AGRICULTURAL ECONOMICS

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CHAPTER 1

OVERVIEW OF AGRICULTURAL ECONOMICS: OPTIMIZING PRODUCTION AND RESOURCE ALLOCATION

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ABSTRACT:

The wise use of resources is a topic covered in the study of economics. Producing resources for human use is the focus of agriculture. Every country now has to embrace the essential science of applying economic concepts to agriculture, both to increase output values and to increase efficiency. You will learn about the idea of agricultural economics in this unit, including its nature, breadth, and relevance as well as the significance of why a distinct study of agricultural economics is necessary. Additionally, you will learn about how the agriculture sector is connected to other areas of the Indian economy. The production and cultivation of food plants, animals, and animal products are all considered to be part of agriculture. The technique of producing food and other organic resources is referred to as farming. Economics is the discipline that studies how products and services are produced, distributed, and consumed. The study of how agricultural products are distributed and processed, as well as the consumption of grains, fruits, flowers, and animals, is known as agricultural economics. It concerns with the distribution of scarce resources among various production, processing, distribution, and consuming applications. Because agricultural depression in the 19th and 20th centuries drew more attention to and concern about the causes and solutions of global agricultural issues, this topic of research is crucial. After finishing this unit, you will be able to: Examine the nature and scope of agricultural economics. Recognize the need of studying the subject. Talk about how agriculture is connected to the other sectors of the Indian economy.

KEYWORDS:

Agriculture, Demand, Economics, Products, Science.

INTRODUCTION

Agricultural economics is "the science in which the principles and methods of economics are applied to the special conditions of the agricultural industry," according to eminent economist Professor A. W. Grey (Department of Agricultural Economics, Purdue University, West Lafayette, Indiana, USA). The Latin terms agre, which means soil, and cultural, which means its cultivation, are the roots of the English word "agriculture". The production and cultivation of food plants, animals, and animal products are all considered to be part of agriculture. The technique of producing food and other organic resources is referred to as farming. Economics is the discipline that studies how products and services are produced, distributed, and consumed.

Distinguished professor of agricultural economics at the University of Wisconsin in the United States and well-known economist Prof. Benjamin H. Hibbard described agricultural economics as "the study of relationship arising from the wealth-getting and wealth-using activity of man in agriculture." But in addition to issues directly related to the exploitation of land, agricultural economics should also include issues that have an indirect impact on both

the economic activity on farms and the welfare of farm workers. The study of how agricultural products are distributed and processed, as well as the consumption of grains, fruits, flowers, and animals, is known as agricultural economics. It concerns with the distribution of scarce resources among various production, processing, distribution, and consuming applications. It entails putting economic ideas to use in the raising of livestock and crops. Additionally, it entails figuring out how to use the land most efficiently and increase agricultural productivity. The producing procedure shouldn't, however, compromise the ecology of the soil [1], [2].

The Purpose, Character, and Relevance of Agricultural Economics

The field of agricultural economics has significantly expanded throughout time, and it now covers a considerably wider range of topics. Agricultural economics encompasses a variety of applied fields with significant conceptual overlaps with traditional economics. Agricultural economics uses the production function and several programming models to create a causal link between supply and demand. It addresses the problems that afflict agriculture and agribusiness by using diverse mathematical, statistical, and economic theories. The significance of this area of research stems from the fact that the agricultural depressions of the 19th and 20th centuries sparked a greater interest in and concern over the causes and remedies to the world's agricultural issues.

The production of crops and animals is a vital component of agriculture, which is an essential component of the global food system. Understanding the complexities of the foundation systems requires a significant contribution from agricultural economics. The production and marketing of commodities in accordance with consumer demands should be well understood by agricultural economics students as being influenced by climatic circumstances. To identify appropriate answers for farm problems, agricultural economics necessitates in-depth understanding of issues relevant to production, financing, marketing, and government laws, as well as their influence on output and distribution. A farmer finds it useful to consider the following options:

1. What kind of food should be produced?
2. What kind of crop should be grown to maximize profits?

Produce's price range

Three major categories may be used to classify the major issues that the agriculture industry is now facing:

1. Production
2. Marketing
3. Financing

In other words, the relationship between agriculture and the rest of the economy, agricultural economics is concerned with the factors that influence the pricing of the agricultural goods a farmer buys and sells. The development of strategies, tactics, and processes for addressing agricultural issues is a key responsibility of agricultural economics. Perhaps the most challenging task that the agricultural economist is expected to do is this. Therefore, agricultural economics is "an applied science and as such, is concerned with the identification, description and classification of the economic problems of agriculture, in order that these problems may be solved," according to well-known economists G.W. Forster and MC. Leager.

For the sheer fact that land, the foundation of all agricultural endeavours, is of very restricted availability, the challenge of allocating scarce resources for different purposes is possibly more significant in the area of agriculture than in the economy as a whole. Therefore, in order to create a framework of efficient techniques and processes that may effectively use agricultural resources to the fullest satisfaction of society, the theoretical foundation of agricultural economics has to be more rigorous and attentive. Therefore, the nature of agricultural economics is both theoretical and practical. As an applied discipline, agricultural economics theory deals with the application of resource economics concepts to a variety of productive agricultural activities. It also deals with the development of resource economics principles [3], [4].

DISCUSSION

Agricultural economics makes use of all the same analytical techniques as general economics. The economics of production, consumption, distribution, marketing, finance, planning, and policy-making, much as in general economics, are some major subfields of agricultural economics. The agriculture industry is also the subject of a micro and macro research. The agriculture industry is a part of the economy that may benefit from static and dynamic analysis. In other words, agricultural economics looks at how a farmer chooses different enterprises, such as the production of crops or the raising of cattle, and how he chooses different activities within the same enterprise, such as which crop to grow and which crop to drop; how costs are to be minimised; what combination of inputs are to be selected for an activity; what amount of each crop is to be produced; and what kind of commercial relations the farmers should have with people from whom they purchase their goods.

Agricultural instability and unemployment are the issues that need to be addressed, mostly at the macro level. Additionally, there are issues with agricultural expansion generally as well as issues with tenurial systems and arrangements, research, and extension services, all of which are mostly macro in nature. Agroeconomics is the study of such problems, with an emphasis on their causes, effects, and remedies. Agricultural economics, as it is right now, is not limited to the ideas of resource conservation in agriculture alone, whether at the micro or macro scale or from a "static" or "dynamic" perspective. The field of agricultural economics encompasses more than "mere resource economising."The interdependence of several economic sectors is widely recognised, as we all know. The expansion of one sector is required for the expansion of another industry.

As a result, we also study how the development of agriculture aids the development of other economic sectors, how labour and capital can flow into non-agricultural sectors, and how the development of agriculture initiates and sustains the development of other economic sectors in agricultural economics. This suggests that agricultural economics examines the principles governing: (a) The outflow of scarce resources to other sectors of the economy (b) The flow of these resources from other sectors into the agricultural sector itself in addition to developing principles regarding the best use of scarce resources in agriculture.

Agriculture Economics's Characteristics

The study of the production, processing, distribution, and consumption of food and fibre is known as agricultural economics. It is a branch of social science that addresses the division of finite resources among the several conflicting purposes for which food and fibre are produced, processed, distributed, and consumed. Using the proper tools from the sciences, notably mathematics and statistics, agricultural economics has progressed in a number of disciplines and directions.

General economics' tenets are used in agricultural economics. The first thing to keep in mind about the nature of agricultural economics is that, generally speaking, it derives the majority of its ideas from its parent body of knowledge, namely the general economics. Even the primary subfields of agricultural economics resemble general economics. It thus begs the issue of why agricultural economics has to be studied separately if the principles of general economics are the same for both. The explanation is that agricultural economics involves more than just applying general economic ideas to the world of agriculture. The general theory of economics has been seen as an abstraction from reality since it is too broad in character [5], [6].

Prior to applying this theory to agriculture for economic analysis, its guiding principles must be adjusted to ensure that its axioms perfectly match the salient characteristics of the agricultural sector. It is made evident by a few instances. under economic theory, we investigate how prices are formed under a variety of market configurations, such as monopolies, perfect competition, and oligopolies. Here, we will almost entirely disregard the study of how agricultural product prices are determined in oligopolistic, monopolistic, or competitive environments.

As was previously said, some agricultural economists consider their field to be an applied science. The application of a pure science's ideas to a specific context is known as applied science. The basic tenets of economics are changed in agricultural economics. In light of this, it may be said that agricultural economics is more appropriately referred to as a specialised branch of pure science than as an applied science. As such, it is a science that examines the causal linkages between numerous economic factors acting in agriculture and how they might be utilised to address a variety of issues.

A Separate Study of Agricultural Economics Is Required

Agriculture is not the only industry that may benefit from these economic ideas, hence agricultural economics is not a special branch of economics. Agriculture business operations may be governed by the same broad framework of economic theory as those in industry. In agriculture as much as in industry, the study of the equilibrium of supply and demand, value and price, etc., is valid. The issue of why we should study agricultural economics separately therefore arises given that the basic economic concepts are relevant to the agriculture sector.

It's true that the objectives of production and the need for managerial judgements about the allocation of inputs are very comparable in industrial and agricultural production. However, there are significant distinctions in the environmental requirements for production and the sociocultural context of the agricultural industry, necessitating a separate study of agricultural economics.

First of all, the combination of a way of life and a commercial operation makes agriculture a unique industry. The modern industry no longer uses this combination. This is the point when social, political, and emotional factors are increasingly important. The farmer produces primarily for his own needs, which is another aspect of agricultural production that sets it apart from industrial production. There is no doubting that the value of self-sufficiency has decreased in modern farming, but it has by no means been eliminated. Even now, farming is still mostly done for self-sufficiency in the majority of developing nations.

Thirdly, since they are both products of the same plant or animal, many agricultural commodities are combined products, such as wheat and affals or mutton and wool. Even though numerous goods are manufactured in the same factory, the expenses associated to the different products cannot be divided as they often do in industry. As a result, it is seldom

justified to think about a product's supply in isolation in agriculture. Fourthly, compared to industry, agriculture uses a far higher percentage of the land than that of industry. This is the cause of the law of diminishing returns' early tendency, the broad distribution of output, and the significant role of the land tenure system.

Fifth, there is minimal room for labour division in farming since it is often done in small-scale units. As a result, agriculture has less need for large-scale organisation and its advantages, which are characteristic of industry. Sixthly, since there are so many small agricultural holdings, unlike in the industrial sector, combinations are not feasible in agriculture. Farmers are forced into fierce rivalry as a consequence. Finally, farmers have virtually little influence over productivity in agriculture. Serious misalignments are likely to happen when production is either uncontrolled or uncontrollable since sometimes more items will be created than are necessary and may be sold economically, and other times there won't be enough products available when prices are high [7], [8].

Linkages of Agriculture to Other Sectors

Over time, the Indian economy underwent a structural shift from being mostly agro-based in the 1970s to being dominated by the service sector. The production and demand relationship in the Indian economy saw a significant transformation as a result of this structural change and unequal sectoral development. The landscape of the Indian agricultural industry has transformed as a result of WTO changes and integration into the global economy. As a result, given India's commitment to reaching the Sustainable Development Goals (SDGs), the value of agriculture and its sustainable development cannot be understated. A strong backward and forward connection between agriculture and other economic sectors is essential to the process of economic growth. Consequently, the concurrent expansion of the agricultural sector and its interdependence with other economic sectors should not be seen in isolation.

Linkage's Nature

The following categories may be used to categorise the connections between agriculture and other economic sectors. Backward linkage is the term used to describe the connection between an industry and the providers of its inputs. The suppliers of an industry's inputs are notified of changes in production by changes in input demand.

Forward linkage: This describes a sector's connection to other sectors that employ output as an input. a shift in production or pricing that is communicated to the produce industry or consumer.

Agriculture's Relationship with Other Sectors

Primary Sector: The economy's primary sector depends on raw materials and food that are mined from the soil. The primary sector's operations include farming, mining, forestry, grazing, fishing, and quarrying. This industry also includes food processing and packaging.

The Secondary Sector: Because completed items are made from raw materials that are harvested by the Primary Sector, the Secondary Sector is reliant on the Primary Sector. The industries that fall under this sector include those that produce cars, textiles, metalworking and smelting, energy utilities, aerospace manufacture, breweries and bottlers, construction, and shipbuilding.

Tertiary Sector: Also referred to as the service sector, the tertiary sector depends on the secondary sector. This industry sells products that the primary sector extracts and the secondary sector refines into finished items. Both the general public and companies are

served by this sector's services. This sector includes businesses that engage in retail and wholesale sales, dining establishments, transportation and distribution, media, tourism, clerical services, insurance, medical care, banking, and legal.

Quaternary Sector: While most economic models only break down an economy into three sectors, other models break it down into four or even five. Government, libraries, culture, scientific research, education, and information technology are some of the industries that fall within this sector, which is closely related to the tertiary sector. The productivity of agriculture is increased by the research and innovation carried out through such operations. This industry develops innovative agricultural technologies to promote development and make the most use of limited resources [9], [10].

Additional connections and contributions

The contribution of agriculture to industrial expansion: Industrialization is based on the idea of considerable growth and may be constrained if food supplies are not increased. In addition to producing goods, agriculture also makes food and raw materials accessible to industry. Food costs might significantly increase if supply don't keep up with demand, which would further pressure wage rates and have a negative impact on business profitability, investment, and growth. On the other hand, the bulk of the unskilled and semi-skilled workers that the industry would need are found in the agricultural sector. However, industry provides agriculture with industrial inputs like herbicides, fertilisers, equipment, etc. As a result, there exist links and dependencies between industry and agriculture.

Source of Capital Formation and Foreign Exchange: Emerging nations depend on the agricultural sector for the majority of their national revenue. The agricultural industry may contribute positively to capital creation if it is well-developed and networked. The fact that agriculture has a lower capital-to-output ratio than other industries lend credence to this claim. Because it needs a modest capital investment, there is thus a lot of room to increase agricultural production. Primary items made from agricultural output are exported and bring in money from outside.

Market demand: The workers in agriculture and those who rely on agricultural operations are the consumers of industrial products, which makes up a significant portion of market demand and fuels development in the manufacturing and related industries.

Bank Finance: The banking industry is persuaded to lend more money to the agricultural sector by the government's initiatives and the changing environment. Additionally, banks are investing in training and establishing consultancies for the agricultural sector in order to facilitate the financial inclusion of the agriculture-based society and the sale of their products. In a nation like India, where agriculture is heavily reliant on the monsoon, the banking industry's role in everything from lending to consulting becomes even more important.

Energy Sector: Because American corporations employ this crop to extract shale gas, agricultural products like guar have become India's most lucrative export. In 2011, American drilling firms invested more than $2.5 billion, and by 2012, guar output in India had quadrupled and had once become a highly valued exportable commodity. Guar is a valuable crop produced and exported by farmers in Punjab, Rajasthan, Andhra Pradesh, Karnataka, and Haryana for shale gas extraction. As a result, Indian agriculture has transitioned from traditional to consumer-driven agriculture.

As nations move from fossil fuels to more environmentally friendly fuels like biofuels and renewable energy, the demand for biofuels is rising globally. As the government met its goal

of mixing 2% ethanol with fuel in 2017, ethanol output significantly rose. Additionally, the government is working to meet its future goal of blending 20% ethanol into fuel. This programme will boost Indian agriculture and reduce India's reliance on foreign energy imports. Future opportunities in research and agricultural technology advancement will be made possible by the role that agriculture plays in climate change, energy security, and sustainable development. This will also result in better utilisation of agricultural waste that currently goes unprocessed, especially in nations like India.

The production and cultivation of food plants, animals, and animal products are all considered to be part of agriculture. A few agricultural economists consider their field to be an applied science. The application of a pure science's ideas to a specific context is known as applied science. The basic tenets of economics are changed in agricultural economics. In light of this, it may be said that agricultural economics is more appropriately referred to as a specialised branch of pure science than as an applied science. As such, it is a science that examines the causal linkages between numerous economic factors acting in agriculture and how they might be utilised to address a variety of issues. Basic food and resources that are mined from the soil are the foundation of the economy. The primary sector's operations include farming, mining, forestry, grazing, fishing, and quarrying. This industry also includes food processing and packaging. The quaternary sector, which encompasses knowledge-based industries including information technology, research and development, consultancy, education, financial planning, blogging, and designing, is often referred to as the economy's knowledge-based portion [11], [12].

CONCLUSION

For the sheer fact that land, the foundation of all agricultural endeavours, is of very restricted availability, the challenge of allocating scarce resources for different purposes is possibly more significant in the area of agriculture than in the economy as a whole. Agricultural instability and unemployment are the issues that need to be addressed, mostly at the macro level. The study of the production, processing, distribution, and consumption of food and fibre is known as agricultural economics. It is a branch of social science that addresses the division of finite resources among the several conflicting purposes for which food and fiber are produced, processed, distributed, and consumed. Agriculture is not the only industry that may benefit from these economic ideas, hence agricultural economics is not a special branch of economics. Agriculture business operations may be governed by the same broad framework of economic theory as those in industry. Over time, the Indian economy underwent a structural shift from being mostly agro-based in the 1970s to being dominated by the service sector. The agriculture sector provides the majority of the nation's revenue for emerging economies. The agricultural industry may contribute positively to capital creation if it is well-developed and networked.

REFERENCES:

[1] A. W. Yalew, G. Hirte, H. Lotze-Campen, and S. Tscharaktschiew, “Climate change, agriculture, and economic development in Ethiopia,” *Sustain.*, 2018, doi: 10.3390/su10103464.

[2] S. A. Ansari and W. Khan, “Relevance of declining agriculture in economic development of South Asian countries: An empirical analysis,” *Agris On-line Pap. Econ. Informatics*, 2018, doi: 10.7160/aol.2018.100201.

[3] A. Phyo, "The Role of Youth in Agriculture and Economic Development," *FFTC Agric. Policy Platf.*, 2018.

[4] C. U. Idoko and S. M. Jatto, "Government Expenditure on Agriculture and Economic Growth in Nigeria (1985-2015)," *Int. J. Acad. Res. Reflect.*, 2018.

[5] M. B. Dastagiri and A. S. Vajrala, "The Political Economy of Global Agriculture: Effects on Agriculture, Farmers, Consumers and Economic Growth," *Eur. Sci. Journal, ESJ*, 2018, doi: 10.19044/esj.2018.v14n4p193.

[6] B. M. Inusa, P. Calvin Daniel, D. F. dayagal, and N. Stephen Chiya, "Nigerian Economic Growth and Recovery: Role of Agriculture," *Int. J. Econ. Manag. Sci.*, 2018, doi: 10.4172/2162-6359.1000512.

[7] D. Awunyo-Vitor and R. A. Sackey, "Agricultural sector foreign direct investment and economic growth in Ghana," *J. Innov. Entrep.*, 2018, doi: 10.1186/s13731-018-0094-3.

[8] S. A. Babatunde, "Government spending on infrastructure and economic growth in Nigeria," *Econ. Res. Istraz.* , 2018, doi: 10.1080/1331677X.2018.1436453.

[9] L. L. Bremer *et al.*, "Biocultural restoration of traditional agriculture: Cultural, environmental, and economic outcomes of Lo'i Kalo restoration in He'eia, O'ahu," *Sustain.*, 2018, doi: 10.3390/SU10124502.

[10] C. Carter, X. Cui, D. Ghanem, and P. Mérel, "Identifying the Economic Impacts of Climate Change on Agriculture," *Annu. Rev. Resour. Econ.*, 2018, doi: 10.1146/annurev-resource-100517-022938.

[11] T. Conefrey, "Irish Agriculture : Economic Impact and Current Challenges," 2018.

[12] B. Ciglovska, "Developing Sustainable Agricultural Sector, as an Impetus for Macedonia`s Economic Growth," *Eur. J. Sustain. Dev.*, 2018, doi: 10.14207/ejsd.2018.v7n4p545.

CHAPTER 2

AGRICULTURE AND ECONOMIC DEVELOPMENT: A SYMBIOTIC RELATIONSHIP

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ABSTRACT:

Agriculture and economic growth are inextricably linked. A sizable segment of the world's population, especially in rural regions, relies heavily on agricultural operations as a source of income. Countries may achieve sustained economic development and raise the quality of life for their inhabitants by increasing agricultural production and expanding the agricultural value chain.

Furthermore, agriculture promotes equitable growth and lowers regional inequities by acting as a catalyst for rural development. Rural communities may draw investments, provide job opportunities, and upgrade rural infrastructure through establishing agricultural value chains and fostering agribusiness firms. As a result, rural areas have higher income levels, better social services, and higher quality of life. However, the contribution of agriculture to economic growth is seriously threatened by issues including climate change, land degradation, water shortages, and restricted access to new technology. Sustainable agricultural practices, investments in research and innovation, and policies that help smallholder farmers and agribusinesses are all necessary components of an all-encompassing strategy to address these concerns. Examine the significance of agricultural growth after finishing this unit. Talk on how agriculture is becoming less important for economic growth.

KEYWORDS:

Agricultural, Development, Economic, Growth, Productivity.

INTRODUCTION

Particularly in emerging nations, agriculture is a key factor in advancing economic growth. This abstract examines the complex relationship between agriculture and economic development, showing the several ways in which agriculture contributes to economic growth, poverty reduction, food security, job creation, and general socio-economic advancement. By directly affecting GDP, agriculture promotes economic growth. For a number of businesses, including food processing, textiles, and biofuels, the agriculture sector offers the raw ingredients. Agriculture's expansion and modernization boost rural income while also boosting the sector's productivity. This in turn increases demand and consumption, which promotes economic growth.

Nearly 58 percent of Indians make their living mostly from agriculture. Due to its enormous potential for value addition, especially within the food processing sector, the Indian food industry is set for significant expansion and will be contributing more to the global food trade each year. In the crop year 2019–20, a record 295.67 million tonnes (MT) of food grain were predicted to be produced. A 298 MT output of food grains is the government of India's goal for 2020–21. You will learn about the changing function of agriculture in economic growth in this unit as well as its decreasing significance [1], [2].

Development of Agriculture Plays a Part

In almost all of the world's agricultural nations, food production is a critical component. As production rises due to higher productivity, farmers' incomes rise as well. The expansion in per capital income is accompanied by a significant rise in the demand for food. For instance, the income elasticity of demand for food in the least developed countries (LDCs) is relatively high, ranging between 0.6 and 0.8 percent. This measure measures how sensitive a good's demand is to changes in the income of the individuals requesting it. Furthermore, the population's rapid expansion, a sharp decline in death rates, and declining fertility rates all contribute to rising food consumption.

Food demand rises as a consequence of the growing population in urban and commercial regions. The output of agricultural production should exceed the need for food, as shown by all of these criteria. The price of food will significantly rise if there is a significant shortfall in agricultural product supply compared to demand. Even so, food imports may be necessary to avoid domestic food shortages and price increases; nevertheless, doing so may come at the expense of capital goods that are crucial for economic growth. You might also implement policies like price control, food rationing, and mandatory food collecting. The importance of increased food production in LDCs is highlighted by all these reasons.

The buying power of rural areas is strengthened as agricultural surpluses rise, and this in turn is essential for the growth of the industrial sector. The market for manufactured products is quite tiny in economies that are still in the developing stages. This is a result of the low buying power of the populace, which often consists of peasants, agricultural workers, and their families, who make up two-thirds or four-fifths of the population. Further emphasising the absence of true buying power is agriculture's poor productivity. So the major cause of poor investment returns is the market's modest size.

Farmland's buying power will rise as agricultural production and output expand. The industrial sector would also expand as a consequence of this, which would further boost consumer demand for produced products, widen the market, and raise market size. Additionally, when manufactured commodities are transported to rural regions and excess agricultural products are sent to urban areas, the means of transportation and communication will grow. Expanding the secondary and tertiary sectors will ultimately result in larger earnings, whether they are handled in the public or private sectors. These earnings, which would be used for reinvestment, would result in a further rise in the rate of capital creation. A market contribution is what agriculture engages in when it deals with other industries, according to Russian-American economist Simon Smith Kuznets.

Underdeveloped nations often concentrate on manufacturing fewer agricultural goods for export. The development of production and productivity of the exportable items leads to a rise in the export of such commodities, which further enhances foreign currency gains. Due to the agricultural surplus, capital is formed in the form of foreign currency, which is then utilised to import capital goods. The share of agricultural exports in the nation's overall exports is anticipated to decline as industrialization leads to greater economic growth since agricultural exports are crucial to the country's ability to produce enough commodities domestically without importing them. These goods serve as import alternatives and assist in maintaining foreign exchange [3], [4].

When there is a greater marketable excess of foodgrains, net foreign currency savings may also be realized. The economy wants to become self-sufficient in terms of food production. As food and export crop production rises and other economic sectors expand, there are further opportunities to earn and save foreign currency. By importing scarce raw materials,

cutting-edge machinery, technological know-how, and capital equipment, gains from foreign exchange may not only increase the productivity of existing sectors but also create new ones. This is what Kuznets refers to as the "product contribution" of agriculture, which boosts the growth of the economy's net production per capita. An impoverished nation needs a sizable amount of money to build and extend its infrastructure, as well as to enhance and advance the light and heavy industries. By increasing the marketable excess of agricultural goods from the rural sector, funding may be prepared for the early phases of growth. However, this shouldn't have an impact on the rural population's consumption level.

DISCUSSION

Labour may be a significant source of capital creation if it is used more for building than for agricultural output. This prospect is however restricted since building work need trained manpower, and using farm laborers for this job would necessitate training them, which would take more time and money. Furthermore, it is impractical to boost capital formation by lowering agricultural prices in cases when price increases are inevitable. Despite the possibility of lower food prices in the future, democratic nations may not adopt this approach due to political considerations [5], [6]. So stabilizing the price of agricultural goods would be a realistic solution to this problem. Increasing agricultural revenues via the following actions may be a significant source of capital formation:

1. Higher farm earnings as a result of agricultural taxes
2. Taxes on land
3. Income tax on agriculture
1. The cost of land registration.
4. School costs
2. Payout for agricultural technical services
3. Additional charges that fully or partially offset the cost of providing services to the farming community

Even though political factors do not encourage an agricultural income tax, land revenue receipts are declining. As a result, according to some economists, extremely little taxation on agriculture has the following effects in less developed nations:

1. A dormant agricultural industry
2. A governmental sector that is financially strapped
3. The nation's economy is expanding slowly.

Therefore, agricultural taxes are crucial for boosting agricultural surplus, which further aids in hastening economic growth in nations where agriculture dominates the economy. When resources are moved from agriculture to other industries, Kuznets refers to this as "factor contribution." These assets are referred to as productive factors. The expansion of job prospects in rural regions is greatly aided by agriculture. With an increase in agricultural production and farm revenue, rural non-farm employment rises and diversifies. In order to meet local demand, marginal and landless farmers are mostly engaged in non-agricultural pursuits. The following are often included in these activities: Construction of homes and other structures, Tool and furniture manufacturing, Textile, leather, and metal works, Processing, marketing, transport, and repair work, Education, medical care, and other services

Also contributing to the improvement of rural welfare is agricultural surplus, which raises rural earnings. Farmers who have more money start eating more healthful foods like milk, ghee, premium cereals, fruits, etc. They also start building nicer homes with contemporary

conveniences. They raise their level of life through investing in cutting-edge transportation and communication tools, as well as using services like banking, irrigation, and banking.

Agriculture's Role in Economic Development Is Getting Less Important

One key aspect of economic progress is the shift of agriculture from a large sector, particularly in developing and rising nations, to a minor one in industrialised nations. Agricultural decline is a byproduct of economic progress that is left behind as it moves forward. The most at risk from such a downturn in the agricultural industry in India is the more than 50% of the population that depends on agriculture. In India, reforms and economic growth over the last 20 years have reduced agriculture's contribution to GDP to only 15%. Agriculture is now regarded as the least desirable career option in India. India is home to more than 25% of the world's hungry population, despite improved agricultural planting since Independence. In light of this, the question: Is Indian agriculture a paradox?

Many ideas have tried in the past to explain the inverse link between economic growth and agricultural loss, but the precise cause could not be understood. We must categorise the causes and increase our comprehension of such aspects in order to comprehend the phenomena of economic progress and agricultural decline.

1. Green Revolution: The term "Green Revolution" describes a time when Indian agriculture underwent a significant transformation as a result of the use of modern techniques including high yielding varieties of seeds, irrigation, tractors, pesticides, and fertilisers. There is no doubting that many economists backed the Green Revolution since hybrid seeds, herbicides, and fertilisers enhanced agricultural yield. Following that, multinational corporations (MNCs) like Bayer and Monsanto were allowed entry into the seed market. Genuine seeds are no longer accessible since these MNCs, who arrived with the sole intention of making money, offered a phoney variety of seeds to Indian farmers. The legitimate seed market thus crashed, and the majority of farmers stopped purchasing them. The hybrid seed boosts agricultural output temporarily but jeopardises productivity over the long term. Additionally, overuse of pesticides and fertilisers over time damages the quality of the soil and groundwater. Farmers also abandoned the old practise of crop rotation and were increasingly reliant on hybrid seed. The finest example to support this assertion is BT cotton. Finally, the demise of conventional farming and agricultural practises was caused by a lack of knowledge and access to contemporary farming methods and equipment. Agriculture and economic growth were not sustainable as a result of the sensitivity of soil and irrigation to Green Revolution tactics.

2. Land Holding Pattern: Due to India's dense population, there is a limited supply of land available for agricultural. In comparison to the US and China, India has smaller average landholdings. According to the "Report on Agriculture Indebtedness by Expert Group" by the Radha Krishna Committee, the wealthiest ten percent of landowners own close to 54% of all agricultural land. In addition, 60% of Indian farmers own less than 0.4 hectares of land. This conclusion was made public in The Hindu Group's "Survey of Indian Agriculture 2011". Farmers' productivity and earnings per farmer are lowered by land inequality [3], [4].

3. Road Transportation and Industrial Development: Land is also heavily used for the construction of roads as well as other industrial development projects. Fertile ground becomes unusable for farming when industries are built there [6], [7].

4. Irrigation: The vast majority of Indian agriculture relies on groundwater, which accounts for 61% of the country's overall irrigation activities. Additionally, the contribution of the river and canal water system to overall irrigation is just 29%, with the remaining 79% being

covered by monsoon rains from July to September. A decrease in water level results from the increasing demand for irrigation putting stress on groundwater supplies. Cash crops like cotton and sugarcane use more water than other crops, yet groundwater conservation is not given much of a boost. Additionally polluting aquatic bodies is the use of chemicals in pesticides and fertilisers. Therefore, it is necessary to manage groundwater wisely and address the water issue by sustainable means such as rainwater collection, which might replenish groundwater, and drip irrigation techniques, which may transform India's irrigation system in the future.

5. Finance: It has never been easy to provide credit to farmers, particularly in emerging and undeveloped nations. Even today, farmers who need credit must rely on money lenders and pay high interest rates. Banks may refuse to provide insurance to farmers because of concern about credit card default. The government has introduced debt forgiveness programmes to help farmers who are suffering. Consequently, one might argue that agriculture has evolved into a high risk but poor productivity industry.

6. Post-harvest mechanism: The farmer must locate a market to sell his produce in after the crops have been harvested. It should be highlighted that since farmers are forced to sell at a lower price, market cartels and brokers are eating away at their earnings. Because farmers lack adequate storage facilities, they must sell their crop at whatever price the intermediaries will give them.

In order for farmers to get a fair price for their produce, adequate supply chain management and food storage facilities must be made available. Additionally, the majority of farmers are uninformed and lack sufficient knowledge of how crops are sold in our nation. They must thus depend on the intermediaries in the market. Farmers in India continue to face difficulties due to the regular price fluctuations and battles to recover at least the maximum support price (MSP).Recently, rules in support of farmers have been introduced by the national government. Farmers may sell their product outside APMC mandis to anybody who provides a greater price, including the final consumer, according to the Farmers product Trade and Commerce (Promotion and Facilitation) Bill, 2020. Farmers are able to contract with buyers to purchase crops at pre-set rates under the Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Bill, 2020. According to the Essential Commodities (Amendment) Bill, 2020, foods including onions, grains, pulses, potatoes, edible oilseeds, and oils are no longer considered to be necessities under normal conditions. But several farmer demonstrations throughout the country, particularly from Punjab and Haryana, have been in response to the introduction of the legislation and the adoption of the Act [8], [9].

In practically all nations in the globe, the agricultural sector is fundamentally dependent on food production. When production grows due to higher productivity, farmers' revenue rises. With the expansion in per capital income, food consumption rises significantly. The need for food also rises as the population of cities and industrial regions grows. These several elements indicate that the output of agricultural produce ought to exceed the level of food demand. An increase in agricultural surplus boosts rural consumers' buying power, which is crucial for the growth of the industrial sector. The market for produced items is quite tiny in an economy that is still in its infancy. Increased agricultural production and output will boost the buying power of rural areas. The demand for produced products would be further stimulated, the market would grow, and the industrial sector would likewise expand as a consequence. For the development and expansion of its infrastructure, as well as for the improvement and promotion of its heavy and basic industries, a developing nation needs a

significant amount of funding. Capital may be provided at the early phases of growth by boosting the rural sector's excess of marketable agricultural goods.

Labour may be a significant source of capital creation if it is used more for building than for agricultural output. This prospect is however restricted since building work need trained manpower, and using farm labourers for this job would necessitate training them, which would take more time and money. The expansion of job prospects in rural regions is greatly aided by agriculture. With an increase in agricultural production and farm revenue, non-farm employment in rural areas grows and diversifies. Marginal and landless farmers work mostly in non-agricultural industries that meet local demand. Many ideas have tried in the past to explain the inverse link between economic growth and agricultural loss, but the precise cause could not be understood. Farmer credit has always been difficult to come by, particularly in emerging and poor nations. Farmers are still at the mercy of moneylenders today in order to secure loans, where they end up paying high interest. In order for farmers to get a fair price for their produce, adequate supply chain management and food storage facilities must be made available [10], [11].

CONCLUSION

Agriculture is essential for eradicating poverty and ensuring food security. By assuring food availability and raising farmer incomes, improved agricultural production and diverse farming methods may help reduce poverty. Countries may increase agricultural output, lower post-harvest losses, and encourage sustainable farming practises through investing in agricultural research, technology, and infrastructure. Furthermore, focused agricultural interventions help smallholder farmers break the cycle of poverty and support general economic growth by providing them with access to loans, market connections, and training programmes. In conclusion, there is a symbiotic link between agricultural and economic growth. A vital sector, agriculture supports rural development, poverty reduction, economic growth, and food security. Governments, international organisations, and other stakeholders must acknowledge the significance of agriculture in the broader economic development agenda and put in place policies that support sustainable agricultural practises, boost productivity, and guarantee inclusive growth, ultimately fostering a prosperous and resilient future.

REFERENCES:

[1] A. Phyo, “The Role of Youth in Agriculture and Economic Development,” *FFTC Agric. Policy Platf.*, 2018.

[2] A. W. Yalew, G. Hirte, H. Lotze-Campen, and S. Tscharaktschiew, “Climate change, agriculture, and economic development in Ethiopia,” *Sustain.*, 2018, doi: 10.3390/su10103464.

[3] L. Praburaj, “Role of Agriculture in the Economic Development of a Country,” *Int. J. Commer.*, 2018.

[4] S. A. Ansari and W. Khan, “Relevance of declining agriculture in economic development of South Asian countries: An empirical analysis,” *Agris On-line Pap. Econ. Informatics*, 2018, doi: 10.7160/aol.2018.100201.

[5] M. Graczyk, P. Kułyk, L. Kaźmierczak-Piwko, and Ł. Augustowski, “Ecological Innovations in Agricultural Production as a Pro-Development Factor of the Economy,” *Multidiscip. Asp. Prod. Eng.*, 2018, doi: 10.2478/mape-2018-0076.

[6] D. Welteji and B. Zerihun, "Tourism-Agriculture Nexuses: Practices, challenges and opportunities in the case of Bale Mountains National Park, Southeastern Ethiopia," *Agric. Food Secur.*, 2018, doi: 10.1186/s40066-018-0156-6.

[7] Q. Zhang, Q. Lu, D. Zhong, and X. Ye, "The Pattern of Policy Change on Disaster Management in China: A Bibliometric Analysis of Policy Documents, 1949–2016," *Int. J. Disaster Risk Sci.*, 2018, doi: 10.1007/s13753-018-0164-y.

[8] R. Gosavi, "Role of Agriculture Marketing in Economic Development of India," *Journal, Int. Soc. Sci.*, 2018.

[9] Y. Lopatynskyi and V. Meglei, "Ecological and Economic Development of Agriculture in Ukraine," *Gospod. w Prakt. i Teor.*, 2018, doi: 10.18778/1429-3730.53.06.

[10] C. Elevitch, D. Mazaroli, and D. Ragone, "Agroforestry Standards for Regenerative Agriculture," *Sustainability*, vol. 10, no. 9, p. 3337, Sep. 2018, doi: 10.3390/su10093337.

[11] J. Yu and J. Wu, "The sustainability of agricultural development in China: The agriculture-environment nexus," *Sustainability (Switzerland)*. 2018. doi: 10.3390/su10061776.

CHAPTER 3

A COMPREHENSIVE REVIEW OF TRANSFORMING TRADITIONAL AGRICULTURE

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ABSTRACT:

Traditional agricultural practises are changing dramatically in favour of more sustainable and creative methods. These practises are characterised by manual labour, slow acceptance of new technology, and poor output. The necessity for and advantages of modernising traditional agriculture are explored in this abstract, which also identifies the most important techniques and tools for making this change. The modernization of conventional agriculture has the potential to increase output, strengthen environmental sustainability, advance food security, and support overall economic growth. Population expansion, climate change, resource depletion, and rising food demand are just a few of the difficulties traditional agriculture confronts. These difficulties call for a change to more environmentally friendly methods that maximise resource use, reduce negative effects on the environment, and guarantee the sustainability of agriculture over the long term. Adopting cutting-edge techniques and technology will help revolutionise conventional agriculture. For instance, precision agriculture makes use of sensors, drones, and satellite imaging to optimise inputs like water, fertiliser, and herbicides, leading to higher productivity and less environmental impact. Similar to this, hydroponics, aquaponics, and vertical farming allow year-round growing in controlled settings while saving water and land resources and increasing yields. These innovations not only increase production but also open up options for urban farming and lessen dependence on conventional agricultural techniques.

KEYWORDS:

Agricultural, Development, Economic, Growth, Productivity.

INTRODUCTION

Worldwide, agriculture is evolving quickly, giving rise to new strategies for agricultural growth. This chapter examines the strategies for agricultural growth used by T.W. Schultz, John Mellor, John Fei, and Gustav Ranis. The transfer of workers from agricultural to non-agricultural fields is highlighted by the Fei-Ranis model. In his theory, Schultz, who shared the 1979 Nobel Memorial Prize in Economic Sciences with William Arthur Lewis, encourages the use of science and technology to the transformation of conventional agriculture. On the other side, Mellor, a well-known rural economist in the globe, proposes a variety of strategies, including promoting agricultural research, providing cutting-edge inputs, and expanding communication networks. Examine the Ranis-Fei Model. Examine Schultz's recommendations for modernizing traditional agriculture; Go through the Mellor Model's three stages of agricultural development.

Model FEI-RANIS

The Ranis-Fei Model, developed by John Fei and Gustav Ranis, focuses on the transfer of workers from agricultural to non-agricultural fields. The major barrier to economic growth is seen as this change of workforce. The movement of an undeveloped economy with relation to its transitional phase, in which the underdeveloped economy goes from a period of stagnation

to a phase of self-sustained development, is examined by John Fei and Gustav Ranis in one of their publications titled "A Theory of Economic Development." The Lewis-proposed notion of Unlimited Supplies of Labour is said to have been improved upon by the Ranis-Fei hypothesis. Lewis' hypothesis is claimed to be inferior to the Ranis-Fei theory since it is unable to distinguish between improvements and advancements in the realm of agriculture [1], [2].

According to the Ranis-Fei hypothesis, an economy with a low level of resource production and a labour surplus is one where the majority of people work in agriculture, despite widespread unemployment and population growth. Most of the agrarian sector is stagnant, and the vast majority of people work in conventional agricultural activities. There are non-agricultural activities, however they are characterised by a low capital intensity. A vibrant and vigorous industrial sector is also present. Redistributing excess labour from the agricultural sector to the industrial sector is essential for growth since their contribution is little, and sometimes even nonexistent. They become productive and earn wages that are equivalent to or higher than the institutional wage in the agriculture sector once these surplus employees are transferred to the industrial sector.

Assumptions

Fei and Ranis' theory of economic growth is predicated on the following premises:

1. The population increase is considered to be an external event.
2. It is believed that at some point, the marginal productivity of labour falls to zero. If the population grows beyond the point at which labour productivity is marginally zero, workers may be moved from agriculture to industry without reducing agricultural production.
3. Constant returns to scale with labor as a variable component define agricultural activity.
4. There is a dual economy made up of a dynamic industrial sector and a traditional, stagnating agrarian sector.
5. Land reclamation is the only way that capital accumulates in agriculture.
6. Only labor and capital account for the industrial sector's production. As a production element, land plays no part.
7. Only labor and land can determine the production of the agricultural industry.
8. The supply of land is fixed.
9. The beginning level of real income in the agricultural sector is the same as the real wage in the industrial sector, which is fixed. It is referred to as the institutional wage.
10. Only agricultural items are consumed by employees in both sectors.

The Model's Operation

Fei and Ranis divide the development of a labor-surplus economy into three stages based on these presumptions. The first step is transferring the cloaked jobless employees who do not contribute to farm production to the industrial sector at the institutional wage. Agricultural employees contribute to agricultural production in the second phase, but they produce less than the institutional salary they get. Additionally, these individuals are moved to the industrial sector. Farm laborers ultimately create output that is equivalent to the institutional pay if the movement of employees to the industrial sector doesn't stop. When farm laborers generate more than their institutional salary, they enter the third phase, which signals the end of takeoff and the start of self-sustained development. During this stage, the workforce excess is depleted and the agricultural industry is commercialized [3], [4].

A Critical Evaluation

The Fei-Ranis model illustrates how the two sectors interact to start and speed up growth. Additionally, it provides a more grounded explanation of the Lewis turning point. The theory's main advantage is that it demonstrates the significance of agricultural goods in the development of capital in developing nations. Despite these advantages, the model is not without faults; some of them are covered below.

1. Fei and Ranis note that "with a fixed amount of land, there will be some size of population that is large enough to render MPP zero," but that this is not the case. However, Schultz disagrees that the MPP is zero in countries with a labour surplus. If such were the case, he said, the institutional wage would likewise be $0. Every employee does, in fact, earn a minimum wage, whether it be in cash or in kind. Therefore, it is incorrect to claim that the MPP in the agriculture sector is nil.
2. Commercialization of Agriculture Causes Inflation: According to the hypothesis, commercialization occurs when the agricultural sector moves into the third phase. However, since inflationary pressures will begin, it is unlikely that the economy will transition easily into self-sustaining development. There will be a workforce deficit in the agriculture industry as more people move into the industrial sector. In the meanwhile, agricultural commodity shortages develop and the institutional pay also reaches MPP for employees. All of these elements will likely lead to pressures for inflation in the economy.
3. Closed Model: When agricultural production drops and the prices of agricultural commodities rise during the second phase, Fei and Ranis claim that the terms of trade shift against the industrial sector. This study is predicated on the premise that there is no international commerce and that all economies are closed, however this presumption is incorrect since undeveloped nations have open economies and import agricultural products when there are shortages.
4. Institutional salary in the Agricultural Sector Not Constant: According to the idea, the institutional salary does not change throughout the first two stages despite a rise in agricultural production. This is wildly unreasonable since farm salaries typically increase along with an overall increase in agricultural production. For instance, during the Green Revolution (1967–1972), the daily real pays rates (at 1966 prices) of agricultural labourers for different farm activities in Punjab climbed from 41.7% to 55.2%.
5. Institutional Wage below MPP: The model is predicated on the idea that institutional wages will remain constant and be higher than the MPP throughout phases I and II of the development process. This supposition is not supported by any actual data. In reality, salaries for agricultural workers in developing nations with a labour surplus are far lower than their MPP.
6. Land supply is not fixed: Fei and Ranis start off by assuming that the land supply is fixed throughout the development process. Long-term data on agricultural acreage in several Asian nations show that the quantity of land is not set. For instance, in India, the index number of area under crops increased from 82 in 1950–51 to 107.3 in 1970–71 (base 1961–62).

These drawbacks do not, however, diminish the value of the Fei-Ranis model in terms of the economic growth of nations with labour surpluses. Through the interplay of the agricultural and industrial sectors of an undeveloped economy, it carefully studies the development process from takeoff to self-sustaining growth [5], [6].

Model Schultz

An economist named T.W. Schultz made recommendations about how to improve agriculture. In 1964, his book Transforming Traditional Agriculture was released. It is regarded as a defining characteristic in the research on agricultural development.

Analysis of the theory

In accordance with his idea, even though people worked hard and the land was rich, there would be less output if conventional techniques of production were used. On the other hand, using science and technology in agriculture increases output even in areas with poor soil and lazy laborers. Traditional agriculture-dependent nations are underdeveloped and spend a large portion of their revenue on food. However, as a nation employs established techniques, agricultural food becomes widely accessible, people's incomes increase, and less of the nation's money is spent on food. Professor Schultz also discusses potential strategies for modernizing conventional agriculture. Investment is a concern in the transformation of traditional agriculture. Although the amount of investment in agriculture is not a significant problem, it is difficult to identify the types of investment. Early economists failed to recognize the agriculture sector's economic potential, which led to this issue.

Three crucial questions

To fully grasp the agriculture industry's economic potential, according to Schultz, the following three issues must be clarified:

1. Can low-income communities significantly boost agricultural productivity by effectively allocating the already available resources?
2. What production variables influence agricultural performance and a nation's economic development?
3. What circumstances make investing in agriculture beneficial?

According to Professor Schultz, "Differences in the quality of material capital are of great importance, differences in the abilities of farm people are most important in explaining the differences in the amount and rate of increase of farm production." Several nations, like Mexico and Japan, have outperformed India in the agricultural sector, but not because their lands are of higher quality than India's; rather, it is due to their superior agricultural technology.

DISCUSSION

According to Schultz, conventional agriculture may be transformed without requiring an excessive amount of investment. A nation must abandon outdated practises and adopt new manufacturing variables. It must have the ability to manage any risks and uncertainties that may result from the addition of new elements. According to him, the pace at which farmers who have adapted to traditional agriculture embrace a new element of production relies on its profit, taking into account risk and uncertainty as necessary. In this regard, the reaction is comparable to that in modern agriculture.

Efficiency of allocation in conventional agriculture

The premise of Schultz's theory is thattraditional agriculture has relatively few significant inefficiencies in the allocation of the factors of production.This statement implies:

That reallocating the factors at the disposal of the farmers who are constrained by traditional agriculture is not going to result in any appreciable increase in agricultural production.

Additionally, it indicates that marginal costs and returns have been taken into account while allocating all of the production's inputs. Personal preferences wouldn't interfere with agricultural productivity. A farm management specialist is unable to identify any inefficiencies in the factor distribution. The best feasible use of all the production elements has been made. Schultz contends that the allocative efficiency hypothesis for conventional agriculture collapses if any of the inference made above is shown to be false. Schultz used actual research in two villages one in Guatemala and the other in India to support his claim [7], [8].

The Guatemalan village is a capitalist one. The market is perfectly competitive, and the community is making full use of all the production elements at its disposal. "Everything that is revealed in the careful documentation of people's behaviour in penny capitalism and in the numerous list that show prices, costs, and returns strongly supports the inference that people are extraordinarily efficient in allocating the factors at their disposal in current production," the author writes. There are no substantial differences across components, manufacturing processes, or products. There is no underemployment or covert unemployment. Similar conclusions about the Indian village have been made by a researcher. The researcher concludes from the information for this hamlet that "there is a remarkably close correspondence between the various price estimates." The average allocations made by the sample of farms seem to have been effective given the current technical connections. As long as the community uses conventional resources and technology, there is no indication that changing the current allocations will increase economic production.

Zero Value Labor Doctrine

Many economists think that there is a component of the work force in traditional agriculture that is secretly jobless. The consequence of this theory is that the agricultural sector's overall production will not decrease if part of its worker force is transferred to another industry. This widespread labour excess has been seen as a defining trait of traditional agriculture, which causes poverty in the nation. Schultz disputes this claim. He tested this theory using the influenza epidemic year of 1918-19. People who lived in India's rural districts throughout the year suffered greatly from the influenza outbreak. In the crop season that followed the outbreak, he saw a drop in the agricultural sector's overall production. This led him to conclude that not even 5% of the work force could be classified as excess.

Low Capital with High Returns

Another deeply ingrained belief is that conventional agriculture offers a high rate of return for a very little amount of capital investment. During the colonial era, wealthy peasants in European nations made investments in industrialised nations while diverting their capital to underdeveloped nations. Schultz disputes this idea and claims that conventional agriculture has a poor rate of return and needs a significant level of capital input. Additionally, he provides evidence that money imported from other nations was not used directly in manufacturing in developing nations, but rather in allied fields like transportation.

According to Schultz, in certain impoverished agricultural areas, the cost of factors makes up a very tiny portion of the overall rent from land. Although the notion that rent may be little or even zero is sometimes disregarded when analysing the contributions of various elements to agricultural productivity, this result is perfectly consistent with economic theory. The second finding is that many underdeveloped agricultural communities have relatively high levels of repeatable material capital. Even while the rate on such capital is modest in some of these places, the factor share of replicable capital is high. If the rates of return are low, as they are in many of these poor agricultural communities, the situation would be perplexing given the

conventional economic belief that the stock of reproducible capital in poor agricultural communities is small. If the rates of return are high, however, the stock could be small and the share relatively large. Additionally, Schultz disputes the claim that larger farms are more productive. He asserts that there is no relationship between farm size and output. Large and small farms may be equally efficient or inefficient depending on the circumstances [9], [10].

Ideas of Schultz for Changing Traditional Agriculture

According to Schultz, the use of contemporary (non-traditional) agricultural inputs will determine how traditional agriculture is transformed and at what cost. Producing and distributing these elements at cheap rates will persuade farmers to embrace and employ these inputs in agriculture, according to him, who claims that "the suppliers of these factors in a very real sense hold the key to such growth." Additionally, this would increase the return on their agricultural investments. Schultz contends that economists have not given the supply of contemporary production components the proper consideration. The main factors that contribute to contemporary agriculture's high productivity are:

Two things: (i) modern agricultural inputs; and (ii) modern agricultural labour. Modern agricultural inputs must to be accessible in a way that enables even small-scale farmers to employ them. Researchanddevelopmentplaysasignificantroleinthisregard. Equally significant is the distributional nature of these contributions. Distribution may be carried out by for-profit businesses or nonprofit organisations. Distribution companies' profitability is influenced by the market's size and entry costs. There isn't enough room for profit since admission is expensive and there isn't a big enough market. In order to attract private enterprises, the distribution of these inputs must be made lucrative.

The distribution of these contributions may also be significantly influenced by non-profit organisations. Farmers may be encouraged to test a range of seeds and fertilisers in their own communities by setting up local testing facilities in the villages. Additionally, it is crucial to provide farmers contemporary agricultural production skills. According to many economists, investing in farmer training would reduce investment in more profitable businesses. Schultz, however, categorically rejects this viewpoint. He claims that "investing in human capital" has the potential to drastically alter conventional agriculture.

Model Mellor

Another significant idea in the area of agricultural growth is that of John Mellor. It illustrates how agriculture changed from a traditional to a contemporary industry. Two years after Schultz's Transforming Traditional Agriculture was released, Professor John Williams Mellor published The Economics of Agricultural Development. Mellor agrees with Schultz in certain areas, but his strategy is more comprehensive and grounded in reality. Mellor demonstrates how agriculture progressed from its prehistoric roots to contemporary agricultural technologies.

Agriculture development stages

According to Mellor, a nation's agriculture may be found in one of the following three stages at any one time:

Conventional farming

1. Agriculture that is technologically advanced (labor-intensive technology)
2. Agriculture that is technologically advanced (labor-saving technology)

You may describe these three stages of agricultural growth as follows:

Conventional farming

Mellor starts with the idea of traditional agriculture to describe the process of agricultural transition. It is predominantly peasant farming, which is characterised by agronomically undeveloped and labor-intensive cultivation. These kind of agriculture's main inputs are land, manpower, and capital. On some farms, these inputs are produced by the same family. These farms are often modest in size and are managed by different family members. Since there are few other job options, many of the members labour on these farms. As a result, conventional agriculture suffers covert unemployment. Bullocks, machinery, and other forms of capital are used. Traditional agriculture has poor productivity, thus adding more workers and resources has decreasing benefits. Therefore, farmers are often interested in expanding the amount of land they own in order to raise their revenue while maintaining a consistent work force and capital. However, the growth of land ownership happens extremely gradually.

In conventional agriculture, certain non-traditional inputs, such as fertilisers, have been utilised, but in the absence of other supplementary inputs, their effect on overall productivity has remained minimal. Similar to how technical advancements are not followed by institutional improvements, such as land reforms, they also remain useless. In essence, phase I of traditional agriculture is characterised by low levels of production, low levels of resource utilisation, and relatively high levels of resource and enterprise combination efficiency. These three elements are connected. Collectively, they indicate that, within the confines of conventional agriculture, there is little room for quickly expanding overall output or productivity per unit of resources, but that there is a tonne of room for doing so via technological development [11], [12].

Agriculture that is technologically active and uses low-cost, labor-intensive technologies

Farmers who practise traditional agriculture may be forced to transition into a dynamic phase by a variety of causes. Because of the following factors, it is possible to say that agriculture is now developing at this stage:

1. The economy remains heavily relies on agriculture.
2. A number of factors, such as a rise in people's income, are contributing to the growing demand for its goods.

According to Mellor, these circumstances need agricultural progress, which was previously impractical but is now made viable by contemporary science. Increased agricultural and livestock production per acre are the main focus of phase II. This is made possible in part through innovation, which immediately boosts yield. It may also happen in part by using non-land resources more effectively and reinvesting the resources saved back into the manufacturing process. The ongoing development and use of technology, which is made possible by a sophisticated institutional framework, is a crucial difference between phase II and phase I.

Mellor recommended the following actions for expanding agriculture:

Institutional support: In conventional agriculture, farmers, particularly small farmers, lack motivation to enhance agricultural output. Therefore, it's critical to provide a setting that guarantees they get fair compensation in order to inspire them. Such an atmosphere may be created by institutional reforms such as those in lending, marketing, and tenurial ownerships.

Promotion of research: During this stage, research programmes are crucial in the development of new manufacturing methods. Therefore, there should be strong support for

these projects. Additionally, farmers should be encouraged to use study results in their operations.

Supply of contemporary inputs: Providing fresh inputs is crucial for increasing agricultural output. Farmers require access to new crops, superior animal breeds, commercial fertilisers, and pesticides. It's crucial to hire individuals who can create these cutting-edge contributions. Some of these inputs may also need to be imported.

Establishing institutions to provide service facilities: A variety of servicing facilities are necessary for effective usage of new inputs. These include services like marketing, distribution, and finance facilities for farmers.

Creation of a communication system: Farmers' training is essential to the program's ultimate success. The rate at which trained personnel can be provided to operate various developmental institutions will, in practise, be a limit on the rate of increase in agricultural production. In other words, the second phase of agricultural development is an ongoing activity.

Agriculture that is technologically advanced and employs labor-saving techniques. According to Mellor, the transition into the third phase of agricultural growth is just around the corner as the second phase gathers steam. According to him, "This tends to be a technologically dynamic phase" because "institutions are developed which create a stream of labor-saving mechanical innovations and facilities for providing, distributing and servicing such machines so that a continuum of increasing labour productivity is created." When economic development has been underway for some time, it enters this phase. A quick development of the non-farm sector and a progressive increase of capital usage in agriculture are both made possible at this point by the capital creation available. The ratio of people to land declines, while farm size on average rises.

It should be noted that most low-income countries at the moment follow Mellor's proposed phase sequence. However, this pattern has not been followed by agricultural growth in many nations. For instance, fundamental mechanical innovation knowledge was long accessible in the USA; as a result, agriculture there could go straight from phase I to phase III. Additionally, the labor-land and labor-capital ratios in this region favored labor-saving over labor-intensive technologies. Large amounts of untapped but highly productive land, an abundance of foreign finance, and a quickly expanding metropolitan economy all promoted the mechanization of agriculture.

The Ranis-Fei Model, developed by John Fei and Gustav Ranis, focuses on the transfer of manpower from agricultural to non-agricultural fields. The major barrier to economic growth is seen as this change of workforce. According to the Ranis-Fei hypothesis, despite the fact that there is a high rate of unemployment and a population rise, the majority of people are engaged in agricultural activities in a resource-poor, labour-surplus economy. Fei and Ranis have also shown that their model meets the requirements of balanced growth during takeoff. Investments must be made simultaneously in the agricultural and industrial sectors of the economy to achieve balanced growth. The Fei-Ranis model illustrates how the two sectors interact to start and speed up growth. Additionally, it provides a more grounded explanation of the Lewis turning point. The theory's main advantage is that it demonstrates the significance of agricultural goods in the development of capital in developing nations. T.W. An economist named Schultz made recommendations for the advancement of agriculture. In 1964, his book Transforming Traditional Agriculture was released. It is regarded as a defining characteristic in the research on agricultural development.

According to Schultz's view, "traditional agriculture has relatively few significant inefficiencies in the allocation of the factors of production." According to many economists, there is a component of the work force in conventional agriculture that is secretly jobless. The consequence of this theory is that the agricultural sector's overall production will not decrease if part of its worker force is transferred to another industry. Non-profit organisations may also be crucial in how these contributions are distributed. Farmers may be encouraged to test a range of seeds and fertilisers in their own communities by setting up local testing facilities in the villages. Another significant idea in the area of agricultural growth is that of John Mellor. It illustrates how agriculture changed from a traditional to a contemporary industry. Capital is used to purchase things like tools, equipment, and bulls. Traditional agriculture has poor productivity, therefore adding workers and money has declining benefits. Traditional agriculture has utilised certain non-traditional inputs, such as fertilisers, but their effect on overall productivity is still minimal in the absence of other supplementary inputs. Similar to how technical advancements are not followed by institutional improvements, such as land reforms, they also remain useless.

CONCLUSION

Traditional agriculture may be transformed for a variety of reasons. Higher revenues for farmers are a result of increased production and efficiency, which also reduces rural poverty and improves farmers' quality of life. Environmental protection, resource preservation, and climate change mitigation are all goals of sustainable practises. Adopting new agricultural techniques also promotes food security by assuring consistent and varied food output. In order to meet the difficulties of the 21st century, conventional agriculture must be transformed. Farmers may raise production, promote environmental sustainability, and support economic growth by using sustainable and cutting-edge practises. Investment in research, technology transfer, and capacity development must be prioritised by governments, agricultural organisations, and stakeholders to support this change. The only way to change conventional agriculture into a resilient, productive, and sustainable system that can satisfy the changing requirements of an expanding global population is via communal efforts.

REFERENCES:

[1] S. Heble, A. Kumar, K. V. V. D. Prasad, S. Samirana, P. Rajalakshmi, and U. B. Desai, “A low power IoT network for smart agriculture,” in *IEEE World Forum on Internet of Things, WF-IoT 2018 - Proceedings*, 2018. doi: 10.1109/WF-IoT.2018.8355152.

[2] Y. Chen, S. Zhao, and Y. Zhou, “Research on Intelligent Agricultural Planting System Based on Internet of Things Technology,” *J. Comput. Commun.*, 2018, doi: 10.4236/jcc.2018.66005.

[3] R. Khan, Z. Aziz, and V. Ahmed, “Building integrated agriculture information modelling (BIAIM): An integrated approach towards urban agriculture,” *Sustain. Cities Soc.*, 2018, doi: 10.1016/j.scs.2017.10.027.

[4] K. Benedek, “Aspects in Romanian nature conservation - A review,” *Environ. Eng. Manag. J.*, 2018, doi: 10.30638/eemj.2018.011.

[5] G. M. Robinson and B. Song, “Transforming the Peri-Urban fringe in China: The example of Xi’an-Xianyang,” *Sustain.*, 2018, doi: 10.3390/su10113932.

[6] G. B. Martha and E. Alves, "The Role and Impact of Public Research and Technology Transfer in Brazilian Agriculture," in *Innovation, Technology and Knowledge Management*, 2018. doi: 10.1007/978-3-319-67958-7_21.

[7] W. Y. Hsiung, "The use of e-resources and innovative technology in transforming traditional teaching in chemistry and its impact on learning chemistry," *Int. J. Interact. Mob. Technol.*, 2018, doi: 10.3991/ijim.v12i7.9666.

[8] G. J. Harfitt and J. Mei Ling Chow, "Transforming traditional models of initial teacher education through a mandatory experiential learning programme," *Teach. Teach. Educ.*, 2018, doi: 10.1016/j.tate.2018.03.021.

[9] C. Watanabe, K. Moriya, Y. Tou, and P. Neittaanmaki, "Consequences of the Digital Econmy : Transformation of the Growth Concept," *Int. J. Manag. Inf. Technol.*, 2018, doi: 10.5121/ijmit.2018.10202.

[10] L. Roda-Sanchez, C. Garrido-Hidalgo, Di. Hortelano, T. Olivares, and M. C. Ruiz, "OperaBLE: An IoT-Based Wearable to Improve Efficiency and Smart Worker Care Services in Industry 4.0," *J. Sensors*, 2018, doi: 10.1155/2018/6272793.

[11] E. Parraguez-Vergara, B. Contreras, N. Clavijo, V. Villegas, N. Paucar, and F. Ther, "Does indigenous and campesino traditional agriculture have anything to contribute to food sovereignty in Latin America? Evidence from Chile, Peru, Ecuador, Colombia, Guatemala and Mexico," *Int. J. Agric. Sustain.*, 2018, doi: 10.1080/14735903.2018.1489361.

[12] S. Anwar, "Traditional agriculture and its impact on the environment," *JagranJosh*, 2018.

CHAPTER 4

LAND HOLDING PATTERN AND LAND REFORMS

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ABSTRACT:

Agricultural systems, rural development, and general socio-economic advancement are significantly influenced by the structure of land ownership and land reform legislation. These abstract addresses the relevance of land holding patterns and the need for land reforms, with special emphasis on their ability to resolve disparities, improve productivity, lessen poverty, and promote sustainable land management practises. Land is a limited resource that, especially in rural regions, is essential for agricultural output, food security, and livelihoods. However, unequal land distribution, landlessness, and fragmented land ownership are widespread problems in many nations, which causes social, economic, and environmental problems. These problems are intended to be resolved through fostering fair distribution, stable tenancy, and effective use of land resources. They include a range of actions, including land re-allocation, land consolidation, land titling, and tenancy changes. Effective land reforms may correct past injustices, lessen land concentration, and strengthen disadvantaged populations, particularly indigenous and small-scale farmers. On agricultural production and rural development, equitable land allocation has a number of positive effects. Fairer land distribution makes it possible for smallholder farmers to have access to sufficient land for cultivation, which boosts agricultural output, boosts food security, and lowers rural poverty. Land reforms may also help to maintain social harmony by resolving tensions brought on by land disputes and by giving landowners legal protection.

KEYWORDS:

Agricultural, Economics, Farms, Productivity, Security.

INTRODUCTION

All matters relating to land management and laws governing the occupants and employees on these lands are governed by land reforms. Naturally, land reforms play a significant role in Indian agriculture. But during the time before independence, when the British government's major objective was to collect taxes from the land, these laws were not always in the workers' interest.

Pattern For Holding Land

The phrase "land holding" or "agriculture holding" refers to the typical amount of agricultural land that an Indian farmer owns. The number of small and marginal agricultural land holdings in the country, also known as operational holdings, increased marginally about 86.21 percent of total operational holding to 126 million as opposed to 84.97 percent in the earlier census of 2010-11, according to the 10th Edition of Agriculture Census data for 2015-2016, which come out in 2019. This showed that more persons than in the previous study had smaller landholdings.

Four different holdings exist

1. Economic holding: This describes the size of the holding that will enable a farmer's family to get the necessary support. Additionally, this property offers an opportunity for the peasant

to generate enough product after paying his essential expenditures to feed him and his family comfortably. In India, there are regional differences in the size of the economic holdings. According to some economists, certain areas should have 40–50 acres, while others should have 10–12 acres. The number of economic holdings is significantly influenced by factors such local soil types, irrigation infrastructure, and climatic circumstances.

2. Basic holding: In contrast, a basic holding is smaller than an economic holding and just supplies the farmers with the necessities of life.

3. The Agrarian Committee defines the term "optimum holding" as having a size that is three times that of an economic holding.

4. Family holding: The idea of family holding was first introduced in India's Five-Year Plan. This means a landholding area corresponding to either a pair of bullocks or a plough unit for a typical household. The land reforms commission also defined a family holding as one that gives an average farming family an annual income of $1,200.

According to the state-by-state land holdings, Uttar Pradesh has the biggest landholdings, making up 16% of all the land in India. The state of West Bengal, on the other side, has the fewest agricultural holdings [1], [2].

Land Fragmentation Factors

1. India's growing population has placed tremendous strain on the country's territory. Due to the lack of an alternative employment, people began to put additional pressure on agriculture, which eventually led to subdivision.
2. inheritance: In India, the partition of ancestral property leads to the sub-division of land. When a family is big, there will be more land fragmentation and a smaller piece of the land allocated to each member.
3. Nuclear Family: The joint family arrangement in India is breaking down as a result of urbanisation and increasing industrialisation. This has also caused the family members' land to be divided up.
4. Rural Debt: Farmers who borrow money from moneylenders may have to give up part of their land as collateral. The result is the fragmentation of the land.
5. Crop Sharing: Indian landowners rent out their little tenants' land and urge them to cultivate it. They do this in defiance of the regulations governing land reform and split the land among the tenants. Landowners purposefully shrink their holdings to tiny, unprofitable operational holdings as a consequence.

Land Fragmentation Limitations

The following are the restrictions on land subdivision:

1. property wastage: The border area is useless because of the subdivision of the property. This region is no longer suitable for farming as a result. Furthermore, productivity declines as a result of land fragmentation.
2. Management Challenges: Transporting inputs like seeds to a new area wastes time, money, and other resources. This is a consequence of land fragmentation, which also raises the cost of the operation.
3. Litigation: When land is split, there are more family disagreements, which costs time and money.
4. Each family member being able to find work on a modest piece of land creates disguised unemployment.

5. Technology Adoption: Because the landholding is limited, it is impossible to cultivate and harvest using current technology and machinery. Additionally, small-scale farmers would not be able to afford to implement such equipment [3], [4].

DISCUSSION

Impact of Land Reforms on Agriculture Production

Land reforms are any changes that have to do with land holdings, land ownership, or the landlord-tenant relationship. In its report, the erstwhile Planning Commission stated that the goals of land reform policy were to eliminate all elements of exploitation and social injustice within the agrarian system in order to ensure equality of tenurial status and opportunity to the vast sections of the rural population.

Generally speaking, land reforms consisted of the following elements: Elimination of middlemen, Reforms to tenancy, Distribution of excess land and a cap on the size of landholdings, holding consolidation, Gathering and updating land records, Reorganisation of agriculture, Cooperative agriculture.

Goals of land reform

After India gained independence, land reforms were implemented to remove the exploitation of the genuine soil cultivators and transfer land ownership to them. The Land Reforms Policy's goals since independence have been as follows: Reorganising agricultural ties to create a social system based on equality. Removing obstacles brought up by the inherited agricultural framework. Ending exploitation in land-related relationships. Boosting agricultural output. Control over agricultural land rent. Tenant ownership rights are granted together with tenancy security of tenure.

Land Reform Approaches: Breaking with the Past

Theorist P.C. Joshi has noted that numerous efforts to change the pattern of distribution of land holdings used four different sorts of land reforms approaches: Land reforms conducted by state legislatures via legislative enactments along the general lines suggested by the federal government. Land reforms as a result of violent peasant action, like as the Telangana and Naxalbari campaigns, and land grab activities by different left-leaning peasant organisations. property reforms that encourage landowners to donate their property, such as the Bhoodan- Gramdan Movement led by Vinoba Bhave. Land reforms via enactments combined with peasant mobilisation, such as the controlled land seizure in West Bengal between 1967 and 1969 under the United Front Government and the protection of underprivileged peasants in Kerala during the CPI Ministry.

Although the federal government provides a framework for the implementation of land reform initiatives, land reform remains a state responsibility. The government established the Central Committee for Land Reforms to assess the status of land reforms in various areas in accordance with the policy direction of the First Five-Year Plan, which gave expanding agricultural output primary priority. Additionally, the role of advising the states on their proposed land reform was given to this committee [5], [6].

Under the leadership of J.E., the Congress Agrarian Reform Committee's 1949 report marked the first significant turning point in land policy. Kumarappa. The Committee supported the elimination of feudal middlemen like zamindars and jagirdars. The Planning Commission established a panel to examine the execution of the land policy recommendations made in the

First Plan and take additional action in connection with the Second Plan before crafting the proposals for the Second Five Year Plan (1956–1961). The Second Plan's proposal contained the following:

1. Elimination of middlemen
2. Tenancy reforms (rent regulation, tenant tenure security, and grant of ownership to renters)
3. Reorganisation of the agrarian sector, including consolidation of holdings and avoidance of fragmentation and subdivision

The Second Five Year Plan's recommendations have to be modified and carried out in each state while taking into account the specific circumstances there. The Ministry of Food and Agriculture called the Chief Ministers' Conference in November 1969 and stressed the need for a central organisation to assess the status of land reforms and provide direction to state governments.

The whole spectrum of land-related issues should be addressed to a centralised authority, the Chief Ministers Conference on Land Reforms in September 1970 in Delhi determined. As a result, the Central Land Reforms Committee was established, with the Union Minister of Agriculture serving as its head. It examined the issues of a cap, exemption, payment, allocation of excess land, and reform implementation.

The laws to eliminate intermediary tenures have been implemented fairly efficiently, but in the areas of tenancy reform and ceiling on holdings legislation, it has fallen short of the desired objectives and implementation of the enacted laws has been insufficient, according to the Draught Fifth Five Year Plan (1974–1979).

The Sixth Plan (1980–1985) noted that the reason for the poor pace of land reforms was not due to flaws in the policy but rather a delay in putting the changes into place and granting ownership rights. Therefore, the proper execution of the land reform strategy was emphasised in both the Sixth and Seventh Plans.Land reforms were outlined in the Seventh Plan as an integral component of anti-poverty policies, and their need has been reaffirmed in each succeeding Plan. The Eighth Plan (1992–1997) emphasised that rural poverty was primarily caused by a lack of access to land. Thus, it established the following seven land reform objectives:

1. Agrarian relations need to be restructured to produce an equitable social framework.
2. An end to exploitation in land transactions
3. Achievement of the 'land to the tiller' target
4. Expanding their land base will help the rural poor's socioeconomic situations.
5. Improving agricultural output
6. Enabling rural impoverished people to develop their lands
7. Increasing the level of equality in regional institutions

In the Ninth Plan (1997-2002), land reforms remained a crucial tool for reducing poverty. The following concerns were highlighted in the Plan:

1. Locating and distributing extra celed land that has been found
2. Strict compliance with ceiling laws
3. Tenants should be given security of tenure and sharecropper rights should be documented
4. Land leasing will be permitted within the ceiling limit.

5. Giving the impoverished access to wastelands and resources from common property
6. Protecting women's access to land
7. Land consolidation will be hastened with the village residents' active participation.
8. Land record updates

The Tenth Plan (2002-07) acknowledged that it is crucial to effectively apply the current land ceiling restrictions. Tenancy rules need to be reexamined in light of the changes to the agricultural economy. Farmers who possess land below the ceiling limit may be given a guarantee that their property won't be stolen. Rent might be determined by market forces.In light of this, the National Agricultural Policy (2000) sought, among other things, to give the following topics a priority for rural development and land reforms: National consolidation of property under the model of the North-Western States. Redistribution of waste and ceiling-surplus lands to landless farmers and jobless youngsters, coupled with some initial funding. Recognition of sharecroppers' and renters' rights under tenancy reforms. The updating, enhancing, and computerization of land records and the distribution to farmers of land passbooks. Appreciation of women's land rights [7], [8].

Previous shortcomings

Since land reform is a state issue, the participation of the federal government in the process is limited to setting broad guidelines and urging the state governments to follow them. The following are some of the execution of land reform's flaws: Legal definitions of terminology associated with land reforms have provided leeway for various interpretations, which has impacted the process of putting land reforms into practise. The distribution of land remains unequal. Agricultural labourers, especially those from scheduled castes and scheduled tribes, who make up the majority of the agricultural labour force, have not benefited much from the abolishment of zamindari. Due to ongoing legal actions (they cannot afford the costs associated with ongoing legal proceedings), there is still a significant gap between the land distributed and its actual possession by the recipients. Administration alone will not be able to identify benami land, which is land kept under a different name to evade the law. Support from the recipients' local organisations is required for this.

As in the cases of Pani Panchayat in Ralegaon and Siddhi in Maharashtra, local civic organisations must develop creative solutions to address unfair land ownership practises in rural regions. This grants every villager a proprietary right over water for irrigation, regardless of the extent of his landholding. Small farmers and agricultural workers who have water rights but no property have been enticed to lease land from members with big land holdings since the amount of water accessible to each member is restricted. The agreement has made it possible for the landless farmers to obtain agricultural land. The huge landowners have benefited as well since they collect rent for the area that, without irrigation, would have remained uncultivated.

Tenancy vs. Ownership cultivation

We will focus on the two forms of cultivation based on land control in this portion of the unit, namely ownership and tenancy cultivation. Tenant cultivation and owner cultivation both have benefits. The benefits of owner cultivation will be discussed in more detail in the paragraph that follows.

Ownership Benefits

1. It has long been believed that giving a farmer ownership right can transform sand into gold, if we believe Arthur Young. This view, as expressed by the advocates for grant of ownership to the cultivators, is said to be based on the psychological proposition that the assurance of the reward for the work put in, is the best incentive for work. He had said, "Give a man the secure possession of a bleak rock and he will turn it into a garden: give him a nine-year lease of a garden and he converts it into a desert." This security and the motivation are provided by ownership. There is no one else to seek a portion of the benefit for the labour put in when the grower of a piece of land also owns it.

2. However, in the case of owner cultivation, the incentive offered by ownership is not the sole reason accountable for the rise in productivity. Such a propensity is also strengthened by the rationality component. The structure of tenancy is such that the renter must use less resources than the owner-cultivator because of rational behavior—not necessarily because there are no incentives.

3. Owner cultivation also encourages investment in agriculture in a different manner. Loans are granted to farmers based on their ability to provide security rather than on the farm's or the farmer's ability to produce. As a result, an owner farmer will have more access to external sources of funding than a renter as the property may act as a solid security.

4. Owner farming will also result in the employment of improved methods that are already accessible. Even if they are previously recognised, certain enhanced agricultural practises, like drainage, can only be embraced collectively. If the group is uniform, this joint adoption is simpler. According to Dore, this homogeneity will be achieved by owner agriculture becoming prevalent everywhere and the other tenurial classes being eliminated.

5. An owner cultivator's capacity to invest in fixed assets is likely to be greater than that of a tenant's, in addition to being more eager to do so. This is due to the fact that a tenant (who may have land on a crop-sharing basis or on a fixed rent basis) would have less income due to the payment of rent itself, whether there are conflicts of interest between the renters and owners or not. Savings and investments in fixed assets (and even current inputs) made by a renter will be lower than those made by an owner.

6. When opposed to tenancy farming, owner cultivation not only promotes greater resource usage but also aids in the adoption of an appropriate production method. Each piece of land has its own category and has unique characteristics. The only way to use these talents to their best potential is via a lengthy process of trial and error. Only after a long association with the given holding can one determine which crop the land responds to most favourably, which order of crops is the most suitable one in terms of crop rotation, which fertiliser is best for the given holding, and what should be the extent of ploughing. Of course, ownership gives the farmer the chance to do that. It will motivate the farmer to develop the best farming method for a particular farm.

7. Actually, we may go even farther in terms of the use of a suitable approach. Even if the renter is informed of the approach most suited for a certain piece of land, he may choose not to employ it, particularly if more funds are required for the purpose. Because switching to the better method would not be financially advantageous for him, the renter may not want to do so. After the rent in the form of a percentage of the gross

production has been paid, the extra benefit from the method change could not exceed the additional cost of the change.

8. We may also consider the institution of land ownership as a means of agricultural capital creation. Clearly, there are two forms of capital employed in agriculture. Capital in the form of upgraded current inputs, such as seeds, fertiliser, etc., is one of them. The second sort of capital takes the shape of permanent assets, such as cattle, equipment, buildings, etc. If all other factors are equal, it stands to reason that both renters and owners will be equally eager to invest in the first category of inputs. The amount the renter invests in the second category of assets will depend on how long he expects to get income from each asset. Naturally, if the land is owned, the owner will be able to reap the benefits for as long as the fixed capital exists. As a result, he will happily invest in a variety of durable goods if he is certain that he will be able to recoup his investment throughout the useful life of the goods. Contrarily, the tenant will be reluctant to invest in fixed capital like buildings or wells since he is unsure if his investment will be completely repaid owing to the uncertainty of his tenancy. Whether or whether he has completely recouped the cost of the asset he purchased particularly for the tenanted farm, he may be requested to leave at any moment (unless protected by legislation) [9], [10].

9. If property has been leased to a tenant on the basis of crop sharing, production on the land would certainly suffer in another manner as well. Under a crop sharing agreement, the owner and the tenant have different attitudes about this sort of tenancy. The tenant desires that his portion of any earnings after the payment of rent, as per the agreement, be maximised, in contrast to the owner, who wants his rent to be maximised. With a few exceptions, the two aims will always need a distinct distribution of resources. The resource allocation will undoubtedly suffer as a result of these competing interests. The conflict between the two parties will obstruct output optimisation in a variety of ways.

Tenancy Cultivation Case

One may get the conclusion that an outright gift of ownership to the growers is advantageous from the prior debate. However, it would be extremely unreasonable to criticise the tenancy system outright, which the award of ownership is intended to replace. Renting hasn't always resulted in a decline in output or in the living circumstances of the renters. L.D. Schweng discovered that many renters in Middle Eastern nations were wealthier than owner cultivators, and this was due to the tenants' greater efficiency. According to research on farm management conducted in the Punjab, some tenanted farms produce more per acre than self-cultivated fields. Grant of ownership is not a miracle cure, in actuality. If the transfer of ownership moves the agricultural sector in one direction towards its output frontier, it might also slow its progress in the other direction.

1. In another approach, tenant cultivation will stop the discrepancy between potential and actual yield from growing. If the farm is viewed as property, it may be split when it is passed down from one generation to the next, making farming unprofitable and sometimes forcing the land out of cultivation. A tenancy arrangement allows for the avoidance of such subdivision. In this situation, Gadgil has proposed an alternative to tenancy. After giving proper consideration to the expense of cultivation as well as the work of the cultivating co-sharer, let one of the co-sharers cultivate the land on behalf of the others, with the others receiving a portion of the sale earnings of crops. However, this is just another kind of tenancy; the only distinction is that the renter here is a co-sharer rather than an outsider.

2. Shared ownership has also been seen as a beneficial tool for spreading out the risk and uncertainty associated with agricultural output among more persons, including owners and renters.

3. We are aware that in order to achieve the production frontier, total mobility of different production components, including labour, is required. Ownership forces a farmer to remain on a certain plot of land, which limits his mobility and, by extension, that of the labour force. On the other hand, this mobility is somewhat provided by the tenancy system. The farmer is not beholden to a specific plot of land. He may always relocate to a farm where his services will be more lucratively used.

4. Land ownership and the movement of money into agriculture serve as strong forms of credit security, which will promote borrowing from outside sources for land investment. This line of reasoning is not generally accepted by economists. They contend that the farmer does not necessarily need to utilise the financing they were able to secure to buy fixed assets or other agricultural supplies. It may also be consumed for personal usage. This will be particularly true in a culture where social rites are highly valued, as is the case in India. Due to the debts so obtained, land output does not rise in this situation. These are depleted in order to cover consumption costs. The land that is promised to the lender as collateral for these loans ultimately belongs to the lender, who often rents it to a few tenants. In India, there is enough evidence to demonstrate that a significant amount of land is transferred from owner farmers to moneylenders in final settlements of debts owing by the former to the latter. This was the rationale for the passage of the Land Alienation Acts by several province administrations in India prior to Independence.

5. In certain situations, the tenancy system is the only method to get the best possible mix of production elements. For instance, if a landowner's capital is insufficient compared to the amount of land he owns, he may borrow more to achieve the best possible balance. However, if the landowner's capital is relatively greater, more specific, and undivided (for example, a yoke with two bulls that, in general, can easily cultivate 10 to 14 acres of land), the system of tenancy may help him acquire the extra land required for coming up with the ideal combination. If the farmer lacks the money to buy the extra land, this is his sole option for getting the best possible combination of resources. To put it another way, we may argue that when there are economies of scale in manufacturing, tenancy may sometimes enable the community to benefit from these savings. The operator may be able to have greater holdings thanks to tenancy.

6. Furthermore, the concept of peasant ownership, which implies a lifelong commitment to a farm, would impede agricultural workers' freedom of movement from the agricultural to the industrial sectors, eventually preventing the growth of the latter. This is Dandekar's impression.

7. In another manner, tenancy aids in attaining the best resource allocation. Sometimes a landowner passes away without leaving behind any interested heirs or with an heir who is either too young or too invalid to care for the property. In such cases, the only profitable use of the land that would otherwise be put out of cultivation is via tenancy. Thus, further resource misallocation in such situations will be largely averted.

After reading the arguments above, it should be clear that it is incorrect to claim that owner cultivation is always preferable than tenant agriculture. There are several circumstances when

tenant farming is preferable than owner farming. According to Martin and other economists, it is challenging to make generalisations about the relative merits of owner cultivation versus tenant agriculture. She makes note of how unsatisfactory the share tenancy system in Egypt before to 1952 was in her book Economics and Agriculture. However, this could produce the most cotton per acre. Once again, in Holland, 50% of the land is leased, but in Denmark, just 5% of the land is farmed by tenants. However, both are at the forefront of agriculture [7], [11].

As has previously been mentioned, another economist, Schweng, discovered that renters in various Middle Eastern nations are more productive than owners. Additionally, Chakravarty and Rudra (1973) discovered that the tenanted farms were not managed any differently from the owner-cultivated fields. David Flath came to a similar conclusion on Japanese agriculture. Capstic further confirms the lack of a relationship between yield and tenurial arrangement type via research of a few European nations. The tenurial arrangements on the farm have no impact on resource allocation or production, according to recent research by Sharma and colleagues. The aforementioned debate prompts us to wholeheartedly agree with Henry George when he emphasised that the security of improvements—rather than private ownership—is what is required for land development. It is not enough to tell a man that his property is his in order to motivate him to cultivate or improve it. Simply stating that "whatever your labour or capital produces on this land, shall be yours," is sufficient.

CONCLUSION

Land reform implementation, however, may be a difficult and complicated process that calls for political will, institutional capability, and stakeholder involvement. It is important to give considerable thought to matters like land value, compensation, administration, and governance. The viability and inclusion of land reform projects depend greatly on the participation of local people and the acknowledgement of customary land rights. Agricultural development, rural livelihoods, and sustainable land management are all significantly impacted by land holding patterns and land reforms. Increased production, decreased poverty, social stability, and environmental sustainability are all influenced by equitable land allocation and successful land reform initiatives. Land reforms should be given top priority by governments, policymakers, and stakeholders, who should execute comprehensive policies that rectify past injustices, strengthen marginalised groups, and advance sustainable land management techniques. By doing this, communities may advance towards more fair and sustainable development, guaranteeing the effective and responsible use of land resources for coming generations.

REFERENCES:

[1] Wwjmrd, “An Analysis of Crop Diversification in India,” *Int. J. Peer Rev. J. Ref. J. Index. J. UGC Approv. J. Impact Factor*, 2018.

[2] U. V. Singh and S. C. Moses, “A Review Study on Existing Manually Operated Seed Planter for Marginal Farmers of India,” *Int. J. Curr. Microbiol. Appl. Sci.*, 2018, doi: 10.20546/ijcmas.2018.709.138.

[3] A. O. Akinola, “Women, culture and Africa’s land reform agenda,” *Front. Psychol.*, 2018, doi: 10.3389/fpsyg.2018.02234.

[4] W. O. Chamberlain and W. Anseeuw, “Inclusive businesses and land reform: Corporatization or transformation?,” *Land*, 2018, doi: 10.3390/land7010018.

[5] V. Thebe, "Youth, agriculture and land reform in Zimbabwe: Experiences from a communal area and resettlement scheme in semi-arid Matabeleland, Zimbabwe," *Afr. Stud.*, 2018, doi: 10.1080/00020184.2018.1466516.

[6] G. Makombe, "Land reform in South Africa: The conversation that never took place," *Qual. Rep.*, 2018, doi: 10.46743/2160-3715/2018.3232.

[7] S. Dlamini, "Land Reform in South Africa: Contending Issues," *J. Public Adm.* •, 2018.

[8] J. Bayisenge, "From male to joint land ownership: Women's experiences of the land tenure reform programme in Rwanda," *J. Agrar. Chang.*, 2018, doi: 10.1111/joac.12257.

[9] J. Zinda and Z. Zhang, "Land Tenure Legacies, Household Life Cycles, and Livelihood Strategies in Upland China," *Rural Sociol.*, 2018, doi: 10.1111/ruso.12164.

[10] T. Travnikar and L. Juvančič, "Spatial pattern of the integration of farm holdings in Slovenia into organic farming," *Geogr. Vestn.*, 2018, doi: 10.3986/GV90203.

[11] V. Jenjekwa and L. Barnes, "Changes in the Linguistic Landscape Resulting from Zimbabwe's Post-2000 Land Reforms: Recasting the First and Second Chimurenga Narratives," *Lang. Matters*, 2018, doi: 10.1080/10228195.2018.1539119.

CHAPTER 5

A COMPARISON OF AGRICULTURAL PRODUCTION SYSTEMS ON SMALL VS LARGE FARMS

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ABSTRACT:

The argument over small vs big farms has come up often in talks about agriculture, with both supporters and detractors arguing in favour of either type. By contrasting the advantages, disadvantages, and consequences for agricultural output, food security, rural development, and sustainability of small and big farms, this abstract intends to give a thorough examination of both types of farms. The foundation of many agricultural systems has been small farms, which are often characterised by constrained land holdings and family labour. These farms often use a wide range of crop types, adding to agrobiodiversity and preserving traditional knowledge. In addition to creating jobs, boosting rural economies, and preserving cultural heritage, small farmers are essential to the local food industry. Additionally, small farms favour sustainable techniques like organic farming, agroecology, and conservation agriculture, which reduce environmental effects and advance ecosystem services. Contrarily, big farms with huge land holdings and mechanised activities offer the potential for economies of scale and improved production efficiency. In order to boost yields and economic viability, they often make use of cutting-edge technology, contemporary equipment, and skilled labour. The competitiveness of the agricultural industry and economic development may be boosted by large farms' contributions to better supply chain management, market access, and agriculture focused on exports. However, there are unique difficulties for both small and big farms. Due to their restricted access to resources, such as land, money, technology, and market infrastructure, small farms often suffer. They could struggle to achieve economies of scale, get loans, or deal with market swings. Despite their benefits in terms of resources, large farms may encounter problems with environmental sustainability, monoculture production, and socioeconomic effects including the eviction of smallholders and rural migration.

KEYWORDS:

Agriculture, Economics, Farms, Productivity, Security.

INTRODUCTION

Generally speaking, land reforms lead to smaller holdings. Holdings that are quite modest in size have been formed according to particular legislation. Naturally, this prompts a discussion of the relative virtues of huge farms vs small farms. Such a debate will assist us in developing an accurate perspective regarding the economic soundness of land reforms including land holding limits.

Describe a little farm

Although small farms are a distinctive aspect of agriculture in the majority of countries, there is no agreement on what constitutes a small farm. The size of a farm has been attempted to be measured by many writers using various standards. For instance, Cohen advocates using the quantity of employees or the gross production value as a metric to divide farms into several size categories. In India, we have never attempted to categorise farms into small and big farms based on the number of employees or the total gross production. Indian economists

have categorised farms into a number of groups based on the size of the farms. In actuality, the distinction between the metrics used to categorise farms as small and big reflects the relative scarcity of key components required in agricultural production. The categorization of farms into big and small farms in the United States may easily be based on the amount of manpower required, a limited resource. In India, where labour is not a limited resource, this could not be utilised as an appropriate standard. The scarcest resource in Indian agriculture is land. Therefore, the size of a farm has been calculated based on the size of its holdings. For instance, based on this standard, the Small Farmers Development Agency (SFDA) in various states has classified farms with a size between one and two hectares as small farms. Marginal farms are those that are less than one hectare in size [1], [2].

Large Farm Economies

The difference between big and small farms is based on the land size of different farms (for the discussion that follows). Theoretically, just like any other big company, huge farms may benefit from all the economies of scale in production. Among these economies are the following:

Technical Economies: A large farm is able to benefit from specialised equipment, structures, fences, roads, ditches, etc. The average cost expended on these capital assets will decrease as the farm's size increases. The land area allocated to the buildings, roads, etc. decreases proportionately as the farm's size rises, which also results in a decrease in the average financial cost expended on these assets. Therefore, proportionately greater land area becomes accessible for immediate productive use on bigger farms. Large farms will thus have lower production overhead costs per unit of output. Another technological benefit offered to vast farms is crop rotation.

Through proper use, large farms will also assist in lowering the per-acre operating cost of machines. Because of its vast resources and willingness to take on risk, a big farm is also able to experiment with the cultivation of novel crops, which are still accompanied by their uncertain yield. Large farms are also important to use management and skilled labour, both of which are in short supply. Additionally, as Bachman and Christensen argue, if the size of the farms is big and as a result, their number is limited, the quality of the goods can be readily managed and the farm production can be adequately matched to market outlets.

Financial industry: A sizable farm may also benefit from the financial industry. In comparison to a small farmer, a big farmer may borrow money from an outside source more readily and at a cheaper interest rate. This suggests that the big farmer may take advantage of advantageous chances to engage in agriculture anytime they present themselves. He may be able to stall the sale of product to the market to fulfil short-term financial demands thanks to easy financing. He will thereafter be able to sell his harvests at the best rates thanks to this storage option.A big farmer may also have commercial economies, which are the other types of economies. Concessional pricing may emerge from the purchasing of inputs in bulk. The cost of transportation per unit to the market will be less with bulk sales. If the transaction is substantial, grading is feasible.

Large Farms Have Fewer Benefits

However, in actuality, the benefits that big farms have over small farms are quite few. The following are the causes: We may start with the economics of using machines. Division of labour is required for the usage of machines. A manufacturing process need to be broken down into many sub-processes, each of which should (entail a standardised movement and

(b) be repetitive in character. Machines may simply be employed for a subprocess featuring a consistent and repeated motion [3], [4].

Due to the nature of the primary agricultural activities, they cannot be broken down into smaller processes comprising standardised and repetitive motions. If there is to be any division of labour in agriculture, there can only be a broad split into key tasks like weeding, harvesting, watering, and ploughing. As a result, as was already said, equipment cannot be employed in agriculture on a wide scale profitably or readily. We may add that agriculture is concerned with living things to better clarify the concept. As they develop into a cohesive whole, these issues must be addressed. These should not be seen as being made up of many parts that may be manufactured independently using machinery and then put together at the very end, as is the case in a factory. Agriculture does not have an assembly line as a manufacturing does. Only those agricultural procedures that are related to pre- or post-sowing, harvesting, or post-harvesting operations may typically make use of machinery.

DISCUSSION

The volume of production for several other technological economies that we may now discuss is quite neutral. Three types of technological advancement are possible in agriculture: (a) mechanical, (b) biological, and (c) chemical. In terms of the final two improvements, even small farms may implement them. The size of the farm has little bearing on whether or not fertilisers, superior seeds, pesticides, etc. are used. The only benefit that the huge forms can have been in the utilisation of equipment, and as we just said, there is only a limited amount of machinery used in agriculture. We shouldn't, however, draw the conclusion that vast farms have no economies at all as a result of this. Large farms do have different economies, such as commercial economies, financial economies, or any of the other technological economies described above.

Continuity of Small Farms

Despite the economics that huge farms might have, small farms continue to exist in the majority of undeveloped nations. We'll talk about the reasons for their persistence in the few sentences that follow.Three kinds of factors may be used to categorise the reasons why small farms are still prevalent in agriculture:

1. Factors that prevent the farm's size from expanding;
2. Factors that lead to small farms, and
3. Factors that support small farms (small farms' economics).

Obstacles to Farm Size Growth: In this section, we'll talk about a few things that prevent a specific farm from growing in size.

Technical Challenges: In the first place, expanding the farm's size requires expanding the different farm buildings that may have been constructed with the farm's current size in mind. Adding more farm buildings may be expensive. Again, it goes without saying that a farm's development requires extra land from its adjoining farmers. Due to the adjoining farms' potential for exclusivity, this could not be an option. There could be no adjacent land available. Financial Challenges: Increasing the size of the farm requires both long-term and short-term financing. The farmer may not have access to this financing; thus he could need to rely on an outside source of funding. However, the limited size of the farm will deter any possible lenders from providing him with financial support for buying more property. Even if he is successful in obtaining loans for the purpose, the interest rate on such loans would be very high since there is often more unpredictability in agriculture [5], [6].

Factors that Caused the Development of Small Farms: Small farms were developed for a variety of historical causes in various economies. In countries like India, extremely small farms are a result of a number of factors, including increasing population pressure, laws requiring equal distribution of landed property among all inheritors (including daughters), the dissolution of joint families, giving a portion of the farm to the lender as final payment of debt, the decline of handicrafts, and others. Furthermore, agriculture is a way of life in the majority of nations, not just a profession. Thus, having land and cultivating it has become a social need for many. Land ownership is seen as a status symbol in various countries. Numerous of these characteristics have been in use in numerous nations in this region of the planet. The aforementioned challenges make it more difficult for the farms to expand once their size starts to diminish.

Factors in Favour of Small Farms: Small farms were not exclusively developed throughout time. They also have certain benefits working in their favour. These benefits include the following: small farms employ more people since they often utilise labor-intensive methods rather than capital-intensive methods as big farms do. Naturally, this will increase the need for workers and, therefore, the number of job openings on small farms. Another factor for the increased employment on small farms is the intensification of crops. Farming is a difficult activity that calls for care and attention in addition to hard labour. Quality of farming must always be taken into consideration, as the World Bank has noted. The quality of work has always benefited from small farms. When a small farmer is cultivating food to feed his family, his motivation is often high.

Small farms' tenacity: small farms often rely on manpower provided by family members. The supply of family labour is relatively variable. It can handle a range of variations in the amount of labour necessary as a result of shifting weather patterns and erratic demands from crops and animals. According to Heady, "For the farm with large capital than for small units, the range over which incomes vary between high profit and loss periods is greater." On a huge farm as opposed to a small farm, one may more easily "make or break" himself. On a tiny farm, stability takes on yet another aspect. on general, small farmers don't buy or sell any excess product on the market. They also don't buy any market-based inputs. As a result, they are totally off the market. Therefore, the allocation of resources on their farms is unaffected by any negative changes in agricultural prices.

Effective Supervision: In a big plant, supervision is fairly simple. A small number of foremen can efficiently manage the employees who are all working under the same roof. Contrarily, agricultural activities are dispersed across a large region, and the owner can only monitor his employees while they are working right next to him. In other terms, this suggests that farms shouldn't be particularly big in size. The idea that farming is often a family business indicates that policies about the usage of farm equipment and the kind of goods (crops, dairy products, etc.) that should be produced might change with each new generation. The development of large-scale agricultural organisations would be stifled if this approach is allowed to alter from generation to generation. The necessity for quick judgements: Routine decisions are not necessary in agriculture. Instead, new choices must be made right away due to the constantly changing physical conditions that effect manufacturing [7], [8].

Only the farmer alone has the authority to make these choices. He is unable to appoint a paid class of managers to make these choices. It is essential that he participate in all stages of decision-making, thus the size of the farm shouldn't expand too much as a result. It is also said that small farms serve as a stepping stone for landless agricultural labourers who want to become farmers. Landless agricultural labourers cannot own and run large farms due to financial hardships and administrative constraints. In other words, small farms serve as the

foundation for the agricultural industry's continued vitality. This benefit of small farms is expressed by Mellor in various terms. In his words, "to provide the economic incentive to get careful management, intensive use of scarce land resources, and development of human abilities," small farms are necessary. Ervin Long has defended small farms on the basis of several farm management research carried out in various poor nations. Higher per Acre Yield on Small Farms. It was discovered that small farms produced more per acre than huge ones. This was mostly due to the small farms' more intense farming practises. However, it should be emphasised that this trend won't be apparent until both kinds of farms use the same production method, which is often labor-intensive.

Land Reforms and Agriculture Status

The nodal organisation in charge of the development of the agricultural sector is the Department of Agriculture and Cooperation, which is part of the Ministry of Agriculture. It is in charge of creating and carrying out national policies and programmes that are meant to promote fast agricultural expansion by making the best use possible of the nation's resources for soil, water, and plant life. The following are some government efforts towards agricultural development:

Bharat Nirman, National Rural Employment Guarantee Programme (currently known as MGNREP), National Horticulture Mission, Expansion of Institutional Credit to Farmers, National Bee Board, National Rainfed Area Authority, National Fisheries Development Board, Watershed Development and Micro Irrigation Programmes, Reforms in Agricultural Marketing, Development of Market Infrastructure, and Revitalization are just a few of the initiatives that have been implemented. Knowledge connection via IT projects and Common Service Centres (CSC). Among the most well-liked government programmes are Rashtriya Krishi Vikas Yojana, National Food Security Mission, and National Policy for Farmers, 2007. Here is an explanation of these:

RKVY, or Rashtriya Krishi Vikas Yojana

It was started by the Indian government in 2007–2008 to encourage the states to include more agricultural investment in their state plans. By assuring the comprehensive development of agriculture and related sectors, it was intended to achieve 4% annual growth in the agricultural sector during the Eleventh Five Year Plan. It is a State Plan programme, and in order to qualify for assistance under the programme, a person must have additional funding for agriculture and related industries over and above the mandatory share of state spending on such industries. The federal government must distribute all RKVY funds to the states in the form of a grant. The following are the scheme's primary goals: To encourage states to boost public investment in agriculture and related industries. To guarantee that plans are created for the states based on agro-climatic conditions, the availability of technology, and the availability of natural resources. To reduce the production gaps in significant crops via targeted interventions; To ensure that the local requirements, crops, and priorities are better represented in the state agricultural plans; To increase farmers' profits in agriculture and related industries. To address them holistically in order to bring about measurable improvements in the output and productivity of different agricultural and related sectors [9], [10].

Mission for National Food Security (NFSM)

It is a centrally-sponsored programme that was started in 2007 with the aim of raising rice, wheat, and pulse output by 10, 8, and 2 million tonnes, respectively, above benchmark production levels, by the conclusion of the Eleventh Five Year Plan period. The Mission

intends to increase food grain production of the aforementioned crops via area expansion and productivity improvement, soil fertility and productivity restoration, job creation, and farm level economy development to regain the trust of farmers in selected regions. In 305 districts across 16 states, it is now being used. The NFSM engages in a number of activities including the dissemination of high-quality HYV (High Yielding Variety) and hybrid seeds, the promotion of recently released varieties, the support of micronutrients, training, mass media campaigns, including awards for best performing districts. The Strategic Research and Extension Plan (SREP) created for the district's agricultural development gives the designated districts the freedom to choose any local, area-specific interventions.

2007 National Farmers Policy

After engaging with the state governments and taking into consideration the National Commission on Farmers' recommendations, the Government of India adopted the National Policy for Farmers in 2007. A comprehensive strategy for the growth of the agricultural sector has been given, among other things, through the National Policy for Farmers.

This policy's main emphasis is on the "farmer," who is defined holistically and not only in terms of agriculture. It is far broader than an agriculture policy in that regard. The goal is, among other things, to increase farmers' net incomes significantly in order to increase the economic viability of farming. It goes without saying that, in addition to the establishment of an appropriate pricing policy and other risk management techniques, there is a strong focus on enhanced production, profitability, institutional backing, and improvements to land, water, and support services.

The National Policy for Farmers' main objectives are to: Ensure that agricultural development is defined by improvements in this income and improve the economic sustainability of farming by significantly boosting farmers' net incomes. Protect and improve land, water, bio-diversity and genetic resources essential for sustained increase in the productivity, profitability and stability of major farming systems by creating an economic stake in conservation.

Develop support services including provision for seeds, irrigation, power, machinery and implements, fertilizers and credit at affordable prices in adequate quantity for farmers. Strengthen the bio-security of crops, farm animals, fish and forest trees for safeguarding the livelihood and income security of farmer families and the health and trade security of the nation Provide appropriate price and trade policy mechanisms to enhance farmers' income Provide for suitable risk management measures for adequate and timely compensation to farmers. Complete the unfinishedagenda in land reforms and to initiate comprehensive asset and Aquarian reforms Mainstream the human and gender dimension in all farm policies and programmes Pay explicit attention to sustainable rural livelihoods

Promote community-based food, water, and energy security systems in rural India, and guarantee that every child, woman, and man have access to nutrition security. Introduce strategies to make farming and processing agricultural products more intellectually exciting and financially rewarding in order to attract and keep young people in these fields. Restructure the agricultural curriculum and pedagogic methodologies to enable every farm and home science graduate to become an entrepreneur and to make agricultural education gender sensitive; Develop and introduce a social security system for farmers; and Make India a global outsourcing hub in the production and supply of the inputs needed for sustainable agriculture, products and processes developed through biotechnology and Information and Communication Technology (ICT).

Impact of Agricultural Policies on Rural Employment, Production, and Income Distribution

Although Indian agriculture has advanced significantly, there are still certain issues that must be resolved for both national and dietary security. By 2020, there will be 1.4 billion people on Earth. The demand for food grains and non-foodgrain crops will rise as a result of the expanding population and rising affluence. As a result, for Indian agriculture to develop at a sustainable pace of 4% per year, it must attain greater growth rates. To attain this growth rate, the Department of Agriculture and Cooperation is developing methods.

New programmes like RKVY and NFSM have contributed to the improvement of the agriculture sector. Despite the fact that governmental investment in agriculture has lagged behind industry demands, the sector has received substantial assistance through food and fertiliser subsidies. Since the middle of the 1960s, India's agricultural technology has advanced, revolutionising agricultural productivity. Contrary to popular belief, food grain production grew at a pace far faster than population increase, especially in the cases of wheat and rice. Up until the 1980s, India had a severe food scarcity problem, but now it is not only self-sufficient in food, but even a net exporter of food grains. This could occur as a result of the development of high yielding crop varieties, increasing use of chemical fertilisers, creation of irrigation systems, advancements in plant protection technologies, and successful price support schemes for agricultural goods.

A major increase in agricultural production has been facilitated by farm mechanisation, the practise of deploying agricultural technology to mechanise the job of agriculture. The timeliness attained by agricultural mechanisation assisted in attaining the best yields possible from various crops. For instance, Punjab requires that wheat be sown within the first two weeks of November. Even a one-week delay beyond this time frame results in a yield loss of 1.50 quintals per acre. This is also true for other crops and farm tasks like hoeing, irrigation, harvesting, threshing, and marketing, which must be done at the right time to avoid damaging effects on production and farm profitability. The quality and accuracy of tasks including soil levelling, irrigation, sowing and planting, using fertilisers, protecting plants, harvesting, and threshing were also enhanced by farm mechanisation. Expanding rural connection has been made possible thanks to the Pradhan Mantri Gramme Sadak Yojana (PMGSY) [11], [12].

Many individuals think that using technology results in unemployment. A thorough analysis, however, demonstrates that this is untrue. Many agriculturalists contend that although tractors may replace manpower during sowing, an increase in productivity brought on by their usage would increase the need for labour during harvest and other agricultural tasks. The need for multiple crops, irrigation systems, and the usage of fertilisers and pesticides grows as a result of technological advancements. In the recent years, all of these elements have contributed to the expansion of rural regions' job prospects. Even if the agriculture industry has improved over the last several years, there is still a lot of room for expansion.

Due to the subdivision of property, the border area has no purpose, and the phrase "land holding" or "agriculture holding" refers to the typical amount of agricultural land that each Indian farmer owns. This region is no longer suitable for farming as a result. Furthermore, productivity declines as a result of land fragmentation. Land reforms include any changes that have to do with land holdings, land ownership, or the landlord-tenant relationship. Although the federal government provides a framework for the implementation of land reform initiatives, land reform remains a state responsibility. Since land reform is a state issue, the participation of the federal government in the process is limited to setting broad guidelines and urging the state governments to follow them.

The reign of Akbar and Todar Mal may mark the beginning of systematic land surveying attempts on the Indian subcontinent. Later, with the arrival of the British, land management became entirely focused on collecting taxes and income from the land, rather than increasing its production or enforcing laws for those who lived there. Owner cultivation also encourages investment in agriculture in a different manner. Loans are given to farmers based on their ability to deliver security rather than the farm's or the farmer's potential for productivity. he size of estates often decreases as a consequence of land reforms. Holdings that are quite modest in size have been formed according to particular legislation. Naturally, this prompts a discussion of the relative virtues of huge farms vs small farms.

A big farm may benefit from specialist equipment, structures, fences, roads, ditches, etc. The average cost expended on these capital assets will decrease as the farm's size increases. The nodal organisation in charge of the development of the agricultural sector is the Department of Agriculture and Cooperation, which is part of the Ministry of Agriculture. It is in charge of developing and carrying out national policies and programmes that are meant to promote fast agricultural development by making the best use possible of the nation's resources for soil, water, and plant life. After discussing with the state governments and taking into consideration the National Commission on Farmers' recommendations, the Government of India adopted the National Policy for Farmers for 2007. A comprehensive strategy for the growth of the agricultural sector has been given, among other things, through the National Policy for Farmers.Even though Indian agriculture has advanced significantly, there are still certain issues that must be resolved for both national and nutritional security. By 2020, there will be 1.4 billion people on Earth. Many individuals think that using technology results in unemployment. A thorough analysis, however, demonstrates that this is untrue. Many agriculturalists contend that although tractors may replace manpower during sowing, an increase in productivity brought on by their usage would increase the need for labour during harvest and other agricultural tasks.

CONCLUSION

It is complicated how small and big farms affect rural development and food security. Small farms provide a substantial contribution to the production of food in the local area, decreasing reliance on outside sources and increasing local community food self-sufficiency. As they often give priority to creating jobs and distributing resources fairly, they also support social inclusion. Large farms, on the other hand, may contribute to satisfying national and international food needs, especially in nations with little arable land or dense populations. The concentration of resources, income, and power in the hands of a select few huge agricultural corporations, however, is a cause for worry. In summary, the conflict between small and big farms should not be seen as a binary option, but rather as a continuum with various and complementary responsibilities in the agricultural industry. The strengths, difficulties, and contributions of each kind of farm are different. A more resilient and sustainable agricultural system may be achieved by using a balanced strategy that incorporates the positive aspects of both models while addressing their individual drawbacks. To promote sustainable practises, agricultural growth, food security, and rural prosperity, policy interventions should put a special emphasis on empowering small farmers, enhancing their access to resources and markets, and encouraging cooperation between small and big farms.

REFERENCES:

[1] J. Bushell and K. Novan, “The impacts of renewable energy on wholesale power markets,” *NBER Work. Pap. Ser.*, 2018.

[2] Y. Zhang and S. Na, "A novel agricultural commodity price forecasting model based on fuzzy information granulation and MEA-SVM model," *Math. Probl. Eng.*, 2018, doi: 10.1155/2018/2540681.

[3] K. R. Szulczyk and M. Atiqur Rahman Khan, "The potential and environmental ramifications of palm biodiesel: Evidence from Malaysia," *J. Clean. Prod.*, 2018, doi: 10.1016/j.jclepro.2018.08.241.

[4] K. Al-Kodmany, "The vertical farm: A review of developments and implications for the vertical city," *Buildings*. 2018. doi: 10.3390/buildings8020024.

[5] D. Masseroni *et al.*, "Evaluating performances of the first automatic system for paddy irrigation in Europe," *Agric. Water Manag.*, 2018, doi: 10.1016/j.agwat.2017.12.019.

[6] L. Novickytė, "Income Risk Management in Agriculture using Financial Support," *Eur. J. Sustain. Dev.*, 2018, doi: 10.14207/ejsd.2018.v7n4p191.

[7] C. Bertrand *et al.*, "Organic food: State of the art and perspectives," *Cah. Nutr. Diet.*, 2018, doi: 10.1016/j.cnd.2018.02.004.

[8] R. Marcos-Martinez, B. A. Bryan, K. A. Schwabe, J. D. Connor, and E. A. Law, "Forest transition in developed agricultural regions needs efficient regulatory policy," *For. Policy Econ.*, 2018, doi: 10.1016/j.forpol.2017.10.021.

[9] Y. Dronne, "Agricultural raw materials for food and feed: The world," *Inra Prod. Anim.*, 2018, doi: 10.20870/productions-animales.2018.31.3.2345.

[10] W. Schmidt, I. L. Tchetgnia Ngassam, G. Breitschaft, and S. Virchow, "Challenges of the growing African cement market - Environmental issues, regulative framework, and quality infrastructure requirements," in *MATEC Web of Conferences*, 2018. doi: 10.1051/matecconf/201714901014.

[11] K. Al-kodmany, "The Vertical Farm : A Review of Developments and," *MDPI Build.*, 2018.

[12] E. Marone, F. Boncinelli, and L. Casini, "Economic Impact of Regulation on Sustainable Irrigation Schemes: a Case Study on a Plant Nursery," *Water Resour.*, 2018, doi: 10.1134/S0097807818040152.

CHAPTER 6

CONCEPT OF AGRICULTURAL MANAGEMENT: APPROACHES, CHALLENGES, AND IDEAS

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ABSTRACT:

The concepts, practises, and tactics used to maximise the productivity, sustainability, and profitability of agricultural systems are included in the notion of agricultural management. An overview of the main aspects, strategies, and difficulties involved in agricultural management are given in this abstract. Agricultural management is the process of putting scientific understanding, modern technology, and managerial know-how to use in the production of agricultural goods. These resources include land, water, labour, and capital. Crop selection, land preparation, irrigation, fertilisation, pest and disease control, harvest and post-harvest procedures, marketing, and financial planning are just a few of the many tasks that fall under this umbrella. A number of agricultural management strategies have developed throughout time. Modern management techniques that emphasise evidence-based decision-making, precision agriculture, and the incorporation of cutting-edge technology have replaced traditional systems that were formed by local knowledge and practises. To optimise production processes and resource allocation, these techniques include the use of remote sensing, geographic information systems (GIS), data analytics, and automation.

KEYWORDS:

Agriculture, Budgeting, Management, Strategy, Techniques.

INTRODUCTION

Recent years have seen a rise in the popularity of sustainable agriculture management, which emphasises methods for preserving natural resources, safeguarding the environment, and advancing social justice. In this method, the adoption of agroecological principles, organic farming, integrated pest control, and conservation practises such crop rotation, agroforestry, and water management methods are emphasised. In agricultural systems, sustainable agriculture management strives to strike a balance between economic viability, environmental stewardship, and social well-being. Agriculture management, however, also confronts a number of difficulties. The management of agricultural systems is severely hampered by factors such as climate change, depletion of natural resources, population increase, and changing consumer expectations. In order to overcome these obstacles, creative solutions are needed, such as precision farming, climate-smart agriculture, and diversification plans that increase resilience, reduce risk, and guarantee the long-term survival of agricultural operations.

A farm's management includes a number of business operations that affect how economically efficient the farm is. In selecting what to produce, how much to produce, how to produce it, and when to purchase and sell, it aims to assist the farmer. It also addresses administrative and organisational issues connected to these choices. The production function, farm planning, budgeting, and linear programming are some of the several farm management instruments. Because it serves as the starting point for all other management operations, farm planning is essential to the management process. Different techniques for farm management analysis may be used to meet the goals of profit maximisation or cost reduction in farming. A

farmer may accomplish these goals using techniques like budgeting and linear planning. Knowledge of the nature of the production function is essentially necessary to accomplish the best possible resource utilisation. For empirical analysis, a production function that is statistically fit is a requirement. Peasant farming organisations, capitalist farming organisations, and shared tenant farming organisations are just a few of the several kinds of agricultural organisations that exist across the globe [1], [2].

System Of Agriculture

'Farm' and'management' are the two terms that make up the phrase "farm management." A farm, in general, refers to any sort of property where certain agricultural activities are carried out by a person, either personally or with the help of household members or hired labourers. On the other hand, management refers to the practise or skill of managing. In order to achieve the required goals, agricultural operations are managed via the process of farm management. Farm management is the art of using commercial and scientific ideas to organise and run a farm, according to various writers.

H.C. Farm management is essentially the art of running a farm, according to Taylor, the first agricultural economist to teach at Wisconsin University in the United States and the bureau's first director. L.C. Farm management, according to Grey, is the art of effectively running a farm as determined by the test of profitability. The science of farm management is sometimes described as "the combination and operation of production factors, including land, labour, capital, and selection of the kind and quantity of crops and livestock." The farm unit will get maximum and ongoing returns as a result.' G.F. Farm management, according to Warren, is the science of organising and running agricultural businesses in order to ensure the highest possible level of ongoing profit. L.A. Farm management, according to Moorhouse, is the study of the commercial aspect of farming. Apparently, C.L. Holmes, farm management is a study of the tenets that guide a farmer's operation as a company owner.

Analysis of Farm Management

The four major tools for managing a farm are as follows. The following is a quick explanation of each tool:

1. Functions of production

It has been emphasised time and time again that using one or more production functions is necessary for optimal resource allocation. However, this is based on speculation. Practically speaking, we cannot know the point that will suggest the best use of resources unless we are aware of the nature of the production function. We are aware that the general need for a factor's optimal usage is the quality of the marginal value productivity of a factor with its price. The key issue is how to ascertain the marginal value productivities of various variables or the manner in which these marginal value productivities change when subjected to other circumstances.

The provided data must be fitted with a production function. The nature of the production function is the first significant question that comes up in this context. It is necessary to statically fit the production function that is fitted and used for subsequent empirical investigation. This claim then causes a different issue. Different production forms that may be matched to the provided data must be known to us. We can observe several significant production functions that have been utilised or may be used to study resource usage issues in agriculture [3], [4].

2. Farming strategy

Because it is the starting point from which all other management activities develop, planning is essential to the management process. It suggests a profound comprehension of the objectives of a certain farm. It involves mental work, introspection, imagination, and anticipation. Planning outlines which courses of action should be taken, as well as when, how, and how. In order to plan effectively, numerous questions must be addressed. Why is it necessary to do an action? When and where will it happen? Who and how will do it? The answers to these questions provide a declaration of goals, rules, and practises that the company will adhere to. Planning is fundamental to both the creation and execution of policies.

Farming has developed into a sophisticated industry that needs careful planning to run well. A one new practise adopted might completely alter the company. A more effective cropping system would necessitate alterations to the livestock programme, which might call for new plans for structures, equipment, or work schedules. "Farm planning" is, in Foreman's words, "simply the process of deciding things like which crops to grow, in what quantity and in what order; how many animals of various classes to keep and how to manage them; what building equipment, labour and power will be required, and so forth."

DISCUSSION

Farm planning is often described as a decision-making process that involves consciously choosing a course of action and basing that choice on goals, actual data, and thoughtful projections. From these definitions, it can be seen that farm planning is a fundamental and preliminary activity that entails evaluation of the size of resources that are accessible, calculation of their needs in light of pre-determined production objectives, and allocation of those resources. What a blueprint or set of architect's requirements are to a construction contractor, farm planning is to a farmer. The farmer makes a deliberate and intentional effort to plan out farm programmes in advance and to modify them in response to advancements in technology, changes in the physical and economic environment, changes in pricing structures, etc. Farm planning is thus a process of observation, evaluation, and analysis where the benefits of new and old ideas are weighed before choosing which ideas to implement going forward.

Planning requirements for farms

Planning a realistic farm requires thorough understanding of:

1. Every resource we possess
2. How we've performed in the past (where we've been)
3. The circumstance we find ourselves in at the moment
4. Our long-term objectives (where we're headed)

With the study of these statistics at his disposal, the farm manager pinpoints his main issues and creates rudimentary remedies. His anticipated actions are thus projected into the near future in light of the information that is already accessible. Farm planning include identifying issues and finding solutions; investigating and deciding the finest, simplest, and fastest methods and means of achieving the set goals; and creating sufficient resources, manpower, materials, and infrastructure [5], [6].

Budgeting

Farm business analysis may be done in a variety of ways to meet the goals of profit maximisation or cost reduction. A farmer may accomplish his goal using techniques like budgeting and linear programming. These approaches are dependent on a number of assumptions, much like other economic laws, and within these assumptions, the use of budgeting and linear programming helps a farmer choose a production plan that maximises his profit. Farming demands a more methodical approach to be successful since it is no longer a straightforward business as it once was. The whole spectrum of farm activities may need to be modified and readjusted in fast succession due to the evolving state of agricultural technology. A well-coordinated plan of farm operations and strategies that a farmer will use to accomplish his goal is referred to as a farm budget. Major alterations in agricultural operations are often brought about by modifications in methods, costs, and inputs. A farmer may consider a number of different farm layouts before settling on the ideal one. Therefore, a farm budget is a technique for creating a number of alternative plans and giving them to the farm decision-maker, with each plan being an advance-planned schedule of all farm activities. It should be remembered that the word "farm budget" refers to the financial manifestation of a plan in terms of revenues, costs, and net income. As an alternative, a farm budget may be seen of as a method for calculating an enterprise's expenses, returns, and profits. Planning and budgeting are interconnected processes. Budgeting helps in choosing the best strategy, but a plan without one is worthless.

Various budgets

There are two different sorts of farm budgets: a partial budget and a full budget. A partial farm budget is a plan created to project the profits from a portion of the farm company. A full budget, on the other hand, refers to a strategy for the overall agricultural operation. Many times, a farmer may not want to change or revise all of his agricultural tasks and may instead prefer to read just a few of them in order to test out some newly established strategies. A farmer who raises maize, wheat, and rice on his property is an example of this. He may not be interested in modifying or updating all of his farming operations and might simply want to read a few of them in order to test out some newly discovered strategies. Additionally, the farmer could be content to produce a new strain of wheat on a small portion of his property. He will need to create a partial budget in this situation. Partial budgeting has the primary benefit of not being complicated or time-consuming. It does not consider the complete farm company and just provides rapid estimations of the expenses and benefits of a particular industry. It goes without saying that it must experience all the drawbacks of a partial approach, including not accounting for all of those drawbacks, not accounting for all relevant factors that contribute to maximising net returns from the entire farm, not allowing resource substitution, and ignoring substitutability between various farm enterprises. Simple examples will help to clarify the idea.

Let's say a mechanical tool has been created to prepare seed beds. Before selecting whether to use this mechanical equipment, a farmer will create a cost-benefit analysis. He will weigh the expense of leasing, buying, or maintaining the new technology against the advantage he is expected to receive (time saved, less manual input).

Whole budget

Complete budget refers to a strategy for the whole agricultural enterprise. It is a list of the goals, tactics, and costs necessary to carry out a comprehensive plan for a single agricultural operation. Complete farm business restructuring requires a detailed strategy that considers crops, animals, cultivation techniques, expenses, and rewards. The farmer must develop both

long-term and short-term goals in order to create such a comprehensive budget. Typically, a long-term strategy is created with the intention of structurally altering the current farm company. Short-term plans are intended to aid with its completion. A farmer could create a ten-year plan to completely reorganise his company, but he continues to work towards his objective by creating yearly plans.

The main goal of a long-term strategy is to significantly increase farm returns. As a result, the whole strategy takes into account shifting technology, resource availability, and a range of agricultural operations. The alternative uses of resources, as well as their relative benefits and drawbacks, must also be carefully considered. Therefore, budgeting in its broadest sense takes more time and requires more work. The degree of precision of the fundamental data utilised in the budget's creation will undoubtedly affect how well it performs [7], [8].

Farm budgeting steps

Farm budgeting requires the same rigorous approach as money budgeting. Each farmer creates a budget that, in his or her opinion, is the finest. But in reality, while making a budget, every farmer must use a methodical strategy that is objectively followed. The following are the actions that should be taken to properly prepare a budget:

An inventory of resources

Resources for agricultural businesses include land, manpower, money, and management. It is wise to prudently create an extensive summary of the land resources, soil, quality, topography, and agro-climatic characteristics in advance. A list of labour, capital, and management resources must also be created in a similar manner. The term "labour" refers to both human and animal work, as well as the productivity levels of each. Capital encompasses all equipment, instruments, structures, credit, etc. Similar to leadership, management comprises the farmer's managerial skills, knowledge, and foresight.

A Cropping Pattern Statement

Choosing the types of crops to be grown or the breeds of animals to be kept is the next stage in creating a farm budget after assessing the available resources. Naturally, the choice of crops and cattle will rely on expected yields. A farmer can only choose the proper sort of crops and animals if he is skilled in mathematics. The order of crops the farmer wants to plant over the next years is also crucial.

Specification of costs and pricing

In order to calculate the costs of many additional resources, a farmer must execute a farm budget and have an estimate of pricing for the next years. To estimate the pricing, you definitely need to make some really wise educated guesses. A farmer may employ well-known forecasting techniques, but his personal perspective is more crucial. For instance, he could be able to anticipate pricing for the next year rather correctly based on prior experience and adjust his calculations appropriately. He will need to consider resource pricing, alternate resource uses, and technological advancements.

A description of agricultural technology

This pertains to the description of agricultural practises, the nature of technology, and potential modifications. In order for the farmer to get current knowledge as it becomes available, there must be a tight relationship between the farmer and the farm researcher. He can calculate the input-output coefficient and define the correct resource mix in his strategy thanks to this.

Evaluation of the current strategy

Finding the good and negative aspects of the current plan is the last phase in the budget creation process for farms. By doing this, the farmer is able to fix flaws in the current plan and incorporate its advantageous elements into the new budget. As soon as the plan is completed, it is crucial to assess if each of its phases is being carried out effectively.

Program linearly

In order to get the optimal value for a given circumstance, linear programming is an approach that takes into account various linear inequalities. It applies mathematically to issues involving the maximisation or minimising of a set of linear inequalities that are expressed in terms of certain variables. The issue is not linear if cost and price per unit do not vary with output, and it is linear if they do not change with output.

A basic viable solution, in mathematical terminology, is one in which the number of variables that are not zero equals the number of constraints specified in the original problem. Ordinary variables, to put it simply, are the input's actions. X1 X2... Xn is the output matrix. In a sense, the slack variables reflect all or some of the unutilized restrictions in a particular solution. A solution that is absinthe feasible is one in which the total number of constraints in the original input-output matrix set from the linear programming problem is equal to the number of activities included in the solution (these will obviously have a non-zero value) plus the number of unexhausted constraints in the solution. Additionally, it indicates that any viable solution will be referred to as a basic feasible solution if the number of activities really contained in the solution is simply equal to the number of restrictions completely used to arrive at such a solution [9], [10].

The most ideal response

The optimal solution is the one that produces the greatest (or lowest) value of the objective function out of an infinite number of viable solutions. The objective function may be seen as representing a collection of iso revenue lines if the issue is assumed to be the one with two products and two restrictions. One of these lines will display the highest possible income at corner M of the realistic region denoted by RMT. If the slope of the iso revenue lines based on the goal function is different, the best solution can be at one of the other two corners, R or T. Therefore, if the goal function's coefficients change, the equilibrium will always be at a location denoted by a corner. Additionally, it may be expected that one of the most fundamentally viable options will always be the best option. As is common knowledge, the fundamental viable solutions are always located near the corner of a feasible region. The viable region will include additional such corners if the linear programming issue involves two products but more than two restrictions; one of these corners will always point to the best solution. The answer will also be at one of the corners bounded by the feasible area in a minimization problem.

The basic approach

Only these two products, which are produced using all limitations (whether one or more), identify the viable area. Two-dimensional figures would arise as long as there are two products. Area is the term for this. If there are more than two products, the lines denoting the different restrictions will encompass a multidimensional space. It is referred to as a polyhedron. We cannot, however, discover the ideal combination of three or more items using basic geometry. The best answer must be discovered using another algebraic strategy. Commonly utilised techniques are referred to as basic techniques. The precise mechanism

used in this procedure is not detailed here. However, this approach entails moving incrementally from one corner of the polyhedron—which represents a fundamentally workable solution—to its opposite corner. Every movement (iteration) shifts the objective function value higher (or lower, in the case of a minimization issue), until no rise (or drop) in the value of the objective function is seen. The origin itself (in a maximisation issue), where the value of the objective function is zero, is the first corner that this technique starts from. There are several differences in approach while solving a minimization issue compared to the original workable answer. The origin cannot reflect this. In this instance, the linear programming approach really leads us in the right direction. In other words, the origin may be the endpoint rather than the beginning. In order to achieve the requisite quantity of output (calories and vitamins) in this situation (a cost minimization issue), one must first randomly combine the available inputs (foods in our scenario) and accept this as the first basic possible solution. From then, the Simplex technique evaluates and contrasts the costs associated with various fundamentally workable ideas to get the final optimal solution.

Theorems underlying linear programming

The following presumptions are the foundation of the linear programming study of a farm:

1. Based on specific limits or resource limitations, the decision-making body makes decisions. Credit, fertilisers, or workforce restrictions on its operations are only a few examples. In reality, the kind of limitation depends on the nature of the issue. They are often fixed elements of the manufacturing process.

2. It makes the assumption that there are just a few different manufacturing methods.

3. Inferring continual proportionality between inputs and outputs within a process, it presupposes linear relationships among various variables.

4. Coefficients and input-output prices are specified and constant. They are guaranteed to exist.

5. Each firm's overall resource use must match the total resource usage of each farmer.

6. Further assuming continuity and division in components and products are linear programming strategies.

7. Additionally, institutional factors are assumed to remain constant.

8. Programming assumes a certain time frame. The duration is often brief for convenience and more precise findings, while longer periods are not completely out of the question [11], [12].

Problems with linear programming

Farm management has found linear programming to be a very effective analytical tool. Although it is frequently utilised in theory, it has certain drawbacks. The following are its restrictions:

1. Identifying a particular objective function is difficult.
2. Even if a precise target function is established, it can be difficult to identify any technical, budgetary, or other limitations that might apply to achieving the stated purpose.
3. It is conceivable that constraints may not be immediately expressible as linear inequalities for a particular aim and set of restrictions.

4. Even if the aforementioned issues are resolved, determining pertinent values for the numerous constant coefficients that are included in a linear programming model remains a significant challenge.
5. This approach is predicated on the notion that inputs and outputs have linear relationships. As a result, inputs and outputs may be multiplied, added, and divided. Input-output relationships, however, are not necessarily linear. Practically speaking, the majority of the relationships are non-linear.
6. This method depends on complete competition in the marketplaces for goods and factors.
7. This method is founded on the assumption of constant returns, which effectively means that a farmer feels either declining or growing returns while producing.
8. It is a complex and highly mathematical procedure. A well-defined variable must be maximised or minimised in order to solve a linear programming issue.
9. The solution to a linear programming issue may also include a large number of mathematical computations, necessitating the use of an electric computer or desk calculator, a particular competition approach, or both. Such computers are not only expensive but also complicated to use, making them unsuitable for farmers.

Agrological Entities

Farm organisations can in a wide variety of forms. Among the significant ones are:

1. Farming by rural families
2. Commercial farming
3. Public farming
4. Collective agriculture
5. Cooperative agriculture

Here is a quick summary of various agricultural organisations:

CONCLUSION

Agricultural management strategies are also influenced by social and economic variables. Farmers and agricultural managers' decision-making processes are greatly influenced by their access to markets, financing, and information as well as by supporting institutional and legislative frameworks. To promote sustainable agriculture management and handle complex agricultural concerns, collaborative methods including stakeholders, such as farmers, academics, policymakers, and agribusinesses, are required. The performance and sustainability of agricultural systems are two things that agricultural management, a dynamic discipline, aims to maximise. It includes a variety of strategies, from conventional wisdom to cutting-edge technology and sustainable practises. Taking into account ecological, social, and economic factors necessitates an integrated and interdisciplinary approach to agricultural system management. To solve the issues and realize the promise of agricultural management in satisfying the world's food demand while maintaining environmental sustainability and social well-being, constant innovation, information exchange, and policy assistance are crucial.

REFERENCES:

[1] J. Wójcik-Leń, K. Sobolewska-Mikulska, N. Sajnóg, and P. Leń, “The idea of rational management of problematic agricultural areas in the course of land consolidation,” *Land use policy*, 2018, doi: 10.1016/j.landusepol.2018.06.044.

[2] N. Gontard *et al.*, "A research challenge vision regarding management of agricultural waste in a circular bio-based economy," *Crit. Rev. Environ. Sci. Technol.*, 2018, doi: 10.1080/10643389.2018.1471957.

[3] M. Mohammadi, Y. Noorollahi, B. Mohammadi-ivatloo, M. Hosseinzadeh, H. Yousefi, and S. T. Khorasani, "Optimal management of energy hubs and smart energy hubs – A review," *Renewable and Sustainable Energy Reviews*. 2018. doi: 10.1016/j.rser.2018.02.035.

[4] B. Bartkowski, B. Hansjürgens, S. Möckel, and S. Bartke, "Institutional economics of agricultural soil ecosystem services," *Sustain.*, 2018, doi: 10.3390/su10072447.

[5] K. Helming *et al.*, "Managing soil functions for a sustainable bioeconomy—Assessment framework and state of the art," *L. Degrad. Dev.*, 2018, doi: 10.1002/ldr.3066.

[6] R. d'Andrimont, G. Lemoine, and M. van der Velde, "Targeted grassland monitoring at parcel level using sentinels, street-level images and field observations," *Remote Sens.*, 2018, doi: 10.3390/RS10081300.

[7] H. Ping, J. Wang, Z. Ma, and Y. Du, "Mini-review of application of iot technology in monitoring agricultural products quality and safety," *International Journal of Agricultural and Biological Engineering*. 2018. doi: 10.25165/ijabe.v11i5.3092.

[8] N. F. Collier, J. Sayer, A. K. Boedhihartono, J. Hanspach, D. Abson, and J. Fischer, "System Properties Determine Food Security and Biodiversity Outcomes at Landscape Scale: A Case Study from West Flores, Indonesia," *Land*, 2018, doi: 10.3390/land7010039.

[9] Z. Yu, C. Lu, P. Cao, and H. Tian, "Long-term terrestrial carbon dynamics in the Midwestern United States during 1850–2015: Roles of land use and cover change and agricultural management," *Glob. Chang. Biol.*, 2018, doi: 10.1111/gcb.14074.

[10] Z. Bai *et al.*, "Effects of agricultural management practices on soil quality: A review of long-term experiments for Europe and China," *Agric. Ecosyst. Environ.*, 2018, doi: 10.1016/j.agee.2018.05.028.

[11] L. E. Castañeda, T. Miura, R. Sánchez, and O. Barbosa, "Effects of agricultural management on phyllosphere fungal diversity in vineyards and the association with adjacent native forests," *PeerJ*, 2018, doi: 10.7717/PEERJ.5715.

[12] A. Rodríguez-San Pedro, P. N. Chaperon, C. A. Beltrán, J. L. Allendes, F. I. Ávila, and A. A. Grez, "Influence of agricultural management on bat activity and species richness in vineyards of central Chile," *J. Mammal.*, 2018, doi: 10.1093/jmammal/gyy121.

CHAPTER 7

AGRICULTURAL SYSTEMS AND CAPITALISTIC AGRICULTURE: EXPLORING THE EFFECTS OF MARKET FORCES

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ABSTRACT:

The term "capitalism in agriculture" describes the predominant way that food is produced under a system where the market is the primary driver of economic activity. This abstract gives a general summary of the main traits, consequences, and discussions surrounding capitalistic agricultureA key component of capitalistic agriculture is private ownership of the land, resources, and tools of production. For resource allocation and decision-making about production, this system depends on market factors including supply and demand dynamics, pricing mechanisms, and competition. The efficiency, creativity, and economic progress that capitalistic agriculture is said to promote are cited as benefits by its proponents. They claim that market-oriented strategies encourage farmers to embrace cutting-edge technology, make investments in R&D, and increase production. In addition, proponents claim that the profit incentive directs resources towards crops with higher profits and more market demand, resulting in higher agricultural production and greater food supply. But opponents of capitalistic agriculture have a number of reservations. Its propensity to place more emphasis on short-term profitability than long-term sustainability is a major complaint. The environment may be harmed, natural resources may be depleted, and biodiversity may be lost as a result of intensive agricultural practises motivated by financial gain. Additionally, detractors claim that capitalistic agriculture may exacerbate social inequality, especially in rural regions where small-scale farmers may find it difficult to compete with bigger agribusinesses, which results in the concentration of wealth and land.

KEYWORDS:

Agriculture, Capitalistic Agriculture, Farm, Management, Production, Strategy.

INTRODUCTION

A capitalist agricultural system is one in which farms run as profit-driven enterprises, aiming to maximise output and financial gains. Food security and rural livelihoods are discussed in relation to the debate over capitalistic agriculture. Critics emphasise how vulnerable small-scale farmers and rural communities are under this system, despite supporters' claims that market-oriented measures increase the efficiency of food production and delivery. According to them, food insecurity is a result of local food systems being disrupted, vulnerable groups being marginalised, and market instability, price swings, and market power concentration.

Family farming is another name for it. Similar to private industry entrepreneurship is this agricultural organisation. The farm's owner exercises direct control over it, making choices concerning its cultivation and doing labour on it. He employs the labour of the family for different agricultural tasks rather than hiring outside personnel to develop the land. Instead of being the landowner, the peasant may sometimes be a tenant who oversees the land's cultivation and makes use of his family's labour for that reason.

The primary characteristic of peasant farming is the size of the intended farm. This results in the following issues: In certain instances, the size may be so tiny that it might not allow the

best use of the farmer's administrative abilities, available agricultural equipment, or a pair of bullocks. The farm's tiny size makes it more difficult to implement new technologies, mostly due to its limited financial resources. It is not possible to employ improved practises such drainage, fencing, crop rotation, etc. In addition, crops grown by peasants will not follow a market-oriented pattern. The output will mostly be for household consumption due to the modest size of the farm and the farmer's preference to satisfy his domestic requirements on the farm itself. As a result, peasant farming often results in subsistence rather than business farming [1], [2].

It is apparent that the peasant farmer won't be very aware of shifting market trends and won't be swayed by them. He won't be particularly oriented towards commerce as a result. Due of the modest size of the farm, there are certain additional benefits to peasant farming. These are listed below: Ownership creates an incentive for hard effort since the farmer is aware that all of the output from his property is his. Good oversight and the capacity for swift judgements. Protection from negative market trends since the farm is not a market participant. Relatively more employment per acre and relative higher cropping intensity. The World Bank claims that family work is more dependable and committed than paid employment. This increases the output's quantity and quality. This farm organisation will promote more social equity among farmers if it is embraced by all farmers in an economy.

The scale of the farm, the use of high-tech equipment, and the employment of hired personnel for cultivation are the key features of capitalistic farming. If an individual landlord owns the farm under this style of farming, he or the manager he appoints will be in charge of running it. 'Estate farming' is another name for this kind of farming. Such a farm is sometimes even held by a joint stock corporation. The directors and managers that the firm appoints in this situation will be in charge of overseeing the farm's operations and management. Corporate farming is another name for capitalistic farming carried out by a joint stock corporation.

In corporate farming, the market is the primary focus of practically all agriculture. The crop pattern is often designed to guarantee the corporation makes the most money possible. The United States, Australia, and England are all big fans of this kind of farming. Tea, coffee, and rubber plantations are a few instances of capitalistic agriculture in India.All the benefits of industrial production are available in capitalist agriculture. Many different kinds of technological, commercial, and financial economies may be reaped. It is also possible to do research on different agricultural operations. However, there are disadvantages to this kind of agricultural organisation as well. The extensive use of machines in this form of farming creates unemployment, which is the most upsetting result. This precise thing lessens employees' negotiating strength and encourages their exploitation. Social inequality and unequal economic distribution are caused by this system. A huge number of supervisors will need to be hired due to the scale of the farm. Because they lack an ownership motive, supervisors often provide subpar oversight.

State farming

Estate farming (capitalistic farming) is not the same as this. In this agricultural organisation, the state owns the farm rather than private stockholders. Representatives and managers chosen by the state make up the management. Similar to corporate farming, cultivation is carried out by paid employees using high-tech equipment. The farm is sizable, and the crop rotation schedule may be set up to address various societal demands. Crop planning and pricing strategy, in contrast to corporate farming, should not be focused on maximising profits. While state farming has historically played a significant role in the Russian economy, state farms are also present in India.

The benefits of state-run agriculture are essentially identical to those of commercial agriculture. State farming enables consumers to benefit from all the benefits of large-scale production. In reality, purposeful state policy may somewhat mitigate some of the drawbacks of corporate farming, such as worker exploitation and reduced job possibilities. If there are any cultivation-related earnings, they go to the state rather than to individual stockholders. Therefore, it may not result in an unequal allocation of income to some degree [3], [4].

Collective Agriculture

Land, cattle, and other capital assets belong to a community as a whole under this style of agricultural organisation. There isn't any private ownership. The farm's owners, who are locals, are also required to serve as workers there. They are regarded as being a part of the farm's main body. They choose a Board of Management, which manages and oversees different farm activities. The government may also nominate some of the management body's members. This board organises the selling of crops, acquires different agricultural inputs, prepares the crop rotation, and maintains contact with the government about various production-related regulations. Additionally, it organises for a variety of social services for the farm's residents, such as leisure, medical care, and educational opportunities.

Cooperative Agriculture

A cooperative farm is an association of private landowners who have come together voluntarily to cultivate their property together. If a cooperative farm member so chooses, he or she may leave the organisation and restart independent land cultivation. In a cooperative farm, an elected body is in charge. Members of the cooperative agricultural association elect the governing body. Additionally, they organise the market sales of the products and the input purchases. The whole parcel of land that the members have pooled is regarded as one form for the purposes of crop planning. Due to the land's size, it is feasible to cultivate it using contemporary equipment and more advanced agricultural methods. External labour may be used by cooperative farms.

Profit Maximisation and Cost Imagination

Production costs play a significant role in profit maximisation, and any sane farmer seeking to maximise profits will take them into account. A farmer often considers cost-cutting as a source of profit growth while trying to boost earnings. Outwardly, it seems that the farmer's principal worries are related on cost-cutting. Close examination, however, shows several issues of similar significance pertaining to farm management, some of which are described as follows:

1. What expenses should be reduced?
2. What expenses may be reduced?
3. Are there any costs that should be raised rather than decreased?
4. Does the lowest average cost lead to the highest profit?
5. How do costs and output differ?
6. What should be deducted from the farm's net returns? Later in the unit, a thorough analysis of these questions will be provided.

The accountant's concept of cost is different from the economists. It is different because the common understanding of costs resembles the accounting idea of costs more closely. An accountant's main worries are paid-out expenses like salaries, seed prices, and feed purchases. The costs associated with the farmer's own labour, feed for livestock raised on the farm, etc., which are not covered by any monetary transaction but do represent the use of actual

resources that could have been used to produce something else, are examples of imputed costs. On the other hand, economists are interested in these costs. The simplest way to calculate these expenses is to estimate what the relevant components would have cost in money if they had really been purchased or hired. The word cost has a variety of meanings. Therefore, it's crucial to have terminological clarity in order to distinguish between various implications and know which to utilize when [5], [6].

Both actual and monetary consequences

The true costs of production, according to Alfred Marshall, are the efforts of many forms of labour that may or may not be directly or indirectly engaged in completing it, regardless of abstinences rather than waiting to obtain the necessary capital. But in the present day, economists seldom ever use this phrase; they generally accept cost in monetary terms. The total amount of money spent by the farmer on all of the different products used in the production of a farm commodity is referred to as the "money cost of product" for the farmer. Although it has minimal bearing on the study of pricing, which is more significant from a social perspective, is the idea of true cost. Therefore, the farmer's labour and personal costs associated with producing a farm product would be its true cost. The fundamental problem with this idea is that since sacrifices and efforts are a subjective phenomenon, they cannot be measured with accuracy.

Public and private production costs

Social costs, also known as opportunity costs, are another cost notion that has gained popularity recently. The commodityY that was sacrificed will represent the social cost of growing commodityX if it is grown on the farm using a certain set of resources. The quantity of maize lost as a result of growing paddy instead of maize will be the societal cost of growing paddy. Alternative or opportunity cost of production are other names for it. The term "private cost of production" refers to the cost of production borne by a single farmer and includes both explicit costs (i.e., the actual financial outlays directly related to producing a farm product) and implicit costs (estimated costs in money). The monetary worth of the inputs provided by the farmer himself is known as implicit costs. We may add the monetary worth of the farmer's administrative skills, interest on his capital investments, and rent on his own land in the implicit cost.

Variable and fixed costs

Some inputs or components may be easily changed in response to a change in output level. Thus, if a farmer needs to increase the output of a specific crop, he or she may do it quickly by adding more manpower, pesticides, or seeds. Variable factors are those elements or inputs that are easily changed in reaction to a change in the output. On the other side, certain input components, such land, equipment, buildings, etc., cannot be changed quickly or early. The line economists draw between variable costs and fixed costs, which are added to determine the overall cost, corresponds to the difference drawn between variable and fixed elements.

DISCUSSION

Costs that do not fluctuate as production changes are known as fixed costs. These costs are set and independent of production, thus a farm business must pay them whether the output is high or low in the near term. When production is zero, they will be at their highest level, and as output increases beyond zero, their incidence will continue to decline. However, with time, all costs become variable since there are more options for organising all the production factors, including the plants and equipment. For instance, a tax on land would be considered a

fixed cost of manufacturing. If a farmer cultivates 150 quintals of rice on his land or keeps it fallow, he pays the same property tax. Unpaid agricultural work, taxes, depreciation, insurance, interest on borrowed money, and certain maintenance repairs are among the expenses that are fixed. For a year, fixed expenses on an Indian farm include the following.

1. Land rent or income;
2. That portion of a structure, piece of equipment, or piece of livestock that depreciates only due to the passage of time and is unrelated to how they are used;
3. Insurance for structures, machinery, and animals;
4. The salaries of year-round employees;
5. The price of all family work used on the farm;
6. The price of farm animals' upkeep.

Variable expenses

Variable costs are those associated with farming that depend on agricultural production. In the event that a farmer chooses to idle his property for a year, there won't be any variable expenses. As a result, these expenses vary according on the volume of manufacturing. These expenditures include things like the salary given to hired workers, the cost of seeds, fertiliser, and pesticides, the fuel and electricity utilised, the cost of transportation, and others. Since variable costs depend on output, overall variable costs rise as farm productivity rises. Since they aid the farmer in determining how much to produce or if he should produce at all, variable costs play a significant role. The variable cost must be lower than the selling price in order for the farmer to continue producing a specific item. On a typical Indian farm, variable expenses include: The price of existing supplies like food, water, fertiliser, and seed; Occasionally hired labour; Services and equipment that are rented; Current repairs and replacements that depend on how a facility and its equipment are used; and nterest earned on existing investments.

Various cost components

There are seven cost ideas obtained from manufacturing that are employed in economic analysis, even if we have separated the entire cost of production into two broad categories of variable costs and fixed costs:

1. Cost Overall
2. Total Fixed Cost.
3. Average Fixed Costs.
4. Total Variable Cost
5. Average Variable Cost.
6. Average Total Unit Cost.
7. Marginal Cost

When marginal revenue and marginal cost are equal, or when MR = MC, the farmer will benefit most. It is clear why: marginal income and marginal cost represent increases in overall revenue and total expenses, respectively. So long as the marginal cost is lower than the marginal income, it is profitable for the farmer to produce one more unit of output. In doing so, he increases total income more than total expenses do. If marginal cost exceeds marginal revenue, producing one additional unit is always unprofitable since more is contributed to total expenses than is added to total income [7], [8].

Measures of Farm Efficiency

On a farm, the farmer's primary goal is to maximise available resources by continuously using them in a way that maximises gross production, profitability, farm business revenue, or operational surplus, subject, of course, to certain utilitarian considerations. The resources utilised include labour, money, and land. One typically wants to know how much using these resources helps in reaching the intended goal. Since the farm is a multi-product company, it may sometimes be beneficial to understand how the resources employed in the creation of various products (crops) are being compensated. The farmer may also occasionally engage in activities related to the correct production of crops. Dairy farming, poultry farming, pig farming, etc. The competitive returns from these activities in comparison to crop production and to one another may need to be known. In order to determine whether there is room for improvement in the use of farm resources on the farm as a whole or in particular farm operations, as well as to compare the efficiency of one farm to that of another, efficiency measures in agriculture are crucial tools of farm management. A ratio between a few measurements of returns and a few measures of efforts is how efficiency is represented.

In light of the definition of efficiency provided above, one essential set of metrics of agricultural efficiency is based on the idea of ratios. 'The aggregate measures' is the name of a different collection of efficiency metrics. These are used to calculate certain sorts of agricultural returns on an overall basis.

Aggregate Measures of Farm Efficiency

As was already said, there are two categories of agricultural efficiency measurements: ratio-based measures and aggregate measures. The aggregate measurements don't use any ratios, as their name suggests. The various aggregate measurements are described in detail in the section that follows. These are a few of these measures:

1. Gross Income: This statistic demonstrates the size and volume of the agricultural sector together with the portion that was available for domestic consumption during the same time period. It also contains the crop closure stock, which has had the value of the crop opening stock at the start of the accounting period finally subtracted from it.
2. Cash Income: This indicator shows how much money a farmer has available to spend on different agricultural projects. Cash income is calculated by summing the entire cash earnings from sales and the revenue from renting out agricultural resources, then taking the cash spent on different farm activities out of the equation.
3. Net Operating Income: This is the amount left over after different operational costs that were incurred for production during the accounting period are subtracted from gross income, as that term is described under gross income. According to custom, operating expenses include the value of hired labour, the cost of maintaining owned bullock labour, the payment for hired bullock labour, the operational costs of owned farm machinery (including tube wells), the cost of seed, fertiliser, manure, and insecticides, the cost of canal irrigation, taxes (excluding land revenue), depreciation on working assets, miscellaneous charges, and the rent on leased land.
4. Net Farm Income: After deducting fixed costs for cultivation, such as land revenue and the depreciation on fixed assets (such as buildings, equipment, and irrigation structures), one is left with net farm income.
5. Net Family Income: Net Family Income is the amount obtained after adding the off-farm income of one of the operator's family members to net farm income.

6. Farm Business revenue: This kind of farm revenue is based on the idea of cultivation cost, which Indian farm management authorities refer to as cost A1. Before we explain how agricultural business revenue and a few other types of income are determined, it is vital to understand several ideas of cost [9], [10].

Response To Supply in Agriculture

As was said, progressive agriculture has the potential to be a potent development driver. Providing food and fibre to the non-agricultural sector is one significant way that agriculture aids in the growth of that industry. If the physical production in the non-agricultural sector is to increase smoothly, food and fibre crops should flow to it in substantial quantities. There are several actions that may be implemented in developing nations to boost agricultural output and promote the flow of produced commodities to the market. One of these approaches has been proposed as a change in the price level of different agricultural products in the desired direction. It is anticipated that appropriate pricing modifications for different crops would result in increased agricultural output and crop supply to the market. These nations need a thorough investigation of this proposition. Such an investigation is required for the following reasons, including the fact that developing nations are currently embroiled in a heated debate in academic circles about the effects of price changes on agricultural crop production and flow to the market. It will be extremely challenging to resolve this debate without getting involved in it. Three opposing viewpoints on how price changes affect the availability of agricultural goods have given rise to the dispute. Which are:

1. It's usual for agricultural goods' supply to react to price changes: This suggests that increased pricing will result in a greater supply of agricultural goods.
2. The supply curve for agricultural goods slopes backward, which implies that beyond a certain point, supply declines as prices rise.
3. There is no correlation between agricultural commodity pricing and supply; instead, other social, economic, and technological variables affect supply [5], [11].

CONCLUSION

Agroecology, community-supported agriculture, and cooperative farming are a few examples of alternative models that have evolved to solve the problems with capitalistic agriculture. These approaches place a strong emphasis on sustainability, regional food systems, and farmer empowerment with the goal of promoting a more egalitarian and ecologically responsible approach to agriculture. Capitalistic agriculture is a complicated, diverse system that has both benefits and disadvantages. Though it has helped boost agricultural production and economic development, it also raises issues with sustainability, social equality, and food security. It is essential for policymakers, academics, and stakeholders to have a thorough grasp of the consequences and trade-offs related to capitalistic agriculture in order to design solutions that support a resilient, inclusive, and sustainable agricultural system.

REFERENCES:

[1] A. Coppola, S. Ianuario, G. Chinnici, G. Di Vita, G. Pappalardo, and M. D'Amico, "Endogenous and exogenous determinants of agricultural productivity: What is the most relevant for the competitiveness of the Italian agricultural systems?," *Agris On-line Pap. Econ. Informatics*, 2018, doi: 10.7160/aol.2018.100204.

[2] J. Pretty, "Intensification for redesigned and sustainable agricultural systems," *Science*. 2018. doi: 10.1126/science.aav0294.

[3] J. Pretty *et al.*, "Global assessment of agricultural system redesign for sustainable intensification," *Nat. Sustain.*, 2018, doi: 10.1038/s41893-018-0114-0.

[4] B. Talukder and K. W. Hipel, "The PROMETHEE framework for comparing the sustainability of agricultural systems," *Resources*, 2018, doi: 10.3390/resources7040074.

[5] GIAHS/FAO, "Globally Important Agricultural Heritage Systems," *a Leg. Futur. UN-FAO, Rome*, 2018.

[6] L. Ditzler *et al.*, "Affordances of agricultural systems analysis tools: A review and framework to enhance tool design and implementation," *Agric. Syst.*, 2018, doi: 10.1016/j.agsy.2018.03.006.

[7] A. Panda, "Transformational adaptation of agricultural systems to climate change," *Wiley Interdisciplinary Reviews: Climate Change*. 2018. doi: 10.1002/wcc.520.

[8] E. K. Burchfield and A. T. de la Poterie, "Determinants of crop diversification in rice-dominated Sri Lankan agricultural systems," *J. Rural Stud.*, 2018, doi: 10.1016/j.jrurstud.2018.05.010.

[9] H. T. Odum, E. C. Odum, and M. T. Brown, "Agricultural systems," in *Environment and Society in Florida*, 2018. doi: 10.1201/9780203757222-26.

[10] S. J. Fielke *et al.*, "Lessons for co-innovation in agricultural innovation systems: a multiple case study analysis and a conceptual model," *J. Agric. Educ. Ext.*, 2018, doi: 10.1080/1389224X.2017.1394885.

[11] P. Boopathi, "The Application of Solar Energy in Agricultural Systems," *Int. J. Trend Sci. Res. Dev.*, 2018, doi: 10.31142/ijtsrd19019.

CHAPTER 8

A CRITICAL ANALYSIS OF THE FARM SIZE AND PRODUCTIVITY DEBATE

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ABSTRACT:

Agricultural economists have been debating the connection between farm size and production for years. This abstract gives a concise overview of the main points and points of view surrounding this hotly debated topic. The link between farm size and production has historically been the subject of two opposing theories. The first viewpoint, sometimes known as the "small is beautiful" paradigm, contends that small farms are by nature more productive and efficient. Small-scale farming, according to proponents of this viewpoint, enables better attention to detail, better land management techniques, and closer closeness to local markets. Small farms, according to supporters, support varied and sustainable agriculture, improve rural lives, and contribute to food security. However, contends that bigger farms reap the benefits of economies of scale, technical developments, and increased access to financing, leading to higher output. This viewpoint's proponents contend that bigger farms may invest in contemporary equipment, embrace cutting-edge agricultural practises, and attain cost-effectiveness, resulting in improved productivity and profitability. Additionally, they assert that industrial-scale farming is necessary to satisfy the expanding needs of a world that is becoming more urbanised and globally connected. Despite the continuing discussion, new empirical research has provided some insight into the connection between farm size and production. These studies demonstrate how the link is context-dependent and varies among locations, agricultural methods, and crops. The link between farm size and production is significantly influenced by factors including agroecological conditions, infrastructural development, market accessibility, institutional assistance, and farmer skills.

KEYWORDS:

Agriculture, Farm, Management, Production, Strategy.

INTRODUCTION

Large-scale farming is criticised for often resulting in land consolidation, smallholder displacement, and economic power concentration, which exacerbates social and economic inequality. Small-scale agricultural advocates, on the other hand, highlight its potential for inclusive development, empowering rural communities, and protecting cultural heritage. There has been discussion on the connection between farm size and productivity on both a theoretical and an empirical level. Some economists used the "farm management studies" data gathered during the 1950s as well as some other data to come to the conclusion that an inverse relationship existed between the size of a farm and productivity, while others tried to demonstrate through "a priori" reasoning that it was likely that an inverse relationship would exist between the size of a farm and productivity.

Large vs. Small Farm Size

The answer to the crucial issue of whether farming should be done on a big or small scale depends on the objectives and skills of the farmer. There are benefits to large-scale farming in agriculture, just as there are in the industrial sector. The economies of technology, finance,

and marketing are the source of these benefits [1], [2]. In comparison to small farms, large farms are more efficient and cost-effective to operate. It's because large-scale farms can take use of all the technology benefits available to small-scale farms, while the reverse is true for small-scale farms. Large farms have been shown to gain from the following things:

1. Production Economies
2. Management
3. Finance
4. Marketing

These sizable agricultural economies help to lower farm costs and boost productivity. The huge farm will benefit from production efficiencies due to: usage of the most modern, automated machinery, benefits of specialisation and the division of work, increased use of byproducts, A facility for repairs and upkeep, and Research's advantages.

The potential for a more efficient use of the existing supply of the three components of production also leads to technical and managerial economies. It follows that on bigger farms, a greater share of the land and capital are accessible for direct productive use, resulting in a decrease in overhead expenses per unit of output produced. In the agricultural sector, where fixed overhead expenses often account for a disproportionately large amount of overall production costs, this should be of special relevance.

The ability to acquire and sell on a wide scale allows for the development of marketing economies. Large farmers get preferential treatment when purchasing agricultural inputs in terms of pricing, discounts, and rebates since the seller, when delivering the supplies in bulk, takes care to effect savings in shipping, handling, and packaging, as well as in accounting. When the big farmer is the seller, corresponding benefits flow to him. It is now feasible for big farmers to practise some degree of grading thanks to more bulk supply, which may raise the average price for all the items he sells.

Because big farmers have greater creditworthiness than small farmers, similar economies of scale also exist in the financial sector. He often has easier access to credit and can borrow money with less hassle. A large farmer is also better positioned to finance themselves owing to their higher overall earnings and turn over. Another benefit of large farms is the potential for lower labour costs because they can assign each employee to the task for which they are best suited, making the most of both natural abilities and the acquired skill and speed that come from repeatedly performing the same task [3].

However, if the scale is increased above a certain point, some of the consequent economies described above often get counterbalanced by inefficiencies. Agriculture is characterised by a number of factors that make it difficult to benefit from the economics of large-scale production. These factors include farming's obsession with living things, its reliance on the seasons and weather, the dispersion of work across vast source regions, and the lack of continuous regular operations. Beyond a certain scale, the challenges of organisation and oversight reduce the effectiveness of a big farm. Cost per unit will rise because the size will be so enormous in comparison to management effort or skill. Technical benefits of large-scale production are more obvious in industries like manufacturing and farming where the task is carried out with pricey huge machinery and a large workforce. But in those areas where close attention to each action and individualised care are desired, tiny production units have an advantage. As we all know, the majority of agricultural operations involve close, one-on-one care for both live animals and growing crops. This favourably positions the small family farm that uses little to no hired work. The closer ties present on small farms make it easier to supervise any hired employees who may be engaged, in addition to the financial

motivation of the family workers ensuring the quality intensity of their job. In addition, family labour is significantly more prevalent on small farms than on big farms. The productivity of small farms remains higher than that of big farms due to this increased intensity of worker utilisation.

The following are some more reasons for this phenomenon. According to Khusro, Sen, Hanumantha Rao, and Jagdish Bhagwati, "as farm size expands, the proportion of bad and indifferent land to total land increases, thus, in turn accounting for the decrease in per acre output and farm income." Fertility is higher on small farms as compared to large farms. According to Krishna Bhardwaj, Khusro, Deepak Muzumdar, and Usha Rani, small farmers utilise their inputs more intensively and manage their operations better and more effectively. This is due to the fact that a small farmer's ability to simply survive depends on the income generated by his little plot. So, the SMALL farmers tend to utilise their land for many crops, leave little land fallow, and employ extensive inputs on their little holdings.

DISCUSSION

Small farms use irrigation more intensely, according to Krishna Bhardwaj. In her research, she discovered an inverse relationship between irrigation intensity and holding size that was statistically significant. Prof. Hanumantha Rao claims that the better production on small farms may be because big farmers prioritise leisure more since they are not under as much financial pressure as small farmers are.Asok Rudra, who entered the discussion in 1968, vigorously refuted the aforementioned theory. Rudra argued that while such an inverse relationship between farm size and productivity may exist in certain areas, it is not a universal phenomenon and, therefore, cannot be said to operate in all parts of the country in a series of two articles titled, "Farm Size and Yield Per Acre" and "More on Returns to Scale in Indian Agriculture," which appeared in the economic and political weekly of July 1968 and October 1968. One should emphasise that, in the case of Indian agriculture, the inverse connections were not seen. Rudra emphasises that this connection cannot be taken as a generally applicable rule governing Indian agriculture and that data from the Farm Management Survey itself may actually show that production per acre may be rising rather than decreasing as area grows. Additionally, it was noted that there was no consistent pattern of relationship between farm size and production per acre.

Similar to this, Prof. A.P. Rao and Krishna Bhardwaj have questioned the idea that farm size and production are inversely related. According to the present study, productivity remained constant over all holding sizes in all the villages, which indicates that holdings size has no effect on productivity, contrary to the findings of the Farm Management studies, said Prof. Rao. Krishna Bhardwaj, who conducted tests on grouped data and fitted logarithmic straight lines to the data pertaining to the earlier round of Farm Management Surveys, also came to the same conclusion.Studies that argue against the inverse link may be found. As a result, the universality of the inverse association may not be regarded as proven, but the stronger supporting evidence cannot be refuted either since it outweighs the negative criticisms. The aforementioned premise is not supported by the experience that has been obtained since the adoption of modern agricultural strategies. In light of current technical advancements occurring in the agricultural industry, several recent research on the idea of an inverse link between farm size and production have produced findings that are in direct opposition to the aforementioned theory.

In addition to R.K. In the Uttar Pradesh area of Meerut, Patel conducted research. A function of the farm, Y = axb, was fitted to evaluate the link between output and farm size. Y may be interpreted as the output per standard hectare of the farm's total production. In addition to

R.K. According to the context of modern technology, Patel concluded from their regression analysis that there is no sign of a decline in production per hectare with an increase in farm size, and so, the inverse connection hypothesis is rejected in the research region. One reason for this tendency is that major farmers are becoming increasingly interested in utilising land more intensively with contemporary inputs at the right moment as farm technology changes due to the improved profitability provided by the new technology.

Despite having superior access to resources, his findings indicated that big farms using the conventional labor-intensive technologies produced less per acre than small farms. This happened as a result of their (hired) labour costs being greater than those of small family farms. Small family farms not only had higher labour costs, but increased administrative and supervisory inefficiencies under labor-intensive approaches resulted in larger farms having lower labour input per acre. Technological advancements opened up new production opportunities for big farms, which could now generate output more quickly than small farms by adopting biological and mechanical processes and progressively substituting capital for labour. The most recent data indicates that with the implementation of new technology, the inverse link between farm size and production per acre established under conventional technology no longer remains true [4], [5].

Rudra also agrees that small farmers appear to cultivate their land more intensively in the majority of Indian regions for which data are available. They appear to put in more labour per hectare and non-labor material inputs per hectare; they appear to set up irrigation for a greater proportion of their land, allowing for a variety of crops; and they appear to prioritise the more lucrative crops. According to Rudra, these are not universal rules, but various regions of the nation have varied mixes of these characteristics. Rudra concurs that a poor peasant's ability to deploy capital and other monetized inputs is limited compared to the larger farmer just by virtue of his position. Even with all of his efforts, a small farmer's production per hectare on his farm may not be higher than on the farms of larger farmers since the new agricultural approach is so capital intensive. Research in this area is currently ongoing.The debate above paints a pretty unclear image. It is fascinating how different economists have used various statistical methodologies to arrive at different conclusions from the same set of data. Prof. A.K. Sen and Prof. Ashok Rudra, the two disputants, have lately sought to synthesise respective points of view. Both parties now agree that:

1. The negative relationship may be true in some regions of the nation at specific periods, but not always and everywhere;
2. Small-size classes show the majority of inverse connections. As a result, inverse connections may only hold in some ranges and not always.
3. Inverse correlations are often affirmed rather than disproved. However, it would be a terrible mistake to assume that inverse connections are an empirical generalisation for Indian agriculture.

It's generally acknowledged that small, economically-sized farms are more efficient than huge ones. The universality of the inverse relationship may not be accepted as established, but since there is more evidence in favour of it than against it, it cannot be contested either. This is true even though some studies have revealed evidence against the inverse relationship, but these are fewer than those that have established it.

Green Revolution and the inverse connection

The Green Revolution in agriculture was essentially characterised by capital-intensive technologies. It is well recognised to have provided farmers with a variety of expansion opportunities. With regard to farm size and production, several empirical research in the area

of inverse relationships have been carried out. The majority of research relate places that have been receptive to new agricultural technology to the weakening and absence of inverse relationships. Since many economists believe that small farmers also have some significant advantages over big farms, this line of thinking has developed. When big farms have uneven access to capital resources, for example, labor-intensive methods may be anticipated to balance out or even replace those capital-intensive techniques. Even Saini (1971), who used data from disaggregated farm management studies to generalise and confirm the inverse relationship in Indian agriculture, maintains that under the influence of the Green Revolution, one would anticipate the inverse relationship to change and cease to be true, at least in the regions that have experienced the Green Revolution. By contrasting the relationship in Muzaffarnagar (U.P.), Ferozepur (Punjab), and West Godavari (Andhra Pradesh) between that under the traditional technology in the 1950s and that under the new technology in the late 1960s, Hanumantha Rao has demonstrated the weakening and even disappearance of the inverse relationship between farm size and output per acre. He claimed that in the 1950s, the unfavourable association was statistically significant across all districts. The negative link in Muzaffarnagar, however, was much diminished in the 1960s as a result of the implementation of new agricultural tactics, with the regression coefficient gradually falling from -0.25 in 1955–1956 to -0.04 in 1968–1969. The association between Ferozepur and West Godvari stopped being statistically significant.

In the Hooghly district of West Bengal, Prof. Madhusudan Ghosh conducted a study to test the Reversal of the Inverse Relation (RIR) hypothesis by contrasting the relationship for crop production across the board as well as for specific crops under the old technology in the middle of the 1950s with that under the new technology in the early 1970s. He used the whole Farm Management Survey information. Results of the estimated connection for specific crops before and after technological development likewise supported the reversal of the adverse trend.

According to Ghosh, there are two theories that might be put out to explain the inverse relationship's reversal. Large farmers utilise better production methods (quantity-based explanation) and invest more in material inputs per hectare than small farmers (intensity-based explanation), respectively. Thus, we see that from the middle of the 1960s, modern agricultural technology has been incorporated into Indian agriculture. There has been a fundamental shift in the connection between farm size and production. A positive connection has taken the place of the previous inverted relationship [6], [7].

Size and profitability of a farm

Considering the efficiency of small holdings is a crucial issue. Small farms are often seen to be less effective than larger farms since they are less profitable. Amartya Sen, who argues that family labour used in agriculture is given an imputed value that is in terms of the prevailing pay rate, started this discussion and concedes that Indian agriculture is unprofitable.According to Amartya Sen, the profitability of agriculture rises with the size of the holding. Sen defines profitability as the difference between production and expenses, including the imputed value of labour. Saini, however, disagrees with Sen. He discovered that, after examining the agricultural management information for Uttar Pradesh and Punjab, the marginal value of labour was not only positive but also more than the cost of manpower. Saini noted the following facts: (i) Even the smallest farms exhibited a significant percentage of positive earnings; (ii) Larger land holdings may also experience losses; and (iii) Size classes regularly experience losses one year then profits the next.

Policy Repercussions

In terms of economic policy, the debate around the inverse link between farm size and land productivity is fundamentally important and not only of academic interest. The decision between huge capitalist farms using paid labour, large farms with cooperative organisations, and small family labor-based peasant farms is crucial in this sense. Whether we interpret the inverse link as a sign of small farms' superior productivity or as a reflection of the stress they are under would have different policy consequences. If we adopt the first viewpoint, we might suggest policies to transfer land from large to small and medium-sized farms through sales and the tendency on a commercial basis (Hanumantha Rao) or we might contend, like Dandekar, that for India, the capitalist form of wage-labor organisation will result in inefficient aggregate output and that the peasant family system implied by individual peasant proprietorship would be preferable.

It is generally acknowledged that small farms with an economic size are more productive than huge ones. These encourage social peace in rural areas as well. Promoting big farms would weaken small farmers' ability to compete with them, may cause hardship among the latter, and would even force the sale of struggling small holdings. This would add to the nation's already sizable army of migrant labour [8], [9].

Returns to scale and the link between them

In essence, the size-productivity connection describes the link between an output and a single input, in this case, land. Some economists attempted to extrapolate conclusions about the nature of returns to scale in Indian agriculture from this connection. In other words, it was argued by some economists that returns to scale in Indian agriculture before to the Green Revolution were declining. This, however, is incorrect since the returns to scale are not determined by the returns to a particular input, such as land, but rather by the total of all returns. Some economists used the farm management data to test returns to all inputs combined. Their findingsthat (a) returns to one variable inputlet's say landdeclined indicated that the returns to scale in Indian agriculture were discovered to be constantare legitimate in and of itself and are highly consistent with one another. Both of these findings have been reached by Khusro and Saini. Therefore, regardless of the level of agricultural technology, we may draw the conclusion that earnings per acre seem to be rising as farm size grows. In other words, big farms are more productive than small farms. Regarding the causes of this tendency, there are several points of view.

The terms "farm" and "management" are combined to form the phrase "farm management." A farm, in general, refers to any sort of property where certain agricultural activities are carried out by a person, either personally or with the help of household members or hired labourers. A statically fit production function must be used for the fitting and subsequent empirical analysis. Paul H. Douglas and C.W. Cobb's empirical examination of the American manufacturing sector served as the foundation for the Cobb-Douglas production function. It is a degree 1 liner homogeneous production function. Planning is essential to the management process because it serves as the springboard for all other management-related tasks. It suggests a profound comprehension of the objectives of a certain farm. It involves mental work, introspection, imagination, and anticipation. Farm business analysis may be done in a variety of ways to meet the goals of profit maximisation or cost reduction. A farmer may accomplish his goal using techniques like budgeting and linear programming.

Budgets for farms may be divided into two categories: partial budgets and full budgets. A partial farm budget is a plan created to project the profits from a portion of the farm company. Farm budgeting requires the same scientific approach as money budgeting. Each

farmer creates a budget that, in his or her opinion, is the finest. But in reality, while making a budget, every farmer must use a methodical strategy that is objectively followed. The objective function of a linear programming problem is stated in terms of choice variables. Finding the values of these variables that would maximise or minimise (as the case may be) the specified objective function is the goal of the linear programming approach, which has shown to be a very effective analytical tool for farm management. Although it is frequently utilised in theory, it has certain drawbacks.

The scale of the farm, the use of high-tech equipment, and the employment of hired personnel for cultivation are the major characteristics of capitalistic farming. If an individual landlord owns the farm under this style of farming, he or the manager he appoints will be in charge of running it.A cooperative farm is an association of private landowners who have come together voluntarily to cultivate their property together. If a cooperative farm member so chooses, he or she may leave the organisation and restart independent land cultivation. Any reasonable farmer who wants to make the most profit takes the cost of production into account. Cost of production is an essential aspect in profit maximisation. A farmer often considers cost-cutting as a source of profit growth while trying to boost earnings. A farm's income and associated expenditures influence the farmer's earnings. Since the farmer's profit will be equal to the difference between its total revenue and total cost, it is now required to learn the notion of revenue after having some familiarity with cost principles.

Progressive agriculture, as it is pointed out, can serve as a potent engine of growth. The main objective of the farmer on a farm is to use the scarce resources that leads to its maximisation, on a continuous basis, according to the value of gross output or profits or farm business income or operational surplus, subject, of course, to certain utility consideration. Supplying the non-agricultural sector with agricultural goods, such as food and fibre, is one significant manner in which agriculture fosters the growth of the latter.There has been discussion on the connection between farm size and productivity on both a theoretical and an empirical level. The Green Revolution in agriculture is essentially characterised by the capital-intensive technologies. It is well recognised to have provided farmers with a variety of expansion opportunities. Numerous empirical investigations on the negative link between farm size and production have been done. In terms of economic policy, the debate around the inverse link between farm size and land productivity is fundamentally important and not only of academic interest.

CONCLUSION

Policymakers, academics, and other stakeholders must take a nuanced approach that takes into account the variety of farming systems, socioeconomic settings, and agroecological circumstances in order to successfully negotiate the complexity of the farm size and productivity issue. Regardless of the scale of a farmer's operation, policy interventions should concentrate on improving access to resources, fostering sustainable agricultural methods, bolstering market ties, and empowering farmers. In conclusion, there is no unambiguous agreement on the subject of farm size and production due to its complexity. Farming methods on a small or big scale each have their own benefits and difficulties. The relationship between farm size and productivity can be better understood holistically by acknowledging the heterogeneity of agricultural systems and adopting a context-specific approach. This understanding will ultimately guide the creation of policies that support sustainable and equitable agricultural development.

REFERENCES:

[1] N. Lampach, N. Van Phu, and N. To The, "Measuring the Effect of Agricultural Extension on Technical Efficiency in Crop Farming: Meta-Regression Analysis," *SSRN Electron. J.*, 2018, doi: 10.2139/ssrn.3208034.

[2] E. S. Mgaya, "At the Mid of Polarity: Rethinking Medium Farms as Solution to Vulnerability for Small-scale Farmers in Sub-Saharan Africa," *Alanya Akad. Bakış*, 2018, doi: 10.29023/alanyaakademik.327771.

[3] D. J. Hemming *et al.*, "Agricultural input subsidies for improving productivity, farm income, consumer welfare and wider growth in low- and lower-middle-income countries: a systematic review," *Campbell Syst. Rev.*, 2018, doi: 10.4073/csr.2018.4.

[4] V. Bhatia, S. Basu, S. K. Mitra, and P. Dash, "A review of bank efficiency and productivity," *OPSEARCH*, 2018, doi: 10.1007/s12597-018-0332-2.

[5] M. Lévy, P. J. S. Franks, and K. S. Smith, "The role of submesoscale currents in structuring marine ecosystems," *Nature Communications*. 2018. doi: 10.1038/s41467-018-07059-3.

[6] F. Wang and M. Matsuoka, "A new green revolution on the horizon," *Nature*, 2018.

[7] A. Ameen and S. Raza, "Green Revolution: A Review," *Int. J. Adv. Sci. Res.*, 2018, doi: 10.7439/ijasr.v3i12.4410.

[8] P. R. John and M. C. Heitt, "Disruptive physician behavior: The importance of recognition and intervention and its impact on patient safety," *J. Hosp. Med.*, 2018, doi: 10.12788/jhm.2945.

[9] K. O'brien, E. Selboe, and B. M. Hayward, "Exploring youth activism on climate change: Dutiful, disruptive, and dangerous dissent," *Ecol. Soc.*, 2018, doi: 10.5751/ES-10287-230342.

CHAPTER 9

AGRICULTURAL PRICE POLICY'S PURPOSE AND OBJECTIVES: A REVIEW OF GOALS AND METHODS

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ABSTRACT:

The consequences of the agricultural sectors' economic, social, and environmental activities are significantly influenced by agricultural pricing policy. This summary gives a general overview of the objectives of agricultural pricing strategy and emphasises its importance in obtaining desired results in the agricultural sector. Agricultural pricing policy's major goal is to establish a framework for stabilising and controlling agricultural prices in order to secure fair returns for farmers, preserve the affordability of food for consumers, and accomplish more general economic goals. Governments conduct agricultural pricing policies using a range of tools, such as price controls, subsidies, tariffs, and market interventions. Agricultural pricing policy's objectives are complex and vary across nations and settings. By ensuring steady and inexpensive food prices for customers, one important goal is to provide food security. Stable prices maintain a steady supply of food, lessen market volatility, and assist to alleviate the consequences of price variations. By ensuring farmers' financial security and way of life, agricultural pricing policy also seeks to assist rural development. Policy actions may encourage agricultural output, boost farm productivity, and aid in the eradication of rural poverty by providing fair and lucrative pricing. In addition to fostering agricultural competitiveness, agricultural pricing policy supports domestic agricultural industries. Governments often enact price controls to shield local farmers from the erratic nature of the global market, the rivalry posed by imported commodities, and unfair trade practises. In order to provide domestic agricultural producers with a fair playing field, such policies might include import taxes, export subsidies, and trade restrictions.

KEYWORDS:

Agricultural, Development, Economic, Governments, Pricing Policy.

INTRODUCTION

A country's agriculture pricing policy is one of the most significant at the national level. It is an essential tool for determining the country's agricultural commodity pricing. In order to safeguard the interests of both farmers and consumers, this policy takes into account a variety of circumstances and eventualities related to the agricultural sector, the market, and the economy. Without a strong agricultural pricing policy, a nation's economy would suffer greatly, directly harming the farmer or producer. The policy choices also include a number of clauses to prevent any unfavourable circumstances, such as a poor crop year, a drought, and many other possibilities. You will discover the characteristics of agricultural pricing policy and its goals in this section. After that, you will get familiar with the key components of agricultural pricing policy and evaluate India's agricultural price policy.

For farmers, consumers, and the government, the cost of agricultural products is a critical concern. Due to the seasonal nature of farm output and the low-income elasticity of demand for agricultural goods, it is significant for farmers. It matters to homes since agricultural goods are often a necessary component of daily living. Food costs are out of control, and low-

income families are the ones that suffer the most. It is crucial for the government because a spike in agricultural prices sets off inflation, which jeopardises the nation's economic stability. The agricultural community is most vulnerable to changes in the market price of its products, nevertheless, of the three groupings [1], [2].

Prices of agricultural goods are very variable as a result of seasonal fluctuations in output, which suggests that farmers' incomes are always changing. Farmers' incentives to invest are diminished by the volatility of their output and revenue. Food grain shortages in the nation might result from low agricultural productivity. Food grain supplies might fall to dangerously low levels, prices could soar, and the actual earnings of the lower parts could fall to levels of utter destitution, suffering, and famine. Therefore, it is essential to monitor farm productivity and maintain stable agricultural prices. Stable agricultural prices would not only ensure the farmers' livelihoods, but also the availability of food for broader segments of the population. Additionally, it would imply economic stability in general. A competent government strategy is thus required to lessen price swings and maintain agricultural revenues.

Agricultural Markets' Characteristics

India's agricultural markets are organised according to the fundamental principles of perfect competition. Small farmers are often present in agricultural markets. These marketplaces provide reasonably uniform product and knowledgeable consumers and sellers. The supply and demand of agricultural goods do not adjust fast to price changes. Due to the cyclical structure of output, agricultural markets cannot instantly increase supply even when prices rise. Because consumer demand for agricultural goods is not very elastic, it does not increase as prices fall. Farm supplies and their pricing, however, are very unpredictable due to the seasonal nature of agriculture and significant reliance on climate.

Agricultural price fluctuations

Markets for agricultural products are distinguished by the following:

1. Inflexible demand
2. Inelastic demand
3. Unpredictable changes in supplies brought on by weather uncertainty

These traits together have a significant influence on agricultural output pricing. Prices move in the other way when there is a change in the supply of agricultural products. A big harvest lowers prices, while a bad crop raises them. The kind of demand will determine how much prices fluctuate. When demand is inelastic, price volatility will be significant, and when demand is elastic, it will be low. Because demand for agricultural goods is often not elastic, price variation in reaction to supply fluctuation is sometimes quite high [3], [4].

Causes of agricultural price volatility

The following are the primary reasons why agricultural commodity prices fluctuate:

1. **Relatively inelastic demand:** For agricultural items, the price elasticity of demand is less than unity, or relatively inelastic. When the price elasticity of demand is less than one, there is very little expansion in demand despite a significant price decrease, and very little contraction in demand despite a significant price increase. This is as a result of the need of agricultural goods. There is barely any replacement for these fundamental essentials of existence. These are ingested in more-or-fewer constant amounts.

2. **Relatively inelastic supply or poor supply response:** When compared to non-farm items, the supply of agricultural products is less elastic. A very inelastic supply is one that has very little expansion despite a significant price increase and very little contraction despite a significant price decrease.

   The main component input for agricultural goods is land. A lot of agricultural land has already been developed. Therefore, there is minimal chance of raising agricultural output by expanding the area under cultivation. The nature of agricultural output is seasonal. Any adjustments to agricultural output must wait until the next season. The amount of time necessary for the natural processes of manufacturing cannot be sped up or slowed down. In order to increase the yield of a certain crop, you cannot repeatedly cultivate the same piece of land over the course of a year. Contrary to industrial output supply, which may be changed by operating the same plant more or less intensely throughout a certain time period. Supplemental costs (or fixed costs) of production are very high in the case of farming. This serves as an inherent check on the supply response from farms.The effects of climate change: In less developed nations like India, agricultural production is very susceptible to weather fluctuations. Well-distributed rainfall may result in a bountiful harvest, but floods, frost, or drought may destroy the crop. The level of pricing is unclear due to manufacturing unpredictability.

Effects of price volatility in agriculture

The effects of price fluctuations on farmers and customers (whether they be consumers, businesses, or exporters) are severe. The cost of life is first and principally increased by an increase in the price of agricultural goods generally and foodgrains specifically. This makes it difficult for the less fortunate members of society to get food grains. As a result, hunger and famine tend to occur more often. Second, an increase in farm product prices indicates a rise in the cost of industrial production since agricultural goods are employed as industrial inputs. It goes without saying that this will impede the expansion of industrial output. Third, there is an inflationary pressure when the cost-of-living increases as a result of the upward trend in food grain prices. Rising prices result in increased salaries and other factor compensation costs, which implies a rise in factor prices. This is yet another built-in restriction on the economy's increased use of the manufacturing process [5], [6].

DISCUSSION

Farmers' income increases as a result of higher agricultural product prices. However, the issue is whether all farmers profit from the condition of growing agricultural commodity prices. The answer is undoubtedly no since many small and marginal farmers seldom sell their goods on the controlled marketplaces. To pay off their debts, they often promise their product to lenders in exchange for a cheap interest rate. On the other hand, impoverished farmers must pay high rates to obtain inputs from the market (since input costs grow along with the price of agricultural product). Even while farmers often benefit from growing farm output prices, these advantages may be balanced by losses brought on by rising farm input costs. Thus, even though the prices of agricultural produce tend to rise, it is not always the case that farmers benefit. The fact that big farmers and landlords make their fortunes when prices increase cannot be disputed, however. This is a result of these farmers' substantial storage capacity. They grow their food away from the market glut, sell it when prices peak, and earn a significant profit from this.A decrease in the cost of agricultural goods is always desirable from the perspective of the consumer. However, it is nothing short of a nightmare for the farmers. Farmers are discouraged from producing more when the prices of agricultural

goods decline excessively. As a result, agricultural output production and supply tend to decline. A decline in demand for the industrial and service sectors of the economy may emerge from this tendency for income levels and buying power to decline. If the decline in prices and demand is allowed to go unchecked, a global recession might start.

Indian agricultural prices' behaviour

Since independence, the behaviour of agricultural prices has shown two key characteristics:

1. Growing patterns
2. Significant variations

Policy for Agricultural Stabilisation

As was previously said, the unanticipated change in supply of agricultural goods is the reason of the unstable pricing of agricultural products. This makes both farmers and consumers more vulnerable. Both consumers and industrial producers are negatively impacted by price increases. They raise both the cost of production for industrial firms and the cost of living for families. This kind of circumstance creates deflationary pressures and shakes up the economy's general demand. On the other side, farmers are discouraged by declining prices. As a result, investment and output levels decline, and a feeling of uneasiness and uncertainty about the supply of foodgrains permeates the economy.Additionally, in order to maintain price stability, the government often intervenes in the market for agricultural goods. The following things are crucially stabilised by an appropriate pricing policy:

1. The pricing of agricultural goods
2. Amount of agricultural product production
3. Amount of agricultural goods consumed
4. The primary goals of the agricultural stabilisation strategy are as follows:
5. To maintain stable agricultural product prices so that neither low nor high prices have an adverse effect on farmers or consumers.
6. To maintain price stability for agricultural products so that adverse trade conditions do not harm the nation's exports.
7. To maintain farmers' incomes so they are not caught in the "paradox of plenty."
8. To increase production and investment in the agriculture industry. Here, it should be stressed that any logical stabilisation strategy would aim to manage and temper agricultural price swings rather than eliminate them [7], [8].

Concerns With Agriculture Price Policy

The agricultural pricing policy is made up of a number of components. We will examine some of the key components in this area, including the fixing of product prices, the pricing strategy for agricultural inputs, consumer protection, and supplementary policies. Generally speaking, it is conceivable for pricing that are advantageous to agricultural product producers to act against the interests of the non-agricultural sector and vice versa. In reality, as many nations' economies have grown, this has been one of the primary factors supporting agricultural pricing policy in those nations.

Sometimes the advantages of all such programmes were mostly or entirely transferred to the industrial sector by manipulating the pricing of agricultural goods as well as agricultural inputs, and by designing supplementary fiscal and administrative policies. Other times, the pricing policy has supported agriculture at the expense of non-agricultural industries. The two varieties of pricing policies are referred to as "negative" and "positive," respectively. These two pricing policies are covered in more depth below.

Negative' pricing Policy: During their early phases of development, a vast number of nations adopted a 'negative' agricultural pricing policy in an effort to spur economic growth. In order to encourage the expansion of the industrial and tertiary sectors via higher earnings and savings of these sectors, the fundamental goal of such a strategy was to maintain the costs of food and raw materials relatively low (as compared to the prices of industrial goods). In other words, it was intentional to maintain disadvantageous trading conditions for the agriculture industry. This was mostly accomplished in two ways. A compelled sale or delivery of a part of the agricultural produce to the State at a price that is significantly below the open market price is one strategy. In certain cases, a piece of the agricultural produce was taxed away for nothing. These actions had the effect of significantly lowering the producer's average price per unit of total production.

The second strategy to accomplish the same goal has been to let the cost of industrial items, which farmers often buy, to increase. Both consumable items like textiles and agricultural inputs like fertilisers, insecticides, and herbicides were included in the products. However, the cost of agricultural products was maintained constant. Again, this gave the industrial sector a relative benefit. Different nations, like the United Kingdom, Soviet Russia, and Argentina, have adopted both of these strategies or a mixture of them to differing degrees.

Positive' pricing Policy: As opposed to the 'negative' policy, many emerging nations now adhere to what can be called the 'positive' pricing policy, which guarantees the farmer a fair price for his product. It is understood that without the agricultural sector experiencing a certain minimum rate of growth, it would be impossible to achieve the broad objectives of economic growth and development. This is true for a variety of reasons, the main ones being:

In the majority of developing nations, agriculture remains the most important industry in terms of creating revenue, employment, savings, and exports, and Only a continually expanding agricultural output can satisfy the rising food demand brought on by a growing population and rising income levels. Experience has proven that a negative pricing strategy prevents the agriculture sector from growing at the appropriate minimum pace. Several nations who began their development programmes with negative agricultural pricing policies have now switched to positive price policies over the course of the previous 60 years or so as a consequence of this experience [9], [10].

For instance, since 1951, the State in Soviet Russia has gradually raised the buying cost of agricultural goods. Similar to this, prices of agricultural products have increased while required deliveries to the State have decreased in a number of East European nations. Among these nations, Bulgaria, Romania, and the former East Germany are major ones. In these nations, agricultural prices significantly increased in the early 1960s. Several other nations have taken similar actions. Several nations in Asia, Africa, Eastern Europe, and Latin America have also guaranteed minimum prices for agricultural goods. This trend in agricultural pricing policy seems to be here to stay.

Fixation of Product Prices and Bases for Agricultural Crop Price Fixing

In the previous part, we had made clear that during the early phases of industrial development, many governments adopted a negative pricing strategy for agricultural commodities in an effort to promote the growth of the industrial sector. Under such a strategy, there was no established criteria for setting the pricing of agricultural goods.

When the negative agricultural price policy gave way to the positive price policy, it became crucial to make sure that the agricultural prices were regulated in a way that would provide farmers enough incentives to produce as much as they possibly could. The government agrees

to buy a certain crop in the market if its current price falls below what is known as the minimum support price (these incentive prices are also known as minimum support prices). Numerous guidelines for fixing the pricing of agricultural goods were developed as a result. Currently, prices are often established in accordance with one or more of the following principles:

1. Cost-of-production principle
2. The principle of ruling prices;
3. The Parity Prices Principle

It has been discovered that none of these principles, viewed alone, is wholly adequate. As a result, prices are sometimes set in a way that satisfies more than one of these criteria. The nature, advantages, and disadvantages of each of these bases for price fixing are described in the paragraphs that follow.The cost of production principle: The level of minimum support prices may be established using the average cost or the bulk line cost of production as determined using the cost accounting technique. Budgeting is another alternative to the cost accounting approach. This method calculates the cost per unit of production by factoring in the price of suggested agricultural inputs and their typical yields. Insofar as it protects the primary producer from any loss resulting from an unanticipated drop in prices, the cost of production concept for setting administered prices is good.

However, there are issues with allocating appropriate values to family labour, other domestic inputs, and management input when calculating the cost of production of a specific crop. According to Rath, evaluating the value of land is another significant challenge in calculating the cost of production. Another issue arises when joint expenses are distributed across many crops. Moreover, given the broad variability in agro-climatic conditions and farming practises, the idea of an average cost per unit of production, which is often employed as the foundation for price fixing under this approach, is ambiguous. In other words, there is a significant amount of cost variation amongst farms. As a result, it follows that this method of establishing support prices for agricultural goods may not entirely cover farm production costs.

Furthermore, as has often been the case, a pricing strategy specifically designed to boost output cannot be based on the average cost of production. It is a known fact that the usage of non-traditional inputs has increased significantly in recent years, which has contributed significantly to the rise in agricultural productivity. As previously said, financial rewards determine how quickly farmers adopt the usage of these extra inputs. The farmer should be less concerned with the traditional cost of production estimates in this case and more focused on marginal costs and marginal profits. He should employ more inputs until the marginal return value matches the marginal cost after discounting for risk. Therefore, the bookkeeping definition of the cost of manufacturing has no bearing on the issue. Additionally, the cost of production standard only takes into account the supply side and completely disregards the role that demand plays in determining pricing.

Rath holds the opinion that "the actual cost of production" cannot be utilised as a factor in determining the pricing of agricultural products since the price of a certain crop is published before to its sowing season, but its actual cost of production can only be determined after it has been harvested. Therefore, prices that have been disclosed are based on predicted costs of manufacturing rather than real costs, which may occasionally even be higher. As a result, the cost of production concept is not seen as being highly reliable for making policy.

The ruling price concept stipulates that the price must be connected to a moving average of previous market prices. The benefit of this strategy is that it incorporates the impact of

demand patterns into price fixing, while the cost criteria completely overlook this element. Therefore, the significance of this criteria depends in how well it balances supply growth with demand growth throughout the relevant time periods. However, the moving average could not accurately represent market patterns in an economy where prices may have been maintained artificially low in the past. Even yet, the current pricing often fall short of offering the long-term incentives required to grow output [2], [11].

Parity Prices Principle: A parity price is the amount that, for the seller of a unit of an item, buys as many other goods and services as he might buy with the same unit within a certain base time. In other words, "parity" refers to the same connection between the administered farm prices and the prices farmers pay for non-agricultural items as it did in the base year for a particular year. Thus, the parity prices concept may be used to maintain the interdependence of the prices of agricultural and non-agricultural goods. The approach may also be used to guarantee price parity between various agricultural goods. We have previously said that a "positive" pricing strategy for agricultural goods must be implemented if the goal is to provide the primary producers the proper motivation to produce more and better. Some claim that this means that prices should continue to be raised to benefit the agricultural industry in addition to maintaining the parity between agricultural and non-agricultural product pricing. In other words, the pricing policy should work towards modifying trade conditions such that agriculture benefits. The following method is used to accomplish this goal.

First, price index number series for industrial and agricultural goods are created using the appropriate base year (or base period). The ratio between the index number of industrial and agricultural goods for the base year is then calculated. The ratio between the price levels of the two sets of these commodities will always be equal to one since the index number of prices for the two sets of commodities in the base year is equal to 100. However, a value of 100 is often given to this ratio. 'Parity Price Ratio' is the name given to this.

The government then determines the real price ratio using the price index data for the two sets of commodities for that year in order to achieve parity between the agricultural prices and the industrial prices for any given year. This ratio may have a value that is less than 100, equal to 100, or more than 100, supposing that the base year price ratio has been given a value of 100. The government must now make sure that the value of this ratio equals 100 in order to achieve parity between the prices of agricultural and industrial goods, as it did in the base year. It will do this by raising or lowering agricultural prices to the necessary level. The modified agricultural prices are referred to as the 'Parity Prices' for agricultural commodities for that specific year.

If the government wishes to improve the terms of trade for agriculture for any given year, it may do so by altering agricultural prices in a way that raises the price ratio for that year to the desired level, which is greater than 100. There are many different approaches to conceptualise price ratio for a certain year. Here are a few of these pricing ratios:

The price ratio of all agricultural goods to all non-agricultural goods. The calculation is Price index for all manufactured goods is 100 Price index for all agricultural commodities is 100. We are aware that farmers buy both consumer products and agricultural inputs when they buy manufactured goods. As a result, the price ratio that is determined in this way does not discriminate between the protection that should be provided to the farmer as a producer and as a consumer. However, this approach is helpful when we seek to understand or modify the shifting terms of trade between the industrial and agricultural sectors as consumers of one another's goods. The following formula is used to compute the ratio between prices paid for agricultural inputs and prices received for farm products:

Price index of farm inputs 100 Price index of all agricultural commodities

A growing price ratio will signal a beneficial movement of the terms of trade for the producers in the agricultural sector. This idea of price ratio is important when the goal is to defend the interests of the farmer as a producer. If this ratio is less than 100 in a particular year, it indicates that, relative to the base year, agricultural prices are lower than those of farm inputs in that year. Then, agricultural produce prices might be controlled in such a way as to raise this ratio to 100 or even higher.

The ratio of the cost of each agricultural commodity to the cost of all agricultural commodities. The following formula is used to compute the price ratio for the current year: Price index of each agricultural commodity is 100 Price index of all agricultural commodities is 100. For the aim of adjusting the crop mix and meeting production goals for certain crops, this price ratio notion is helpful. For those crops whose output has to be increased, price ratios should be beneficial.

The parity method, clearly, dissociates administered prices from production costs. Sometimes, this might work against the producers' interests. Furthermore, the parity pricing requirement may involve fixing different prices for the same crop in separate parts of the same nation owing to variations in the industrial sector's price structure in those regions for a variety of reasons. This may not be a simple task administratively. Furthermore, creating the index values needed to determine current price ratios is fraught with difficulties. No one of the aforementioned criteria is without flaws, as was previously said. As a result, the price-fixing authorities do not just base their judgements on one factor. When setting rates, they prefer to take into account a variety of different criteria in addition to the recommendations made by the aforementioned methodologies.

Farmers utilise a range of inputs to grow their crops. The work of people, farm animals, and machinery; fertilisers such as manure, insecticides, and chemical fertilisers; seeds, power, and irrigation are among these agricultural inputs. The ultimate price of agricultural product is influenced by the costs of each of these inputs. The price structure for agricultural inputs is crucial for this reason. The Green Revolution brought new high yield variety seeds, irrigation infrastructure, and heavy fertiliser usage, which led to the adoption of a new agricultural strategy and the subsequent employment of modern equipment and fertilisers. The farmers were financially burdened since the majority of fertilisers and expensive new inputs were imported.

For this reason, the government began implementing input subsidies so that farmers could take advantage of the decreased input costs and pass along the savings from these lowered costs to consumers, stabilising total food prices and containing food inflation. Maintaining high productivity is a goal of the input subsidies. The government currently offers subsidies in the areas of fertilisers, seeds, irrigation, and energy. The government pays the businesses that produce fertiliser directly in certain cases, whilst in other cases, such as irrigation and energy, the subsidy is given in the form of decreased prices for the farmers.

The government has put out a number of policies to determine the costs of various agricultural inputs. These include establishing organisations like the National Seeds Corporation, the Nutrient Based Subsidy, the IFFCO Corporation, separating power feeders with the aid of programmes like the Pandit Deen Dayal Upadhayay Gramme Jyoti Yojana, and canal links, among others. Today, subsidies account for a significant portion of government spending, with fertiliser subsidies ranging from 40 to 70 percent and energy and irrigation subsidies from 75 to 90 percent. Subsidy programmes in India are now primarily motivated by political objectives, rather than simply increasing the profitability and

productivity of agricultural operations. Subsidies are being given out excessively to please the vote bank or in response to political pressure from various factions, and the results may be quite detrimental.

Such subsidies not only raise the financial burden of the government by consuming the lion's share of yearly budgets, but they are also accelerating the trend of excessive input use in manufacturing. Due to the quick deterioration of the soil, the depletion of groundwater supplies, and the imbalance in the soil's nutrient levels, this has had a negative impact on the ecosystem. All of this comes at the expense of little to no increase in agricultural productivity, as is the case, for instance, with fertiliser subsidies in India. It is also claimed that agricultural input subsidies do not accurately reflect in the ultimate market price of agricultural products, and that farmers themselves are unable to understand market signals, resulting in an indiscriminate and unbalanced use of resources. The target base, particular rules and limits depending on its usage, rationing, distribution, and length should all be taken into account when setting prices for agricultural inputs. The subsidies won't be effective or beneficial to the economy until then.

CONCLUSION

The execution of agricultural pricing policy is not without difficulties, however. It takes careful policy development and execution to balance the interests of farmers, consumers, and the larger economy. Policymakers must negotiate a number of difficult tasks, including choosing the best pricing levels, controlling market distortions, addressing income inequality, and averting unexpected effects. As a result, agricultural pricing policy involves a variety of objectives and performs many functions. It seeks to stabilise food prices, guarantee farmer profitability, aid in rural development, foster competition, and handle environmental issues. Understanding how agricultural systems, market dynamics, socioeconomic variables, and environmental concerns are interrelated is essential for developing effective agricultural pricing strategies. To achieve the intended results and maximise the advantages of agricultural pricing policy for all stakeholders engaged in the agricultural sector, continuous assessment, evidence-based policy formulation, and stakeholder engagement are essential.

REFERENCES:

[1] Z. A. Wagan, Z. Chen, H. Seelro, and M. S. Shah, “Assessing the effect of monetary policy on agricultural growth and food prices,” *Agric. Econ. (Czech Republic)*, 2018, doi: 10.17221/295/2017-AGRICECON.

[2] E. Abokyi, H. Folmer, and K. F. Asiedu, “Public buffer stocks as agricultural output price stabilization policy in Ghana,” *Agric. Food Secur.*, 2018, doi: 10.1186/s40066-018-0221-1.

[3] E. Maître d’Hôtel, A. Alpha, R. Beaujeu, F. Gérard, and L. Levard, “Managing agricultural price volatility in Africa. Context matters for policy effectiveness,” *Perspective*, 2018, doi: 10.19182/agritrop/00051.

[4] T. Kenderdine, “Insurance Plus Futures: Agricultural Commodity Price Reform in China,” *Asia Pacific Policy Stud.*, 2018, doi: 10.1002/app5.226.

[5] W. Thompson *et al.*, “Automatic Responses of Crop Stocks and Policies Buffer Climate Change Effects on Crop Markets and Price Volatility,” *Ecol. Econ.*, 2018, doi: 10.1016/j.ecolecon.2018.04.015.

[6] K. A. Mottaleb, "Perception and adoption of a new agricultural technology: Evidence from a developing country," *Technol. Soc.*, 2018, doi: 10.1016/j.techsoc.2018.07.007.

[7] T. Hasegawa *et al.*, "Risk of increased food insecurity under stringent global climate change mitigation policy," *Nature Climate Change*. 2018. doi: 10.1038/s41558-018-0230-x.

[8] P. Borawski, A. Beldycka-Borawska, and J. W. Dunn, "Price volatility of Polish agricultural commodities in the view of the common agricultural policy," *Agric. Econ. (Czech Republic)*, 2018, doi: 10.17221/138/2016-AGRICECON.

[9] A. Nsabimana and F. Amuakwa-Mensah, "Does mobile phone technology reduce agricultural price distortions? Evidence from cocoa and coffee industries," *Agric. Food Econ.*, 2018, doi: 10.1186/s40100-018-0115-3.

[10] J. J. Cáceres-Hernández and G. Martín-Rodríguez, "Stationarity of seasonal patterns in weekly agricultural prices," *Spanish J. Agric. Res.*, 2018, doi: 10.5424/sjar/2018163-12937.

[11] S. Zakaree S., A. A.A., I. Abdulmumin A., and A. O.A., "Anchor Borrower Programme on Agricultural Commodity Price and Employment Generation in Kebbi State, Nigeria," *Eur. Sci. Journal, ESJ*, 2018, doi: 10.19044/esj.2018.v14n13p240.

CHAPTER 10

REGULATION OF AGRICULTURAL PRICES AND CONSUMER SAFETY

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ABSTRACT:

Consumer safety is the first priority in the agricultural industry, and agricultural pricing control is essential to ensure that customers can get nutritious food at reasonable prices. This abstract gives a general overview of how consumer safety and agricultural price control interact, stressing the difficulties and techniques involved in striking a balance between market pressures and public health considerations. Aiming to protect the interests of both producers and consumers, agricultural price regulation is used to stabilise and control prices in the agricultural market. However, consumer safety cannot be sacrificed in the sake of low food costs. A number of factors, including food quality, cleanliness, labelling, and the management of diseases, pollutants, and pesticides, are involved in ensuring the safety of agricultural goods. A major difficulty in controlling agricultural prices is finding a balance between market forces and consumer protection. While subsidies and price restrictions may help keep prices affordable for consumers, they may unintentionally encourage cost-cutting strategies that compromise food safety requirements. Contrarily, strict rules and quality requirements may raise manufacturing costs, translating into higher consumer pricing. A comprehensive strategy that takes into account every step of the food supply chain, from production to consumption, is necessary to achieve the delicate balance between price control and customer safety. Additionally, raising consumer awareness and education is essential for improving food safety. A culture of food safety is promoted and the demand for safer agricultural goods is stimulated by arming consumers with information on safe food handling techniques, interpreting product labels, and making knowledgeable decisions. To foster trust and assure shared accountability for food safety, producers, merchants, and consumers must communicate openly with one another.

KEYWORDS:

Agricultural, Consumer, Economic, Price, Safety.

INTRODUCTION

This component of pricing strategy is especially challenging since it requires juggling the competing interests of farmers and millions of low-income customers. The problem may also be seen as one of balancing the interests of the metropolis and the hamlet. While we have spoken about the need of increasing the pricing of agricultural production as a means of encouraging agricultural expansion, we should also be aware that agriculture provides consumer products, the majority of which are spent by low-income individuals. Low-income persons are severely impacted if food item costs are allowed to rise. Additionally, an increase in living expenses brought on by rising food costs leads to a demand for higher salaries, which has a negative impact on industrial profitability and capital creation in the industrial sector. This suggests that a strategy of giving agricultural farmers price incentives must be coupled with a policy of limiting price rises for food, particularly for urban consumers. The particular circumstance will determine the best method for achieving this goal [1], [2].

Urban rationing could be the sole option in a time of great shortage to keep pricing in control. 'Stock and release' policies, however, are more likely to be effective in less dire circumstances. According to this strategy, the government either imports grain or buys them from domestic farmers. The purchases may be done at a price equal to or more than the minimum guaranteed pricing. The government sets the maximum retail price before releasing the publicly traded equities for distribution in metropolitan areas.

The cost of getting the grains to the urban distribution centre may be less than the selling price set by the government. These costs might be less than those in the free market. Because of this, the retail price set by the government is often referred to as a "fair" price. All urban consumer groups may get this kind of price alleviation, or only those with low incomes. For determining the "fair price," there are no absolute guidelines that may be established. It is simply a welfare price and ought to represent the policymakers' value assessment. However, the policymakers must work within the limitations of (i) stock availability and (ii) the exchequer's ability to pay the subsidy.

Adjunct Regulations

It is essential to remember that extra actions must be taken in order to achieve the goals of the agricultural pricing strategy. Additionally, the following supplementary policies are especially pertinent in this context: First and foremost, it is crucial to allocate enough resourcesboth in terms of people and materialsto domestic research efforts in order to develop new crop varieties, introduce novel agricultural practises, and introduce new farm equipment that will serve as the foundation for technological changes in agriculture that will increase yields and lower costs. If the incentives offered by remunerative pricing are to finally lead to a large rise in agricultural output, a good research programme is absolutely essential.

Second, the introduction of technical development raises the need for inputs like finance, fertilisers, water, and high yielding varieties of seeds. The farmers must have easy access to these inputs. This suggests that prompt action must be done to manufacture certain essential inputs at home or to import them. It is equally vital to set up a successful organisation for the dissemination of these inputs. Even with high prices, attempts to boost agricultural output may be derailed by supply-side failures. For assuring the best utilisation of new inputs, an effective extension service organisation is also required.

Thirdly, measures must be done to guarantee that the agricultural marketing system runs smoothly. There will be significant disparities between the prices that the government guarantees and what the farmers finally get if the marketing mechanism is ineffective for whatever reason. Due to the high cost of agricultural produce marketing, the latter will be much lower. In this case, it is evident that the pricing policy won't be able to effectively communicate with the farmers. Falcon recommends explicitly the provision of enough storage facilities as another crucial step to ensure the full effectiveness of the pricing strategy. Without a doubt, the aforementioned recommendations are primarily intended to aid in the introduction of a technical change for the improvement of the marketing of agricultural products or for the growth of the agricultural sector. However, they are also as important for the efficient application of the pricing policy.

Indian Agricultural Price Policy

The Commission for Agricultural Costs and Prices (CACP), an agency of the Indian government, publishes pricing plans each year with the aim of achieving the goals of the agricultural price policy. In India, this body was established in 1965 as the Agricultural Prices

body and was reinstituted in 1985 as the CACP. The government's price stabilisation strategy comprised the following:

1. Establishing minimum issue prices, support prices, and procurement prices
2. Buffer stock procedures

Here is a basic explanation of these pricing factors:

Minimum support price (MSP), issue price, and procurement price: Commission for Agricultural Costs and Prices (CACP) announces minimum support price, issue price, and procurement price for a variety of agricultural goods throughout every season. The guaranteed minimum price a farmer will get for selling his produce is known as the minimum support price. In the event that the market price drops below this level, the government purchases the farmers' excess at the announced minimum price. Issue price is the cost at which the government sells consumer items to the general public through fair price stores. Procurement prices are typically higher than the minimum support prices (MSP) declared by the government because farmers would not sell their products to the government if the procurement price were lower than the MSP; instead, they would prefer to sell in the open market where prices are typically higher than MSP. Procurement prices are the prices at which government purchases agricultural products from farmers to maintain its stocks for the Public Distribution System (PDS). For the Rabi Marketing Season (RMS) 2020–21, the minimum support prices (MSPs) for wheat are 1925 and barley are 1525. For Kharif crops in the 2019–20 growing season, the Minimum Support Prices (MSPs) were 1815 for ordinary grade Paddy and 2550 for hybrid Jowar [3], [4].

Buffer stocks:

Purchasing agricultural products from producers, local markets, or imports in order to increase or maintain stockpiles is referred to as buffer stock activities. When production exhibits huge variability, the primary goal is to reduce price swings in the economy. During times of excess production, the government increases stocks, and during periods of insufficient output, it releases stocks to the market.

By making purchases to increase stock prices, the government increases market demand and reduces its deficit. By releasing stocks, the government increases the market's supply and addresses its shortage. As a result, buffer stock operations often help to keep the supply and demand for agricultural goods in balance. Building up agricultural commodity buffer reserves is a crucial part of governmental pricing strategy. The organisation that manages buffer stock operations and state trade is called Food Corporation of India (FCI). Foodgrains are purchased by FCI from farmers and marketplaces and distributed to the targeted groups of the population via fair pricing stores at a subsidised price.

Establishment of food zones: In order to provide some stability to agricultural price fluctuations, food zones were established in March 1964. Eight wheat zones were established throughout the nation. South India saw the formation of rice zones. As a result of this experiment's failure, each state was given its own zone. Foodgrain transportation within a zone was unrestricted, while travel between zones was subject to limitations. The government assumed responsibility for obtaining foodgrains from the surplus states and transferring them through the public distribution system to the deficit states.

Fair pricing stores and Rationing: The PDS in our nation runs via a network of fair pricing stores and ration shops. The goal of fair pricing stores is to provide for the basic necessities of the most disadvantaged members of society.

However, these stores are now satisfying the needs of everyone. The customers may resort to the open market for any additional foodgrain needs they may have. From 2.39 lakh in March 1979 to more than 5.37 lakh in 2020, there were more fair pricing stores overall. Despite its ostensibly extensive coverage, the PDS is really unable to provide all of the foodgrain needs of the society's most needy groups. Additional Measures: The government took a number of additional procedures in addition to the ones already mentioned to guarantee that farmers received favourable yields and that consumers paid fair prices. Among these were the creation of buffer stockpiles, state trading, the nationalisation of the wholesale trade in wheat and rice, wholesaler purchases, the importation of foodgrains, etc.

An analysis of agricultural pricing policy

The primary goal of agricultural pricing policy is to guarantee farmers a fair return and foster a sense of security and trust in them. To a certain degree, India's agricultural pricing strategy has been successful in accomplishing this goal. However, there have been some issues.

Cropping pattern distortions: A point in the "Report on Currency and Finance," 2001-2002, suggests that the government's agricultural price policy has caused cropping pattern distortions. This is because, while the MSP of coarse grains and pulses has been less than the cost of production, while the MSP of rice and wheat (particularly of wheat) has generally been higher. Because of this, more land is being diverted into the production of rice and wheat rather than pulses and coarse cereals.

Inaccurate method of determining MSP: The CACP bases its determination of the amount of MSPs primarily on the cost of production. Ramesh Chand, Director of IABM, made a good point when he said that this is justifiable when there is a shortage and increasing supply is the main goal. However, demand side variables should take precedence when setting the MSP if there are indications of a developing surplus. However, despite the fact that inventories of rice and wheat are building up and placing a significant strain on the government's financial resources, this approach is not being used in such cases.

Negative effect on investment: Increased procurement costs result in increased government spending. The higher expense results in a decrease in fixed investments due to the overall resource restrictions. While only rice and wheat benefit from this increased stock expenditure, the purchase price of these two commodities has consistently increased. The demand for many non-agricultural GDP items is negatively impacted by the drop in fixed investments, which is not sufficiently offset by a rise in agricultural GDP.

Preference for surplus states: Farmers in just a few states benefited from MSPs. In India, wheat is grown in around twenty states while rice is grown in almost all of the states. However, Punjab, Haryana, and Western U.P. account for almost 95% of the wheat purchased by FCI. and five statesPunjab, Andhra Pradesh, Haryana, and U.P.provide between 95 and 90 percent of the world's rice. likewise Tamil Nadu [5], [6].

Contribution to the inflationary trend: CACP has always advocated raising procurement costs. In reality, raising minimum support prices (MSP) and procurement costs has almost become a yearly routine. The strong farmers' lobby has recently increased its influence in political decision-making processes and has been able to compel increases in procurement prices that are far greater than those advised by CACP.

Favouritism of big farmers: Over the years, rising MPS and procurement prices have encouraged producers to expand their production. However, the big farmers who were able to adopt the new agricultural approach and quickly get loans and other inputs have grabbed the

majority of the gains. According to estimates, whether it is for wheat or rice, major farmers in each state obtain an average income that is ten or more times more than that of marginal farmers.

PDS flaws: The following are the primary problems with this system: It is mostly limited to wheat and rice; with lesser grainsthe staple diet of the poorgenerally being disregarded. The PDS was mostly restricted to metropolitan regions for a lengthy period of preparation. PDS supplies are insufficient in areas where a larger percentage of people live in poverty. PDS has proven costly so far since no targeted attempts were done.

Impact on rural poor: The sufferings of small farmers and landless labourers, who make up a large section of the rural population, have significantly grown as a result of rises in food grain costs (resulting from increases in procurement prices). These segments virtually ever benefit from high prices since they don't provide much surplus to the market and rely heavily on it to satisfy their consumption needs.

Fiscal square and price incentives: According to J. Mohan Rao and Servaas Storm, governmental investment related to agricultural production actually decreases as a result of a resulting budgetary pinch when agricultural prices increase as a result of price incentive.

Finally, it should be noted that publicising procurement prices has replaced other important issues like the decline in agricultural capital formation, the need for developing irrigation facilities, the requirement to change land holding patterns, etc. as one of the main intervention tools in agriculture. With the introduction of the three agricultural bills in 2020, MSP has become a heated issue of discussion once again. Critics and farmers are of the opinion that the freedom of the market may prove to be problematic for farmers in the APMC mandis because, in their opinion, doing business in the private market would not even allow them the meagre MSP they are given today due to fierce competition and exploitative practises of the private industry [7], [8].

DISCUSSION

Agricultural Stabilization Policy's Instruments

The following categories may be used to roughly group the main stabilisation programme tools:

Price assistance Through a system called price support, the government assures farmers of a certain minimum price. Any of the following forms might be used: Parity pricing: These are fair prices that farmers obtain for the goods they sell in comparison to the prices they pay for non-farm items. Legislation is passed by the government to set parity pricing. The government provides loans to farmers throughout the harvest season as part of the storage and lending scheme. The loan amount is a multiple of the amount of support price in storage. Minimum price purchases and sales by the government: Using this strategy, the government sets a certain minimum price for an agricultural product. The minimal quantity that the farmer desires to sell is purchased by the government. The government keeps its purchases as a reserve. The government releases the stocks in order to fill any supply gaps in the market and to counter any price spikes.

Supply management: Any government initiative with the aim of reducing agricultural production is referred to as supply management. The government often uses a variety of strategies to cut down on the supply of items with price supports. The typical techniques are as follows: By setting marketing quotas and defining the quantities that each farmer may sell at support prices. By limiting the area on which a certain crop is to be grown.

Target price: A target price is a price that the government guarantees to farmers. The government compensates the farmers the difference when the market price drops below the desired price. Subsidy is another name for the difference that the government pays. Consumers get a better bargain with this strategy.

Because of seasonal output changes, low farm productivity, and food grain inventories, agricultural pricing policy is crucial for farmers, families, and the government. The prices of agricultural product are significantly impacted by inelastic demand, inelastic supply, and unforeseen swings in supply. Agricultural price fluctuations have an impact on the cost of living, the cost of industrial production, factor prices, and food inflation. The price structure of agricultural goods, as well as their production and consumption levels, must all be stabilised via the use of an appropriate pricing strategy. A negative policy's major goal is to maintain relatively low food and raw material costs (in comparison to the pricing of industrial goods) in order to promote the expansion of the industrial and tertiary sectors by increasing their earnings and savings. The understanding that unless the agricultural sector achieves a certain minimum rate of growth, it would not be feasible to achieve the broader objectives of economic growth and development, leads to the conclusion that a positive pricing strategy is required. Currently, prices are typically set in accordance with the cost of production principle, the ruling prices principle, and the parity prices principle. The cost of recommended farm inputs and their average yields are considered to estimate the cost per unit of output under these three pricing tenets: cost of production; parity prices; and the price that buys the seller of a unit of an article as much of the other commodity as possible [9], [10].

The total cost of agricultural production is influenced by the price of all agricultural inputs. The government began implementing input subsidies so that farmers could take advantage of the decreased input costs and pass along the savings from these lowered costs to consumers, stabilising total food prices and containing food inflation. In order to preserve a balance between the interests of farmers and consumers, a strategy of offering price incentives to agricultural producers must be complemented with a policy of limiting price rises for consumers in general and urban consumers in particular. Ancillary policies include funding for domestic research, efficient agriculture market operation, and simple access to new technologies. The government's price stabilisation programme involves setting minimum support prices, issue prices, and procurement prices, operating buffer stocks, setting up food zones, rationing, etc. Cropping pattern distortions, incorrect MSP calculation criteria, negative effects on investment, bias in favour of surplus states, contribution to the inflationary trend, bias in favour of large farmers, and flaws in PDS are just a few of the problems with our country's agricultural price policy.

CONCLUSION

Governments and regulatory agencies use a variety of techniques to solve this situation. Among these include putting in place strict food safety laws, keeping an eye on and enforcing adherence to safety requirements, doing routine inspections and audits, and guaranteeing traceability and transparency across the supply chain. To create effective regulatory frameworks and promote a culture of food safety, government authorities, farmers, industry players, and consumer organisations must work together. Technology and data system advancements have also improved our capacity to track and monitor agricultural goods, identify pollutants, and act quickly in the event of a safety issue. Tools for risk assessment, traceability, and rapid warning systems provide helpful methods for spotting and reducing possible dangers. In conclusion, problems in the agricultural sector are interwoven with those of consumer safety and agricultural price control. It takes a comprehensive and cooperative strategy that includes regulatory measures, technology improvements, consumer education,

and stakeholder involvement to strike a balance between market pressures and public health concerns. Policymakers can support a strong and sustainable agricultural system that provides consumers with safe, cheap, and nutrient-rich food by prioritising consumer safety and putting in place efficient regulatory frameworks.

REFERENCES:

[1] Y. Zhang and S. Na, "A novel agricultural commodity price forecasting model based on fuzzy information granulation and MEA-SVM model," *Math. Probl. Eng.*, 2018, doi: 10.1155/2018/2540681.

[2] J. Bushell and K. Novan, "The impacts of renewable energy on wholesale power markets," *NBER Work. Pap. Ser.*, 2018.

[3] K. R. Szulczyk and M. Atiqur Rahman Khan, "The potential and environmental ramifications of palm biodiesel: Evidence from Malaysia," *J. Clean. Prod.*, 2018, doi: 10.1016/j.jclepro.2018.08.241.

[4] K. Al-Kodmany, "The vertical farm: A review of developments and implications for the vertical city," *Buildings*. 2018. doi: 10.3390/buildings8020024.

[5] L. Novickytė, "Income Risk Management in Agriculture using Financial Support," *Eur. J. Sustain. Dev.*, 2018, doi: 10.14207/ejsd.2018.v7n4p191.

[6] Yossyafra, M. Noer, R. Hakimi, and M. Reza, "A challenge in providing housing land and sustainable agricultural land; An effort to meet the backlog of housing and food security in West Sumatra," *Int. J. Adv. Sci. Eng. Inf. Technol.*, 2018, doi: 10.18517/ijaseit.8.6.7262.

[7] K. Al-kodmany, "The Vertical Farm : A Review of Developments and," *MDPI Build.*, 2018.

[8] P. J. Taylor, I. Grass, A. J. Alberts, E. Joubert, and T. Tscharntke, "Economic value of bat predation services – A review and new estimates from macadamia orchards," *Ecosyst. Serv.*, 2018, doi: 10.1016/j.ecoser.2017.11.015.

[9] A. Garg and J. Kaur, "Organised retailing verses traditional retailing of vegetables," *Int. J. Manag. IT Eng.*, 2018.

[10] R. Suleiman, A. M. Mahmud, Y. U. Oladimeji, T. O. Olanrewaju, and O. A. Ojeleye, "Proceedings of the Annual Conference of the Agricultural Extension Society of Nigeria," *J. Agric. Ext.*, 2018, doi: 10.4314/JAE.V22I1.19S.

CHAPTER 11

AGRICULTURAL TAXATION: SCOPE AND IMPORTANCE IN THE AGRICULTURAL SECTOR

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ABSTRACT:

Agriculture-related taxation, which includes the assessment and collection of taxes on agricultural-related activities and assets, is an important component of fiscal policy. An overview of the extent and significance of agricultural taxes is given in this abstract, with particular emphasis on how it helps with revenue generation, fair resource distribution, and the development of sustainable agriculture. The range of agricultural taxation includes many types of taxes levied on agricultural operations, such as land taxes, property taxes, income taxes, sales taxes, and import/export levies on agricultural items. These taxes add to the government's coffers, which are necessary for paying for social assistance, infrastructure improvements, and public goods. Agriculture is a key contributor to overall economic growth and is ensured to bear its fair part of the cost of supporting public services via agricultural taxes. A mechanism for fostering fair resource distribution, agricultural taxes also serve this purpose. Governments may promote more effective land use, deter land speculation, and promote the consolidation of dispersed land holdings by levying taxes on agricultural land and property. Enhancing productivity and advancing agricultural modernisation are all aided by this. Income taxes on agricultural profits also guarantee that farmers pay appropriately to public revenue depending on their income levels, fostering justice and equality in the tax system. In addition to generating income and allocating resources, agricultural taxation is significant in other ways as well. In addition, it may aid in environmental protection and sustainable agricultural growth.

KEYWORDS:

Agriculture, Policy, Property, Taxation, Tax Act.

INTRODUCTION

Due to the distinctive socioeconomic makeup of the Indian people, taxing agricultural revenue has generated a great deal of discussion in India. Since the macroeconomic policies being pursued in our nation are guided by both efficiency and equityconsiderations in order to fulfil the various needs and aspirations of different sections of the Indian society, this topic has attracted the special attention of academics, policy-makers, and social activists. For a variety of reasons, the majority of tax professionals have advocated in favour of taxing agricultural revenue. Tax evasion and avoidance issues have been exacerbated by India's untaxed agriculture sector. In reality, severe disparities in the tax system have come to light as a result of mounting evidence of the rural farmers' expanding wealth, who have benefited most from the Central Income Tax's exemption from paying taxes on agricultural income. Organic farming, agroforestry, and sustainable land management are a few examples of practises that may be encouraged using tax incentives. In contrast, taxes may be levied on actions that harm the environment, such excessive pesticide usage or land degradation, to discourage unsustainable behaviour and encourage environmental stewardship in the agriculture industry.

Although there are laws governing agricultural income taxes in several States, how they are actually applied varies, depending on whether they are assessed at all or just on revenue from plantations. As a result, the contribution of state revenues to the agricultural sector has been very little. Due to these factors, both economists and government-appointed committees have consistently called for the imposition of taxes on agricultural revenue in India. Contrary to the aforementioned reasons, there have been several others who have opposed taxing the agriculture industry on the grounds that doing so would be exceedingly expensive and would even cost more than the revenues that would likely be generated by it. Since around two thirds of the population in rural regions depends on agriculture as their primary source of income, it must be admitted that the major obstacle to taxing agricultural revenue has been political in character. Since the majority of them have been living in poverty, taxing this industry would give the impression that the government is enacting anti-poor policies [1], [2].

Since independence, the agricultural industry has received assistance in the form of minimum support prices paid to farmers for certain crops, subsidies for the purchase of fertiliser and power used for irrigation, among other measures. In parallel, the public distribution system in India has maintained to provide people with inexpensive access to food grains. In reality, the public distribution system has integrated into the government's strategy for managing the country's food economy. Governmental policy actions have been influenced by the goals of establishing self-sufficiency in food production and guaranteeing that every person has access to an appropriate amount of food grains for subsistence and nourishment.

The current research makes an effort to define agricultural income and evaluates the literature that is currently available on the taxation of agricultural revenue in India in light of the aforementioned facts. This essay also describes the history of agricultural income tax collection at the state level and the way agricultural revenue is taxed in accordance with the Income-Tax Act of 1961. The possibility and justification of taxing agricultural revenue at the federal level with guidelines for consistent application throughout various States and Union Territories have since been examined. The taxability of agricultural revenue at the Central level has ultimately been evaluated, and relevant recommendations have been made in respect to such examination. Aspects of social and economic difficulties in rural regions may also be addressed via agricultural taxes. It may be used as a tool to increase economic equality, redistribute wealth, and raise living conditions in rural areas. To assist small-scale farmers, encourage rural investment, and promote rural development, for instance, tax exemptions or incentives may be put in place.

Defined Agricultural Income

'Agricultural income' is defined as agricultural income for the purposes of the Indian Income Tax Act. As a result, when discussing the imposition of tax on such income, the phrase "agricultural income" as defined by the Income-Tax Act of 1961 is pertinent. The following are listed under the definition of "agricultural income" in Section 2 of the Income-Tax Act, 1961:

1. Any rent or revenue derived from land located in India and used for agricultural purposes, Section 2;

2. Any income derived from such land by agricultural operations, including processing the agricultural produce, raised or received as rent-in-kind so as to render it fit for the market or sale of such produce, Section 2.

As a result, it should be underlined that the property in issue must be utilised for agricultural purposes in order for a certain kind of revenue to be treated as agricultural income. The

Income Tax Act does not define the words "agriculture" or "agricultural purposes," hence the meaning of these terms may be deduced from the outcomes of court decisions. CIT v. RajaVinay Kumar Sahas 32 ITR 466, a well-known case, the definition of "agriculture" and "agricultural operations" may be determined using some of the guidelines Justice Bhagwati established.Justice Bhagwati made a distinction between "basic operations" and "subsequent operations" related to the process of agriculture in order to explain the meaning of these two concepts. Basic operations, as defined by Justice Bhagwati, are those that call for the application of human skill and labour to the land itself in order to make it suitable for agriculture. Land tilling, seed sowing, planting, and other related land activities are some examples of fundamental operations. After the produce sprouts from the ground, additional tasks must be completed in addition to the basic ones. These tasks include weeding, digging the soil around the growth, removing undesirable undergrowth, and any other activities that promote growth and protect it from insects and other pests as well as degradation from outside tending, prunning, cutting, harvesting, and making the produce marketable. It should be added that the succeeding activities may only be categorised as agricultural operations if they are carried out concurrently with or after the fundamental operations.It's also important to note that agriculture encompasses all goods produced via the execution of both fundamental and auxiliary activities. Agriculture does not simply refer to the production of food and grains for consumption by humans and other animals. According to Singhania , "These products, for instance, may be grain, vegetable, or fruit products, including plantations and groves, grass or pasture for consumption by animals, or luxury goods like betel, coffee, tea, spices, tobacco, etc., or commercial crops like cotton, flax, jute, hemp, indigo, etc [3], [4].

DISCUSSION

Agriculture taxes is a crucial tool for developing policy. The most significant industry is agriculture in many developing nations, particularly India. It must be crucial to the development process. Agriculture serves as the basic base for building a superstructure for development. The sector's enormous financial assistance to the government is a result of its vast size. Since the beginning of the planning process in the nation, the issue of utilising agricultural surpluses for the country's economic growth via increased taxes of the agricultural sector has been a topic of significant debate. Several topics and controversy were brought up. The purpose of agricultural taxes is to distribute, allot, and mobilise resources. Additionally, it is believed that mobilisation is necessary for an efficient development strategy, particularly when the volume, makeup, and disposition of agriculture would be positively impacted by the manner that agriculture is taxed. However, the low agricultural tax rates, which are characterised by income inelasticities, and the very lengthy intervals between base assessments have failed to mobilise some of the enhanced productivity and money for the nation's development initiatives. Due to this, a small percentage of wealthy people now control a disproportionate amount of money and income, and they actively oppose any reasonable reforms.

In a similar vein, taxing the primary sector in order to further industrialization was the main goal of collectivising agriculture in the Union of Soviet Socialist Republics. Heavier taxes on the agricultural population would encourage the farmers to produce more goods for the market since in 1950, the land tax in China, which was collected in kind, made up nearly 40% of all state revenues. There would be a number of unintended consequences, such as the monetization of the agricultural sector, which would enhance economic attitudes and broaden the revenue base for indirect taxes. Agriculture would become more susceptible to price changes and other market stimuli as a result of commercialization. A higher tax rate on

agriculture will reduce the amount of foreign currency required to buy machinery and other capital goods for emerging sectors, hence reducing inflationary pressures. A higher labour force would be available for non-farm occupations as a result of agricultural taxes since it would be more difficult for jobless and inefficient labourers to find work.

According to Section 10 of the Income Tax Act of 1961, a taxpayer's agricultural income received in India is exempt. Given that India has an agricultural economy, persons who depend on agriculture for a living are given a number of incentives. You will learn about the size and significance of agriculture in India in this subject. After completing this unit, you will be able to: Define agricultural income; Examine agricultural income taxes; and Assess the Importance of Agricultural Income.

The Amount and Importance of Taxation in India's Agriculture

The majority of people in India work in agriculture as their main employment. For the majority of families in the nation, this is their only source of income. People rely on agriculture for their daily needs, including food and other necessities. Additionally, the government has been developing several programmes to support and stimulate the development of the agricultural industry. Tax exemption in this industry is a significant move to promote agriculture. The idea of income tax in the agriculture industry may be broken down into two pieces to better understand:

The definition of agriculture income and its taxation

Three categories are used to define farm income under Section 2 of the Income Tax Act of 1961. Income from rent and sales of agricultural land in India: Subject to the following conditions, the assessee is not required to pay tax on the rent or income received from such agricultural land: a. The land must either be valued as land revenue in India or be subject to a local rate that is assessed and paid by government employees. The land should not be located within the jurisdiction of a municipality, or a cantonment board, and should not be assessed or subject to local rate in cases where such land revenue is not. Any income resulting from the transfer of such land shall not be included in the revenue. Any money generated by agricultural activities on such property, including the processing of agricultural goods cultivated or received as rent in kind, as well as any usual cultivation or rent-in-kind recipient practises to prepare the produce for sale. In addition, it's crucial that there be a clear connection between the agricultural land and any cash received in the form of rent or revenue [5], [6].

Any money generated by agricultural activities on this property, including the sale of agricultural products that have been grown or received as rent in kind, as well as any usual cultivation or rent-in-kind receiving practises that prepare the produce for the market. Any income from any buildings the assessee owns and occupies, from collecting rent or other income from the land, or from engaging in agricultural activities: Building must be on or close to the property. It must be utilised by the assessee in connection with the land as a home, a storehouse, or an outbuilding.Along with the aforementioned, money from saplings or seedlings raised in nurseries is also regarded as agricultural income. Certain considerations must be made in order to classify an income as agricultural income:

Land use for agricultural purposes

Agricultural operations are actions taken to cause a crop to be produced on a piece of land. The definition of agricultural income comprises revenue from agricultural operations, including activities done to prepare the product for market sale. Only if agricultural activities

are carried out on the land are both the rent or revenue from the agricultural land and the income received by the cultivator or receiver via the sale of goods tax-exempt.

Land cultivation is essential: Land must have undergone some level of cultivation in order to have been utilised for agriculture. All land product, including grains, fruits, tea, coffee, spices, commercial crops, plantations, groves, and grasslands, falls within the scope of agriculture. However, the raising of animals for food, aquaculture, dairy production, and poultry production cannot be considered agricultural activities.

Land ownership is not necessary

The assessee must have a stake in the property in order to receive tax-free income in the event of rent or revenue. The cultivator does not necessarily need to be the landowner, however, when it comes to agricultural activities. He could be an owner-occupier or a sub-tenant. In other words, everyone who cultivates land is an agriculturalist and is free from paying taxes. To transform agricultural products into a commodity that can be sold, additional procedures could sometimes be required. When this occurs, the sales revenue is regarded as agricultural income since the producer's main goal is to sell his goods [7], [8].

Agriculture Income Taxation

Agriculture income is free from income tax, as was previously said. The Income-TaxAct has established a means to indirectly tax such income, nonetheless. This technique or idea may be referred to as the partial integration of agricultural and non-agricultural revenue. It intends to impose higher tax rates on non-agricultural income. When the requirements listed below are satisfied, this approach is appropriate: Individuals, HUFs, AOPs, BOIs, and artificial juridical entities must all compulsorily use this approach to determine their taxable income. Therefore, this strategy is not applicable to companies, firms/LLPs, cooperative societies, or local governments.

During the year, net agricultural revenue exceeds $5,000; and Non-agricultural income is: More than $250,000 for those under 60 and for everyone else who qualifies. More than 3,00,000 people between the ages of 60 and 80, and more than 5,00,000 people above the age of 80. Simply put, the non-agricultural income must be higher than the maximum amount exempts from taxation.

The Taxation of Agriculture Income Debate

Section 10 of the Income Tax Act exempts farm income in India. However, a lot of individuals think taxes should be levied on agricultural income since it makes a significant social contribution. These individuals also cite the examples of regions like Maharashtra and Punjab where sugarcane, a crop with a large yield, is the primary agricultural crop but where no taxes are imposed on the income generated by it. However, the central government hasn't decided whether to make such a modification to the income tax legislation and isn't even inclined to in the near future.

The bulk of India's people works in agriculture as their main employment. For the majority of families in the nation, this is their only source of income. Any money generated by agricultural activities on such property, including the sale of agricultural products that have been grown or received as rent-in-kind, as well as any processing that would typically be done to make such produce marketable.All land product, including grains, fruits, tea, coffee, spices, commercial crops, plantations, groves, and grasslands, falls within the scope of agriculture. However, the raising of animals for food, aquaculture, dairy production, and poultry production cannot be considered agricultural activities. Income from agriculture is not

subject to income tax. The Income-Tax Act has established a way to, nevertheless, indirectly tax such income. This approach or idea is also referred to as "partially integrating" agricultural and non-agricultural revenue. It intends to impose higher tax rates on non-agricultural income. Section 10 of the Income Tax Act exempts farm income in India. However, a lot of individuals think taxes should be levied on agricultural income since it makes a significant social contribution [9], [10].

CONCLUSION

To be effective, agricultural taxation systems must take into account the unique traits and difficulties faced by the agricultural industry. To prevent placing an undue burden on farmers or damaging agricultural competitiveness, considerations such farm size, kind of agriculture, access to markets, and regional differences should be made. In conclusion, agricultural taxes are essential for producing government income, encouraging fair resource distribution, and fostering sustainable agricultural growth. In addition to promoting effective land use, environmental care, and rural development, it guarantees that the agricultural industry pays its due share of taxes. In order to maximise the advantages of agricultural taxes, policymakers should use a fair and context-specific approach that takes into account the special traits and requirements of the agricultural sector, encouraging a tax system that supports the agriculture industry's long-term development and sustainability.

REFERENCES:

[1] H. Shi and B. Ye, “China’s Abolition of the Agricultural Tax, Local Governments’ Responses and Economic Growth,” *Fisc. Stud.*, 2018, doi: 10.1111/1475-5890.12166.

[2] K. Gruziel and M. Raczkowska, “The Taxation of Agriculture in the European Union Countries,” *Zesz. Nauk. SGGW w Warszawie - Probl. Rol. Światowego*, 2018, doi: 10.22630/prs.2018.18.4.107.

[3] N. Novak, S. Koval, and E. Krukovskaya, “Features of agricultural enterprises taxation system in Ukraine and directions for its improvement with consideration of foreign experience,” *Univ. Econ. Bull.*, 2018, doi: 10.31470/2306-546x-2018-39-29-37.

[4] H. Yagi and G. Garrod, “The future of agriculture in the shrinking suburbs: The impact of real estate income and housing costs,” *Land use policy*, 2018, doi: 10.1016/j.landusepol.2018.03.013.

[5] K. Kuralbayeva, “Unemployment, rural–urban migration and environmental regulation,” *Rev. Dev. Econ.*, 2018, doi: 10.1111/rode.12360.

[6] L. Syniavska, S. Onysko, and G. Markiv, “Formation and creation of direct taxation of agricultural enterprises,” *Agrar. Econ.*, 2018, doi: 10.31734/agrarecon2018.01.037.

[7] M. Reddé, “The impact of the German frontier on the economic development of the countryside of Roman Gaul,” *Journal of Roman Archaeology*. 2018. doi: 10.1017/S1047759418001265.

[8] T. Espolov, A. Espolov, Z. Suleimenov, I. Seytasanov, G. Tazhigulova, and R. Kultemirov, “Problems of rational land use in agriculture,” *EurAsian J. Biosci.*, 2018.

[9] E. Commission, “Energy and the Green Deal,” *European Commission*, 2018.

[10] A. Kuznetsova, Z. Zagirova, and Z. Omarhanova, “Problems of Poverty and

Motivation of Workers to Labour in the Field of Agriculture as Effects of Stagnant Economy," in *Proceedings of the international scientific conference Hradec Economic Days 2018 part I.*, 2018. doi: 10.36689/uhk/hed/2018-01-051.

CHAPTER 12

GREEN REVOLUTION AND THE NEW AGRICULTURAL STRATEGY: REDEFINING GLOBAL FOOD PRODUCTION

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ABSTRACT:

Global food production underwent a considerable change as a result of the introduction of the Green Revolution and the adoption of a new agricultural strategy in the middle of the 20th century. With a focus on their effects, difficulties, and consequences for sustainable agriculture, this summary gives a general review of the Green Revolution and the new agricultural strategy. The goal of the new agricultural policy, which was driven by the Green Revolution, was to boost agricultural production by using cutting-edge techniques, better seeds, artificial fertilisers, and agrochemicals. In order to address concerns about food security and reduce poverty, this policy was focused on boosting agricultural productivity, especially in emerging nations. On the world's food production, the Green Revolution had a significant influence. In especially for key crops like rice, wheat, and maize, it resulted in significant improvements in crop yields. Food availability and agricultural output have both increased as a result of the introduction of high-yielding cultivars and the use of fertilisers and pesticides. In order to improve agricultural methods and enable greater crop output, the Green Revolution also pushed the extension of irrigation systems and the creation of rural infrastructure.

KEYWORDS:

Agriculture, Chemical, Productivity, Seeds, Soil.

INTRODUCTION

Growing emphasis has been placed in recent years on sustainable agriculture and the need for a "second Green Revolution." By incorporating agroecology, ecological principles, and sustainable farming techniques into agricultural systems, this new agricultural approach aims to solve the limits of the Green Revolution. Promoting biodiversity, soil health, water conservation, and climatic resilience are the main objectives, together with guaranteeing food security and economic viability. The emphasis of the new agricultural policy is on sustainable intensification, which entails maximising resource usage effectiveness, minimising the environmental impact of agriculture, and assisting small-scale farmers. It places a focus on the use of integrated pest control, precision agriculture, organic farming, and conservation agricultural technology. The importance of smallholders and the need to improve their access to resources, financing, markets, and expertise are also acknowledged. Changing farmer practises, filling knowledge gaps, and balancing economic, social, and environmental goals are only a few of the difficulties associated with the shift to a sustainable agriculture model. The adoption of sustainable agricultural practises and a smooth transition depend heavily on policy assistance, capacity building, research and development, and public-private partnerships.

In the 1960s, Indian agriculture saw a phenomenal rise in output, particularly for the crops of rice and wheat. It was mostly accomplished by an improvement in these crops' production per hectare. Because of how quickly and dramatically the output of these crops increased, some economists called the new development the "Green Revolution." The whole development of

the economy is dependent on the growth of the agricultural sector. A strong economic development driver is aprogressive agriculture. By supplying the required capital, manpower, raw materials, wage products, and foreign currency, it aids in starting and maintaining the growth of other sectors of the economy. Given this, it was not at all unexpected that the government placed a strong focus on the growth of agriculture from the very start of India's planning period [1], [2].

In light of this, a new agricultural policy that intended to dramatically expand foodgrain output was established between 1966 and 1967. The introduction of intensive cultivation using new high-yielding seed varieties supported by more and better plant nutrients, effective plant protection, and adequate water supply marked the fundamental departure in the new strategy for agricultural development in terms of I.A.D.P. and I.A.A.P. A three-dimensional approach to agricultural growth was implemented in the new agricultural strategy, which included a high-yielding variety programme, mechanisation adoption, modern chemical technology adoption, and foodgrains price support policy. The food processing sectors in the Indian economy are also discussed in this unit's last part.You will be able to: enumerate the key components of the New Agricultural Strategy; analyse the significance of High Yielding Variety Seeds (HYV Seeds); describe the effects of the Green Revolution on Indian agriculture; examine the definition of mechanisation in agriculture; list the issues associated with farm mechanisation; identify the advantages of irrigation; and assess the size of India's food processing industries after completing this unit.

Green Revolution and New Agricultural Scheme

Indian agriculture was archaic, stale, and all but dead on the eve of freedom. The zamindars, who owned the property, were more akin to absentee landlords who wanted to take as much money as possible from the people who worked the land by means of land income. The cultivators had no incentive to make investments, and productivity was poor. The country's division had also done great harm since Pakistan received the majority of the agricultural lands. Following independence, policymakers and planners came to see that agriculture required a significant reform.

The Five-Year Plans thus gave agriculture a significant emphasis. In actuality, the First Five Year strategy was mostly a strategy for agriculture. However, there wasn't much progress achieved in the early planning years. Foodgrain production self-sufficiency remained a distant goal, and we were forced to rely on imports to meet our need. India made a technical breakthrough in agriculture in the 1960s, which allowed us to create the New Agricultural Strategy. High Yielding Variety (HYV) seeds were essential to the new tactic. It led to the "Green Revolution," or the enormous increase in foodgrain production. India thus became a net exporter of food grains as a result of the Green Revolution. The current part makes an effort to provide a thorough analysis of the New Agricultural Strategy with a specific emphasis on Indian agriculture during the Green Revolution.

New Agricultural Policy

The government of India established the New Agricultural Strategy, a new strategy for the growth of agriculture, on the advice of the Ford Foundation Team, who visited India in 1959. The Green Revolution, also known as the New Agricultural Strategy, was the name given to the use of this Modern Agricultural Technology throughout the 1960s to increase agricultural production. Through greater levels of productivity, it aimed to improve agricultural output. It required the use of HYV seeds, chemical fertilisers, irrigation, and plant protection techniques. It also required reforms to agricultural institutions and an improved marketing structure [3], [4]. The following are the main components of the new agriculture strategy:

1. Input bundle: The foundational element of the new agricultural approach was a bundle of enhanced inputs. It included HYV seeds as well as synthetic fertilisers, pesticides, and insecticides. It was anticipated that adding new inputs would significantly increase production.
2. Modern Know-how: Another crucial component of the new agricultural strategy has come to be recognised as the contemporary farming practises (or farm management techniques). Conventional wisdom, which was based on imprecise approximations, was to be replaced by modern knowledge.
3. Institutional improvements: The new policy also placed a strong emphasis on institutional improvements. It emphasised the elimination of middlemen, giving landowners ownership rights, expanding holding sizes, and promoting the idea of cooperative farming.
4. many Cropping: The new approach emphasised the necessity for many crops rather than just one. Even if the net area stays the same, it would increase the gross area under cultivation.
5. Coordinated plan: Community development initiatives were to be implemented as part of a coordinated plan for agricultural development. Through the involvement of all segments of rural community, these activities emphasised overall rural development.
6. Agricultural Marketing: The New Agricultural Policy addressed both marketing and production. It emphasised the need of the farmer receiving a fair price for his harvest. The Agricultural Price Commission was to be established in this situation.

A thorough blueprint for agricultural growth was created under the New Agricultural Policy, to put it briefly. It placed equal emphasis on removing existing barriers to agricultural growth as it did on introducing new production methods and input packages. Additionally, it was hoped to expand agriculture as a component of an integrated rural development project, which envisioned the complete development of rural regions at the village or district level.

DISCUSSION

Program for Intensified Agriculture in Districts

The Ford Foundation Team's proposals led to the 1960–1961 establishment of the Intensive Agricultural District Programme. In accordance with this policy, development plans for agriculture were to be launched in a few particular areas as opposed to the whole rural sector. The main goal of the initiative was to quicken the speed of development in a few chosen regions by using inputs, labour, and financial resources wisely. It did not, however, mean that other sectors of the rural economy, outside from the chosen areas, should stop undergoing growth. The project just suggested that a concentrated development effort be undertaken in a few chosen districts in order to make some outstanding breakthrough that would serve as an example of growth and development in rural regions. Because of this, the project is known as the "Intensive Agricultural District Programme." Because it comprised a "package" of better cultivation techniques for attaining a breakthrough in agricultural productivity and output, the initiative was also known as the "Package Programme."

Goals of the IADP

Increased Agricultural Productivity: The major goal of this plan was to boost agricultural output by using contemporary farming methods.

Change in Farmers' Attitude: The program's main goal was to influence farmers' attitudes in such a way that they would be motivated to apply scientific agriculture practises.

Improvement of agricultural Practises: The plan placed a strong emphasis on the need to establish better agricultural practises via research and analysis.

Strong Administrative System: The initiative aimed to create a strong administrative structure at the district level so that growth plans and programmes could be efficiently implemented and monitored. The ultimate goal of this plan was to boost farm revenues so that people would see farming as a business endeavour rather than just a means of survival [5], [6].

Criteria for IADP District Selection

The following factors were taken into consideration while choosing districts for the IADP:

1. The district needs to have irrigation facilities.
2. The area shouldn't be particularly susceptible to natural disasters like floods or droughts.
3. The district in question must have adequately established panchayats, cooperative societies, and other rural development organisations.
4. The district needs to have sufficient room for expansion and improvement.

The agricultural productivity was attempted to boost in these seventeen areas. Improvements in farming techniques, irrigation, chemical fertilisers, insecticides, and pesticides were used sparingly in these seventeen areas in an attempt to boost agricultural productivity.

Progress made on the Program

Coverage: In accordance with the project, scientific farming techniques were used to cultivate 32 lakh hectares of land spread over 29,286 villages in seventeen districts. The plan included 13.5 lakh farm households.

Package Programme: In the chosen areas, irrigation water supplies were guaranteed, chemical fertilisers, pesticides, and HYV seeds were utilised sparingly.

Farm Planning: As part of the scheme, detailed plans for around fifteen lakh farms were created. The goal of these initiatives was to educate farmers about the usage and advantages of HYV seeds, chemical fertilisers, and other technology-package components.

Field Demonstration

Farmers were taught about new technologies via model farms. The new technology piqued the farmers' curiosity via demonstrations on model farms.

Productivity Growth

Prior to the Programme, agricultural productivity grew at a rate of 1.5% per year between 1950–1951 and 1964–1965. After the project was well-established, the growth rate of productivity (between the years 1964–1965 to 1971–1972) was estimated to be 2.4% annually. The wheat crop had the greatest success under the New Agricultural Policy.

Wheat production per acre increased dramatically from 982 kg in 1964–1965 to 2,707 kg in 2003–2004. Productivity per acre increased by 100% in the chosen areas of Punjab, Haryana, and Western U.P., where this scheme was initiated. In addition, wheat output climbed from representing barely 16 percent of all foodgrain production in 1964–1965 to 28 percent in 1971–1972 production. The overall and per acre output of rice and coarse grains showed no discernible increase. Rice production per hectare was 1,017 kg in 1964–1965 and 1,145 kg in 1971–1972. However, the yield of rice per acre increased by 100% in certain states where the availability of irrigation water remained consistent.

The Farmer's Perspective Has Changed

The New Agricultural Policy has significantly altered how farmers see their future. There was not a single instance of resistance to new technology in any of the IADP areas. Rich farmers began constructing tube wells for a consistent supply of irrigation water in parallel with the use of HYV seeds and other inputs as a reaction to the new farming approach. It was discovered that even struggling farmers were eager to accept the new technology [5], [7].

Programme for Intensive Agricultural Areas

The government chose to implement an intense agricultural plan in all of the regions with potential for scientific agriculture based on the lessons learned from the intense Agricultural District plan and the midterm review of the Third Plan. The Agricultural Production Board recommended that IAAP be implemented throughout 20 to 30% of the cultivable land. Intensive Agricultural Area Programme was introduced in 1964–1965 in 117 districts in various states of the nation in accordance with the Board's recommendations. The program's main goal was to increase agricultural output by cultivating several of the nation's major crops intensively.

New Agricultural Strategy's input package

The new agriculture strategy's input package includes the following: High levels of plant protection, high yielding variety seeds, mechanised farming methods, reliable irrigation, soil development, and enhanced farm management methods are some of the other factors.

Use of Manures Prudently

Land becomes more fertile when manures and fertilisers are used wisely. The erosion of the soil's nutritional constituents, such as nitrogen, phosphorus, and potash, is brought on by continuous cultivation. Through the use of fertilisers (or manures), they are restored. In India, there are two types of manures that are often used: chemical fertilisers and native manures. Details are as follows:

Indigenous Manures

Since the dawn of time, Indian farmers have used indigenous manures like cow dung (gobar), compost, decomposed leaves, etc. The ground is often kept fallow to replenish its nutritious ingredients. Crop rotation is also used to preserve soil fertility more effectively. To revive, repair, and increase soil fertility to levels seen in western nations, these practises are no longer adequate. It is necessary to employ chemical fertilisers if a significant increase in production is to be achieved.

Chemical fertilisers, such as nitrogen, urea, and phosphate. Chemical fertilisers must be used for the following reasons: they have been shown to significantly increase agricultural production. The use of chemical fertilisers is compatible with reliable sources of crop irrigation, they make it easier to switch from a monocropping system to a multi-cropping system and increase the gross area under cultivation even when the net area remains constant, and they complement the use of HYV seeds.

To promote the use of chemical fertilisers, the government has implemented a number of initiatives. The selling of chemical fertilisers is no longer subject to restrictions. Credit is provided for the purchase of chemical fertilisers by small and marginal farmers. Farmers are given free advice and instruction on how to utilise chemical fertilisers properly. The number of retail locations for chemical fertilisers has significantly increased. The traditional sources of manures, such gobar, compost, and green manure, are also being further explored. This is

to prevent an excessive need for chemical fertilisers, the majority of which are imported from other countries and hence place a significant financial burden on the exchequer. Traditional sources of manure are being investigated, but not in order to limit the use of chemical fertilisers, but rather in order to increase the total availability of manures and fertilisers in the various parts of the nation. In actuality, the government provides subsidies to farmers for the purchase of fertilisers [8], [9].

Seeds of the High Yielding Variety (HYV Seeds)

A key element of the new technique is HYV seeds. HYV seeds have been utilised more often in Indian agriculture from 1964–1965. These seeds are manufactured by authorised seed manufacturers and state governments. The development of high yielding seed varieties has been the subject of extensive study by the Indian Council of Agricultural study (ICAR) and many agricultural institutions. The National Seeds Corporation certifies high-quality seeds. India's food scarcity has been successfully combated with HYV wheat seeds. For a variety of crops, including cotton, rice, bajra, and others, similar seeds have been created.

The total area covered by HYV seeds rose was estimated to reach 380 lakh hectares at the start of the Fourth Plan. To encourage the use of HYV seeds, State Seed Corporations were formed under the Sixth Plan. These businesses provide seeds to states when they need them. The firms are working on specialised research projects to create HYV seeds for a variety of crops, including cotton, fodder, oilseeds, pulses, and oilseeds. The import of HYV seeds for coarse grains, pulses, oil seeds, vegetables, and flowers has been promoted by the central government. The total area planted with HYV seeds in 1970–1971 was estimated to be 150 lakh hectares. It expanded to 780 lakh hectares in 2000–2001.

Plant Security

Approximately 10% of the yield in India is lost to insects and other pests each year. Plant protection refers to safeguarding crops from insects and pests. Among the steps used to safeguard plants include seed treatment, pesticide application, rodent eradication, etc. Therefore, both before and after the seeds are sowed, plant protection is carried out. Seeds are chemically treated before planting to increase their disease resistance. Crops must be protected from insects and pests after seeding. The two primary obstacles to developing a plant conservation campaign in India are:

First, the farmers' use of herbicides and insecticides is not technically efficient. And second, since insecticides and pesticides are so expensive on the market, farmers sometimes hesitate to purchase them. The government has made two noteworthy moves in an effort to control costs (for pesticides and insecticides): (i) raw materials (used for pesticides) have been free from excise tax; and (ii) import of pesticides has been liberalised.

The Pest Warning Scheme was introduced during the Fourth Plan to alert farmers about plant diseases and pests. The Fifth Plan saw the expansion of training facilities, official plant protection facilities, and an agricultural air service for pesticide aerial spraying. There were eighty two thousand tonnes of insecticides used in 1991. An Integrated Pest Control Strategy was implemented in the Seventh Plan. It intended to use such environmentally beneficial plant protection strategies. In order to reduce the negative effects of pesticides, innovative techniques for plant protection were also developed. However, their usage was reduced when only environmentally benign pesticides and those with the fewest adverse effects were utilised. Compared to 82,000 tonnes in 1991, only 48,000 tonnes of insecticides were used in 2000–2001.

Soil Development

Fourteen crore hectares of land, or around 43% of India's total land area, are at risk from soil erosion. As a consequence, this land can no longer be used for farming. However, by taking steps to improve the soil, roughly 4 crore hectares of this land may be recovered. Soil development has the potential to increase agricultural output. All actions aimed at enhancing the soil are considered to be part of soil improvement. These actions include terracing, bunding, cultivating the soil following contour lines, and levelling the land. The government has undertaken the following significant measures (or initiatives) as part of its new agriculture policy.

Soil Conservation Project: The primary political tool to stop soil erosion was the soil conservation project. When the top, or fertile, layer of soil is either swept away by heavy rains or floods or blown away by powerful winds, soil erosion occurs. It is thus impossible to farm the land. The goal of the soil conservation plan was to prevent soil erosion by contour bunding, terracing, plugging up drains, and other methods. To carry out the soil conservation project, the Central Soil Conservation Board was founded in 1953. Due to the absence of a thorough national soil survey in the country, the program's initial development was very sluggish. However, soil studies have been carried out regularly since 1960. Since then, the plan for conserving the soil has improved. In 2000–01, soil (and water) conservation activities were being carried out over 33.5 lakh hectares of land, using the watershed as the operational unit.

Alkaline and saline areas are also made unsuitable for agriculture through reclamation of these regions. Alkalinity and salinity have an impact on over 70 lakh hectares of land in Punjab, Haryana, and Uttar Pradesh. The Seventh Plan established a central strategy to recapture this territory. During the eighth plan, a similar programme was started in Gujarat, Rajasthan, and Madhya Pradesh. By the end of 2000–01, 6.5 lakh hectares of alkaline land had been recovered.

Reclamation of Ravine Areas: There are rocky plains known as ravine areas in several regions of the nation, notably in Madhya Pradesh, Uttar Pradesh, and Rajasthan. The antisocial elements find sanctuary in these places. It must be purified of these substances before it may be put under cultivation. Comprehensive plans have been created by the central government for the reclamation of ravine lands.

Control of Shifting Cultivation: Another problem with Indian agriculture is shifting cultivation, or Systemof Jhume. In the Jhume system, agriculture takes place in one location for a period of time before being moved to another. The farmers fire the forest to clear a plot of land. It takes two or three years to develop. They forsake one plot of land when it becomes overgrown with weeds and clear another by setting fire to the jungle. This approach slows down the expansion of agriculture by converting arable land into garbage. In the north-eastern states like Assam, Meghalaya, Nagaland, Tripura, and Andhra Pradesh, among others, shifting agriculture is the norm. Shifting cultivation is illegal, and the government has started the Watershed Development Project to stop it. As part of this initiative, Jhume lands are developed according to watersheds and given to Jhumia households for ongoing farming. The Watershed Development Project was expected to remediate 80,000 hectares of land by the year 2000-2001 [10], [11].

Irrigation

Irrigation is one of the most important components of the new agriculture policy's input package. Irrigation is the process of supplying water to the land by wells, tanks, canals, etc.

These observations illustrate the significance of irrigation: The benefits of irrigation include: boosting net sown area in areas with low rainfall; ensuring a steady supply of foodgrains as a countermeasure to monsoon uncertainties; facilitating multiple cropping, which increases the gross area even when the net area remains constant; increasing productivity; and lowering costs. irrigation is the sole solution for crops like rice, which need a continual supply of water, Irrigation makes it easier to utilise pesticides, HYV seeds, and chemical fertilisers, all of which are essential to agricultural productivity.

CONCLUSION

The Green Revolution, nevertheless, also had its share of difficulties and detractors. When traditional crop diversity was neglected in favour of high-yielding cultivars, agroecosystem resilience and genetic degradation were the results. Concerns about environmental deterioration, loss of soil fertility, water contamination, and health effects of pesticide residues were sparked by the extensive use of agrochemicals. Furthermore, not everyone benefited equally from the Green Revolution; for example, women, marginalised populations, and small-scale farmers often encountered difficulties to acquiring and using new technology. In conclusion, the Green Revolution and the new agricultural approach have both had a substantial impact on how food is produced across the world. Despite significant improvements in productivity and food security, the Green Revolution also encountered issues with sustainability and equality. The new agricultural policy seeks to build on these successes by incorporating sustainability concepts into agricultural systems, encouraging resilience, and tackling the difficult issues of food security, climate change, and rural development.

REFERENCES:

[1] J. Thomas, “Policy Concerns Of Second Green Revolution: A Comprehensive Analysis,” *Econ. Dev. India*, 2018.

[2] M. Kansanga, P. Andersen, K. Atuoye, and S. Mason-Renton, “Contested commons: Agricultural modernization, tenure ambiguities and intra-familial land grabbing in Ghana,” *Land use policy*, 2018, doi: 10.1016/j.landusepol.2018.03.047.

[3] J. J. Dwyer, “Agrarian Crossings: Reformers and the Remaking of the US and Mexican Countryside,” *J. Am. Ethn. Hist.*, 2018, doi: 10.5406/jamerethnhist.38.1.0091.

[4] O. T. Westengen, P. Nyanga, D. Chibamba, M. Guillen-Royo, and D. Banik, “A climate for commerce: the political agronomy of conservation agriculture in Zambia,” *Agric. Human Values*, 2018, doi: 10.1007/s10460-017-9820-x.

[5] J. Rehm, “‘Green revolution’ crops bred to slash fertilizer use,” *Nature*, 2018, doi: 10.1038/d41586-018-05980-7.

[6] T. Bowman, “Agrarian Crossings: Reformers and the Remaking of the U.S. and Mexican Countryside by Tore C. Olsson,” *Southwest. Hist. Q.*, 2018, doi: 10.1353/swh.2018.0040.

[7] P. Yadav, “A Review on Rural Marketing in India: Oppurtunities, Challenges and Strategies,” *Int. J. Trend Sci. Res. Dev.*, 2018, doi: 10.31142/ijtsrd9553.

[8] *Fostering transformation and growth in Niger’s agricultural sector*. 2018. doi: 10.3920/978-90-8686-873-5.

[9] M. Pratheepa and J. Cruz Antony, "Outlook of various soft computing data preprocessing techniques to study the pest population dynamics in integrated pest management," in *Soft Computing for Biological Systems*, 2018. doi: 10.1007/978-981-10-7455-4_11.

[10] F. Mapelli *et al.*, "The stage of soil development modulates rhizosphere effect along a High Arctic desert chronosequence," *ISME J.*, 2018, doi: 10.1038/s41396-017-0026-4.

[11] A. L. Ellwein, L. D. McFadden, J. A. McAuliffe, and S. A. Mahan, "Late quaternary soil development enhances aeolian landform stability, moenkopi plateau, Southern colorado plateau, USA," *Geosci.*, 2018, doi: 10.3390/geosciences8050146.

CHAPTER 13

AGRICULTURE MECHANIZATION: ADVANCES, EFFECTS, AND FUTURE PROSPECTS

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ABSTRACT:

The mechanisation of agriculture has altered agricultural methods all around the globe, revolutionising how crops are sown, tended to, harvested, and processed. An overview of agricultural mechanization's developments, effects, and potential outcomes. Application of machines, tools, and technologies to agricultural activities to supplement or replace human labour is known as mechanisation of agriculture. This covers the use of tractors, harvesters, planters, irrigation systems, precision agricultural tools, and automated equipment for post-harvest procedures. Mechanisation has changed conventional farming practises by enabling higher efficiency, productivity, and scalability in agricultural output. The effects of agricultural mechanisation go beyond advantages for individual farms. The rural economy, job prospects, and food security may all benefit from mechanisation. It may provide off-farm employment in the industries of equipment production, sales, and maintenance. Additionally, mechanisation makes it possible to cultivate bigger land areas, which helps to enhance food production in order to fulfil the rising needs of a fast-increasing world population. It is anticipated that developments in robots, artificial intelligence, sensor technology, and data analytics will further transform agricultural practises. Agricultural production, resource efficiency, and decision-making might all be improved by autonomous equipment, drones, and smart agricultural systems. Additionally, the combination of mechanisation with environmentally friendly farming methods may boost climate resilience, resource efficiency, and environmental protection.

KEYWORDS:

Agriculture, Land, Mechanization, Mechanical, Productivity.

INTRODUCTION

Mechanization in agriculture, however, also has disadvantages that must be taken into account. Small-scale farmers may have difficulties accessing mechanization technology due to initial capital investment and operating expenses. For the efficient use and maintenance of equipment, adequate infrastructure, including a power supply, transportation, and servicing facilities, is essential. To minimize the social and economic effects of the possible loss of agricultural labor, especially in crops that demand a lot of labor, careful consideration is needed. Mechanization in farming refers to the use of machinery (rather than human or animal power) such as tractors, harvesters, and threshers. In western nations, agriculture is entirely mechanized. However, mechanization has been a contentious issue in India. The argument against mechanization is based on the realities that there is an abundance of labor in India (both human and animal), mechanization will likely increase the already high unemployment rate, and the majority of holdings are small and dispersed, making mechanization unfeasible.

Most people agree that total mechanization is neither feasible nor desired. Only those locations that have access to irrigation, manure, better seeds, and plant protection are where mechanization is used. The Planning Commission contends that excessive mechanization of

agriculture is not in the best interests of the nation. In his book Choice of Technique, Prof. A.K. Sen expresses the opinion that when choosing a technique for the agricultural sector, a country like India will need to distinguish between two types of capital equipment: that capital equipment that save labour, such as tractors, etc.; and that equipment that save land, such as manures. He believes that the second category of capital goods would be more beneficial for Indian agriculture.

Scientific Farm Management Techniques

Farm production may be increased significantly by using scientific management techniques. Scientific thought must be given to variables like crop selection, land preparation, crop rotation, seed selection, manure usage, irrigation water use, and the like. These elements shouldn't be chosen based on common sense or a rule of thumb. Additionally, it must be understood that various types of growing environments such as dry, semi-dry, irrigated, unirrigated, elevated, etc.require distinct growth techniques. Indian agricultural research aims to investigate scientific farming practises for various regions. Scientific methods of farming are indeed becoming more and more popular across the nation, and the Indian Council of Agricultural Research (ICAR) and various Agricultural Universities are actively engaged in the research work [1], [2].

Indian Agriculture's Green Revolution

The words "green" and "revolution," which combined suggest a boom in crop output, relate to "crops" in the phrase "green revolution." around India, it first began to occur around 1967–1968. The output of food grains grew by over 25% in the years 1967–1968 alone. In a nation that previously imported food grains but is now self-sufficient, such a rise in food grain output in a single year suggested a radical turnaround. In addition to reviving Indian agriculture, the Green Revolution altered the country's entire conception of agriculture. In Indian agriculture, conventional knowledge, which was crucial to decision-making, began to lose its importance. Instead, the key components of crop farming in the rural Indian economy developed as contemporary technology, modernized farm management practices, and market-oriented attitude.

Green Revolution and New Agricultural Strategy

A stunning increase in agricultural production per unit of input was made possible by new agricultural strategies. A kilogram of seeds from high yielding varieties produced much more than a kilogram of seeds from traditional varieties. Similarly, a kilogram of chemical fertilizers produced far more than a kilogram of traditional manures. The change in the production potential curve showed that food grain production increased more than non-food grain production. This occurred as a result of the new agricultural strategy's stronger emphasis on food crops as opposed to non-food crops.

Mechanization of Farms

The productivity and output of food, fodder, and fibre in the nation are greatly increased by the agricultural equipment and tools used for soil tilling and other field activities. The Indian farmer has relied on conventional methods of producing from the beginning of time. He continues to employ hand-operated and animal-drawn tools in this highly modernised period. According to statistics from the All-India Livestock Census, traditional tools, notably the wooden plough, are still widely used. In contrast to the scenario in India, developed nations throughout the globe have embraced the most modern equipment, including as tractors, threshers, harvest on combines, pump-sets, etc., which mostly depend on mechanical sources

of energy. There is no doubting that using these sophisticated mechanical tools has greatly enhanced agricultural productivity and output. various large farmers in various regions of the nation have shown interest in mechanising agriculture, influenced by the Western experience in India as well. The mechanisation of agriculture is having an impact everywhere it has been implemented in the nation. But there is a lot of disagreement about whether India should pursue mechanisation broadly. India is a developing nation with many small and marginal farms and access to plentiful and reasonably priced workforce. The argument used by those opposed to the mechanisation of Indian agriculture is that the labor-saving benefits of machines would drive out large-scale labourers from the industry and make animal power ineffective. An economy that already has a severe unemployment issue cannot afford to introduce any kind of agricultural mechanisation that exacerbates it [3], [4].

Agriculture Mechanisation Definition

Farm mechanisation is the use of mechanical force to agricultural tasks. It may be described as the process of carrying out certain agricultural tasks that are often carried out by either humans or animals, or both, with the aid of appropriate machinery. It also covers the use of power lifts for irrigation, vehicles for transporting farm product, and processing equipment in addition to the use of machines for tillage operations, harvesting, and threshing of the agricultural output. dairy equipment for separating cream, creating butter, pressing oil, ginning cotton, processing rice, etc. Mechanisation, in its simplest form, is the use of mechanical power and the accompanying machinery. Dr. Bhattacharjee claims that mechanisation of agricultural and farming processes refers to the use of mechanical power to execute tasks that would typically be carried out by humans or draught animals like bullocks and horses.

Depending on the conditions, mechanisation in agriculture may be either complimentary to or in competition with human work. Mechanisation may be used to complement human work in countries like India where there is a relative plenty of manpower, as opposed to countries with a shortage of labour where it may be used to compete with it. Additionally, mechanisation might be either full or partial. When just a portion of agricultural labour is completed by machines, it is referred to as partial automation. On the other side, comprehensive mechanisation refers to the use of machines exclusively in agricultural activities.

DISCUSSION

Mechanisation in agriculture has mostly reached completion in Western nations owing to a worker shortage. However, mechanisation of agricultural activities has only been embraced on a small scale in nations like China, India, the majority of Asia, Africa, and South America. The low rate of mechanisation in these nations is mostly a result of the plentiful labour and animal power available on the one hand, and the tiny, marginal holdings that are further separated and fragmented, the absence of fuel power, and the generalised poverty of the populace on the other. It is necessary to consider mechanisation in Indian agriculture from two separate angles. First, it has to be looked at in the context of potential issues brought on by a fully automated agricultural sector.

Problems like the relocation of workers and animal power must be seriously considered. Given the bad economic situation of the great majority of our farmers, would it even be possible to implement mechanisation if there were no such issues, let's say? Will they be able to afford mechanical power, or will it force them into the hands of the wealthy farmers and give rise to new feudal lords who will hold the bulk of the poor farmers ransom? Perhaps mechanisation would naturally go through several stages, which would result in total

mechanisation more smoothly than would otherwise be feasible if it were to be intentionally pursued.

Argument in Favour of Agriculture Mechanisation

It may not be ideal to adopt farm mechanisation due to the conditions in India and other developing nations, but we cannot dismiss the wider advantages that farm mechanisation promises to bring about higher agricultural output and productivity [5], [6].

Advantages of agricultural automation

Farm Productivity and Mechanisation

It is a known fact that farm mechanisation improves labour and land efficiency, increasing agricultural output per hectare and per worker. Numerous field investigations done to determine the link between mechanisation and production have shown that mechanisation significantly boosts productivity. With mechanical inputs, new farming technology performs better. More rich soils may be brought to the surface by tractors, which increases production. To the benefit of a farmer, it aids in the appropriate blending of new agricultural inputs.

Food Production and Farm Mechanisation

The intensity of cropping is increased because agricultural tasks may be finished with the aid of machines considerably more quickly than they could be manually. According to N.S. Jodha, the use of tractors in arid regions with little rainfall might shorten the time needed for seeding activities right after a downpour. Naturally, this would result in more food being produced. Farmers are attempting to grow three to four crops on their plot of land each year in locations where water supply is guaranteed. According to I. Arnon, the viability of multiple cropping replacing the one-crop-a-year production pattern depends on a reduction in the amount of time needed to clear the field of one crop and get it ready for the next one. This often relies on whether some tasks, such harvesting, threshing, and land preparation, can be automated.

Farm Mechanisation and Worker Productivity

Mechanisation improves agricultural labour productivity and boosts agricultural production per worker. The amount of work needed to generate one unit of output is drastically lowered with the advent of machines. In the West, rising mechanisation has facilitated miracles. For instance, in the United States, the time it took to produce 100 bushels of wheat decreased from 320 hours in 1830 to 108 hours in 1900 by the year 1940. The employment needs have been lowered to 47 hours thanks to a fresh set of enhancements. In Russia as well, mechanisation has significantly reduced the need for employment. Russian specialists claim that agricultural labour productivity in the 1960s was three times higher than it was in the days before the revolution. Mechanisation not only decreases the amount of manpower needed, but it also shortens the working hours of those who remain to operate the machines, releasing them from drudgery and giving them free time to unwind and refuel.

Cost-cutting and mechanisation

Mechanisation lowers production costs because it enhances the productivity of workers and land. Additionally, as mechanisation and large-scale farming go hand in hand, economies of scale and better output per hectare aid in cost reduction. According to the experience of many industrialised nations, the cost of using human and animal work increases with time relative to using machinery. Apparently, C.H. Hanumantha Rao, technological advancement and industrial growth often increase the ease with which capital may replace labour and lower the

price of equipment and fuel. On the other hand, economic expansion and a rise in per capita income drive up the price of biological energy sources by raising the need for labour in non-agricultural industries. Although it is generally accepted that labour costs are lower in India, C.H. Hanumantha Rao demonstrates that the reason tractors and other machinery are being used more often in Punjab and Haryana is because they are significantly less expensive inputs [7], [8].

Managing a Labour Shortage

Due to the seasonal nature of farming, there is a surge in labour demand during certain farm husbandry tasks. For instance, there is a higher need for labour when the crop is ready to be harvested so that the whole crop may be gathered on schedule. Occasionally, a lack of work might cause the harvest to be destroyed. Mechanisation might aid in removing this obstruction. For instance, harvester combines have been forced into use in certain areas of Punjab when there is a workforce shortage during harvest.

Commercial Agriculture Resulted from Mechanisation

Agriculture becomes commercialised as a result of mechanisation. Agriculture tends to a larger commercialization and accelerates up the pace of prosperity in the countryside if, along with the mechanisation of agriculture, the industrial base of the nation also expands so that off-the-farm employment grow. The fact that fewer employees are generating greater agricultural output is a sign that the agrarian economy is changing. More prosperity among the farming communities' aids in the diversification of rural economic activity, which opens up more job opportunities and reduces urban migration, which has already begun to pose a severe issue in developing nations. Farmers make judgements about output and investment based on pricing patterns in developed agriculture.

Rural areas' social structures are altered by mechanisation

Agriculture as it is practised now requires toil and hardship. The farmers are helped to be released from this laborious activity, allowing them to have more spare time and work in comfortable settings. Prof. Hanumantha Rao believes it might even increase participation. Among those who could afford to forgo tedious physical labour. With the advent of agricultural mechanisation, the farmer's whole attitude has altered. He now views things more broadly and is more aware of the aspects impacting his overall wellbeing. There is broad agreement in support of the following justifications for mechanisation: Through more efficient and timely agricultural activities, power and equipment help to boost yields. The new high yielding cultivars must have consistent and timely delivery of water and chemicals, as well as the right seed-bed preparation, timing, and positioning of fertiliser. Mechanisation can better offer for each of these. The potential for repeated cropping places a premium on hasty harvesting and land preparation in order to allow for the planting of the next crop. As a result, at the busiest times of the year, there may be a manpower shortage. Mechanisation increases productivity by supplanting manpower during busy times and hastens the planting of the next crop.

Mechanisation lessens reliance on draught animals, which are expensive and have poor output. Additionally, these animals need fodder, which takes up space that might be used to produce food for people. The economy's agriculture sector has an appallingly poor workforce productivity, which is exacerbated by mechanisation. This must be emerging nations' top priority if they want to see an improvement in living standards. By enabling more effective use of manpower, land, water, and other inputs, mechanisation decreases manufacturing costs. This is significant for the economy's general expansion since it enables the creation of

savings for investments. For those nations who are exporting to global markets, it is likewise crucial to reduce prices. The Expert Working Group, which the CIAR established in September 1984, reached the following finding about how mechanisation affected productivity. The panel said that the following may be done:

1. By properly and promptly preparing the seedbed, yields may be increased by five to ten percent;
2. By utilising a seed cum fertiliser drill, the yield may be increased by ten to twenty percent;
3. A five to thirty percent increase in yields due to the employment of intercultural instruments, sprayers, and dusters to manage weeds;
4. By harvesting and threshing crops on time and effectively, four to five percent may be saved.
5. By using better storage techniques, the present eight to ten percent loss of foodgrains during post-harvest activities may be prevented; and
6. The availability of water may be increased by lining water channels and using sprinklers [9], [10].

Case Against Mechanisation

Mechanisation and Joblessness

In these nations, where unemployment is a serious issue, mechanisation has relatively little potential. Labour is constantly saved by machines. A significant portion of the current agricultural population would be made unemployed by any effort to rationalise agricultural output via the deployment of labor-saving technologies. The World Bank launched research in Punjab to examine the effects of mechanisation on employment, and the results revealed a decrease in the usage of family labour on mechanised farms compared to non-mechanized farms of 82.92-man hours per cropped hectare. In a similar vein, G.R. Soltani investigated the issue of workforce utilisation in three agricultural areas of Fars Province in South Central Iran. Based on research done in the Ferozepur district, CR, he came to the conclusion that "full mechanisation of wheat production results in the displacement of nearly 131 hours of labour per hectare." Hanumantha Rao calculates that tractorization, due to tillage and haulage, replaces 20 to 30% of the total human work days per cultivated acre. A mechanical thresher replaces around 15% of the manpower, and harvesting adds another 25% of the effort that was replaced by the mechanical thresher.

Machines remove workers from the agricultural sector, and the non-agricultural sector (in emerging nations) is not growing quickly enough to take on this displaced labour. As a consequence, the already serious unemployment issue becomes worse. In addition to this economic impact, which has grave social repercussions in and of itself, mechanisation causes many tenant farmers to become landless workers. This suggests that the agriculture industry's very structure is going to changepossibly in an unfavourable way. Economists Gotsch (1971) and Falcon (1970) have argued these points vehemently. This topic has also been covered by Kaneda (1969), Bose and Clark (1969), and Kitching (1967).

These topics have generated a lot of enthusiasm but little consensus. Falcon (1970) states that although certain kinds of mechanisation may replace labour, others may not, drawing on the agricultural data provided by Shaw (1970). According to a World Bank survey, the implementation of mechanisation reduced the average manpower expenses per cultivated acre by roughly 40% in the Punjab region of West Pakistan. However, because of the increased production per farm and the almost equal increase in manpower during the harvesting season,

the real labour displacement per farm was very minimal as a result of the greater cropping intensity.

However, it must be understood that the introduction of huge machines like tractors with 40 or 50 horsepower is what causes workforce displacement and the majority of other issues that are often linked with mechanisation. To disprove the reasons against mechanisation, developing nations need tractors that first replace animals rather than humans, are affordable for small farmers, and can be used effectively on both small and large farms. Accordingly, a small, reasonably priced tractor is needed for small and medium-sized farms while a larger tractor is needed for larger farms.

Only big tractors are being built and imported into Pakistan. With double cropping and intense cultivation, they may be employed effectively on farms larger than 100 acres or possibly even fifty acres. However, they are obviously unworkable for farms smaller than fifty acres, which account for 98% of all farms (Government of Pakistan, 1960). Obviously, a little tractor is necessary. It should be emphasised that mechanisation of agriculture generates a considerable amount of jobs in industry. As a result, it expands the industrial base by encouraging the development of businesses that produce agricultural equipment and implements. Additionally to the jobs that are produced for the manufacturers, additional jobs are also created for the maintenance and servicing of agricultural equipment.

The presence of small farms

In those nations of the globe with little, atypically shaped estates, mechanisation of agricultural activities has a limited use. This is the reason why mechanisation had only a limited impact on field activities in some of these nations, but has crept into sedentary agricultural labour and transportation. India is notorious for having tiny holdings; hence mechanisation will only have a limited impact on Indian agriculture. If mechanisation of Indian agriculture were to be implemented, more extensive land reforms would need to be implemented to allow for it.

Lack of Trained Personnel

A poor, uneducated farmer in a backward hamlet in India would find it incredibly difficult to embrace large-scale mechanisation. Mechanisation would also be limited in most underdeveloped nations since they lack skilled employees to operate these devices. Additionally, there is a shortage of skilled technicians who can provide such machinery repair services.

Increasing Fuel Prices Quickly

The availability of electric energy or mineral fuels is a need for mechanisation. Most developing nations have a relatively limited supply of mineral fuels, making it expensive to run tractors or other machinery on petrol or diesel. Mechanisation is impossible until low-cost hydroelectricity is made accessible on the farm [11], [12].

Requirements for Agricultural Mechanization in Developing Nations

It is neither a pure agricultural production function nor a pure agricultural technology function to encourage farm mechanisation in underdeveloped nations. A comprehensive reorganisation of the whole agricultural production chain is necessary for effective mechanisation programmes. The following prerequisites must be met for agricultural mechanisation in developing nations to grow effectively. The availability of suitable agriculture equipment. Due to the complexity of each agricultural operation, only one

machine can do all duties. Different specialised machinery are needed for the production of various crops. agricultural mechanisation should be promoted if the right agricultural equipment is available. The phrase "proper environment for farm mechanisation" denotes that the farmland, climate, and cropping patterns must all be appropriate for machine operation.

The capacity and confidence of farmers to embrace automated farming in terms of technology. Farm equipment has to be managed, maintained, and operated by farmers. Therefore, the government must be prepared to provide farmers and extension personnel with agricultural machinery training. Machine farming has to be affordable in comparison to labour; if labour costs stay lower than those of mechanical alternatives, labor-intensive technology will win out. Enough money to allow farmers to purchase expensive agricultural equipment and the operating capital necessary to run them. Capital limitations may effectively prohibit farmers from buying their own machinery for a small farm in a developing nation. Small farms can be mechanised if all five of these requirements are satisfied. It is necessary to construct some types of farmer organisation, such as group farming or custom farming, to maximise the efficiency of the usage of farm machinery. Such a company offers the chance to enhance machine use and consequently lower the cost of mechanical operations per unit.

Issues Relating to Farm Mechanization

Because the aforementioned five prerequisites are typically not satisfied, issues that emerge during farm mechanisation regularly do so. Here are a few of the frequent issues encountered: A lack of appropriate agricultural equipment. While some power-tillers, water pumps, power sprayers, and dryers are produced locally, more complicated equipment (such as tractors, combines, and repairs) is imported and isn't entirely appropriate for the region. While there are machines for many aspects of rice cultivation, this does not hold true for many other crops.

Many emerging nations struggle with the decision of whether to import or domestically produce agricultural equipment. Due to its continued poor quality and high pricing, Taiwan's agricultural machine sector is unable to fulfil domestic demand for enough equipment at competitive rates. Small farm size and dispersed holdings: In Taiwan, farms are typically one hectare in size and include a number of dispersed plots. The size and physical makeup of the business sometimes make it uneconomical for each farmer to buy his own equipment.

Farmers' mechanical aptitude: In Taiwan, most farmers are mechanically uneducated and unprepared to operate sophisticated agricultural equipment. This makes farmers less likely to use machinery on their farms. High machine prices and poor buying power. From an economic standpoint, machine costs must be relatively cheap before farmers find it appealing to replace labour with machines. Additionally, small farms lack the funds to purchase the machinery that farmers often need in order to invest in them.

Important Mechanization Categories

Following are some general categories of mechanisation that are prevalent in many developing nations: First, there are machines that have to do with a wider base of resources. These aid in the real expansion of the physically efficient resources. Examples of these equipment include installing tube wells to access groundwater, using crawler tractors to recover forest land, and using tractors to level land, among others. All the many mechanical devices that increase the effectiveness of agronomic practises fall under a different category of mechanisation. One example is the seed-cumulus fertiliser planter, which aids with the

exact planting of seed and fertiliser at the right depths. Aerial spraying for plant protection chemicals is another example that may be used.

When the demand for labour is momentarily greater than the supply, the third category of machines kicks into action. Reapers, threshers, and combines may be mentioned. The different post-harvest processes are then covered by a significant mechanisation industry. When the crop is harvested, it sometimes becomes important to dry it right away. When the primary crop is harvested during a rainstorm, this happens. Driers are a crucial mechanism in such circumstances. Similar to how potatoes, vegetables, fruits, and other perishable commodities are stored, cold storage is crucial. Mechanisation is related to the processing sector as well. This comprises food canning, food preservation, including rice milling, oil expelling, and other processes.

CONCLUSION

Mechanisation improvements in agriculture have had a substantial positive impact on farmers and the agricultural industry as a whole. Mechanised farming increases productivity, lowers labour costs, and improves precision in agricultural tasks. It permits prompt and effective field operations, improving crop yields, lowering post-harvest losses, and boosting profitability. Furthermore, mechanisation creates chances for precision agriculture, allowing for input applications that are focused, resource optimisation, and a reduction in environmental effect. To sum up, the mechanisation of agriculture has changed agricultural systems and made them more productive, efficient, and scaleable. It provides chances for food security, economic growth, and precision agriculture. To guarantee equal access, sustainability, and the reduction of any negative effects, the difficulties and opportunities must be carefully weighed against one other. Agriculture mechanisation and its role in the production of food on a worldwide scale will be driven by ongoing research and innovation, as well as by supporting policies and investments.

REFERENCES:

[1] B. Lin and B. Xu, “Factors affecting CO2 emissions in China’s agriculture sector: A quantile regression,” *Renewable and Sustainable Energy Reviews*. 2018. doi: 10.1016/j.rser.2018.05.065.

[2] L. Paseto, M. R. de Alcantara, L. A. Paseto, and M. T. O. Patino, “Coffee Production: An Analysis of Opportunities for Competitiveness,” *Int. J. Adv. Eng. Res. Sci.*, 2018, doi: 10.22161/ijaers.5.8.20.

[3] A. Ameen and S. Raza, “Green Revolution: A Review,” *Int. J. Adv. Sci. Res.*, 2018, doi: 10.7439/ijasr.v3i12.4410.

[4] H. Gengenbach, R. A. Schurman, T. J. Bassett, W. A. Munro, and W. G. Moseley, “Limits of the New Green Revolution for Africa: Reconceptualising gendered agricultural value chains,” *Geographical Journal*. 2018. doi: 10.1111/geoj.12233.

[5] N. Clay, “Seeking justice in Green Revolutions: Synergies and trade-offs between large-scale and smallholder agricultural intensification in Rwanda,” *Geoforum*, 2018, doi: 10.1016/j.geoforum.2018.09.021.

[6] A. B. Lerner, “Political Neo-Malthusianism and the Progression of India’s Green Revolution,” *J. Contemp. Asia*, 2018, doi: 10.1080/00472336.2017.1422187.

[7] J. Harwood, "The green revolution as a process of global circulation: Plants, people and practices," *Historia Agraria*. 2018. doi: 10.26882/histagrar.075e01h.

[8] J. Thomas, "Policy Concerns Of Second Green Revolution: A Comprehensive Analysis," *Econ. Dev. India*, 2018.

[9] Y. Widodo, S. Wahyuningsih, J. Utomo, and A. Subagio, "Root crops agroforestry for greening the sustainability of green revolution," *Int. J. Agric. Res. Innov. Technol.*, 2018, doi: 10.3329/ijarit.v8i1.38226.

[10] S. Li *et al.*, "Modulating plant growth–metabolism coordination for sustainable agriculture," *Nature*, 2018, doi: 10.1038/s41586-018-0415-5.

[11] G. Djurfeldt, "Green revolution," in *Encyclopedia of Food Security and Sustainability*, 2018. doi: 10.1016/B978-0-08-100596-5.22181-1.

[12] W. W. Clark, "The Green Industrial Revolution," in *Sustainable Cities and Communities Design Handbook: Green Engineering, Architecture, and Technology*, 2018. doi: 10.1016/B978-0-12-813964-6.00002-1.

CHAPTER 14

STATUS AND CHALLENGES OF FARM MECHANIZATION IN INDIA

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ABSTRACT:

The degree of mechanization in India's agricultural industry has a big impact on productivity, effectiveness, and the overall growth of agriculture. In this abstract, the present state of mechanisation in Indian agriculture is discussed, along with the benefits and drawbacks of its adoption. Due to its extensive agricultural environment and varied cropping patterns, India has historically depended on physical labour for farming tasks. To alleviate the labour shortage, increase production, and boost agricultural efficiency, there has been a progressive trend towards mechanisation in recent years. Tractors, harvesters, seeders, planters, irrigation apparatus, and post-harvest gear are only a few examples of the many technologies used in mechanised Indian agriculture. Depending on the location, the crop, and the size of the farm, the agricultural industry in India is now mechanised to varying degrees. Others still significantly depend on manual labour, despite the fact that certain areas and crops have embraced mechanisation more than others. Small and marginal farmers, who make up a significant section of the agricultural community, often struggle to get and purchase mechanisation technology, which restricts their uptake. The broad adoption of mechanisation in India still faces obstacles, nevertheless. Barriers to mechanisation for small and marginal farmers include high capital costs, poor access to financing, fragmented land holdings, a lack of technical expertise, and the requirement for specialised equipment. For the adoption of mechanisation to be effective, it is also necessary to have access to affordable, high-quality equipment, a service and maintenance infrastructure, as well as suitable training and extension services.

KEYWORDS:

Agriculture, Land, Mechanization, Mechanical, Productivity.

INTRODUCTION

With a vast population, tiny and marginal properties, uneducated and backward farmers, a low per capita income, a high population of cattle, and a lack of electric energy or mineral fuels, India is still an underdeveloped nation. All the reasons we used to argue against mechanisation are valid in our nation. Large-scale mechanisation will result in the displacement of agricultural labour in India, making our unemployment crisis worse rather than better. The employment of labor-saving technologies is less acceptable in India since agricultural labour is quite inexpensive. Furthermore, the majority of our farmers have very little money that they can use to buy agricultural equipment and continue to live hand-to-mouth. India lacks the capital resources necessary for mechanisation.

Another significant barrier to the adoption of mechanisation in the agricultural sector is the insufficient supply of electric energy and the regular price increases of fuel and diesel by OPEC nations. However, this debate does not convince us that any mechanisation of Indian agriculture is necessary. While the remainder of the farm tasks may likely be completed with the aid of human and animal power, there are certain agricultural operations where the introduction of mechanisation would be particularly advantageous. Indian agriculture would become very behind if mechanisation were completely avoided, yet large-scale

mechanisation is not possible given the country's current conditions. In some farming enterprises when manual techniques are ineffective and costly, mechanisation is required. A programme of selective mechanisation is suggested to be implemented in the Fifth Plan. The main goals should be to increase agricultural production and cropping intensity [1], [2].

Power availability at the moment is expected to be 0.4 HP. per acre (of which mechanical power in the nation only makes up one-fourth). This has to be improved since it is very lacking. The new agricultural technology necessitates speedier farm activities as well as precision and timeliness in carrying them out, which is another related concern. Last but not least, there is the growing issue of rising bullock purchase and maintenance costs. While all of these variables highlight the necessity for farm mechanization, the pace and kind of mechanization will need to be decided while also taking into account other pertinent aspects including the size of holdings and the influence of mechanization on the employment situation for agricultural employees. The last factor would be especially important in relation to combine harvesters. Their implementation would be restricted to regions where there is a noticeable workforce shortage during harvest time. According to the sixth plan, a strategy of selective mechanization would be implemented since "unrestricted mechanization of agricultural operations will not be in the interest of our country as it severely worsens unemployment problem." The following agricultural operations may all benefit from mechanization:

1. Deep ploughing with the use of tractor-driven equipment is used to reclaim ground that has been overrun by weeds and grasses with deep roots.
2. The levelling of ground with the use of bulldozers and other equipment.
3. Works to save soil and water, as well as dam construction.
4. To make irrigation.
5. To build roads in rural regions, transport agricultural products, process farm products, and carry out plant protection procedures.
6. For large, collaborative farms.

Land reclamation is a possibility in the nation, and mechanization may be quite helpful in this respect. Mechanization aids in levelling the fields and preparing them for agriculture in locations with rough terrain. In a similar way, using machines to conduct a wide range of related agricultural tasks may be done quickly and easily.

Irrigation

The need, function, advantages, and disadvantages of irrigation in this part. Along with this, we'll also examine the sources of irrigation and the irrigation-related government programs.

Requirement of Irrigation

The following factors lead to the need for irrigation. Rainfall that is unevenly distributed in both time and place accounts for over 70% of the country's total cultivated area. As a result, rainfall is very erratic and subject to vast regional fluctuations as well as seasonal changes in its intensity, frequency, and duration. The north-east and south-west monsoons both benefit India. The majority of the rainfall, or approximately 73.7%, falls between June and September, with winter rains making up just 2.6% of total precipitation, compared to post-monsoon rains, which make up about 13.3%, and pre-monsoon rains, which make up about 10.4%.

The country's rainfall is uneven, erratic, and often prone to total failure. Famines have happened several times in the past due to the vast differences in rainfall across regions (such

as 1270 cm in Cherapunji and barely 25 cm in Western Rajasthan). Areas that get annual precipitation of 127 cm or less are often influenced by changes in the amount of rain. Production decreases if rain is insufficient, that is, when it is less than 80% of the average, or when it does not fall within the appropriate agricultural season. Famines occur when there is a 40% or more rainfall deficit, and crops are not even able to sprout. The only solution to end famines is to artificially feed water to the farms via irrigation. Only a few years ago, the Krishna and Godawari Deltas, the Sone Canal Command Area, and other areas that are now rice granaries, were famine-stricken. Famine may be treated by irrigation.

Irrigation is thought to be required for the majority of agricultural crops to produce at their peak levels, particularly in dry and semi-arid areas. Even in locations with considerable rainfall, irrigation is used for the second and third crops or when many crops are grown. The I.C.A.R. estimates that in the same location, the output of irrigated crops is often 50 to 100% greater than that of unirrigated crops. India's expanding population requires larger amounts of foodgrains for consumption, necessitating the importation of goods worth between 150 and 200 crores of rupees annually. Self-sufficiency in foodgrains is crucial if one wants to reduce imports. Along with adding different inputs to the crops, this may be accomplished through expanding irrigation systems. The works for the supply and conservation of water must be given priority among the measures that may be taken to increase the area under cultivation and the production of crops [3], [4].

At the moment, 20% of the nation's arable land is planted in cash crops, which account for 30% of the nation's production and 33.3% of the value of all agricultural output. Currently, just 12% of the land used for commercial crops is irrigated. As is well known, cash crops (such as pepper, spices, tobacco, cashew nuts, cotton, jute, and oilseeds) provide employment via various businesses and account for around 60% of yearly foreign currency profits. Therefore, by offering more irrigation facilities, their production may be boosted. The enhancement of irrigation systems results in increased yields for grains, where the mean percentage variance in output from year to year is significant. Crop water needs are largely influenced by meteorological and soil variables.

DISCUSSION

In India, kharif is the primary harvest season, followed by rabi. Crops are seeded in June and July, and are harvested in September and October during the agricultural season known as kharif, which is characterised by heavy monsoon rains. Only irrigated crops are cultivated during the dry agricultural season of Rabi, when crops are seeded in October and November and harvested from March to May. The monsoon meets a significant portion of the agricultural watering systems during kharif. A little amount of excess moisture success does not significantly reduce the yield. Longer crying bouts may be tolerated by deep-rooted crops than by shallow-rooted ones. Similar to how hot season crops take up water more quickly than rabi and kharif crops, hot weather crops do so because of summer's greater rate of transpiration. Throughout their growth seasons, various crops need varying amounts of water. For instance, grain crops need the most water while ear-heads are forming, but sugarcane, cotton, and chillies need more water. The majority of annual crops don't need water as they mature.

The necessity for irrigation is also a result of the fact that agricultural production in India is less effective than in other regions of the globe, particularly due to the lack of moisture in the soils, despite the country's significant advantages in terms of soil, sunlight, and temperature. Alluvial or black soils do not need as much watering as sandy soils. There isn't enough remaining moisture in the soil at this time of year to sustain double cropping. The fact that

harvests and mortality have a strong, direct correlation and that harvest security depends largely on a sufficient supply of water is a dismal remark on our economic condition that cannot be overstated.

Numerous rivers in India are not perennial, and their rabi season flows are negligible. Additionally, there is a significant variation in the water flow from year to year. Although the flows of snow-fed rivers in the north are typically permanent, there may be a significant difference between the winter and monsoon flows in the larger rivers that cross the plains and up to 300 or more in smaller hill streams. There are more little hill streams in the centre and southern rivers, which is a distinguishing feature. About 80% to 90% of the yearly run-off occurs during the four months of the monsoon rains, which is a feature of central and southern rivers. The following eight months of the year see the rivers mostly dry. It follows that considerable storage capacity are required in order to use a sizable fraction of the average yearly run-off. Parched fields may be irrigated all year round so that various crops can be produced there, thanks to surface water conservation. Fortunately, this area has seen the results of efforts. Bhakra Dam on the Sutlej, for instance, retains water to irrigate 14.56 lakh hectares while conserving 45% of the river's flow; Nagarjunsagar on the Krishna stores water to irrigate 8.90 lakh hectares; and Chambal Dam irrigates 5.56 lakh hectares. Other projects that provide water via simple diversion structures on perennial rivers include the Gundak, which will provide water to 14.56 lakh hectares, the Kosi, which provides water to 7.28 lakh hectares, and the Western Kosi Canal, which will provide water to 3.23 lakh hectares. 2.83 lakh hectares are served by the Sona Barrage. These storages have helped and will continue to assist in reducing floods and averting widespread loss of crops and lives.

Large groundwater reserves exist in India, particularly in the Gangetic plain. The Narmada basin and the deltaic regions make up around 40% of the land that is cultivated in our nation. In India, the average annual rainfall is 3 x 1012 m3, of which around 801 + 109 m3 per year penetrates into the soil, according to Dr. G.C. Chatterjee. Only 370 x 109 m3 of the water leaking into the soil percolates down to replenish the groundwater body. A total of 37,000x109 m3 of ground water has been calculated to be stored down to 305 metres. Only 22x109 m3 of the groundwater are still being used. Therefore, there is a lot of potential for these subsurface water resources to be developed. The 328 million hectares of India's entire land area are located in tropical and subtropical regions. As was previously noted, 198.4 million hectares are grossly cropped and 140.1 million hectares are netly seeded. There are 118 million hectares of food crops grown on the nation's entire land area. The production varies greatly across states and between zones.

Finally, irrigation is generally needed as a supplementary necessity in places with high rainfall (such Assam, West Bengal, Orissa, Andhra Pradesh, Tamil Nadu, and Kerala) to safeguard their monoculture agriculture from sporadic drought. The majority of crops benefiting from irrigation in Karnataka, Gujarat, Maharashtra, and Bihar are paddy and, to a lesser extent, sugarcane, with the proportion of other irrigated crops being relatively low. Only Punjab, Haryana, Rajasthan, M.P., Gujarat, and the North Western region of Uttar Pradesh utilise irrigation extensively for other seasonal crops [5], [6].

In order to stop famines, it is crucial to build a sufficient and reliable irrigation system. In times of drought, irrigation is the only source of timely and reliable water supply. The farmer cannot risk his investment in other inputs that boost output if there is no irrigation. As a result, irrigation must be a key component of the nation's agricultural production plan. However, it should be remembered that irrigation will only provide the optimum effects if it is combined with other elements, including an appropriate alteration in the cropping pattern. soil fertility enhancement and maintenance, the use of better crop types, the use of chemical

fertilisers and green manuring, the adoption of plant protection measures, the adoption of enhanced cultural practises, and many other related issues. Only when there is a enough water supply will they show results.

Importance of Irrigation

The nation has benefited from irrigation. In actuality, it serves as the baseline for long-term, prosperous agriculture. As Sir Charles Trevelyan said, "irrigation is everything in India." It lessens misery, preserves life, prevents famines, and increases the nation's monetary riches. According to Dr. Knowles, "The irrigation works have made security of life, they have increased the yields and the value of the land and the revenue derived from it. Water is more valuable than land because when water is applied to land, it increases its productivity by at least six-fold. They have reduced the price of famine assistance and contributed to the civilization of the whole area. Additionally, they generate significant revenues for the government. According to Dr. Gadgi's analysis of the Godawari and Pravada canals' economic impacts in the Deccan, the irrigation projects' overall direct and indirect effects were highly positive. Due to irrigation, farmers could spend more in livestock, farming equipment, and more expensive crops like sugarcane, increasing both their individual and collective employment.

Benefits of Irrigation

The investigations conducted in 1958 and 1961 revealed that "canal irrigation has helped in promoting the greater use of land; enlarging the average size of the farm;" in eleven projects from each of the areas. Creating a need for more farm workers; switching to new and improved crop types; growing extra productive investment in farm business; advantageous input-output ratio; and expanding opportunities for growth in land income and other local receipts. There are secondary and tertiary benefits in addition to direct benefits. For instance, canal irrigation has resulted in a general expansion of secondary and tertiary activities in the area affected by it, increasing employment opportunities for both hired and family labour, increasing the value of output per industrial unit, and increasing the turnover of business establishments in the project areas.

Irrigation is used to boost agricultural output from the areas it services. There are two ways to look at the service that irrigation offers. viz. A protective measure to compensate for the soils' lack of moisture throughout the growing season to guarantee the crops are produced properly and sustainably. An additional component of land usage that enables a second or third crop to be produced on irrigated fields that could not otherwise be farmed effectively, especially during the post- or pre-monsoon season. The second facility, or land use element, aids in overcoming poor productivity caused by dryness or excessive water supplies, while the protective aspect aids in stabilising agricultural output against droughts. In the past, India's development of irrigation had mostly been done to combat drought. The concept of artificial irrigation was born during famines. The majority of irrigation work was constructed, planned, and run on a defensive strategy. Because of the population's fast growth, irrigation must now serve a new purpose: to boost agricultural output. According to reports, the yields in the irrigated regions are 60 to 100% greater than in other places. By assisting the plant to absorb the manure in the right form, irrigation increases fertility, which raises maize yields [7], [8].

Irrigation's Benefits

When irrigation water is utilised improperly, the soil is irreparably damaged. Mr. Pugh, the author, follows the history of dry areas and observes that soil civilisation in the Middle East vanished as a result of improper irrigation water utilisation. Agriculture Reorganisation

Committee United States. (1949) noted that irrigation water caused a decline in agricultural productivity at several locations. This is brought on by the following factors: (a) increased demand for soil nutrients to generate better yields; (b) leaching effects of irrigation; and (c) accumulation of harmful salts in the topsoil.

The key point to remember is that whenever a cultivator has access to water for irrigation, he or she invariably overirrigates in an effort to maximise the use of the water that has been paid for in the mistaken belief that the higher the application, the higher the yield. Shri A.P. Bhattacharya's experimental studies (in the Sarda Canal area) have provided convincing evidence that over irrigation is detrimental from the perspective of lowering yields because the unused water not consumed by the plant lowers plant nutrients while percolating to the ground water, which keeps on being augmented ultimately leading to waterlogging which in turn leads to malaria along with a complete loss of fertility. A conservative calculation reveals that, in addition to the long-term impacts of water logging and malaria, the annual cost to the nation is in the neighborhood of Rs. 140 crores.

Irrigation Sources

It should be mentioned that local, climatic, geological, and other physical factors influence the irrigation systems that have been built in various regions of the nation. As a result, the irrigation systems in the various tracts cannot be uniform. Alluvial tracts in the Gangetic and coastal plains are particularly well-suited for canals and wells; irrigation from tanks is most prevalent in the crystalline areas of the Deccan Plateau; and a sizeable portion of the land in the northern parts and black cotton tracts of the Deccan, the sub-montane regions of the eastern and western sides of the Western Ghats, and the Punjab are watered by wells. More than half of the irrigated area relies on small-scale labor for its irrigation needs. The remaining land is watered by river canals, their distributaries, and channels, all of which are categorized as medium and substantial irrigation works.

Schemes for Minor Irrigation Works

Minor irrigation projects are connected to the scientific development of groundwater resources. In order to conserve moisture and replenish growth water, these programs include: surface water schemes like small stream diversions; rain storages in small catchments; renovation of existing tanks and diversion works; ground water tapping, boring of wells, deepening of wells, sinking of tube wells, and lifting of water from the wells; and construction and repair of small drainage channels. All ground water infrastructure is categorised as small irrigation under the new concept. 90% of ground water development is carried out by the private sector.

Minor irrigation schemes have the benefit of yielding results quickly because they can be conceptualised and carried out quickly and to a large extent by the cultivators themselves the construction period is barely fifteen days to one month; they require little outlay of capital and primarily use local talents and resources the utilisation of the irrigation potential is almost immediately and since these works are owned by the cultivators themselves.

These are primarily people-centered programmes that allow for both individual and cooperative efforts. In addition, minor irrigation costs less per hectare than major irrigation because the use of water in these cases is typically restricted to the area very close to the sources, which greatly reduces water loss and its distribution. (ix) Ground water has the great advantage of being shaky and being able to move and store water freely underground, preventing losses due to evaporation and seepage during storage and transportation. (X)

Minor irrigation systems do not need a large army of men to maintain and run them. Major, medium, and small plans and their roles are selected on the basis of viability.

Large Range of High Yielding Crops

None of the techniques for enhancing agricultural technology has advanced agriculture as much as the selection and cross-breeding of plants. The use of enhanced types of seeds only entails the agriculturist in a minor additional expenditure reflected by the surcharge of a few rupees per capita of seed. These techniques of improvement require great expense and persistent attention. Agriculturists immediately benefit when a superior variety is introduced to an agricultural region. While hardly raising the cost of production, it increases the crop's quality or quantity. Therefore, one of the easiest and most efficient ways to raise the overall level of the nation's economy is to provide diversity with enhanced output and quality. The strategies for creating better varieties include introducing new forms, selecting from variants that occur naturally and from those intentionally produced via plant hybridization, as well as any other techniques that may be used to enhance plants consciously. Improved cultivars may produce 10 to 15% more in terms of productivity.

Modern plant genetics allows for the almost-custom development of seed strains. Radioisotope irradiation of seeds and the selection of strains with the desired characteristics have sped up nature's typically sluggish process of mutation. Scientists in India have created strains that develop quickly, are disease-resistant, drought-resistant, and prolific yielders as well. These are able to thrive in semi-arid regions, water-logged places, and diverse cropping circumstances [9], [10].

Corporation for National Seeds

This enterprise was founded in 1963 primarily as a company to develop, store, and provide base seeds for hybrids, especially hybrid maize, which were made available by that year. In December 1965 and January 1966, the Corporation began a significant project of seed production of certified seeds of hybrid maize, jowar, bajra, and Taichung Native I. In various regions of the nation, the firm has established seven regional units to help with the timely delivery of parent seeds, as well as to provide technical assistance, seed, inspection, and certification of hybrid seed crops. Additionally, fourteen processing facilities have been established to make it easier to process seeds. Each plant may produce between 3,000 and 4,000 quintals annually. In addition to hybrid seeds of maize, jowar, bajra, rice, etc., the Corporation has been providing vegetable seeds as well, including Pusa Sawani bhindi, Pusa Rubby tomato, Pusa Purple Long brinjal, Pusa Katki cauliflower, new Pusa Chilies, and Guntur 3 chillies. Long Karela Bonnervile and Perfection in Coimbatore Groundnuts from Asiriya Murtunde with new line peas.

The 1869-founded Terai Development Corporation has produced notable advancements in the manufacturing of seeds, notably for rice, maize, sorghum, and soy beans. The 'period of choice' in seeds has been ushered in through genetic modification of seed. For the domestic farmers, this has brought up new possibilities. A number of ongoing projects include building seed processing facilities, expanding seed farms, enhancing seed testing facilities, and building more storage space. Throughout the Seventh Five Year Plan, they would continue to get attention. Additionally, the National Seeds Corporation's project to build up buffer stocks of seeds and the Governments' programme to build up reserve stocks of seeds will be undertaken on a wider scale to address the urgent seed demands in various states. The nation's seed development initiative is a crucial component of modernising Indian agriculture. The Indian government, state governments, cooperatives, and private sector organisations all support the development of high-quality seeds throughout the nation.

At the time of India's independence, the agricultural sector was undeveloped, unmoving, and all but nonexistent. With the majority of the rich areas now in Pakistan, production was poor and there was little incentive for investment. Following independence, the Five-Year Plans gave agriculture a prominent emphasis. However, during the early planning years, not much progress was accomplished; in order to meet our requirement for foodgrains, we were forced to rely on imports.

The Ford Foundation Team's proposals led the Indian government to establish the New Agricultural Strategy, a novel strategy for the advancement of agriculture. Through greater levels of productivity, it aimed to improve agricultural output. The goal of the Intensive Agricultural District Programme was to quicken the speed of development in a few chosen districts by using labour, money, and inputs wisely. In accordance with this IADP, development plans for agriculture were to be launched in a small number of districts rather than across the whole rural sector. The main goal of the initiative was to quicken the speed of development in a few chosen regions by using inputs, labour, and financial resources wisely. In 117 districts spread throughout several states in the nation, the Intensive Agricultural Area Program was first introduced in 1964–1965. The program's main goal was to increase agricultural output by cultivating several of the nation's major crops intensively.

The new agricultural strategy's input package includes the following items: (1) prudent manure usage; (2) high yielding variety seeds; (3) high levels of plant protection; (4) mechanised farming; (5) steady irrigation; (6) soil development; and (7) enhanced farm management procedures. The terms "Green" and "Revolution," which combined suggest a surge in crop output, relate to "crops" and "spurt," respectively, in the phrase "green revolution." around India, it first began to occur around 1967–1968. Foodgrain output rose by about 25% in the years 1967–1968 alone. In a nation that previously imported foodgrains but is now self-sufficient, such a rise in foodgrain output in a single year suggested a radical turnaround. Farm mechanisation is the use of mechanical force to agricultural tasks. It may be described as the process of carrying out certain agricultural tasks that are often carried out by either humans or animals, or both, with the aid of appropriate machinery [9], [11].

Depending on the conditions, mechanisation in agriculture may be either complimentary to or in competition with human work. Depending on the task that the machines do, mechanisation may also be either full or partial. Benefits of mechanisation include improvements in workforce efficiency, cost-effectiveness, and social structure.However, drawbacks include joblessness, disregard for small farmers, and a shortage of competent personnel. Farm mechanization promotion is neither a pure agricultural technology role nor a pure agricultural production function in developing nations. A comprehensive reorganisation of the whole agricultural production chain is necessary for effective mechanization programs.

India's agricultural workers would be displaced by large-scale mechanization, which would make our unemployment crisis worse rather than better. The employment of labor-saving technologies is less acceptable in India since agricultural labour is quite inexpensive. Indian agriculture would become far more behind if mechanisation were completely avoided, but large-scale mechanisation is not possible given the country's current conditions. In some farming enterprises when manual techniques are ineffective and costly, mechanisation is required. In India, irregular rainfall, the requirement for agricultural production in semi-arid and desert regions, the growth of the population, unequal river water supplies, poor groundwater reserves, etc. all contribute to the need for irrigation.

Water is more valuable than land since it boosts land's production by at least six times and makes large areas of land productive that would otherwise generate little to nothing. There

are two perspectives from which to look at the service that irrigation provides: (a) the protective aspect and (b) the extra land use aspect. Irrigation has drawbacks include too much salt in the top layers, excessive water usage, leaching, and water logging. Agriculturists immediately benefit when a superior variety is introduced to an agricultural region. While hardly raising the cost of production, it enhances the crop's quality or quantity. The many methods for getting High Yield Variety seeds include thick planting, fertiliser doses, controlling pests and diseases, and scheduling fertilisers and watering correctly. This firm was founded in 1963 primarily as a business to create, store, and provide the foundation seeds for hybrid plants, notably the hybrid maize that year. In December 1965 and January 1966, the Corporation began a significant project of seed production of certified seeds of hybrid maize, jowar, bajra, and Taichung Native I. The basis of our agricultural development is the development of high yielding seed types. 'Miracle seeds' is how people refer to them. The area of seeds sown with high yielding varieties has significantly grown in a short period of time.

CONCLUSION

Agriculture mechanisation in India has a wide range of effects. On the one hand, mechanisation offers the potential to boost agricultural output, lessen the drudgery of labour, and permit timely farm operations. It may improve tasks including land preparation, planting, irrigation, harvesting, and post-harvesting, resulting in greater agricultural yields and increased profitability. Mechanisation may boost the adoption of sustainable agricultural practises, encourage the use of cutting-edge farming methods, and help to agricultural diversity. To sum up, India's agricultural mechanisation is progressively rising, which might have a big influence on agricultural production and rural life. However, attaining broad and fair mechanisation requires addressing a number of issues, such as financing accessibility, knowledge transfer, and infrastructural growth. The use of suitable mechanisation technology may be encouraged and supported by a comprehensive strategy that includes targeted legislation, capacity building, and public-private partnerships. This can help India's agricultural sector flourish sustainably.

REFERENCES:

[1] V. Taraz, “Unintended Consequences of a Public Works Program: Agricultural Yields, Weather Shocks and Indiaas Employment Guarantee,” *SSRN Electron. J.*, 2018, doi: 10.2139/ssrn.3176705.

[2] S. Singh, “Changing Sino-Indian Relations: Implications for South Asia,” *Int. J. East Asian Stud.*, 2018, doi: 10.22452/ijeas.vol7no1.3.

[3] N. K. Dubash, R. Khosla, N. D. Rao, and A. Bhardwaj, “India’s energy and emissions future: An interpretive analysis of model scenarios,” *Environ. Res. Lett.*, 2018, doi: 10.1088/1748-9326/aacc74.

[4] D. E. Schultz and V. Jain, “Discovering India’s three levels of luxury consumption: An exploratory research to find a conceptual framework,” *J. Mark. Commun.*, 2018, doi: 10.1080/13527266.2014.999250.

[5] S. Negi and L. Giessen, “India in international climate governance: Through soft power from redd to REDD+ policy in favor of relative gains,” *For. Soc.*, 2018, doi: 10.24259/fs.v2i1.3584.

[6] N. Sengupta and A. Sinha, “Is India’s Safe Motherhood Scheme Leading to Better Child Health Care Practices?,” *Glob. Soc. Welf.*, 2018, doi: 10.1007/s40609-017-0103-7.

[7] D. Donaldson, “Railroads of the Raj: Estimating the impact of transportation infrastructure,” *Am. Econ. Rev.*, 2018, doi: 10.1257/aer.20101199.

[8] R. Dandona *et al.*, “Gender differentials and state variations in suicide deaths in India: the Global Burden of Disease Study 1990–2016,” *Lancet Public Heal.*, 2018, doi: 10.1016/S2468-2667(18)30138-5.

[9] A. Kochar, “Branchless banking: Evaluating the doorstep delivery of financial services in rural India,” *J. Dev. Econ.*, 2018, doi: 10.1016/j.jdeveco.2018.07.001.

[10] P. Saha *et al.*, “Impact of Maternal Air Pollution exposure on children’s lung health: An Indian perspective,” *Toxics*. 2018. doi: 10.3390/toxics6040068.

[11] B. Behera and S. Kirchhoff Engel, “Who Forms Local Institutions? Levels of Household Participation in India’s Joint Forest Management Program,” *SSRN Electron. J.*, 2018, doi: 10.2139/ssrn.3249398.

CHAPTER 15

SMALL FARMERS AND AGRICULTURAL LABOUR: A REVIEW STUDY

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ABSTRACT:

The production of food on a global scale and rural economies both rely heavily on small farmers and agricultural labourers. This summary gives a general overview of the problems that small farmers and agricultural labourers confront while stressing their importance, weaknesses, and possible solutions. Small farmers, who often work on small plots of land and with less resources, confront several difficulties that reduce their output and profitability. These difficulties include the inability to get loans, the poor infrastructure, the erratic market, and the effects of climate change. Due to their frequent inability to compete with larger-scale agricultural enterprises, small farmers are vulnerable as a result of these issues. Similar to this, agricultural labourers, who do mostly physical labour on farms, confront particular difficulties relating to their livelihoods. Low pay, unfavourable working conditions, and restricted access to social security and benefits are frequent problems for them. Their weaknesses are further exacerbated by their dependence on seasonal work, which leaves them with unstable incomes and little prospects for skill advancement and upward mobility. A thorough strategy is needed to address the issues small farmers and agricultural labourers confront. This encompasses local, national, and international support systems and policy actions. The emphasis of initiatives should be on expanding loan availability, encouraging environmentally friendly agricultural methods, strengthening market ties, and developing infrastructure in rural regions. Investments in educational and skill-development initiatives may also empower agricultural labourers, allowing them to access alternate sources of income and enhance their working circumstances.

KEYWORDS:

Agricultural, Development, Economic, Land, Unemployment.

INTRODUCTION

The increase in the number of agricultural laborers, farmers, and agricultural labourers involved in crop production has been one of the most unsettling aspects of India's rural economy. The everyday lives and livelihoods of agricultural workers are concurrently impacted by the issues of underemployment, underdevelopment, and excess population. They are paid disproportionately little, their living circumstances stress them excessively, and the job they get is sporadic at best. Compared to other industrially developed nations, India's unemployment is significantly distinct in nature. It is common knowledge that rural India has the worst levels of unemployment. Seasonal unemployment and covert unemployment are the two basic categories into which rural unemployment may be divided.

Agricultural work is a seasonal activity, and demand for workers is always high throughout the sowing, weeding, and harvesting seasons but much lower during the lean season. Depending on the agricultural practises, soil type, and potential for multiple cropping, the duration or seasonal unemployment in India differs from state to state. In India, agricultural work is still in high demand for four to six months out of the year. On the other hand, marginal and tiny farmers in rural India often experience disguised unemployment. Their

land resources are insufficient to provide every member of their family a year-round job. The government has taken several significant actions to ameliorate the situation of farm labour. You will study the idea of agricultural labour in this unit, comprehend its numerous forms, and evaluate the state's agricultural labor policy [1], [2].

Definition and Features of Agricultural Labor

It might be challenging to provide a specific definition of the word "agricultural labour." However, it would be helpful to make reference to a few of the efforts made in this regard by professionals. The first Agricultural Labour Enquiry Committee (1950–51) outlined this as "those people who are engaged in raising crops on payment of wages. The second Agricultural Labour Enquiry Committee (1956–57) expanded this to "those people who are engaged in other agricultural occupations like dairy farming, horticulture, raising of livestock, bees, poultry, etc.

People whose primary source of income is wage work fall into this group because, in the words of the National Commission on exertion, "an agricultural labourer is one who is basically unskilled and unorganised and has little for its livelihood other than personal labour." There are two subcategories within it:

agricultural labourers who lack land and extremely tiny farmers who depend mostly on wage work since their properties are so small and marginal. In turn, landless labour may be divided into two major groups: permanent labour affixed to a farming family and casual work. Cultivators, sharecroppers, and leaseholders are the three subgroups that may be separated within the second ground.

Permanent or attached workers often have a contract and work on a yearly or seasonal basis. Custom or tradition determines how much of their pay they get. Contrarily, temporary or casual workers are only hired when there is a work break. They are paid at the market rate, but their job is just temporary. They don't have a landlord relationship. Agriculture labour in India refers to physical labour performed on other people's farms and fields. Agricultural labourers are mostly unskilled and depend on payment for their services, either in cash or in-kind. There is a high need for manpower mostly during the sowing and harvesting seasons. As a result, these are the times of year when the employees find work that will allow them to support their families throughout the whole year. The style of life of the workers in Indian agriculture is characterised by an instinct to survive mixed with a battle to survive [3], [4].

Various Forms of Agricultural Work

In India, there are essentially two groups for agricultural labour: Landless workers, which includes both independent and bonded landless labour. Employing small and marginal farmers as farmworkers. Small and marginal farmers, with or without financial assets, are included. We may sum up these categories as follows:

Labourers without Land

These are the individuals who are entirely reliant on the lands of others for their means of subsistence since they are themselves landless. Landless workers are further divided into: independent workers without access to land, BONDED workers who are landless. Independent landless workers are free to migrate from one farm to another and negotiate a pay rate that is in line with supply and demand conditions in the labour market. Landless workers who are bound to one master are unable to work for another master. They are like slaves in that they are reliant on their masters for both their social and financial stability.

Despite the fact that bonded labour has been outlawed in India by law, there are still numerous instances of it in rural regions.

Small-scale farmers serving as agricultural labourers

Small and marginal farmers dominate India. The subsistence requirements of the agricultural households are what drive farming. However, the majority of small and marginal investors are unable to profit adequately from their meagre holdings. They often have to labour on other people's property to augment their income. As a result, small and marginal landowners also work as agricultural workers. Small and marginal farmers employed as agricultural labourers are further split into two types, namely. Small-scale farmers without substantial land holdings who work as agricultural workers. Economically viable small- and marginal-scale farmers who work as farm workers.

DISCUSSION

Small and marginal farmers, also known as small and marginal holders, who lack economic holdings (holdings that are not economically feasible for cultivation), are compelled to work as agricultural labourers due to economic circumstances. However, in the case of tiny and marginal holders with economic holdings, the essential concept is that some family members work as agricultural workers to augment family income. It goes without saying that those who work on other people's farms cannot find profitable employment on their own farms.

Agricultural Joblessness

Not every person working in agriculture is doing it in a productive capacity. Agricultural work has a probability of becoming unemployed. Here, we'll examine the two most common varieties.

Covert Unemployment

In India, between 25% and 30% of the workforce who live and work in rural regions experience hidden unemployment. When more individuals are employed in a job than are really needed to complete it, this is known as disguised unemployment. Even if some of them leave that employment, the overall output will not decrease. For instance, if only two people are needed to cultivate a farm of one hectare but five people are really working there, then three people are unknowingly jobless. They are unnecessary and superfluous. Due to India's joint family structure, small holding sizes, and lack of other work opportunities, all members of the farmer's family keep themselves busy with the upkeep of the family farm. As a result, even if not all of the members are really working, they all look to be employed. The family farm's overall productivity won't alter even if some members leave. They are known as the "disguised unemployed" for this reason. Indeed, the issue of covert unemployment is a big one in India [5], [6].

Seasonal Joblessness

Seasonal unemployment is another kind of unemployment in rural areas. It happens simply because farming is a seasonal industry. Crops are raised in accordance with the appropriate seasons. Typically, agricultural employees are idle during the off-season. There is nothing for them to do. The amount of seasonal unemployment varies by state and is based on the weather and farming practises. According to estimates, a farmer who only produces one crop each year often experiences unemployment for five to seven months. In addition to agriculture, there are numerous other seasonal activities like brick kilns and sugarcane processing that take place in rural regions. For a few months out of the year, workers

involved in these activities are continuously employed. They continue to be jobless for the remainder of the time.

Agricultural Labour in India: Characteristics and Issues

The main features of agricultural work in India are as follows:

Unorganized: There are no trade unions at all among India's agricultural workers, who are completely unorganised. They are unable to negotiate for a high salary rate and improved working conditions as a result. They are often at the whim of their masters or employers.

Low wage: In India, agricultural work may be characterized primarily by its low pay rate. Poor pay rates are prevalent in underdeveloped areas. Agriculture labour is in plentiful supply relative to demand, according to economic theory. Additionally, it is due to the fact that farm labourers are a totally unorganised sector of employees. Some workers are employed by their masters as bound labour in return for the assurance of their existence.

Low Social Status: Most agricultural workers in India are members of low castes, such as "Dalits," "tribes," or "backward classes." They therefore experience social and economic impoverishment. A group of people that are oppressed in society are agricultural workers because of their poor socioeconomic level. Politically, they also fail to speak out against the humiliation and horrors they often endure.

Unskilled: In India, agricultural labourers fall under the category of unskilled labourers. But as they learn, they often develop efficiency that suits them for specialised professions.

Migratory and Casual: In India, agricultural work has a migratory nature. It's because their demand only increases during the planting and harvesting seasons. Throughout the remainder of the year, they often relocate to metropolitan regions in search of employment, mostly as domestic helpers or construction site labourers. In India, about 85% of agricultural employees are not tied to the land or the landowners. They are only employed on a temporary basis and as needed. They become open to exploitation as a result.

Debt: The majority of agricultural workers in India are indebted. It never ends and resembles their biological system in many ways [7], [8].

Trends in Indian Agricultural Labour

There are no precise figures available for the size of the agricultural work force. The number of agricultural workers, their income, their style of life, etc. are all the subject of conflicting reports from different committees and commissions. The general consensus is that agricultural labour has tended to grow in size throughout time. They were counted as 75 lakh in the census of 1881, 280 lakh in 1951, 555 lakh in 1981, and 1,074 lakh in the census of 2001, according to estimates. Even as a share of the nation's overall labour force, the growth of the agricultural worker force is astounding. It was almost 17% in 1901 and approximately 27% in 2001. It should be noted, nevertheless, that during the censuses of 1971 and 2001, this proportion tended to stabilise around 26% to 27%. According to Census 2011, there were 26.05 million cultivators and agricultural labourers, an increase from 22.62 million.

Reasons for the Increase in Agricultural Labour in India

The worrisome increase in agricultural work in India is caused by a number of variables. The following are a few of the notable ones:

Population Growth: The main reason for India's quick increase in the number of agricultural workers is the country's rapid population growth. Since 1921, known as the "great divide" in

India's demographic history, the population has tended to grow rapidly. On the other hand, the pace of economic expansion was unable to provide enough secondary and tertiary sector jobs. As a result, more labourers are being forced to work in the agricultural industry.

The absence of career paths outside of agriculture: India lacks career paths outside of agriculture. As a consequence, the workforce (which develops mostly in rural regions) is restricted to those areas, increasing its reliance on agriculture via agricultural labour.

Village Industry Decline: Prior to the arrival of the British, India's rural economy benefited greatly from the cottage industry. It reduced the strain of population growth on the land. But cottage manufacturing declined throughout the British era. It also eliminated job possibilities. As a result, the majority of the labour force was forced to rely on agriculture for employment. Agriculture became more important, which also helped the class of agricultural workers grow.

Mobility Restraints: In India, labour mobility is influenced by more than only economic variables. Both societal and familial factors have a big impact on it. Except briefly during the off-seasons, these factors have often operated as a barrier to the transfer of labour from agriculture to non-agricultural professions.

Small and marginal holders' indebtedness: In India, indebtedness has been small and marginal holders' defining trait. Many of these landowners have given in to financial pressure and sold their properties, becoming landless agricultural workers as a result.

Oppressive Land-Tenurial System during British administration: India underwent an oppressive land-tenurial system under British administration. In order to increase their earnings, landlords and zamindars often used mass evictions of tenants. Permanent renters thus became little better than slaves.

Inadequate Enforcement of Land Reforms After Independence: The Zamindari system, a regressive method of collecting land income, was eliminated. The introduction of a holdings ceiling and the redistribution of excess land among small and marginal landowners as well as among landless workers were other developments. But the majority of the time, the administration was unable to maintain the changes. After the original debt was paid off, it was just a matter of time until small and marginal landowners as well as agricultural employees lost their land. Their land never had any kind of substantial support system added to it. Land by itself is insufficient for productivity. It should be backed up by additional resources including equipment, implements, seeds, water, and fertilizer inputs. In the beginning, a mortgage seemed nearly unavoidable, and in the end, a frantic sale of their land seemed to be the only option [9], [10].

Improvements to Agricultural Labourers' Conditions

The following are some broad recommendations to enhance the socioeconomic circumstances of agricultural labourers:

Effective Application of Minimum Wage Act: India pays very little for agricultural work. With a few exceptions, such as Punjab and Kerala, the national average pay rate for agricultural work is almost at an all-time low in the majority of states. Labourers are still recruited at subsistence wages notwithstanding the Minimum Wages Act of 1948. This suggests that there is blatant leniency in the application of the law. This sloppiness has to be fixed. The state should make arrangements for the periodic modification of pay structures in line with pricing structures and guarantee that farm workers are given salaries in compliance with the Minimum salaries Act.

Agriculture Development: Raising productivity standards in the agricultural industry and developing technologies to promote multi-cropping systems are very necessary if we are to find a long-term solution to the issues facing agricultural workers. This will lead to lucrative work prospects. The hiring of agricultural labour will come with a fair pay scale.

Alternative job alternatives: The government has to concentrate on creating job alternatives outside of agriculture. This will make it easier for employees to transition from agriculture to nonagricultural sectors of the economy. As a result, the strain of an overburdened work force on the land would be lessened, and rural pay rates would increase to catch up to urban wage rates. The construction of rural village infrastructure and the growth of rural industry, notably the agro-processing sector, may result in the creation of alternative job options.

Establishing Peasant Unions: Peasant unions should be established in order to strengthen the negotiating power of agricultural workers. Through their unions, agricultural workers may negotiate for more pay and reduced working hours. Government and non-governmental organisations should take the initiative to help create these unions.

Rehabilitation and Settlement: Land and other long-lasting assets should be made available to agricultural workers so they may start their own businesses and make enough money to support themselves. If the government efficiently implements the land ceiling legislation, this is possible. The excess that results from the application of this rule should be given to the workers who are without land. Through unique programmes supported by the government and non-governmental organisations, inputs (seeds, fertilisers, and other items) may be delivered.

Social Security: Agricultural labourers should have access to social security, just as employees in the industrial and service sectors. The government should provide insurance and pension plans with affordable premiums (or at no cost) expressly to solve the issues faced by farm labour.

Elimination of the Bonded Labour System and Other Forms of Exploitation: Although the concept of bonded labour was outlawed in India (by the Abolition of Bonded Labour System Act, 1976), it is still used in certain regions of the nation. If one looked at the rural regions looking for individuals who are bound to their masters in return for their financial stability (at that subsistence level), the examples of bonded labour would increase from hundreds to centuries.

The legislation removing the system of bonded work has not yet been fully implemented. The government must firmly execute the law and serve as an example for lawbreakers by punishing them severely. An emphasis should be given to addressing other kinds of exploitation of agricultural labourers, such as inadequate pay in kind and lengthy workdays.

In conclusion, we may say that Indian agricultural workers are a class that endure a horrible lot. Their population is growing, and their poverty and squalor are taking on grave proportions. This is a significant societal threat; especially given that we claim to be the tenth-largest industrialised economy in the world. The government has launched a number of initiatives to address the issue, demonstrating its serious worries about it. But as usual, the government has great ideas for programmes and activities but struggles to put them into action.

Agenda of The State for Agricultural Labor

To ameliorate the situation of agricultural employees, the government has adopted a number of corrective measures. These include the Minimum Wage Act, rural employment initiatives,

the elimination of bonded work, the creation of a national committee on rural labour, among others.

The agricultural workers, especially the landless ones, come from underdeveloped areas, have social impairments, and are vulnerable to economic abuse. Their standard of life is poor, and their incomes are often below the poverty line, erratic, and insufficient for subsistence. Therefore, according to what was noted in the First Plan, "Agricultural labour population are concentrated mostly in areas where population presses heavily on the land and the development in sectors of the economy other than the agricultural has been retarded." Because a rise in the pace of growth is the effective solution to the issue of unemployment and underemployment, it should be feasible to make a significant contribution to the problem of rehabilitating agricultural workers by choosing such regions for special programs such as C.D.P.

Programs Specifically for Agricultural Laborers

The majority of India's rural working population consists of small farmers and agricultural workers who do not own land. The issues faced by small farmers and agricultural workers differ from region to region, but the most prevalent issues include small and fragmented holdings, a lack of security of tenancy, an insufficient and inconsistent supply of agricultural supplies, and an absence of suitable finance and marketing facilities. All of these have made it very difficult to build agriculture on a stable foundation and to improve the economic and social circumstances of these people. Therefore, during the Fourth Plan period, a number of well-defined programmes were launched, especially to increase employment opportunities and the productive potential of the economically weak farmers and landless agricultural labourers, with the goal of enabling the weaker sections of the rural population to benefit from the economic growth in the rural areas through spread of new technology.

Marginal Farmers and Agricultural Labourers and Small Farmers' Development Agencies (SFDA & MFAL). When analysing the issue of small holdings, the All-India Rural Credit Review Committee (1969) came to the opinion that by providing enough state assistance and making the necessary institutional adjustments, it would be feasible to successfully address the issues facing what it referred to as "potentially viable farmers." These farmers were small farmers whose agricultural operations might be made sustainable with assistance from irrigation, fair pricing on goods and services, etc. Therefore, it offered ways to increase the flow of institutional credit and other state aid to the small farmers in an effort to elevate their economy to a level of surplus. It also advocated institutional establishment in the form of a Small Farmers Development Agency.

As a result, the Planning Commission suggested the implementation of two pilot project-style plans in the Central Sector of the Fourth Five Year Plan. One was the Marginal Farmers and Agricultural Labourers (MFAL) programme, and the other was the Small Farmers' Development Agencies (SFDA) plan. Because the emphasis on programming in the two projects varied, it was decided to keep the SFDA Projects separate from the MFAL Projects. However, it was found that sometimes, their operational zones can overlap. As a result, it was thought that the SFDA may be used as a tool for carrying out the MFAL programme. The Swarnajayanti Gramme Swarozgar Yojana, which was created by merging the plan with the Integrated Rural Development Programme (IRDP) and other schemes, was launched in 1971–1972. In 2011, the SGSY underwent a name change to become the National Rural Livelihood Mission, which was later combined with the Deen Dayal Upadhayaya Antyodaya Yojana [11], [12].

For the purposes of these initiatives, a small farmer is someone who owns between 2.5 and 5 acres of land, while a marginal farmer is someone who owns less than 2.5 acres of dry land. The maximum amount of land that may be held in irrigated areas is typically 50% of the values shown above. The definition of a landless agricultural labourer is one who does not own any land but has a permanent homestead and makes more than half of his living from farming. The agencies' duties include identifying participants in accordance with the guidelines established by the Indian government, developing appropriate programmes for bettering agriculture and related jobs, securing credit from institutional sources, and implementing the programmes through the already-established development and extension organisations in the project area.

Crop husbandry is the agencies' primary focus in the project region. Programmes for auxiliary vocations are also pursued based on how well the marketing infrastructure works. Land development, soil conservation, minor irrigation, horticulture, demonstrations, introduction of new and improved varieties, adoption of various cropping patterns, etc. are all included in the project for enhanced agriculture. The use of dry land agricultural methods and water harvesting techniques in rainfed regions is stressed heavily. The provision of milk animals, poultry, piggery, sheep and goat farming, and fisheries are among the ancillary professions.

Small farmers who have been recognized may get subsidies of up to 25%, while marginal farmers and agricultural workers may receive subsidies of up to 33.3% of the investment cost for different initiatives. For such a subsidy from project funds to a single participant for the whole project time, a cap of 3,000 has been established. Subsidy up to 50% from the project budget is permitted for group communal projects like community irrigation works. The following findings would highlight the accomplishments of these initiatives:

"We have enough proof to show that the issue of small farmer identification has not received the proper attention." Our perception is that farmers attempt to make the necessary modifications to pocket the advantages of the SFDA scheme as though it were a program with prolonged rewards. Due to leakages, small farmers have not received all of the advantages offered by the plan. The program's actual efficacy has been determined to be at least 30%.

Although the scheme was mainly meant to benefit marginal farmers, different research done in MFAL regions found that out of the 48 participant homes chosen for the study, six possessed lands between twenty-eight and four hectares. These characteristics are unsettling. If the initiative for small and marginal farmers is to actually remove their poverty, it is essential to be watchful, picky, and to only provide state aid to those who truly need it. It is not acceptable to enable programming leaks to weaken it. The National Commissions on Labour have advised the following in light of these findings:

For the purposes of the plan, marginal farmers' maximum holdings should not exceed 1 hectare and small farmers' maximum holdings should not exceed 2 hectares. To guarantee that the plan has the essential tilt in favor of marginal farmers, the coverage of small and marginal farmers in the combined project regions should ideally be in the ratio of 1: 3 on average (as opposed to 3 at present). There should be one agency for each district, and 70,000 farmers (17,500 small and 52,500 marginal) should be included in each region served by the agency. During the Five Year Plan, the initiative shall be expanded to 160 units, serving 11 million households.

It would be suitable and reasonable to allocate the extra agency units based on the number of small and marginal farmers and agricultural workers that are distributed by state. When

expanding the initiative, a focus on the selection of regions with reasonably guaranteed rainfall should be made. It is not necessary to expand the plan to drought-affected regions when a separate initiative has been implemented. In these combined programmes districts, which correspond with those for the special subsidiary programmes, individual subsidiary programmes such as milk production, poultry raising, sheep rearing, and pig production should be overlaid as distinct programmes.

The combined programme agency shall maintain constant communication with the special subsidiary programmes and be in charge of selecting the small and marginal farmers and agricultural workers who would benefit from these programmes. The whole programme has to be time- and goal-bound, and it needs to be carried out quickly. The districts' extension infrastructure has to be improved and refocused to give special attention to the issues facing small and marginal farmers. To assure the provision of financing, service, supply and marketing facilities as well as technical guidance in one location, Farmers' Service Societies shall be created as many times as feasible in the project regions.

CONCLUSION

Small farmers' productivity and access to markets may both be improved by integrating them into value chains and using technology and digital platforms. The risks encountered by small farmers and agricultural workers during times of crises or market fluctuations may also be reduced by adopting social protection measures, such as insurance plans and safety nets. In order to ensure food security and rural development, small farmers and agricultural labourers play a significant role, hence it is essential to build an environment that meets their requirements. To implement inclusive policies and programmes that empower small farmers and enhance the living conditions of agricultural labourers, cooperation between governments, civil society organisations, and the corporate sector is crucial. In conclusion, small farmers and agricultural workers encounter a variety of difficulties that impede their effectiveness, prosperity, and wellbeing. Nevertheless, with focused interventions that focus on their particular requirements, such as access to loans, market connections, infrastructure, and social security, their vulnerabilities may be decreased and their contributions to food production and rural economies can be increased. Supporting small farmers and agricultural workers, safeguarding their sustainable livelihoods, and promoting rural development need an all-encompassing and inclusive strategy.

REFERENCES:

[1] H. Lu and H. Xie, “Impact of changes in labor resources and transfers of land use rights on agricultural non-point source pollution in Jiangsu Province, China,” *J. Environ. Manage.*, 2018, doi: 10.1016/j.jenvman.2017.11.033.

[2] S. Liu, R. Wang, and G. Shi, “Historical Transformation of China’s Agriculture: Productivity Changes and Other Key Features,” *China World Econ.*, 2018, doi: 10.1111/cwe.12228.

[3] T. Q. Thoai, R. F. Rañola, L. D. Camacho, and E. Simelton, “Determinants of farmers’ adaptation to climate change in agricultural production in the central region of Vietnam,” *Land use policy*, 2018, doi: 10.1016/j.landusepol.2017.10.023.

[4] M. A. Bwala and A. U. John, “Profitability analysis of paddy production: A case of agricultural zone 1, Niger State Nigeria,” *J. Bangladesh Agric. Univ.*, 2018, doi: 10.3329/jbau.v16i1.36486.

[5] F. Boncinelli, F. Bartolini, and L. Casini, "Structural factors of labour allocation for farm diversification activities," *Land use policy*, 2018, doi: 10.1016/j.landusepol.2017.11.058.

[6] L. Paresys *et al.*, "Feeding the world while reducing farmer poverty? Analysis of rice relative yield and labour productivity gaps in two Beninese villages," *Eur. J. Agron.*, 2018, doi: 10.1016/j.eja.2017.10.009.

[7] L. Lindawati, M. B. Sibuea, D. Novita, M. I. Riyadh, and A. Hasibuan, "A comparative analysis of economic farming activity of farmers rice-livestock integrated farming system (RLIFS) and non RLIFS," *Int. J. Eng. Technol.*, 2018, doi: 10.14419/ijet.v7i2.29.14258.

[8] S. Kumar *et al.*, "Integrated farming system in India: Current status, scope and future prospects in changing agricultural scenario," *Indian Journal of Agricultural Sciences*. 2018. doi: 10.56093/ijas.v88i11.84880.

[9] K. Emerick, "Agricultural productivity and the sectoral reallocation of labor in rural India," *J. Dev. Econ.*, 2018, doi: 10.1016/j.jdeveco.2018.08.013.

[10] J. Shinoff, "22. The Feminization of Agricultural Labour in India, With a Case Study of the Semi-Arid Region of Andhra Pradesh: A Means of Empowerment or a Method of Domination?," *Inq. Undergrad. Res. Conf. Proc.*, 2018, doi: 10.24908/iqurcp.10704.

[11] Z. A. Wagan, Z. Chen, H. Seelro, and M. S. Shah, "Assessing the effect of monetary policy on agricultural growth and food prices," *Agric. Econ. (Czech Republic)*, 2018, doi: 10.17221/295/2017-AGRICECON.

[12] E. Berg, S. Bhattacharyya, D. Rajasekhar, and R. Manjula, "Can public works increase equilibrium wages? Evidence from India's National Rural Employment Guarantee," *World Dev.*, 2018, doi: 10.1016/j.worlddev.2017.10.027.

CHAPTER 16

RAPID-PROGRESS OF RURAL DEVELOPMENT SCHEME

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ABSTRACT:

The innovative and comprehensive Rapid-Progress Rural Development Scheme (RP-RDS) programme aims to hasten the growth and development of rural regions. By tackling major problems encountered by rural populations, it aims to close the socioeconomic gap between rural and urban areas. With a focus on its goals, tactics, and prospective effects, this abstract gives a general overview of the RP-RDS.

The main goal of the RP-RDS is to support equitable and sustainable development in rural regions by encouraging economic growth, developing infrastructure, and improving the standard of living for rural populations. The plan focuses on sectors including agriculture, education, healthcare, connectivity, and skill development in order to take into consideration the various demands of various regions. The RP-RDS uses a multi-pronged strategy to accomplish its goals.

It entails directing a large amount of money into rural development initiatives, allowing for the construction of vital amenities including roads, power plants, water supplies, and sewage systems. The programme also places a focus on raising agricultural production by giving farmers access to modern technology, better irrigation systems, and financial options. The RP-RDS aims to provide rural communities with the knowledge and skills required for economic and social advancement, and education and skill development are essential elements of this programme. The programme makes it easier to set up educational institutions, career training facilities, and online learning platforms to support rural youth in obtaining an education and developing their skills.

KEYWORDS:

Agriculture, Development, Economic, Land, Region.

INTRODUCTION

The Central Government funded and the State Governments implemented the Crash Scheme for Rural Development (CSRD) in April 1971 for a three-year period. The scheme's main goals were as follows: The creation of direct employment for 1,000 people on average, consistently during a ten-month work year, in all rural areas of the nation via the implementation of projects that are mostly labor-intensive. The creation of durable goods or works in accordance with regional development strategies to support the districts' overall growth.

Land development and reclamation, road construction, drainage, minor irrigation, water conservation and ground water recharging, soil conservation, afforestation, and specific repairs were among the labor-intensive projects that would be primarily undertaken under this strategy. The State Governments were given particular instructions for choosing the project employees and allocating funding in order to carry out these goals.

50 crores were initially allotted in 1971–1972; however, 48.4 crores and 47.5 crores were awarded in 1973–1974 and 972-73, respectively. This cutback resulted from the

implementation of the "Pilot of Intensive Rural Employment Project" (PIREP), a special initiative with a budget of 1.5 crore for 1972–73 and 2.5 crore for 1973–74. A total of 156.6 crores were spent on different programmes throughout the three years 1971–1974, of which 79 percent went towards building roads and 10 percent towards small irrigation projects [1], [2]. The examination of the scheme's operation yields the following conclusions:

1. These projects' daily pay rates were noticeably lower than standard wage rates.
2. In comparison to the proportional labour force in the states, the coverage of the working population was uneven and out of proportion.
3. The initiatives failed to diversify or repurpose rural labour for use in other areas of the economy.
4. The majority of the projects had an absorptive character, which meant that they couldn't offer opportunities for ongoing employment since, as soon as they were finished, they made the employees unemployed.
5. The initiative did not set the stage for the industrialization of the rural economy, which is essential for generating steady employment prospects.

Program for Integrated Land Distribution

During the third and succeeding plans, the Planning Commission developed and put into action an integrated land allocation scheme. By dispersing the land that has been made available via reclamations and purchase as surplus land above the cap on holding of property, the goal has been to eliminate the limitations faced by small farmers and the poverty experienced by agricultural labourers who lack access to land. The plan aimed to alter rural development policy "to enhance the productive and absorptive capacities of millions of small farmers." The policy used for land allocation is:

1. In dry lands, no family ownership holding shall be bigger than 10 hectares and 8 hectares, respectively.
2. Households who do not own land or cultivate it will not be allocated agricultural land that has been freed for redistribution.
3. Households with fewer than 2 hectares of land are to receive the lands made available by setting a holdings ceiling.

The disparity in per capita land ownership between the poorest and greatest family holdings was anticipated to be more than five times under such a land allocation programme. In addition, the percentage of individuals living in poverty would drop from two-fifths to around one-third.

For the allocation of government and fallow lands, guidelines have been developed in practically all states to give precedence to landless workers, especially those who belong to the Scheduled Castes and Scheduled Tribes. All rural households that live below the poverty level are eligible for help under the IRDP. A reservation of up to 50% of the total number of helped families is made for SC/ST. During the Seventh Plan, it was anticipated that 20 million households would get assistance via IRDP. All of the nation's community development blocks have adopted IRDP. In addition, from the excess land created by the execution of ceiling regulations, lakhs of hectares were donated to workers who were without land. As was previously indicated, the IRDP was combined to create the Swarnajayanti Swarozgar Yojana in 1999. It eventually underwent a name change to the National Rural Livelihood Mission and was merged to create the Deen Dayal Upadhayaya-Antyodaya Yojana [3], [4].

Programme for National Rural Employment

The NREP was introduced in October 1980 and started airing regularly in April 1981. The plan was anticipated to provide 300–400 million man-days of new meaningful work annually in rural regions. The NREP plan was anticipated to build enduring communal assets, enhance the nutritional condition of the underprivileged, and raise their level of life. The development of long-lasting assets is one of this program's key goals. 1775,5,000,000 mandays worth of jobs were produced by the National Rural jobs Programme. Social forestry, soil conservation, road building, and tank construction all resulted in the creation of durable assets. Under the initiative, additional irrigation potential was also generated. In 1989, the NREP was transformed into the Jawahar Rozgaar Yojana [4].

DISCUSSION

Guaranteed Employment for Landless Rural People

With the intention of giving at least one member of every landless household a guaranteed job for a certain number of days each year, the RLEGPW was launched on August 15th, 1983. Its secondary goals were to build durable assets for infrastructure strengthening in order to meet the expanding demands of the economy. In comparison to the 360 million man-days set as the aim for job creation in 1983–1984, 260 days of employment were actually produced. It is anticipated that this plan would have produced a significant number of long-lasting community assets and economic infrastructure in the rural regions. The Seventh Five Year Plan allocated 743.78 crore for this initiative in the central sector with the intention of creating 1013 million man-days of employment over the plan period. In 1989, the programme and the Jawahar Rozgaar Yojana were combined.

Jawahar Rojgar Yojna

Launched in 1988–1989, the Jawahar Rojgar Yojna aimed to improve job prospects in rural regions. The Jawahar Rojgar Yojana combines the National Rural Employment Programme with the Rural Labour Employment Programmes. Women from the economically disadvantaged parts of society are only allowed to apply for 30% of the jobs generated under the scheme. Since 1993–1994 JRY has been applied in the three streams listed below. The first stream consists of JRY-related general works. The second JRY stream, also known as the enhanced JRY, is implemented in 120 designated underdeveloped regions with extra funding. JRY's third stream comprises of unique and exceptional initiatives. About 896 million man-days of employment were created under JRY in 1995–96, however this was a lesser accomplishment than in 1994–95 and 1993–94. Strengthening the Jawahar Rojgar Yojana is necessary.

Scheme for Employment Assurance

On October 2, 1993, the Employment Assurance Scheme was introduced. The programme sought to provide guaranteed employment to all rural residents who fell below the poverty line, were looking for work, but were having trouble finding it. There are 3206 community development blocks where the plan is being put into action. The plan will be made global, it has been decided. By 1998–199, every community development block will be covered by the plan. In 1995–96, there were over 347 million man-days of employment created, compared to 274 million man-days in 1994–1995. The program's scope has also been expanded to allow for the implementation of horticultural projects on the private property of marginal farmers who are beneficiaries. In order to create the Sampoorna Grameen Rozgar Yojana, the Jawahar Rozgaar Yojana, Employment Assurance Scheme (EAS), and Jawahar Gramme

Samridhi Yojana (JGSY) were combined. In 2005–2008, under the MGNREGA, they were combined to create the National Rural Employment Guarantee Scheme [5], [6].

Removal of Bonded Labour

There hasn't been any disagreement over the need of ending the system since the country's independence. "Traffic in human beings and beggars and other similar forms of forced labour are prohibited," states Article 23 (1) of the Constitution's chapter on Fundamental Rights. "Any contravention of this provision shall be an offence punishable in accordance with law." India is a party to International Labour Organisation (ILO) Convention 29, which states that "forced or compulsory labour" is not permitted. Any kind of forced work is prohibited under Section 374 of the Indian Penal Code. The Commissioner for Scheduled Castes and Scheduled Tribes had often called attention to the need for specific laws to end bonded work, and the Dhebar Commission emphasised this need in 1961.

On October 25, 1975, the Union Government officially ended the practise by issuing a notice stating that "No person shall make any advance under the system or compel any person or render any bonded labour or other form of forced labour." Any custom, practise, or agreement by a family member or dependant of such a person that requires them to do any labour as bonded labour is invalid and unenforceable. A person who has been liberated and discharged in accordance with this regulation is not permitted to be removed from his homestead or other domestic property. All assets held by a bonded worker under any charge, lien, or other encumbrance in connection with any bonded obligation must be released and shall be delivered back to the bonded worker's ownership. Such a worker is entitled to compensation from the mortgagee, charge, or encumbrance as assessed by the civil court if any delay is made in repairing any property.

According to the ordinance, there is no longer any need to pay back bonded debt. A bound worker's responsibility to pay back any bonded debt or the portion of a bonded debt that isn't paid right away is judged to have ended. For the purpose of recovering a bonded obligation in whole or in part, no action may be brought in a civil court or before another authority. No creditor may accept payment for a bond obligation that has been completely paid, declared to be extinguished, or is otherwise understood to have been extinguished. Any breach of the requirements of the Ordinance is a cognizable crime, punishable by up to three years in jail, a fine of up to $2,000, or both. There are numerous programmes in place for agricultural workers throughout the nation:

Soil Health Card Scheme: Introduced in 2015, the Soil Health Cards tell farmers on the nutrient state of their soil and provide recommendations on the right amount of nutrients to apply to increase soil health and fertility.

Paramparagat Krishi Vikas Yojana (PKVY): This programme is being launched to encourage organic farming across the nation. This will raise the farmer's net income and increase the amount of organic matter in the soil, allowing him to sell his produce for higher prices.

Pradhan Mantri Krishi Sinchayee Yojana (PMKSY): This programme, which was introduced on July 1st, 2015, aims to extend cultivated land with guaranteed irrigation, decrease water waste, and increase water usage effectiveness.

Nationwide Agriculture Market (e-NAM): By March 2018, the National Agriculture Market scheme (e-NAM) plans to launch a nationwide e-marketing platform and promote the development of infrastructure in 585 regulated marketplaces throughout the nation. The Pradhan Mantri Fasal Bima Yojana (PMFBY)/Restructured Weather Based Crop Insurance

Scheme (RWBCIS) is a comprehensive crop insurance programme that covers losses from pre-sowing to post-harvest against unavoidable natural hazard [7], [8].

Interest Subvention Scheme (ISS): Under this programme, the government would pay 3% less in interest on short-term agricultural loans up to Rs. 3.00 lakh. Physical labour performed on other people's farms and fields is referred to as agricultural labour in India. Agricultural labourers are mostly unskilled and depend on payment for their services, either in cash or in-kind.

There are two main groups of agricultural labour in India: Landless workers, which includes both independent and bonded landless labour. Employing small and marginal farmers as farmworkers. The main characteristics of agricultural work include: lack of organisation, poor pay, low social standing, lack of skills, itinerant nature, and debt. Even as a share of the nation's overall labour force, the growth of the agricultural worker force is astounding. In 1901, it was around 17%, and in 2001, it was about 27%.But it should be noted that during the censuses of 1971 and 2001, this proportion tended to steady at around 26 to 27%.

There are several reasons why the number of agricultural workers is increasing in India, including population increase, a lack of skills for jobs outside of agriculture, the demise of village industries, movement restrictions, debt, and a harsh tenancy system. Disguised unemployment occurs when there are much more employees working on a project than are really needed to complete it. Even if some of them leave that employment, the overall output will not decrease. The fact that agriculture is a seasonal industry accounts for seasonal unemployment. Crops are raised in accordance with the appropriate seasons. Typically, agricultural employees are idle during the off-season. There is nothing for them to do.

The agricultural workers are a very underprivileged class. Compared to industrial work, their pay are much lower. However, the Central Government already has set minimum pay in certain of the military farms, research facilities, and demonstration farms it controls. Several well-defined programmes were launched during the Fourth Plan period, particularly to increase employment opportunities and the productive potential of the economically weak farmers and landless agricultural labourers, in order to enable the weaker sections of the rural population to benefit from the economic growth in the rural areas through spread of new technology. Marginal Farmers and Agricultural Labourers (MFAL) and Small Farmers' Development Agencies (SFDA): The agencies' responsibilities include locating participants in accordance with the guidelines established by the Indian government, creating workable financial arrangements, and securing programme execution via already-established development and extension organisations in the project region.

Crash Scheme for Rural Development: The scheme's main goals were to directly create jobs for 1,000 people on average, continuously over a ten-month work season throughout all rural districts of the nation, and (ii)produce durable assets or works in accordance with local development plans. During the third and succeeding plans, the Planning Commission developed and put into action an Integrated Land Distribution Programme. By redistributing the land that was made available through reclamations and acquisitions as surplus land above the ceiling on holding of land, the goal has been to eliminate the limitations faced by small farmers and the poverty experienced by landless agricultural labour. The NREP programme was expected to create lasting community assets and improve the nutritional status and living standards of the underprivileged. The development of long-lasting assets is one of this program's key goals [9], [10].

The RLEGPW was established with the following goals in mind: increasing and improving employment opportunities for rural landless people in order to guarantee employment for at

least one member of every landless household for a specified number of days each year; and developing durable assets for bolstering infrastructure in order to meet the expanding demands of the economy. Any kind of forced work is illegal under Section 374 of the Indian Penal Code. India is a party to International Labour Organisation (ILO) Convention 29, which states that "forced or compulsory labour" is not permitted. The seventh five-year plan's last year saw the introduction of the Jawahar Rojgar Yojana. The creation of employment in productive labour is the program's main goal. The Employment Assurance Scheme is being used in 1778 underprivileged areas of the nation. It intends to provide up to two family members 100 days of unskilled physical labour.

CONCLUSION

Enhancing healthcare in rural regions is another goal of the RP-RDS. Construction and renovation of healthcare facilities, the use of medical professionals, and the implementation of preventative healthcare initiatives are all included. By ensuring that rural and urban people have access to high-quality medical care, the programme seeks to narrow the gap in healthcare between them. Wide-ranging effects might result from the RP-RDS. The programme opens doors for rural entrepreneurship, job development, and income production through encouraging economic growth and enhancing infrastructure. Raising living standards, lowering poverty rates, and promoting rural-urban migration are all benefits. Innovating, exchanging information, and integrating the market are all facilitated by the increased connection and access to resources. In conclusion, the Rapid-Progress Rural Development Scheme (RP-RDS) is a thorough programme created to hasten rural development, solve socioeconomic issues, and encourage inclusive growth. The plan seeks to close the gap between rural and urban areas, raise living standards, and generate sustainable economic possibilities by concentrating on infrastructure, agriculture, education, healthcare, and skill development. The RP-RDS has the ability to revolutionise rural communities via its multidimensional approach, releasing their actual potential and assisting in the growth of the whole country.

REFERENCES:

[1] S. Singh, “Impact of Micro-Finance on Women Empowerment in India.,” *Adhyayan A J. Manag. Sci.*, 2018.

[2] D. B. Tripathy and S. Raha, “Role of Government o n Women Empowerment in India,” *Adhyayan A J. Manag. Sci.*, 2018.

[3] H. E. B. M. Ahmed, “Impact of Microfinance on Women Empowerment, Gezira State, Sudan,” *Univ. Gezira*, 2018.

[4] M. L. G. Munish Kapila, Anju Singla, “Impact of Micro-Finance on Women Empowerment in India.,” *Adhyayan A J. Manag. Sci.*, 2018.

[5] M. Aklin, S. P. Harish, and J. Urpelainen, “A global analysis of progress in household electrification,” *Energy Policy*, 2018, doi: 10.1016/j.enpol.2018.07.018.

[6] D. Qu, X. Wang, C. Kang, and Y. Liu, “Promoting agricultural and rural modernization through application of information and communication technologies in China,” *Int. J. Agric. Biol. Eng.*, 2018, doi: 10.25165/j.ijabe.20181106.4228.

[7] M. Fanea-Ivanovici, “Culture as a prerequisite for sustainable development. An investigation into the process of cultural content digitisation in Romania,” *Sustain.*, 2018, doi: 10.3390/su10061859.

[8] P. Sandbhor Gaikwad and R. Banerjee, "Advances in point-of-care diagnostic devices in cancers," *Analyst*. 2018. doi: 10.1039/c7an01771e.

[9] G. F. Garuma, "Review of urban surface parameterizations for numerical climate models," *Urban Climate*. 2018. doi: 10.1016/j.uclim.2017.10.006.

[10] L. Ma, W. Cheng, and J. Qi, "Coordinated evaluation and development model of oasis urbanization from the perspective of new urbanization: A case study in Shandan County of Heixi Corridor, China," *Sustain. Cities Soc.*, 2018, doi: 10.1016/j.scs.2018.02.007.

CHAPTER 17

EXPLORING THE IMPORTANCE OF AGRICULTURAL MARKETING

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ABSTRACT:

Agricultural marketing is essential to the agricultural industry because it makes the interchange of agricultural goods between farmers and customers more effective. This summary gives a general overview of the significance of agricultural marketing, emphasising how it contributes to farm profitability, food security, rural development, and market integration. Farm profitability must be increased via efficient agricultural marketing. Farmers may get access to more markets, get higher pricing for their goods, and lower post-harvest losses thanks to it. Agricultural marketing channels provide up options for value addition, product differentiation, and market diversification by linking farmers with customers, intermediaries, and processors. This in turn helps to boost agricultural revenue, rural residents' quality of life, and the local economy. Beyond a single farmer, agricultural marketing is significant. At both the national and international levels, it is essential to guaranteeing food security. Effective marketing strategies aid in the timely distribution of agricultural goods, cut down on waste, and guarantee a sufficient supply of food. Additionally, efficient marketing strategies encourage farmers to boost output, make investments in quality enhancement, and use sustainable agricultural methods, all of which support long-term food security. By boosting economic activity in rural regions, agricultural marketing also aids in rural development. It supports agro-processing enterprises, transportation, storage, and marketing infrastructure, generating jobs throughout the value chain. As a result, auxiliary businesses and services flourish, promoting social welfare, poverty eradication, and overall rural development.

KEYWORDS:

Agriculture, Development, Economic, Marketing, Strategy.

INTRODUCTION

Before India gained its independence, the average Indian farmer struggled to make ends meet and sought to sell off his grain as soon as it was harvested, regardless of the fact that market prices were low at the time. Because there were overabundances of goods on the market just after harvest, prices were often cheap. The majority of farmers essentially had no awareness of the mandis, or local market. They were unaware of the pricing that were in control throughout the various mandis since there was no marketing information system. They were thus forced to accept the prices that were given to them. Because there were no institutional sources of credit at all, the farmers were completely dependent on moneylenders whose only goal was to take advantage of them. As a result, after gaining independence, our nation's policymakers chose to create an effective agricultural marketing system here.

The Indian economy's most significant sector since Independence has been the agricultural products industry. The rising trend in agricultural output has brought with it new difficulties in terms of selling the excess that has been sold. In the liberalised trade environment, there is also a need to adapt to the possibilities and difficulties that the global markets provide. The nation's internal agricultural marketing system has to be linked and improved in order to take

advantage of the new chances for accessing the global market on behalf of the farming community. In order to maximise the benefits to the farmers and to compete with the global markets, the Indian government is working to develop the domestic agricultural markets and marketing environment. To address market demands and customer preferences, agriculture and agricultural marketing must be reoriented. To accomplish the aforementioned goal, agricultural marketing reform and the development of marketing infrastructure have been started [1], [2].

Marketing Structure for Agriculture

A key factor in the context of agricultural expansion is agricultural marketing. Farmers are encouraged to put up significant effort in all aspects of farming by the prompt and profitable selling of agricultural goods. A sensible farmer, in fact, keeps one eye on the market and the other on the plough. Unfortunately, there are some significant problems with India's agricultural marketing. Frequently, farmers do not get a fair price for their product. They often suffer from the "Paradox of Plenty," which states that more output results in lower income since prices tend to drop as a result of market-wide bulk purchases.

As a result, farming in India is more akin to futures bet than a source of stable revenue. Marketing is a danger and a significant threat to the enticement to invest in Indian agriculture, according to some. Agriculture's severely constrained supply price response has prevented it from becoming a profitable industry. The majority of Indian farmers still see their work as solely a means of livelihood. Due to the persistence of a rudimentary marketing framework, farming's exposure to the dynamics of supply and demand in the market is severely constrained. According to the Royal Commission Report, "Agricultural marketing must be improved if the problem of agricultural growth is to be fully resolved.

Agricultural marketing

Agricultural marketing encompasses more than just the selling of agricultural output. It is a fairly broad phrase that includes all such actions connected to the buying, sorting, moving, and ultimately selling of agricultural products. Agricultural marketing, according to Faruque, "comprises all operations involved in the movement of farm products from the producer to ultimate consumer." Broadly speaking, agricultural marketing also covers the following activities in addition to the sale of agricultural output:

1. Preparations for collecting agricultural products
2. The plan for standardising and rating the product
3. Product processing, if necessary
4. Storage warehousing facility
5. A facility for storing perishable goods in the cold

Transportation infrastructure

A credit arrangement to meet monetary needs before selling or marketing the product.Marketable excess begins to react to the relative pricing structure once a marketing framework is established, and agriculture begins to operate like other commercial companies.

Various Marketing Agency Sources

There are several marketing channels available in India for agricultural produce. The noteworthy ones are as follows:

Local market sales: at India, farmers often sell the majority of their products at unorganised local marketplaces. An official estimate is that the local markets in Bengal and Bihar each

saw the sale of 89% and 72% of the nation's rice production, respectively. According to the All India Rural Survey Committee, an Indian farmer typically sells close to 35% of his output in the village, and 24% of it to merchants and commission agents in rural regions [1], [3]. Three alternative techniques are available for selling agricultural products in local markets:

1. At rural fairs and bazaars
2. Directly to the moneylenders or Mahajans
3. To the urban areas' mobile merchants

Local sales do not bring in a fair price. The pricing is more akin to a desperate selling. Sale in urban markets: India has two sorts of urban marketplaces: o Unregulated markets

Controlled markets

The majority of the food from farmers is bought in uncontrolled marketplaces by commission agents who also happen to be moneylenders. The quantity of uncontrolled marketplaces is, nevertheless, steadily decreasing. The majority of markets are controlled and provide fair prices to the farmers while being under the direct control of the market committee more retail locations: There are several more retail locations. These are a few of them:

1. Cooperative societies for sales
2. Sales to the government directly

The Food Corporation of India, the Jute Corporation, the Cotton Corporation of India, and several other organisations allow direct sales to the government.

Agricultural Marketing's Purpose

The following are the main purposes of agricultural marketing:

1. Gathering: Gathering crops for sale in the various mandis is the first task in agricultural marketing.
2. Grading and standardisation: Sorting product based on size, quality, colour, and texture is the second purpose of grading. The standardisation process aids in validating the grading process so that it continues to be consistent or customary throughout the year.
3. Processing: Creating a consumable form out of the agricultural output is the third crucial role of agricultural marketing. For instance, milk is used to make ghee and butter, while wheat is transformed into flour. Processing helps preserve excess product that could otherwise go to waste, which is a huge benefit.
4. Transporting the finished product to the ultimate customer by land, sea, air, and train is the following crucial task. The mode of transportation must ensure that perishable goods arrive at their destination in excellent condition.
5. Storage: Local mandis import food items from all around the nation. The provision of suitable storage facilities for fruits, vegetables, and other commodities is also essential. There are several things that also need cold storage space.
6. The product must be packaged in accordance with its size and variety in order to be sold in the market. Packaging has the primary benefit of preventing food product degradation.
7. Distribution: Retailers, wholesalers, and marketers all play a part in the distribution process [4], [5].

DISCUSSION

Margin and Success

Without being efficient, the marketing strategy may nevertheless be successful. For instance, Indonesia is a nation made up of thousands of (not all of them inhabited) islands. The difficult task of physically distributing rice and making sure that everyone has access to their basic food needs fell to Bulog in Indonesia. Therefore, the Bureau of LogisticsBulog name. Before Indonesia was able to produce enough of the main food on its own, the success or failure of Bulog was solely determined on how well it distributed rice. The price of such delivery was less important as long as Bulog could maintain its expenses within the budget that was given to it.

The interests of farmers, traders, processors, wholesalers, retailers, consumers, and society at large are best served by increased efficiency. The level and/or costs of the system's inputs necessary to produce a certain level and/or quality of output are used to determine how effective a marketing system is. These inputs often take the shape of land, money, time, labour, and materials. The transportation of a predetermined quantity of goods across predetermined distances to markets, the provision of a certain level of services to predetermined market segments, and the provision of goods at predetermined prices are examples of typical outputs. Resources thus represent the expenses while utilities represent the benefits in the marketing efficiency ratio. Marketing that is effective optimises the ratio of input to outcome.

Effectiveness of Operations

When marketing expenses are cut but outputs are either maintained or grow, operational efficiency has improved. Gains in operational efficiency may include, for instance, the adoption of a less costly grain storage technique or a creative milk container that uses less energy when the product is delivered to merchants. Higher levels of operational efficiency may be attained by methods other than technological advancements. An organisation is likely to see a gain in operational efficiency if it improves its methods for acquiring raw materials, such as by centralising purchases, purchasing in bigger quantities, or taking advantage of unit freight prices. Similar to this, an organisation may boost operational efficiency by rearranging sales regions and allocating fewer but bigger loads to each delivery location. Another facet of operational efficiency is minimising physical losses when goods, produce, or products travel through the channels of distribution. The operating efficiency decreases as losses increase.

Consumer happiness is really influenced by changes in the cost of marketing, and attempts to raise customer utility often have an impact on marketing expenses. The efficiency ratio might be lowered by a new marketing strategy that cuts expenses but simultaneously lowers customer happiness. For instance, Millers may increase efficiency by selling only minimum orders of 10 kilogramme bags of meal instead of the market's standard 5 kg bags. If a significant portion of customers choose to purchase the 5-kilogramme bag, then the advantages realised by the Miller in terms of cost reduction may not outweigh the drop in customer happiness. It is tough to increase marketing efficiency since there must be a trade-off between operational efficiency and client happiness. It is simple to cut marketing expenses by doing things like reducing pack/bag sizes, doing away with packaging, or cutting back on the number of retail outlets that are supplied, but there may be a greater loss in customer satisfaction than what is made up for by the reduction in marketing expenses and

retail prices. Cost savings and consumer utility must both be taken into account when analysing any marketing modification designed to increase marketing effectiveness.

Although their objective may be larger profits, marketing organisations functioning in a competitive environment are particularly well-motivated to attempt to boost operational efficiency. Frequently, the advantages of improved operations flow to consumers in the form of cheaper pricing. Competition serves as a brake on the rate of profit growth and prevents any tendency for customer happiness and service standards to decline [6], [7].

Price Competitiveness

The second kind of marketing efficiency, pricing efficiency, is predicated on the idea that markets with competition are effective. It is concerned with the marketing system's capacity to allocate resources and plan the complete process of producing and selling food and other products for consumption. The effective use of resources and maximum economic production are proof of price efficiency. The price that consumers are willing to pay in the marketplace for the particular produce, commodity, or product may be the finest indicator of the satisfaction-output of the marketing system. It may be assumed that the juicing procedure increases the form utility of fresh oranges by three cents if customers are prepared to pay three cents more per orange for orange juice than for fresh oranges. In this case, the pricing mechanism has a direct impact on output since it suggests that a specific proportion of the oranges should be processed rather than sold as fruit. According to Kriesberg, the use of price efficiency indicators in assessing any marketing strategy relies on four factors:

1. Do consumers have options in the market from which to choose? In other words, the provision doesn't really apply to circumstances in which there is an actual monopoly.
2. The expenses of supplying alternatives are fairly reflected in the pricing of alternatives. In other words, there are no overt or covert subsidies for goods that are in competition.
3. Market entry and exit must be unrestricted for businesses.
4. There must be rivalry among people who operate in the market. For instance, cartel behaviours shouldn't be present.

According to theory, pricing of a particular product will be connected across geography, time, and across forms if markets are functioning effectively. Prices should only vary across regions of a nation based on the cost of moving goods between points. Similar to this, the cost of storage should not cause the price of things that can be stored to rise over their prior price at any given moment. Furthermore, a processed product's price should not be higher than its unprocessed counterpart's price by more than the cost of processing.Pricing efficiency proponents contend that prices that do not reflect the costs of marketing a service are indicators of functional flaws, the most obvious of which is monopolistic power. Pricing efficiency is significantly influenced by competition. Market-oriented businesses fight for customers by cutting marketing expenses, improving operational efficiency wherever feasible, and simultaneously enhancing product usefulness to increase market share.

Calculating marketing margins and expenditures

Whether goods are transported by farmers, middlemen, cooperatives, marketing boards, wholesalers, retailers, or exporters, marketing expenses are incurred when they reach their destination. Urbanisation and industrialisation tend to result in higher marketing expenses compared to the farmer's farm gate price since the product travels further, has more middlemen, and has more elaborate packaging. As a country's level of living rises, less money is spent on agricultural goods as a whole and more money is spent on more and better

marketing services, which may also be a reflection of the condition of a nation's growth. In industrialised nations, increasing the value-added entails, among other things, involving more people in selling agricultural goods than in their production [6], [8].

Labour, transportation, packing, containers, rent, utilities (water and electricity), promotion, selling costs, depreciation allowances, and interest fees are all considered marketing costs. The price of marketing varies from product to product and from one commodity to another. These disparities may be explained singly or jointly by a number of variables. They consist of the following:

1. The percentage of a customer's purchase that is spent on marketing expenditures increases with waste.
2. The expenses of marketing rise as a product becomes more perishable.
3. The expenses of marketing rise when a product is processed more.
4. The expenses of marketing increase as product handling and transportation increase.

Actions To Improve Marketing Success

India's agricultural marketing has certain severe flaws. Farmers often do not get a fair price for their product as a consequence. The following are some significant flaws:

A lack of funds: Marketing and finances are intertwined. Small farmers often rely on dealers and moneylenders for their financial requirements. Loans are often provided by merchants and moneylenders on the condition that the product be sold straight to them. As a result, the farmers are more open to being taken advantage of.

Distressed sale: A typical Indian farmer seldom ever sells his crops while facing financial hardship. Produce must be sold as soon as it is harvested due to the following reasons:

1. The Mahajans and banks are under pressure to repay their debts.
2. Farmers' domestic requirements
3. The farmer's inadequate capability for retaining

The farmer often needs to sell his product under poor circumstances and at an unpleasant moment. Absence of collective bargaining: This problem affects Indian farmers. Numerous small and marginal producers' number in the millions, making a cohesive front unlikely. They often enter the market as independent competitors with their goods. Low pricing and revenue loss are the apparent results of this. According to the Royal Commission on Agriculture, "The farmer cannot bargain better with the buyers of his produce, who are frequently very shrewd and well informed, until he learns the system of marketing himself or in cooperation with others."

Lack of grading: Indian farmers do not understand the need of classifying the harvest. No distinction is made between crops of high and low quality. Even grain of high grade sells at a cheap price when combined with grain of lower quality [9], [10].

Inadequate storage facilities: Proper storage facilities are lacking in rural regions. Insect and pest-prone subterranean pits are where crops are often thrown. This often causes the farmer to sell his goods during periods of market oversupply and low pricing.

The existence of several middlemen: The existence of many intermediaries is a fundamental flaw in India's marketing system. Between the farmer and the ultimate consumer, there is a lengthy network of middlemen that take the majority of the profit that would have otherwise gone to the farmers. According to estimates, the farmer only receives 55 paise from the sale

of each rupee's worth of rice and 50 paise from the sale of each rupee's worth of wheat. On average, the farmer only gets 60% of the amount paid by the ultimate customer, with the remaining 40% going to the middlemen.

Lack of market knowledge: Farmers sometimes are unaware of the current state of the market. Their only source of income for the price of their goods comes from commission agents. They often offer their food for sale at the neighbourhood markets run by commission salespeople and Mahajans at inexpensive costs.

Transportation bottlenecks: There aren't many affordable, quick ways to go from rural to metropolitan locations. Bullock carts are often used to transport crops. This mode of transportation moves quite slowly and is susceptible to the elements. The overall result is high transportation costs, which account for about 20% of production value.

Abuse: Abuse in the marketplaces is a regular occurrence. These have to do with weights and measurements as well as covert price fixing of products by brokers and commission agents. "Fraudulent practices in the markets are nothing short of day light robberies," the Royal Commission on Agriculture said, and it was a very wise observation [4], [11].

CONCLUSION

Numerous aspects must be taken into account if agricultural marketing is to reach its full potential. These include the creation of effective infrastructure for storage and transportation, the dissemination of market data, the establishment of suitable rules and regulations, and the provision of financial and technical assistance to farmers and other market players. Farmers' marketing knowledge and business savvy may also be improved via investments in training and capacity development programmes, giving them the ability to make wise choices and negotiate the market's intricacies. In summary, agricultural marketing is essential to the agricultural industry and is advantageous to farmers, consumers, and the entire economy. It boosts agricultural profitability, provides food security, encourages rural development, and makes market integration easier. Stakeholders can unleash the full potential of the agricultural sector and promote sustainable and equitable economic development by recognising the value of agricultural marketing and enacting supporting policies and programmes.

REFERENCES:

[1] M. S. M. Bhosage, “E-Marketing of Agricultural Products,” *Int. J. Trend Sci. Res. Dev.*, 2018, doi: 10.31142/ijtsrd18675.

[2] E. G. Onuk, N. D. Shehu, and T. A. K. Anzaku, “Factors affecting the marketing of perishables agricultural produce in Minna metropolis, Niger State, Nigeria,” *J. Agric. Sci. Pract.*, 2018, doi: 10.31248/jasp2018.091.

[3] M. Arsyad, Heliawaty, Y. Kawamura, and S. Yusuf, “Agricultural development-marketing nexus: is tengkulak truly enemy of smallholders in indonesian rural area?,” *Int. J. Agric. Syst.*, 2018.

[4] H. Akhmadi, “Use of Information and Communication Technology (ICT) on Agricultural Marketing in Indonesia a Brief Literature Review,” 2018. doi: 10.2991/fanres-18.2018.57.

[5] G. C. Rwekaza and P. Anania, "Co-operative Decision Making Structure and Its Effectiveness in Promoting Sustainable Co-operative Organizations in Tanzania: A Case of Selected Agricultural Marketing Co-operatives in Shinyanga Region," *Arts Soc. Sci. J.*, 2018, doi: 10.4172/2151-6200.1000320.

[6] H. Nugroho, R. Hendriyanto, and K. Tisamawi, "Application for Marketplace Agricultural Product," *IJAIT (International J. Appl. Inf. Technol.*, 2018, doi: 10.25124/ijait.v2i02.1286.

[7] USDA and NOP, "National Organic Program | Agricultural Marketing Service," *USDA*, 2018.

[8] A. Colman, "Farmers Markets: Access to healthy, fresh and local fruits and vegetables in your community park.," *Park. Recreat.*, 2018.

[9] C. Tumbe and I. Ralli, "The four eras of 'marketing' in twentieth century India," *J. Hist. Res. Mark.*, 2018, doi: 10.1108/JHRM-06-2017-0031.

[10] H. Singh, "Green Marketing: Challenges and Opportunities in India," *Socrates*, 2018.

[11] J. Bisen and R. Kumar, "Agricultural marketing reforms and e-national agricultural market (e-NAM) in India: a review," *Agric. Econ. Res. Rev.*, 2018, doi: 10.5958/0974-0279.2018.00032.0.

CHAPTER 18

TECHNIQUES FOR COMBATING DEFICIENCIES: AN OVERVIEW

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ABSTRACT:

Deficits in a variety of areas of life, such as social welfare, healthcare, and education, provide serious problems for both people and nations. The emphasis of this abstract is on creative strategies, legislative interventions, and cooperative initiatives for reducing deficits and resolving their root causes. Utilising focused interventions and programmes is one of the most effective ways to address shortcomings. These programmes seek to pinpoint particular areas of insufficiency and create plans for dealing with them successfully. Providing access to high-quality education, putting in place corrective measures, and fostering inclusive learning environments are a few examples of focused interventions in the subject of education. Similar initiatives may focus on expanding access to healthcare facilities, educating healthcare workers, and putting preventative healthcare programmes in place. Innovation and technology are essential in the fight against shortcomings. Technology advancements provide up new ways to overcome shortcomings by supplying creative remedies and instruments. For instance, e-learning systems that provide accessible and individualised learning experiences help close educational disparities. Remote medical consultations are made possible via telemedicine, enhancing access to medical knowledge in underdeveloped regions. Artificial intelligence and data analytics may also be used to assist find problems, examine trends, and direct decision-making for efficient solutions. In order to fully resolve inadequacies, collaboration among many stakeholders is crucial. Community participation, civil society engagement, and public-private partnerships all support practical solutions. Collaboration makes it easier to pool resources, share expertise, and take action as a group to address shortcomings. It encourages cooperation among many players, using their skills, resources, and networks to put holistic strategies into action.

KEYWORDS:

Marketing, Policy, Society, Strategy, Storage.

INTRODUCTION

Interventions in policy are essential for addressing shortcomings. Governments and institutions may be crucial in developing and carrying out policies that focus on certain areas of deficit. These policies can include actions to boost social welfare systems, manage resources more effectively, and encourage equal access to opportunities. Policy frameworks may help to support sustainable growth, social well-being, and the eradication of deficits. The government of India has launched a number of initiatives to address flaws in the agricultural marketing system. Here are a few of the crucial ones:

Price support

In order to control farmers' income, the government provides price assistance to them. Any amount of the commodity is available for purchase by the government at the set price. The Commission on Agricultural Costs and pricing sets the pricing. In order to protect farmers from market turbulence, the support price is reevaluated yearly.

Standardisation of weights and measures

In 1958, the government adopted the metric system of weights and measures in order to ensure consistent weights and measurements throughout the nation. Old weights and measurements were fully eliminated in 1966. The usage of metric weights will be supervised by weight inspectors. This has undoubtedly helped to some degree lessen market exploitation of farmers [1], [2].

Transport

Over the course of the previous three Five Year Plans, considerable advancements in transport have been made. The 20-year Hyderabad plan is now being implemented, and highways are being built. This plan stipulates that no hamlet in India should be more than 4 km away from the metalized roadways.

Development and grading of agricultural products

In order to improve the grading of agricultural products, the Agricultural Produce, Grading and Marketing Act, 1937, was enacted. In 1986, changes were made. AGMARK centres in several locations have emerged to standardise agricultural goods. The Planning Commission recommended in 1952 that agricultural products be classified in order to be exported. For the purpose of standardising agricultural goods, a central quality control laboratory as well as sixteen regional laboratories have been created. Almost 164 goods have been categorised and standardised thus far.

Storage facilities

The government has given the construction of godowns a high priority in order to improve storage facilities for farmers. For example, the National Cooperative Development Warehousing Corporation was founded in 1956, the National Cooperative Development Corporation was founded in 1963, and the Central Warehousing Corporation was founded on March 18, 1962. This company builds godowns for the Food Corporation of India to utilise. In various regions of the nation, sixteen state Warehousing Corporations have been established. The overall storage capacity of the Food Corporation of India is 235 lakh tonnes. The State Corporation's godowns can store 114 lakh tonnes in total. Hapur now hosts the Indian Grain Storage Institute. This institution provides a wide range of scientific data on grain storage. 3.354 godowns have been built by the Rural Development Corporation in rural regions. The capacity of the 247 cold storage facilities built by the National Co-operative Development Corporation is 7.4 lakh tonnes. In 2003, India had 3,546 cold storage facilities. India has a total storage capacity of 429 lakh tonnes. 424 crore was spent on increasing India's storage capacity during the Eighth Plan.

Cooperative marketing societies

In order to be useful in the context of agricultural marketing, cooperative marketing organisations have been developed. The societies are set up to sell the products produced by its members collectively. As a result, the farmers are released from the control of the middlemen. These cooperative groups have storage facilities of their own as well. These also provide financing options to their subscribers. These societies have made remarkable growth in the states of Gujarat, Maharashtra, Punjab, Haryana, and Uttar Pradesh. Since the Second Five Year Plan, these civilizations have clearly advanced. 6,980 primary cooperative marketing societies, 186 central cooperative marketing societies, and 19 state cooperative marketing societies were present in 2001. In order to facilitate international commerce and coordinate the efforts of numerous organisations, the National Agricultural Cooperative

Marketing Federation was founded in 1964. Additionally, the organisations do work for food firms around the nation. These organisations reported selling 13,600 crore worth of crops in 2001.

Marketing intelligence

In order to help farmers, the government has set up the sharing of marketing data. To do this, the All-India Market News Service was established. Every day, All India Radio broadcasts prices from various marketplaces around the nation [3], [4].

Regulated markets

Starting with the one in Hyderabad in 1943, regulated marketplaces have been formed in various regions of the nation. The following are some of these markets' key characteristics: The marketing activities are overseen by the market committee. Members of marketing committees include producers, dealers, and local self-government representatives. Licences are necessary for traders and brokers to do their jobs. The market committees alone decide on commission and brokerage. Weights and measurements are employed under the committees' close monitoring. The committees communicate information about the current market prices. State Agricultural Marketing Boards have been created by the governments of Punjab and Haryana to facilitate communication amongst their respective marketing committees.

Organisation for agricultural marketing: Directors of Marketing and Inspection was created with the goal of enhancing agricultural marketing. It emphasises the following pursuits:

1. Research
2. Development
3. Grading

The Directorate also oversees transactions for sales and purchases. An extension cell for marketing has been created. For the benefit of the farmers, it produces marketing newsletters, marketing extension newsletters, and agricultural marketing. Additionally, it provides farmers with marketing education.

DISCUSSION

India's Marketing System

In the context of agricultural growth in India, agricultural marketing is very important. An effective marketing system is essential to the success of any strategy intended to promote agricultural development.India's agricultural marketing takes one of four forms:

1. Village sales to local merchants and moneylenders
2. Sales at haats or weekly markets
3. Wholesale private mandis sales
4. Wholesale sales to dalaals in controlled mandis, who subsequently resell the product to businesses including factories, shops, and mills. In India, APMC controls how these mandis operate, and FCI buys or obtains the agricultural goods from here.
5. Sales made via cooperatives

We will go into more depth about the final one in this section since it is very common and distinctive in India. According to Professor V. Jesons, "Cooperative marketing means working together for mutual benefit in solving marketing problems" and collaboration of the farmers for their own common welfare, with regards to the selling of their output and the purchase of other inputs. The following are some of the main goals of cooperative farming:

1. These organisations sell the products of their members at reasonable costs and on schedule.
2. The members of these societies have access to a storage facility.
3. In times of need, loans are made available to member farmers.
4. Members are provided with market pricing information.
5. For the benefit of its members, the societies buy and get the essential inputs (seeds, fertilisers, etc.) [5], [6].

Cooperative Marketing Societies in India: Structure and Types

In India, cooperative marketing organisations were only allowed to sell the crops of its member farmers up until 1954. These existed independently of the credit societies. After the publication of the All-India Rural Credit Survey Report, marketing societies evolved into multipurpose organisations. The significant categories of co-operative marketing societies in India are as follows:

Primary cooperative marketing societies

These organisations function on a local level. They were established to address their members' marketing issues, but they also keep an eye on their members' credit demands in addition to those for seeds, fertiliser, and other inputs. In India, there are over 6,980 of these groups.

Central cooperative marketing societies

Central cooperative societies are organised as a federation of the several local primary societies. These deal with issues/problems that primitive cultures often encounter. These are based in both urban and rural locations. In India, there are over 186 such groups. State cooperative marketing organisations are the leading cooperative organisations in each state throughout the nation. Through the central cooperative societies, they support the operations of the basic societies. There are almost nineteen of them, which are often found in the state capitals. The National Agricultural Cooperative Marketing Society (NAFED) coordinates the operations of the numerous marketing societies in India at the national level and promotes both local and foreign commerce in agricultural goods.

Only the cooperative marketing society's members may dispose of their marketable excess. As the society produces the product, it gives the members some advance cash to cover their daily expenses. The crops are prepared after being purchased in preparation for market sale. Without the need of intermediaries, the deal is completed. Crops are held and sold later if the going rates are not profitable. The society pays its members' dues upon the final sale, accounting for the advance payment previously made. The society hires staff to conduct its daily operations, while the committee of elected members is in charge of general administration.

Cooperative marketing development in India

Societies that practise cooperative marketing have advanced significantly over time. In particular, the States of Maharashtra, Gujarat, A.P., Tamil Nadu, Punjab, Haryana, and Bihar have seen significant advancements in these societies. In the process of acquiring commercial commodities like cotton and jute as well as staple crops like wheat and rice, these organisations are providing helpful services.

Benefits of cooperative organizations

The benefits of cooperative societies are highlighted by the following observations:

1. Elimination of intermediaries: Cooperative societies have made it possible to cut out the middlemen who formerly stood between the farmer and the consumer. This has assisted in halting an unjustified price increase while also guaranteeing that farmers get a fair price for their goods.
2. Reduction in marketing expenses: As a result of the collective sale, marketing costs have decreased. Additionally, it shields the farmer from several conventional penalties for monitoring and weighing.
3. Collective bargaining and remunerative price: Because cooperative organisations sell the farmers' product collectively, they have been successful in obtaining the benefits of collective bargaining. In India, the farmer's personal negotiating power is quite low. The farmers may use their collective negotiating strength to achieve benefits in terms of a fair price for their crop.
4. Protection against distressed sales: By providing members with recurring loans, cooperative organisations have lessened the susceptibility of small and marginal farmers to rural moneylenders. The prevalence of distressed sales has decreased as a result of the societies' loans becoming available.
5. Grading and storage: The society's facility for grading aids in the standardisation of the output. The organisations also provide storage facilities to help farmers increase their holding capacity. As a result, farmers' income increases as well.
6. Procurement facility: The cooperative societies established collecting centres in practical places to make it easier to purchase the products of the members. It lowers the cost of transportation for farmers. Additionally, it relieves pressure on the limited transportation options in rural regions.
7. Gluts are avoided: Societies control the flow of market sales, preventing circumstances when there is a glut and a price drop [7], [8].

Positive aspects of cooperative societies

In this context, the following observations may be made:

1. Inactive societies: The nation is home to several inactive societies. Nearly 40% of inactive organisations don't do even five lakhs worth of commerce. These civilizations haven't yet made a significant advancement in how they run.
2. Lack of coordination: The primary, central, and state cooperatives do not work together well. As a result, farmers often sell their goods independently and directly to consumers. Maybe the farmers will still find it convenient to get loans from the dealers and commission brokers.

Advice for improvement

The structure and operation of cooperative marketing organisations indicate that there is need for significant improvement. Here are a few noteworthy recommendations:

1. Multi-purpose societies: To create multi-purpose societies, cooperative marketing societies should combine with other organisations doing business in rural regions. Such societies need to be more beneficial in promoting not only marketing but all other aspects of agricultural development and progress.
2. Direct relationship with consumers: Cooperative marketing societies need to forge direct relationships to their clientele. Without any intermediaries, the farmer will get the highest price for his product and the customer will pay the lowest price. Cooperative societies should build a comprehensive strategy that goes beyond grading and storage. They should expand their network of activities by taking on processing

tasks like extracting cotton's fibre and seeds. This would increase both the co-operatives' efficacy and farmers' profit margins.

3. Government agency: The societies need to operate as a government organisation. For instance, the societies should make sure that the Food Corporation of India only buys foodgrains through cooperative centres and not from marketplaces directly. Farmers will therefore get a fair price for their goods, which will help increase their reputation as trustworthy people in society.

Agricultural Marketing Finances

There are two types of agricultural marketing and financing requirements:

1. Considering time
2. Depending on the goal
3. Considering time

Farmers' financial requirements may be further separated into two groups:

1. Short Term: Farmers' ongoing costs, such as those for seeds, fertiliser, animal feed, selling agricultural products, paying labourers' salaries, and applying pesticides, are covered by their short-term financial demands.
2. Medium-Term: Funds are required for the purchase of animals, repayment, the building of wells and tubebells, as well as modest agricultural tools.
3. Long Term: Long-term loans are necessary for soil and land development, the construction of wells and tube bells, and the purchase of heavier agricultural equipment like tractors and harvesters. Furthermore, such a loan might be obtained to settle past-due payments as well [9], [10].

Considering the goal

Depending on the aim, the farmer's demands for agricultural financing might be categorised into the following groups:

1. Productive: All credit requirements that have an immediate impact on agricultural production are included in the productive needs. In order to buy seeds, fertiliser, manure, agricultural instruments, animals, dig and repair wells and tube wells, pay workers, make permanent improvements to the land, sell their output, and other things, farmers require loans. Such loans are often easy to repay since the manufacturing process itself usually generates the outflow needed for payments.
2. Consumption need: Loans are often needed by farmers for their own consumption. Institutional credit institutions don't provide loans for consumer use. Farmers reach out their hand to the lenders as a result.
3. Unproductive: Loans are obtained for things like lawsuits, weddings, social rituals (such the birth and death of a family member), religious gatherings, festivals, etc. that are not productive. Farmers borrow money from Mahajans since institutional credit institutions do not provide these kinds of loans.

Agriculture Finance Sources

There are two categories of agricultural financing sources:

Non-Institutional Sources

Moneylenders: Moneylenders provide loans to farmers so they may purchase the seeds they need and sell their crops. However, the interest rate is greater than the going rate in the

market. Furthermore, neither the lender nor the borrower may agree on the loan terms and conditions.

1. Relatives: The farmer's family and relatives may sometimes provide him credit to cover his agricultural necessities.
2. Traders: Based on their reputation with and familiarity with a farmer, the traders will also provide a credit line.
3. Commission agents: These agents charge a commission when they get funding for a farmer's farm from various sources.
4. Landlords: The landlords maintain the title deeds as security and provide a farmer with credit lines.

Academic Resources

Farmers who work in agriculture may get short- and medium-term loans from cooperative groups. They further provide farmers help and long-term financing. A significant part in providing short- and medium-term loans has been performed by the Primary Agriculture Cooperative Society (PACS). Ten or more people may start the PACS. These people are village residents. Each share often has a nominal value, making it possible for even the poorest farmer to join the community. The president, secretary, and treasurer are members of the elected body that oversees the operation of the organisation.

Since India's independence, PACS has been a key player in the country's agricultural financing. The Reserve Bank of India, in collaboration with the state governments, generally ensures the flow of credit provided through PACS. The main goal of the corporative society is to support and expand development programmes to the less privileged groups in society. Scheduled Commercial Banks: Although the direct financing capabilities of commercial banks were previously constrained, they are now providing indirect financing to the agricultural sector through cooperative societies. The marketing, processing, and other ancillary operations of agricultural goods are increasingly supported and funded by commercial banks. Additionally, they assist dairy farming, poultry farming, and other related agricultural pursuits.

Commercial banks are subscribing to central land development bank debentures at an increasing rate, allowing land development banks to increase the medium- and long-term loans they provide to farmers for land development and improvement. Rural regional banks: RRBs' principal goals are to boost agriculture trade, commerce, and other productive activities in rural areas, especially for small and marginal farmers, agricultural workers, craftsmen, and small business owners. Initially, five RRBs were established in 1975 with a share capital contribution made in a 50:50 split between the federal and state governments. RRBs are only applicable to one or more state districts. The regional rural bank provides direct loans and advances for productive purposes to small and marginal farmers, agricultural workers, and other people with little resources. RRB loan rates shouldn't be more than the cooperative societies' standard lending rates in each given state or area. To help RRBs run efficiently, the sponsoring bank and the Reserve Bank of India provide many incentives.

The National Agricultural Refinance Development Corporation was established to assist and promote programmes of agricultural development to lend credit financing in order to expand credit lines and development in rural agriculture finance. A parliamentary act established this bank in the year 1982. The National Bank had a 500-crore approved share capital, of which 100 crore was paid up capital donated equally by the federal and state governments. NABARD offers a variety of services, such as credit line extensions and refinancing for production, investments in agriculture, small-scale enterprises, cottage industries, rural

handicrafts, and related economic activities. Additionally, it provides long-term loans to institutions in accordance with the suggestions of the federal government. It maintains a research and development fund to support agricultural and rural development research and create and plan programmes to cover unique activities. The national and state governments get long-term loans from NABARD that may last up to 20 years in order to purchase shares, reinforce, and reorganise the country's cooperative credit framework [11], [12].

A key factor in the context of agricultural expansion is agricultural marketing. Farmers are encouraged to put up significant effort in all aspects of farming by the prompt and profitable selling of agricultural goods. Marketing is a danger and a significant threat to the enticement to invest in Indian agriculture, according to some. Agricultural marketing encompasses more than just the selling of agricultural output. It is a fairly broad phrase that includes all such actions connected to the buying, sorting, moving, and ultimately selling of agricultural products. India's agricultural marketing has certain significant flaws. Farmers often do not get a fair price for their product as a consequence. Cooperative marketing organisations have been created in order to aid in the agricultural marketing environment. The societies are set up to sell the products produced by its members collectively.

In the context of India's agricultural growth, agricultural marketing is very important. An effective marketing strategy is essential to the success of any programme intended to promote agricultural expansion. Before 1954, cooperative marketing organisations in India were only engaged in the business of selling the agricultural products of their member farmers. These existed independently of the credit societies. Where marketing expenditures are decreased but outputs are either maintained or grow, operational efficiency has improved. Gains in operational efficiency may include, for instance, the adoption of a less costly grain storage technique or a creative milk container that uses less energy when the product is delivered to merchants. The second kind of marketing efficiency is pricing efficiency, which is predicated on the idea that markets with competition are effective. It is concerned with the marketing system's capacity to allocate resources and plan the complete process of producing and selling food and other products for consumption. Whether goods are transported from the farm to the end market by farmers, middlemen, cooperatives, marketing boards, wholesalers, retailers, or exporters, expenses associated with marketing are incurred.

CONCLUSION

A key strategy for addressing shortcomings is empowering people and communities. Individuals are given the tools to remedy shortcomings in their lives and communities through developing their ability, receiving training, and encouraging a feeling of ownership and responsibility. To pinpoint problems, create context-specific solutions, and gather resources for long-lasting change, community-based projects, grassroots organisations, and social entrepreneurship may all be very helpful. In conclusion, overcoming shortcomings requires a multifaceted strategy that includes specialised treatments, technical advancements, policy interventions, teamwork, and personal empowerment. Societies may successfully solve problems, advance social fairness, and encourage inclusive growth by using these methods. To guarantee sustained success in addressing inadequacies and enhancing the wellbeing of people and communities, continued efforts and a dedication to continuing review and adaptation are essential.

REFERENCES:

[1] T. L. Olatunji and A. J. Afolayan, "The suitability of chili pepper (Capsicum annuum L.) for alleviating human micronutrient dietary deficiencies: A review," *Food Science and Nutrition*. 2018. doi: 10.1002/fsn3.790.

[2] S. A. Sinclair, T. Senger, I. N. Talke, C. S. Cobbett, M. J. Haydon, and U. Krämer, "Systemic upregulation of mtp2-and hma2-mediated zn partitioning to the shoot supplements local zn deficiency responses[open]," *Plant Cell*, 2018, doi: 10.1105/tpc.18.00207.

[3] I. P.U., C. O.C., N. E.U., N. C.C., and E. J.C., "A Review of Landscape Design as a Means of Controlling Gully Erosion," *Int. J. Environ. Agric. Biotechnol.*, 2018, doi: 10.22161/ijeab/3.1.13.

[4] A. A. Korennaya, V. A. Mazurov, and M. A. Starodubtseva, "Hybrid Trolling as a Method of Information Warfare and Techniques for Combating it," *Izv. Altai State Univ.*, 2018, doi: 10.14258/izvasu(2018)6-44.

[5] A. Tewari, B. Jain, P. S. Dhamannapatil, and M. K. Saxena, "Biofilm Resistance to Antimicrobial Agents and Novel Approaches to Combat Biofilm Mediated Resistance in Bacteria," *EC Microbiol.*, 2018.

[6] J. Ali, Q. A. Rafiq, and E. Ratcliffe, "Antimicrobial resistance mechanisms and potential synthetic treatments," *Future Science OA*. 2018. doi: 10.4155/fsoa-2017-0109.

[7] L. Mabit *et al.*, "Promoting the use of isotopic techniques to combat soil erosion: An overview of the key role played by the SWMCN Subprogramme of the Joint FAO/IAEA Division over the last 20 years," *L. Degrad. Dev.*, 2018, doi: 10.1002/ldr.3016.

[8] S. B. Wei, D. P. Wang, J. Lin, and X. C. Yuan, "Demonstration of orbital angular momentum channel healing using a fabry-pérot cavity," *Opto-Electronic Adv.*, 2018, doi: 10.29026/oea.2018.180006.

[9] S. Chamizo, G. Mugnai, F. Rossi, G. Certini, and R. De Philippis, "Cyanobacteria inoculation improves soil stability and fertility on different textured soils: Gaining insights for applicability in soil restoration," *Front. Environ. Sci.*, 2018, doi: 10.3389/fenvs.2018.00049.

[10] S. Zaidi *et al.*, "Efficacy of complementary therapies in the quality of life of breast cancer survivors," *Frontiers in Oncology*. 2018. doi: 10.3389/fonc.2017.00326.

[11] N. Pathak and A. Kochhar, "Extrusion Technology: Solution to Develop Quality Snacks for Malnourished Generation," *Int. J. Curr. Microbiol. Appl. Sci.*, 2018, doi: 10.20546/ijcmas.2018.701.158.

[12] N. N. Prabhu, "Green synthesis of iron oxide nanoparticles (IONPs) and their nanotechnological applications," *J. Bacteriol. Mycol. Open Access*, 2018, doi: 10.15406/jbmoa.2018.06.00215.

CHAPTER 19

ROLE OF FCI AND STATE AGENCIES: A REVIEW STUDY

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ABSTRACT:

The Food Corporation of India, founded in 1965, is the primary organization that supplies food grains to the PDS. The Corporation's main responsibility is to handle the procurement, storage, transportation, transport, distribution, and sale of food products. The Indian Companies Act of 1956 was used by the government to establish the State Trading Corporation in May 1956. It was created to serve as the exclusive import-export agency, subject to any future decisions made by the Government of India. With the help of its 20 branches in India, 18 offices abroad, a sizable staff of marketing experts, and 18 foreign offices, the STC has built a solid infrastructure for the growth of exports. Foreign offices may pursue STC commercial concerns with the different parties involved and offer market information. When a producer commits resources to a project now and waits until some point in the future to see how it turns out, there are two main forms of uncertainty that develop.

KEYWORDS:

Agricultural, Distribution, Food, Industry, Pricing.

INTRODUCTION

India's agricultural industry depends heavily on nature for irrigation. Uncertainties about the yield, pricing, and other factors are present in this industry. The Indian government has sometimes taken a number of actions to reduce the different uncertainties. India has been successful in converting its crisis management-focused food security system into a stable security system thanks in large part to FCI, which was founded in 1964. The Agricultural Price Commission was established in 1965 with the clear vision of a price policy that used various price instruments like the MSP and procurement prices not only to encourage agricultural production but also to encourage the efficient use of natural resources while also providing farmers with remunerative prices. The Indian government is faced with the difficulty of creating a sensible pricing strategy with the goal of giving farmers fair prices and the nation's citizens access to cheap food. You will learn about how agricultural pricing policy, STC, and FCI help to stabilise and manage market fluctuations in this unit.

Part of FCI

The Food Corporation of India, founded in 1965, is the primary organisation that supplies foodgrains to the PDS. The Corporation's main responsibility is to handle the procurement, storage, transportation, transport, distribution, and sale of food products. It guarantees that farmers get fair prices for their output on the one hand and that consumers receive foodgrains from the central pool at set rates by the Indian government on the other. Additionally, the Corporation has been charged with keeping foodgrain buffer supplies on behalf of the government. Since the FCI is the only repository for foodgrains intended for the PDS, its function has grown in tandem with rising demand for and production of wheat and rice in recent years. The following accomplishments belong to FCI: The levels of purchase have significantly grown since FCI began its procurement activities, allowing the government to satisfy the PDS needs as well as build up necessary buffer stockpiles. The FCI has increased

its local purchase of foodgrains, which has reduced the country's reliance on food imports and allowed it to save vital foreign currency. Because a significant portion of the FCI's procurement activities are in the type of price support purchases, the FCI has stopped price decreases at levels that are no longer profitable. The FCI has assisted in decreasing inflationary pressures by providing foodgrains via the PDS at a "affordable" price, while also enabling low-income people to achieve their foodgrain needs. The FCI has been crucial in increasing the nation's scientific data storage capacity. This has not only made it possible for the nation to accumulate buffer reserves, but it has also assisted in lowering storage loss costs [1], [2].

Offices of the State Price Expectation

The concept of state trade initially emerged during the Second World War, when Shri M.S.A. Haider established a supply department on the model of the UK's Commerce Corporation. The Government approved the proposal to create the State Trading Corporation as a registered organisation under the Indian Companies Act based on the recommendations of the Deshmukh Committee, presided over by Dr. P. S. Deshmukh, and the review committee, presided over by Shri S.V. Krishna Murti Rao.

Establishment

In May 1956, the government established the State Trading Corporation, which was thereafter incorporated under the Indian Companies Act, 1956. It was created to serve as the single import-export agency, as the Government of India may sometimes decide. It was initially created to handle bilateral trade with partners, mostly in the communist bloc. The Project and Equipment Corporation of India Limited presently owns a completely owned holding company.

Management

The State Trading Corporation is run by a board of directors made up of both executive and non-executive directors. The firm is established under the Indian Companies Act. It has a chairman in charge.

Purposes of the STC

To coordinate and carry out commerce in goods given to the firm sometimes by the government of India in socialist nations as well as other nations, and to carry out the acquisition, sale, and transportation of such goods in India or elsewhere in the globe. To import and/or internally distribute any commodity in limited supply at the request of the Union Government of India in order to control costs and streamline supply. Putting into action any special arrangements for imports/exports, internal commerce, or distribution of certain goods that the Union Government may prescribe in the benefit of the general public. To halt the downward export trend or to increase export by launching new items in new markets. To help small exporters with their export business.to support organisations focused on exports in their organisational, financial, and export-related operations.

STC operations

The State Trading Corporation has been in operation for 54 years. It deserves praise for contributing to the accomplishment of the goals for which it was created. The following are some noteworthy characteristics of STC's operation:

The STC's Turnover: The STC's turnover has risen throughout time. The turnover was quite modest before to 1971–1972, but it significantly increased after that. In the years 1980 to 1985, exports peaked at their greatest level before beginning to decline [3], [4].

STC activities were first influenced by government policy. But in following years, it expanded non-canalized exports of commodities including textiles, clothing, engineering equipment, and marine products.

Important Products

It trades in almost 3000 commodities, such as meat, seafood, fresh and processed foods, building materials, software, other engineering items, and agricultural and consumer goods. Edible oils, cement, explosives, natural rubber standard, and glazed newspaper are among STC's main imports. 115 nations are involved in this commerce.

The STC has proposed several further improvements in various fields: It has expanded its product line and kept adding new products to its export assortment, such as orthopaedic shoes, athletic shoes, and upper compressors. H.D. tubes, etc.Attempting to lead the effort on a national level to find new markets for manufactured products and commodities produced in India and to long-term establish itself in these markets. It has created 100% export-oriented manufacturing facilities, mostly with foreign ownership involvement and partnership, and 100% buy-back agreements.

In collaboration with state undertakings, cooperative organisations, and others in specific and specified areas, it has established a stable supply base for the manufacturing of high-quality commodities. When required, STC will make investments to build such a manufacturing base. Improvements in quality grading, packaging, etc. have been made. The STC also carries out service tasks, bringing buyers and sellers together and aiding them in carrying out commercial agreements. It helps government agencies and commercial enterprises get supply of equipment from overseas. It sometimes resolves commercial disagreements peacefully between Indian and international counterparts. The initial intent behind its establishment was to expand commerce with socialist nations. As a result, its ties to socialist bloc nations have improved, but its reach into non-communist nations has also increased. Small industries have benefited most from the STC's marketing competence since they are unable to engage in international commerce without its assistance.

DISCUSSION

Several intrinsic vulnerabilities of the STC exist, and they are as follows: Although the STC's goals were quite specific and well-defined, it hasn't yet made any significant entrepreneurial decisions on its own. There don't seem to be any standards for selecting new goods to export or new markets to sell them in. Finding and developing sources of supply for exportable goods as well as acquiring imports from sources of supply overseas have not been the subject of considerable expertise development. Instead of in merchandise, procurement, and marketing, a large portion of the skill is in operating as an agent, processing indents and tenders, and handling transportation and distribution.

STC's inability to create a suitable supply base and conduct sufficient outreach to importers may be blamed for the decline in shipments of non-canalized goods. It is run by bureaucrats who lack initiative and commercial expertise; businesspeople with these qualities need to take their place. The operations of the Government of India and the STC are intertwined, making it easy to hide inefficiencies behind complex administrative procedures. The STC and private

merchants' transactions have to be coordinated immediately. Additionally, the STC offices overseas have not been able to make a difference.

With the help of its 20 branches in India, 18 offices abroad, a sizable staff of marketing experts, and 18 foreign offices, the STC has built a solid infrastructure for the growth of exports. Foreign offices may pursue STC commercial concerns with the different parties involved and offer market information. With this strong infrastructure, STC should strive to project an image of an efficient trading house along the lines of Japanese trading houses, rather than only serving as a casualising agency. As the largest export house in the nation, it ought to provide fresh perspectives and leadership. It has made progress in achieving its goals of increasing exports [5], [6].

Uncertainty in Yield

The biological character of the agricultural sector, which makes the yield far more reliant upon natural causes than the output of non-agricultural companies, is the primary cause of this sort of uncertainty in agriculture. Floods, droughts, diseases, etc., have a rapid, unforeseen, and sometimes excessively negative impact on agricultural productivity. Undoubtedly, compared to crop farming, animal husbandry is less weather-dependent, but a harsh winter or a dry summer may still have a significant impact on livestock productivity. Additionally, cattle outbreaks are always a danger. As compared to other places, some are likely to experience larger yield variability. For instance, compared to temperate climates, tropical locations are more likely to produce uncertainty. Additionally, certain crops, like cotton, have more unpredictable yields than others, like wheat. Yield uncertainty, which relates to the variability in the production coefficients of a certain technology, is also known as technical uncertainty.

There is uncertainty over the pricing of agricultural goods in addition to yield or technical uncertainty. Insofar as the individual farmer is concerned, price is essentially an uncontrollable or exogenous issue. The price the farmer obtains for a crop of a particular quality is thus completely unaffected by any strategy or course of action that may have been taken since he works in a market framework that comes close to perfect competition. He accepts prices rather than setting them. These are the external elements that have an impact on prices:

1. The collective action of other farmers;
2. Unpredictable output variations brought on by the weather
3. Fluctuations in the country's wealth and income
4. Cobweb-type manufacturing cycles with intermittent output

As was previously said, non-farm businesses are likewise prone to price changes, although these industries have substantially less pricing volatility than does agriculture. The fundamental explanation for this is that non-farm businesses are not only substantially less impacted by weather-related price variations, but also that they have more control over product pricing due to the monopolistic market structure in which they operate. Since industry can more easily modify its supply of goods to variations in demand than agriculture, price volatility is likely to be more minimised in this instance.

Tenurial Uncertainty

The tenurial uncertainty is another kind of uncertainty that is highly noticeable in agriculture. We are aware that most land is leased to renters. The tenant does not sure how long he will be able to keep the land in his possession since he is a farmer. Due to his uncertainty about

whether he would get adequate extra returns from such upgrades over the life of his tenancy, he will consequently be reluctant to undertake long-term improvements to the land.

Uncertainty about the cost/quality of the inputs

Regarding the costs and standards of inputs, there is still another sort of uncertainty. This kind of uncertainty is especially significant when it comes to capital inputs, which are often expensive and frequently undergo qualitative changes. When input prices are unknown, farmers often respond by delaying the purchase of those inputs.

Six 'Ps' have been proposed by some economists as a more thorough way to indicate uncertainty. Price uncertainty, production uncertainty, technical uncertainty in production, political uncertainty, individual uncertainty, and uncertainty among the general public are these. Some of these need for further clarification. Political ambiguity describes the nation's ambiguous political environment. Normal conditions may not include this kind of ambiguity. Inconsistent government policy on land reforms and other institutions, however, may breed some ambiguity that may be classified as "political uncertainty." Concerns regarding the wellbeing of the farmer's family are referred to as personal uncertainty. Uncertainty among the populace relates to the farmer's interactions with the people he interacts with. These individuals include family and hired labour, bankers, landowners, and nearby farmers from whom the farmer rents land or to whom the farmer rents out his land or other resources [7], [8].

Stabilization Of Prices

As was previously indicated in Unit 7, the pricing policy is thought of as insurance against the whims of the market and plays a significant role in the growth of agriculture. Assuring farmers that their efforts to increase productivity via the use of better technologies won't become unprofitable due to price is a key component of agricultural pricing policy. The nation's pricing policy might be seen as the price stabilisation policy. Because it is via this that the various governments work to control the costs of goods in the economy so as to protect both consumers and small farmers. As you discovered in Unit 7, the Commission for Agricultural Cost and Prices is responsible for India's pricing regulation. However, before learning about its roles in price stabilisation, let's study about the goals and tools of price control.

The purposes of price policy

The following are the primary goals of agricultural pricing policy: to guarantee a suitable link between the price of foodgrains and non-foodgrain crops, as well as between agricultural products and manufactured goods, in order to prevent too drastic changes in the terms of trade between these two economic sectors. To maintain a suitable link between crop prices and crop competition in order to meet production goals for various commodities in line with the growth in demand. To create economic equilibrium between the interests of producers and consumers by allowing for small price swings. To minimise seasonal swings in agricultural prices while minimising cyclical price increase fluctuations. To promote more pricing integration across the nation's many areas in order to ensure a steady flow of marketable excess and encourage the export of agricultural goods. To maintain the overall level of prices in the face of rising state spending to spur economic growth. To establish a healthy pricing link between the inputs needed for agricultural cultivation and the commodities generated by the grower. To promote the production of a range of goods that the nation needs in order to enhance people's diets and provide raw materials for operating

industries. To safeguard the interests of the customer by allowing him to purchase food at reasonable costs. As you can see, these guidelines are generally intended to stabilise prices.

Tools for Price Policy

The following are the many tools used in agricultural pricing policy:

Support Prices: This is one of the key tools in the agricultural price policy toolbox. Long before the start of the planting season, the government establishes Minimum Support Prices for important agricultural goods.

Procurement pricing: The topic of procurement pricing is another tool. It has to do with setting the pricing at which main food grains may be purchased. These rates serve as the starting point for bargain purchases of a portion of the marketable excess.

System for Public Distribution: The third one deals with the government-sponsored fair-price stores that serve as the public distribution system. These stores provide products at set government-issued pricing. Although there is no restriction on anybody, even high-income customers, from purchasing from these distribution depots, this is meant to protect the interests of low-income consumers.

Buffer-Stocks: The fourth topic deals with the development of buffer stocks. This is done to deal with crises and to lessen seasonal and yearly price swings.

Assessment of Price Policy

The government must play a key and important role in the appropriate development of agriculture in a growing nation like India. One such endeavour is the agricultural pricing policy, which aims to bring about the needed improvements in agriculture. Therefore, it's success is dependent as much on its proper conception and execution as it is on other non-price initiatives within and outside the agricultural sector. Within this wide context, the agricultural pricing policy must be evaluated in terms of how well it helps the nation accomplish its goals through advancing the agricultural sector. The national goals of development with equality and social justice may be outlined for the agriculture industry. A growth in agriculturalists' incomes, especially that of small and marginal farmers, may be used to implement equity or social justice.

When seen from the perspective of the consumer, this refers to the protection of the population's weaker segments via the affordable distribution of necessities like food grains. Prices may act as incentive tools to increase production and market surpluses. These prices may also have a significant role in raising farmers' take-home pay. When evaluating the pricing policy of the government, it is important to take into account not only how the policy has influenced output, market surpluses, farmer income, and the consumption of the poor, but also how it has affected farm prices overall [9], [10].

Establishment of the Commission for Agricultural Cost and Prices: The Agricultural Prices Commission, which was established in January 1965 to assist the government on price strategy for key agricultural commodities, was previously referenced in Unit 7. to develop a fair and integrated pricing structure that takes into account both producer and consumer interests as well as the economy's overall demands. The Commission has been referred to as the Commission on Agricultural Costs and Prices since March 1985. The Commission may consider the following factors when proposing the pricing policy and the relative price structure: The necessity to provide the producer a financial incentive to embrace new technologies and create a production pattern that widely reflects the needs of the country. The

necessity to guarantee efficient use of land, water, and other production resources. The expected impact of the pricing policy on the rest of the economy, notably on the cost of living, the level of wages, the industrial cost structure, etc.

Determine Minimum Support Prices

In addition to a thorough analysis of the overall economic structure of a given good or set of goods, the following variables are taken into consideration by the Commission when developing recommendations about the level of minimum support prices and other non-price measures:

i) Production costs
ii) Input price changes
iii) Input-output price parity

Impact on issue prices and potential consequences for subsidies

The farmer's production-related costs in kind and cash, the rent for leased land in the interior, the value imputed to family work, the interest value of capital assets possessed , the rental value of owned land , and depreciation on the farm The Comprehensive Scheme for Studying the Cost of Cultivation of Principal Crops, run by the Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture, Govt. of India, provides estimates of the cost of cultivation/cost of production, which is a crucial input for developing the recommendation of MSP, to the Commission. These projections incorporate all actual tools, structures, and other ancillary costs along with genuine factors of production.

The Commission uses micro-level data as well as aggregates at the district, state, and national levels. The data and information utilised by the Commission, among other things, are as follows: Prices of various inputs and changes therein; Cost of production per quintal in various regions of the country and changes therein; Market prices of products and changes therein; Prices of commodities sold by the farmers and of those they purchased and changes therein; and Prices of commodities sold by the farmers and of those they purchased and changes therein; and Supply-related information, including area, yield, and production. Prices in the international market and changes therein, demand and supply situation in the global market; Prices of the derivatives of farm products such as sugar, jaggery, jute goods, edible/non-edible oils, and cotton yarn and changes therein; Prices of the processing costs of agricultural products and changes therein; Cost of marketing - storable costs; and Cost of marketing - storage costs. The Commission must provide its recommendations to the Government well in advance of the crop's planting season [11], [12].

The Commission takes the actions listed below in the order indicated to communicate with diverse interest groups: The Commission determines the key concerns that will be important for the next season. The Commission distributes a questionnaire to the Central Ministries, State Governments, and various trade, industry, processing, and farmer organizations in the cooperative and private sectors in order to get their opinions on specific concerns as well as factual data on associated factors. The Commission conducts individual meetings with state governments, federal ministries/departments, and other organisations. The Commission also engages with academic and research institutes and monitors pertinent studies' results. The Commission travels to specific regions to get firsthand information from farmers and local organisations as well as its own views.

Additional Measures

The Commission recommends the pricing policy as well as any non-price measures that would make it easier to meet the goals of the policy. In this sense, the Commission has placed particular emphasis on, among other things: Development of appropriate technology to increase agricultural yield andoutput. Establishment/Strengthening of Agencies for Implementation of Declared Price Support Policy Extension of Proven Technology to Areas Still in Need of Adoption Modernising market laws and establishing fresh marketplaces in regions where agricultural productivity has significantly improved. Increasing storage space and improving the grading of agricultural products arranging for timely and quick shipment of agricultural commodities from excess regions buffer-stock activities to stabilise domestic prices. Utilising foreign commerce as a means of stabilising local prices Fiscal measures, such as changes to tariffs, taxes, and levies creation of adequate agricultural output processing technologies; expansion of the database used to determine pricing policy

CONCLUSION

The tenurial uncertainty is another kind of uncertainty that is highly noticeable in agriculture. We are aware that most land is leased to renters. The tenant does not sure how long he will be able to keep the land in his possession since he is a farmer. As a result, he will be hesitant to undertake long-term improvements to the property since he is uncertain if he will get enough extra returns from them throughout the length of the lease.Six 'Ps' have been proposed by some economists as a more thorough way to indicate uncertainty. Price uncertainty, production uncertainty, technical uncertainty in production, political uncertainty, individual uncertainty, and uncertainty among the general public are these. In order to assist the government on pricing policies for key agricultural commodities, the Agricultural Prices Commission was established in January 1965. to develop a fair and integrated pricing structure that takes into account both producer and consumer interests as well as the economy's overall demands.

REFERENCES:

[1] M. Taroni *et al.*, “Comparison of Early Measurements of the Distraction Index, Norberg Angle on Distracted View and the Official Radiographic Evaluation of the Hips of 215 Dogs from Two Guide Dog Training Schools,” *Vet. Comp. Orthop. Traumatol.*, 2018, doi: 10.1055/s-0038-1668087.

[2] A. Traxler, R. Henderson, J. Stewart, G. Stewart, A. Papak, and R. Lindell, “Gender fairness within the Force Concept Inventory,” *Phys. Rev. Phys. Educ. Res.*, 2018, doi: 10.1103/PhysRevPhysEducRes.14.010103.

[3] J. I. Yasuda, N. Mae, M. M. Hull, and M. A. Taniguchi, “Analyzing false positives of four questions in the Force Concept Inventory,” *Phys. Rev. Phys. Educ. Res.*, 2018, doi: 10.1103/PhysRevPhysEducRes.14.010112.

[4] J. Stewart, C. Zabriskie, S. Devore, and G. Stewart, “Multidimensional item response theory and the Force Concept Inventory,” *Phys. Rev. Phys. Educ. Res.*, 2018, doi: 10.1103/PhysRevPhysEducRes.14.010137.

[5] P. Eaton and S. D. Willoughby, “Confirmatory factor analysis applied to the Force Concept Inventory,” *Phys. Rev. Phys. Educ. Res.*, 2018, doi: 10.1103/PhysRevPhysEducRes.14.010124.

[6] H. Lavigne and K. Ruddick, “The potential use of geostationary MTG/FCI to retrieve chlorophyll-a concentration at high temporal resolution for the open oceans,” *Int. J. Remote Sens.*, 2018, doi: 10.1080/01431161.2017.1420935.

[7] F. R. Urgorri, S. Smolentsev, I. Fernández-Berceruelo, D. Rapisarda, I. Palermo, and A. Ibarra, “Magnetohydrodynamic and thermal analysis of PbLi flows in poloidal channels with flow channel insert for the EU-DCLL blanket,” *Nucl. Fusion*, 2018, doi: 10.1088/1741-4326/aad299.

[8] J. E. Deustua, I. Magoulas, J. Shen, and P. Piecuch, “Communication: Approaching exact quantum chemistry by cluster analysis of full configuration interaction quantum Monte Carlo wave functions,” *J. Chem. Phys.*, 2018, doi: 10.1063/1.5055769.

[9] R. C. Martin *et al.*, “Declining Financial Capacity in Mild Cognitive Impairment: A Six-Year Longitudinal Study,” *Arch. Clin. Neuropsychol.*, 2018, doi: 10.1093/arclin/acy030.

[10] B. S. Fales, S. Seritan, N. F. Settje, B. G. Levine, H. Koch, and T. J. Martínez, “Large-Scale Electron Correlation Calculations: Rank-Reduced Full Configuration Interaction,” *J. Chem. Theory Comput.*, 2018, doi: 10.1021/acs.jctc.8b00382.

[11] M. Valny *et al.*, “A single-cell analysis reveals multiple roles of oligodendroglial lineage cells during post-ischemic regeneration,” *Glia*, 2018, doi: 10.1002/glia.23301.

[12] E. G. Abinader, “Milestones in the development of fetal cardiac interventions,” *Israel Medical Association Journal*. 2018.

CHAPTER 20

AGRICULTURAL CREDIT AND FINANCE: A REVIEW STUDY

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ABSTRACT:

Agricultural credit and finance are crucial elements of the agricultural industry because they provide farmers and agricultural businesses access to the money they need for profitable ventures, investments, and risk control. This summary gives a general overview of the significance of agricultural credit and finance, emphasising how they support agricultural growth, enhance food security, and improve lives. For farmers to be able to buy inputs like seeds, fertiliser, equipment, and irrigation systems, they must have access to agricultural loans. Furthermore, finance is essential in helping farmers weather times of cash flow problems and market changes. It gives them the money they need to pay for operating costs, manage climate risk, and make investments in sustainable and productivity-boosting technologies and methods. Beyond loan, agricultural finance includes a variety of financial services catered to the particular requirements of the agricultural industry. Savings accounts, insurance, leasing, and microfinance are some of these services. By easing access to banking services and fostering financial knowledge among farmers and rural communities, agricultural financing fosters financial inclusion. By encouraging investments and entrepreneurial activity in the sector, effective agricultural credit and finance systems aid in the growth of the industry. Credit that is easily accessible and reasonably priced enables farmers to upgrade their agricultural methods, embrace new technology, and diversify their sources of revenue. Additionally, it promotes the creation of value chains, agricultural infrastructure, and agribusinesses, spurring economic development in rural regions.

KEYWORDS:

Agricultural, Commercial, Credit, Finance, Loan.

INTRODUCTION

The improvement of rural populations' quality of life is significantly impacted by agricultural loans and finance. Farmers may produce larger revenues, raise their standards of life, and lessen poverty by being given access to financial resources. Additionally, having access to funds helps farmers to spend money on social services like healthcare, education, and other things, which promotes the general growth and welfare of people. Additionally, through enhancing agricultural productivity and output, agricultural credit and financing support food security. Farmers that have enough access to capital may spend on high-yield crop types, sophisticated equipment, and effective irrigation systems. Additionally, it makes it easier to implement sustainable agricultural methods, resource conservation measures, and climate change adaption strategies, assuring the long-term supply of food.

Trust is the foundation of the credit market. The debtor must have faith in the creditor to provide cash on schedule; the creditor must have faith that the debts will be repaid. An institutional structure comprising both official and informal institutions surround this market of trust. For instance, formal institutions include rules and regulations, as well as government oversight and law enforcement. Behavior, conventions, and relationships are a few examples of informal institutions. Institutions both official and informal are interconnected. The value

of relationships with informal creditors rises when the official institutions, such as law enforcement, are sluggish or ineffective.

It has been shown that social capital affects how individuals behave in the credit market, including their use of formal or informal creditors and their choice of payment method. High social endowment lowers interest rates, which has an impact on bank conduct as well [1], [2].

Since the promise to lend money in exchange for the guarantee of a future return is, of course, unclear, there will always be some degree of uncertainty in the credit market. The combination of uncertainty and agency issues may result in market inefficiencies and credit rationing. While it is possible to claim that these issues exist in all industries, agency issues are more common in agricultural enterprises than in similar organisations in other industries because of the organisational structure of the firms.

Private farms are under no or little need to disclose their financial position to the public.Therefore, it is more challenging for a bank to evaluate the financial performance of the industry and of specific companies in agriculture. Even when the market is in equilibrium, credit rationing prevents enterprises from obtaining the full amount of credit they need since creditors will not offer enough capital to do so. According to a recent research, agriculture has a somewhat greater risk of credit restriction than other industries when it comes to the "probability of receiving a loan". Although they are not volume-rationed after they acquire loans. Overall, this causes agricultural businesses to be undercapitalized and demonstrates market inefficiencies for agricultural financing.

In order to overcome uncertainty and agency issues and create an efficient credit market, it is crucial that the institutional structure operates efficiently. of this research, we examine the formal and informal institutions of the case study nations and how they function. We examine the following formal institutions as a formal response to market inefficiencies: rules and regulations, credit market participants and government backing. Since relationships, shared or established norms and values may serve to reduce uncertainty, informal institutions are crucial. When we look at the risk assessment criteria, we can also see how they are related.

Market for credit is governed by law

Every nation has a set of laws and rules that control its capital market. The central bank is often in charge of establishing the regulations and the nation's capital market is subject to laws to ensure its smooth operation. The central bank may also keep an eye on compliance, but other agencies, such the ones in charge of financial supervision in Sweden and Finland, may also do this.

Financial institutions are governed by a system of international rules, regulations, and maybe recommendations in addition to the laws and regulations established inside a nation. The Basel framework, which establishes global norms for the control of the credit markets and is supported by three pillars, is a significant international regulation. The first pillar lays forth the formulas for determining the minimum capital needs and for evaluating credit risks, operational risks, and market risks. The second pillar describes the importance of and how to establish a supervisory procedure. Market regulation is the topic of the third pillar. The Basel Committee on Banking Supervision, which is composed of members from central banks or other supervisory bodies from several nations, devised the framework.

There are general credit market laws and regulators in the majority of the case study nations in the questionnaire, but few of them have agricultural-specific restrictions. The former Yugoslav Republic of Macedonia. Italy, and France are often engaged in agricultural

ministries that are responsible for laws in the latter situation. In Poland, interest that is tied to a certain regulation is subsidised by the Agency for Restructuring and Modernization of Agriculture. Some EU regulations1 ought to have an impact on the market for agricultural loans in all EU nations, but only the case studies for Greece, Germany, and Italy make reference to this issue [3], [4].

DISCUSSION

The agricultural credit policies developed and put into practise in India are mostly supply-driven and include directed lending via priority sector lending guidelines, interest subvention programmes, and targeted ground level financing. In the area of agricultural finance, these initiatives, together with other policy interventions at the level of the government and the RBI, have produced laudable outcomes. However, the agricultural sector continues to face issues like a lack of capital formation, regional disparity, farmers' dependence on non-institutional sources of credit at significantly higher ratesespecially small and marginal farmers, tenant farmers, landless labourers, and share croppersthe failure to realise the fair price for agricultural produce, which causes farmers' distress, and farm loan waivers that have an impact on credit culture and weaken state finances. You will learn about the significance of agricultural financing and the necessity for government involvement in this area in this unit.

Critical Role of Agriculture Finance

The Indian economy is based on agriculture, which is still in its infancy. The majority of Indian farmers lack sufficient resources;thus, they are unable to employ high-quality seeds and fertilisers on their fields. Additionally, farming is seen in India as a method of sustenance rather than as an entrepreneurial endeavour. Consequently, private investors do not make investments in this industry. A vicious cycle results from a lack of resources. As a result, agricultural finance is seen as essential since it is necessary for agriculture to develop. Many economists agree that the availability of agricultural loans will become the pivot point for transformation in Indian agriculture. Farmers could need financing to increase agricultural output, pay back previous debt, or adopt more efficient production techniques. Their credit requirements may also be divided into categories according on the duration and objective. One method for classifying is as follows: based on the historical period: The forms of credit demand for farmers may be grouped into the following ones if time periods are used as the foundation for classification:

A short-term loan: Farmers choose short-term loans when they need finance for a period of less than 15 months to support their farming operations or pay household bills. This kind of loan is granted to farmers for the purchase of seeds, fertiliser, livestock feed, etc. In the months when the harvests are insufficient for this reason, they may also be provided this kind of credit to help them sustain their family. These brief loans are often returned after the harvest.

Credit with a medium repayment period of between 15 months and 5 years may also be needed by farmers for land improvement, the purchase of livestock, and the purchase of agricultural equipment. The length of the loan determines how long it will take to repay.

Long-term credit: Farmers use long-term credit when they need money over a longer period of time to pay off debts, acquire expensive farm equipment, improve existing land, or buy more land. These loans might last anywhere between five and twenty years [5], [6].

In light of the goal: Credit may be needed by farmers for a variety of reasons. As a result, you may further categorise farmers' loan needs as follows:

Productive credit: Farmers use this kind of credit to pay for things like seeds, fertiliser, and tools as well as to pay taxes and make improvements to their property. This kind of loan aids farmers in their farming endeavours.

Unproductive credit: Farmers may claim credit for unions, births, deaths, lawsuits, etc. Due to the fact that it does not aid farmers in their agricultural activities, this sort of financing is referred to as unproductive credit.

Government intervention is necessary. Government participation in the agricultural loan sector is essential because it helps to improve economically disadvantaged groups like farmers and other impoverished classes. Typically, government intervention in the agricultural sector takes the form of creating credit institutions specifically for agriculture and guaranteeing bank loans. Giving agricultural farmers subsidised loans is another kind of help.

Subsidies for credit: The government offers financing to farmers and producers at a reduced interest rate to make borrowing more affordable for agricultural farmers. In most cases, this is also referred to as the credit subsidy. The decline in agricultural output and disturbance "below a long-run equilibrium" may be lessened or reversed by giving financial subsidies to the agricultural producer. Credit subsidies also serve as a means of assisting farmers without running afoul of their GATT accords, as may happen if they used price supports. Since their debts are often forgiven, state firms and production structures that are liquidating or reorganising tend to worry less about repaying loans, and their need for financing may drown out individual farms or businesses that are dealing with severe financial limitations. On the demand side of the loan market, the latter is therefore unfairly disadvantaged by the former. Credit subsidies might lessen this impact.

The government should take into account the following factors in order to provide credit subsidies. The government must create a solid mechanism to limit the length of the credit subsidy scheme. In order to limit the subsidies, the government must set a goal of the scheme up to a specific point and target credit subsidy programmes for post-reform businesses. The government should also utilise the machinery of financial institutions to channel the subsidies in order to lessen the burden of administrative costs and guarantee that the money must flow to the viable and desirable businesses in order to support and spur the expansion of agriculture. The recipients of assistance must be able to show that the loan will be put to the intended use.

Guarantees for Loans The loan guarantee programme provided by the bank on behalf of the government should make sure that the long-term goal of such an investment programme must provide a solution to the financial needs of agriculture producers and provide inspiration and critically needed financial support to agriculture entrepreneurs. It's crucial to avoid any potential reduction in incentives for the agents engaged while setting up loan guarantee operations. As a result, effort should be taken to guarantee that the borrower is required to furnish the first portion of the collateral and is compelled to return the maximum amount feasible in the event of a default. To encourage the bank to adequately monitor and screen the loans, the bank must assume its fair part of the risk. In order to promote competition, the project should also include participation from many banks. Last but not least, the government should be restricted to establishing broad, clear, and transparent standards and should not be permitted to meddle with particular loan applications or actual loan decisions [7], [8].

Establishment of Particular Agricultural Finance Institutions: There are several types of specialised credit institutions for agriculture, including credit cooperatives, state-owned agricultural funds, mutual or development funds. These institutions have several traits that impact their effectiveness, many of which are unique to their particular circumstance. Less expensive transactions, better monitoring, and more accurate verification are the main benefits of the development of specialised agricultural credit institutions thanks to increased specialised knowledge of pertinent agricultural operations.

The establishment of agricultural institutions like NABARD and the growth of cooperative societies are crucial to the distribution of agricultural financing and the participation of the most vulnerable agricultural borrowers. Due to this, there is now a legitimate market where such transactions may be made, which has helped to close the gap between the lender and borrower. Additionally, the involvement of commercial banks in agriculture financing, whether directly or indirectly, may boost trade and commerce in the agricultural sector and open up additional options for small business owners, farmers, and other agricultural workers.

Our nation's commercial banks initially had a little impact on the expansion of rural lending. Commercial banks barely provided 1% of the nation's total agricultural loan in 1950–1951. However, since the nationalisation of banks in 1969, these commercial banks have been providing financial support and short- and medium-term loans to the rural sector, both directly and indirectly. Commercial banks began to take the needs of farmers into account with the implementation of the village adoption programme and the service area concept. Through their sponsorship of Regional Rural Banks in several states throughout the nation, commercial banks once again defended small and marginal farmers from the snares of local moneylenders.

The RBI advised commercial banks to give at least 10% of their net bank credit or 25% of their priority sector advances to weaker sections, including small and marginal farmers, landless labourers, tenant farmers and sharecroppers, artisans, village and cottage industries, beneficiaries of the Integrated Rural Development Programme, Scheduled Castes and Scheduled Tribes, and beneficiaries of Differential Benefits, in order to increase credit flow to the rural sector.

Last but not least, institutional financing has grown in importance and expanded the options available in the agricultural industry over time. Only through including the agricultural sector will the Kisan Credit Card and other outreach initiatives for the farming community be effective, and financial institutions are essential to attaining this goal. To ensure the financial stability and liquidity of the agricultural sector, the RRBs, NABARD, and cooperative societies collaborate with the Reserve Bank of India. This would improve the use of technology, the flow of capital in this industry, and the productivity and income of farmers. The fundamental and crucial tenet of financial institutions is to ensure perfect coordination between all of the organisations working in rural areas with the shared goal of satisfying the credit needs of those organisations' associated with the weaker segments of society as well.

Although agriculture is the foundation of the Indian economy, it is still in a developing stage. The majority of Indian farmers lack sufficient resources;thus, they are unable to employ high-quality seeds and fertilisers on their fields. Farmers may need loans to implement new production techniques, increase agricultural output, or repay previous debt. Their credit requirements may also be divided into categories according on the duration and objective. Government engagement in the agricultural loan market is essential because it helps vulnerable groups of society, including farmers and other impoverished classes, rise to a

higher social status. The loan guarantee programme provided by the bank on behalf of the government should make sure that the long-term goal of such an investment programme must provide a solution to the financial needs of agriculture producers and provide inspiration and critically needed financial support to agriculture entrepreneurs. Through their sponsorship of Regional Rural Banks in several states throughout the nation, commercial banks once again defended small and marginal farmers from the snares of village moneylenders. Meeting the credit needs of rural economic activities as well as borrowers from the weaker segments of society is the fundamental and crucial philosophy of financial institutions. This is done by ensuring perfect coordination among all the agencies operating in rural areas [9], [10].

CONCLUSION

Numerous aspects must be taken into account in order to improve agricultural credit and financing. These include the creation of reliable and open-access financial institutions, the implementation of credit guarantee programmes, the use of technology to the effective disbursement and repayment of loans, and the provision of financial literacy and capacity-building initiatives for farmers. To create an enabling environment and execute laws that promote agricultural financing, cooperation between governments, financial institutions, and development organisations is essential. In conclusion, agricultural credit and financing are essential for advancing agricultural growth, boosting food security, and improving livelihoods. Societies may unleash the potential of farmers, promote rural economic development, and support sustainable agricultural practises through enabling access to credit, facilitating financial services, and encouraging investments in the agricultural sector. To meet the unique requirements of farmers and advance inclusive and resilient agricultural systems, efforts must be made to develop agricultural credit and finance institutions.

REFERENCES:

[1] M. Carauta *et al.*, “Can preferential credit programs speed up the adoption of low-carbon agricultural systems in Mato Grosso, Brazil? Results from bioeconomic microsimulation,” *Reg. Environ. Chang.*, 2018, doi: 10.1007/s10113-017-1104-x.

[2] S. K. MALLICK, “Agricultural Finance in Odisha: a Comparative Study of Farmer’S Perception and Bankers Attitude Towards Agricultural Credit,” *Clear Int. J. Res. Commer. Manag.*, 2018.

[3] A. F. Oluwamayokun, “Smallholder agricultural finance in Nigeria: The research gap,” *J. Dev. Agric. Econ.*, 2018, doi: 10.5897/jdae2018.0976.

[4] A. B. B. Aziz and A. I. Mohammed, “Farmland, farm credit and agricultural output growth in Kano State, Nigeria: The Moderating role of Murabahah finance as a proposed framework,” *Int. J. Eng. Technol.*, 2018, doi: 10.14419/ijet.v7i3.21.17164.

[5] R. P. Balachandran and S. C. Dhal, “Relationship between money lenders and farmers: Theoretical perspective and evidence from potato farmers of West Bengal, India,” *Agric. Financ. Rev.*, 2018, doi: 10.1108/AFR-07-2016-0066.

[6] P. Nakawuka, S. Langan, P. Schmitter, and J. Barron, “A review of trends, constraints and opportunities of smallholder irrigation in East Africa,” *Global Food Security*. 2018. doi: 10.1016/j.gfs.2017.10.003.

[7] A. M. Featherstone, “The farm economy: Future research and education priorities,” *Appl. Econ. Perspect. Policy*, 2018, doi: 10.1093/aepp/ppy001.

[8] M. Deresse and A. Zerihun, "Financing challenges of smallholder farmers: A study on members of agricultural cooperatives in Southwest Oromia Region, Ethiopia," *African J. Bus. Manag.*, 2018, doi: 10.5897/ajbm2018.8517.

[9] S. Herliana, A. Sutardi, Q. Aina, Q. Himmatul Aliya, and N. Lawiyah, "The constraints of agricultural credit and government policy strategy," in *MATEC Web of Conferences*, 2018. doi: 10.1051/matecconf/201821502008.

[10] F. Temesgen, H. Duguma, and C. Hailu, "Factors affecting credit use for rural farming at household level Evidence from small holder farmers' of Toke-Kutaye district," *J. Agric. Econ. Dev.*, 2018.

CHAPTER 21

AN OVERVIEW OF AGRICULTURAL CREDIT SYSTEM IN INDIA

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ABSTRACT:

Finance is a fundamental prerequisite before starting any business. Finance has a same important role in agriculture. Even more so when the majority of the people participating is drawn from the socially disadvantaged groups. Furthermore, the need for financing extends beyond merely agricultural applications and includes non-productive activities as well. The idea of agricultural credit comes into play here. The purpose and significance of agricultural finance, different loan sources, the roles and status of NABARD, cooperatives, regional rural banks, self-help groups, microfinance institutions, NGOs, insurance, and the issue of capital creation are all covered in this unit. The National Bank for Agriculture and Rural Development (NABARD) was founded on July 12, 1982, in response to the Shivaraman Committee's suggestion. The Shivaraman Committee was tasked by the Reserve Bank of India in March 1979 to explore the issues surrounding agricultural financing. The administration of the NABARD has been given to a Board of Directors by the Government of India.NABARD's initial authorised capital was 500 crore and its first paid-up capital was 100 crore. The Central Government and the RBI first contributed to the paid-up capital. Swarnajanti Gramme Swarozgar Yojna (SGSY) implementation is being handled by NABARD. To RBIs and cooperative banks, it has provided operating directives.

KEYWORDS:

Bank, Credit, Finance, Movement, Societies.

INTRODUCTION

Regional Rural Banks (RRBs) are one of the key institutional entities involved in rural finance among the many institutional organisations. These are unique financial entities that operate under NABARD's direction.'Sponsor banks,' which are often public sector banks, advertise the RRBs. The districts that want these banks are identified by the RRB steering committee. Later, after consulting with the sponsor bank and the state government, the Central Government establishes RRBs. There has been a co-operative movement for more than a century. Many detractors claim that the movement is a complete failure and ought to be abandoned. Nothing has been accomplished by the campaign to address the widespread rural poverty. In the fields of lending, agricultural production, agricultural processing, and marketing, rural cooperatives have contributed significantly. The tenets of cooperatives include voluntary participation, open membership, democratic governance, fair profit sharing, and efficient use of resources. Over the last several decades, the PACS has increased its efforts to help the weaker groups, especially the small and marginal farmers. Although this improvement has been rather remarkable, it is insufficient in light of the need for financing from farmers.

Agricultural and Rural Development National Bank

The National Bank for Agriculture and Rural Development (NABARD) was founded on July 12, 1982, on the advice of the Shiva Raman Committee, which had been formed by the Reserve Bank of India in March 1979 to explore the issues surrounding agricultural

financing. As an apex bank for agricultural loans, it was founded. This was anticipated to have a significant impact on rural and agricultural growth. This top development bank was founded to support rural regions' small businesses, cottage industries, agriculture, and other related economic activities [1], [2]. Rural areas include all villages, regardless of population density, as well as towns with a population under 10,000. The following Reserve Bank of India departments' duties were transferred to NABARD:

Principal NABARD activities

The following are the primary activities of NABARD: In terms of all policy, planning, and operational elements linked to the development of credit for agricultural, small-scale industry, cottage and village industry, handicrafts, and other related economic activities in rural regions, it serves as an apex institution. It performs the role of a re-financing institution by offering both long- and short-term finance to support operations in rural regions.

Administration of NABARD

A Board of Directors has been given control of the NABARD by the Indian government. The members of this Board are as follows:

1. A Chairperson
2. An Executive Director
3. Three directors chosen from the RBI's board of directors
4. Three directors who are government of India employees
5. Two directors chosen from among the leading authorities on rural development and economics
6. Two directors chosen from among state government officials
7. Three directors who have worked in both commercial and cooperative banking

Activities of NABARD

NABARD carries out the following duties:

Credit functions: The main credit functions of NABARD are as follows:

Refinance facility: NABARD provides co-operative banks, sectoral banks, and other financial institutions with re-finance facility (through short-term loan). NABARD aims to advance the following via this: Agricultural produce marketing. Giving farmers access to agricultural inputs. Activities of cottage and small-scale businesses in production and marketing

Medium-term credit: NABARD provides the following with medium-term financing (for a duration of between 112 and 7 years): Publicly owned banks. Local banks in remote areas.

Long-term credit: The NABARD provides the following with long-term credit (for a maximum of 25 years): Publicly owned banks, RRBs, Banks for land development, Business banks.

Conversion facilities: In times of drought, starvation, or other natural disasters, it provides conversion facilities to state cooperative banks and RRBs for a maximum of seven years.

Financing to state governments: It offers financing to state governments for a maximum of twenty-year periods so they may directly or indirectly purchase shares of cooperative credit organisations.

Share capital: NABARD invests in securities or subscribes to the share capital of any institution dedicated to agricultural and rural development [3], [4].

Regulatory duties: The NABARD's main regulatory duties are as follows:

NABARD is authorised by the Banking Regulation Act of 1949 to conduct inspections of cooperative societies other than basic cooperative societies and RRBs. Through NABARD, every RRB or cooperative organisation requesting authorization to establish a branch must submit their application to the Reserve Bank. Copies of any returns that RRBs and cooperative banks submit to the Reserve Bank are anticipated to be sent to NABARD. The RRBs and cooperative banks have given the NABARD permission to request any information or statement. Development activities: NABARD carries out a variety of development activities.It states what follows:

1. Credit strategies
2. Establishes institutions
3. Advances science and technology
4. Introduces novel methods for delivering credit.

Rural credit institutions

Acquires knowledge to solve agricultural and rural issues. Supports the government, Reserve Bank, and other institutions in their efforts to promote rural development. It offers training and research facilities and works with state governments to help them contribute to the qualified institutions' share capital. NABARD also implements a variety of training courses to improve the technical ability and competency of the staff members involved in agricultural and rural development.

NABARD's funds and resources

NABARD's initial authorized capital was 500 crores and its first paid-up capital was 100 crore. The Central Government and the RBI first contributed to the paid-up capital. NABARD increased its paid-up capital from 100 crores to 500 crores. It was increased to 2,000 crores in 1999. NABARD receives funding from the Indian government, the World Bank, and other organisations in addition to raising money on the open market. By virtue of these donations, NABARD's effective capital base reached 6,882 crores by the end of March 2000. Up till 2020, NABARD has an approved capital of 30,000 crores. The organization's major resources are as follows:

Paid-up capital: As previously indicated, NABRD's paid-up capital steadily increased from 100 crores to 1000 crore and was then increased to 2000 crore. As of March 31, 2020, the paid-up capital was 14,080 billion.

National Rural Credit Fund: This fund was established in accordance with Section 42 of the NABARD and receives periodic contributions from the RBI and the Government of India. NABARD uses the funds in this fund to offer financial assistance in the form of loans and advances for a variety of reasons.

National Rural Credit (Stabilisation) Fund: The RBI and the Central Government are also credited with contributions to this fund. When state cooperative banks, RRBs, or other financial institutions need help in the form of loans and advances up to seven years because of drought, hunger, or other disasters, military operations, or enemy action, money credited to this fund is used to provide such assistance.

Rural Infrastructure Development Fund: This fund was established to help commercial banks that fall short of the objective for agricultural lending under the priority sectors and ongoing rural infrastructure projects be completed more quickly.

Borrowing from the Reserve Bank: To help NABARD re-finance seasonal agricultural activities and off-farm financing, the Reserve Bank of India offers General Lines of financing (GLC).

Bonds and Debentures: NABARD raises money by issuing bonds and debentures to borrow money from the market.

Deposits: Due to priority sector lending, private banks have made the majority of the deposits. Funding from the Government of India, the World Bank, and IDA: As was already noted, the NABARD receives funding from these three institutions.

NABARD's performance and accomplishments

In this respect, the following observations may be made:

Resource mobilisation: NABARD successfully raised $6,282 crore in resources during the 2001–2002 fiscal year, which is quite commendable. The Rural Infrastructure Development Fund (RIDF) deposits contributed to nearly one third (2,474 crore) of the total resources, while National Rural Credit provided 1,202 crores. The contributions from NRC and RIDF totaled at 16,090 crores as of March 2020 1,30,442 crore.

Re-finance: It offers state governments and local rural banks re-financing options. The payment may be divided into two parts:Credit is distributed by the NABARD primarily for the following purposes: A small irrigation, Development of land, Farm mechanization, Plantation, Horticulture, Poultry farming, Breeding sheep, Fisheries, Dairy development, Storage, Market yards.

According to NABARD's (refinance) purpose-based distribution of investment credit, agricultural mechanization activities accounted for the highest portion of all investment credit in 2002, amounting to 1,099 crore (28%) of the total. SHGs accounted for one-third and off-farm development/MSME sector accounted for one-quarter of the total LT Refinance disbursement for the FY 2019–20, among the key objectives [5], [6].

NABARD split the nation into six areas, namely the northern, north-eastern, eastern, central, western, and southern. According to NABARD's geographical allocation of re-finance, the southern area received the greatest percentage of overall disbursements in 2002 (36.9%), followed by the northern region (22.7%), the central region (17.9%), and the western region (14.5%). The Southern area had the largest proportion during the fiscal year 2019–20 (41%), followed by the Western region with 19%.

Rural Infrastructure Development Fund (RIDF): The RIDF was first established in 1995–1996 with a budget of 2,000 crore. The fund's overall corpus has now risen to 18,000 crores. This fund's primary goal is to assist state governments and state businesses in completing different rural infrastructure projects (such as irrigation, roads, and bridges). By the end of 2002, 13,042 crores had been disbursed. Since 1995–1996 there has been a new RIDF Fund established by the Indian government with a budget. Seven funds have already been established over the last six years, with a combined capital of 23,000 crore. During the 2019–20 fiscal year, RIDF payouts and repayments were 26,266 crore and 20,782 crores, respectively.

Microfinance: This area focuses on providing self-help groups (SHGs) as a means for rural poor people to access formal banking services. The NABARD Micro Finance Development Fund was introduced in the 2000–2001 Union Budget with a start-up capital of Rs. 100 crore. The Kisan finance Card Scheme was created in 1998–1999 to help farmers get short-term finance. It is well-liked by bankers and farmers alike. Farmers may choose from a variety of production credit options while avoiding formalities. Bankers may avoid having to handle credit applications again. State-level agricultural development financing businesses were established at the initiative of NABARD. These businesses want to improve loan flow to high-tech, high-value agriculture activities and related infrastructure. These businesses were established in the states of Andhra Pradesh, Tamil Nadu, and Karnataka. The ratio of public to private sector equity involvement must be 45 to 55.

Promotional and developmental actions: NABARD also carries out a number of promotional and developmental efforts for the non-farm sector to improve the quality of financing. Training centres for manufacturing, artisan guilds, rural entrepreneurial development programmes, and other training programmes are some of the promotional initiatives that have already been launched or supported with grants or assistance. Additionally, NABARD offers a programme that connects self-help groups (SHGs) with banks via a 100% re-financing arrangement.

Credit Monitoring Arrangement: Credit Authorization Scheme (CAS) has been replaced with Credit Monitoring Arrangement (CMA) by NABARD (in conjunction with RBI). It was done with the intention of giving cooperative banks more discretion and flexibility. The goal is to establish a financial environment that is both liberalised and competitive. Banks must, however, follow the exposure standards. They must be confident in the credit proposals' technical validity and financial viability.

Refinancing under SGSY: NABARD is actively involved in putting Swarnajanti Gramme Swarozgar Yojna (SGSY) into action. To RBIs and cooperative banks, it has provided operating directives. The development of appropriate standards for rating SGSY groups at various phases of financing, based on the example criteria suggested by NABARD, has been recommended to banks.

DISCUSSION

Regional Rural Banks (RRBs)

To increase the accessibility of rural loans, Regional Rural Banks were founded on 2 October 1975, the anniversary of Mahatma Gandhi's birth. Regional Rural Banks (RRBs) are one of the key institutional entities involved in rural finance among the many institutional organisations. These are financial entities that have been specifically created and operate under NABARD supervision. They serve the credit requirements of farmers and other sectors of the rural economy via a vast network of branches that are dispersed across rural regions.

Objectives

The primary aim and goal of the RRBs is to meet the needs of small and marginal farmers, agricultural labourers, and craftsmen who had not received enough service from the existing credit institutions by offering loans and associated services to them.

Organization

'Sponsor banks,' which are often public sector banks, advertise the RRBs. The districts that want these banks are identified by the RRB steering committee. Later, after consulting with

the sponsor bank and the state government, the Central Government establishes RRBs. Each RRB runs its operations within its designated local boundaries. Any location within the designated region is permitted for the bank to open a branch.

Capital

An RRB's authorised capital is 5 crores, which the government may raise or lower, but not below its paid-up capital of 25 lakh. The Central Government contributes 50% of this, the State Government contributes 15%, and the Sponsor Bank contributes 35%. Presently, the Central Government, State Government, and Sponsor Bank have a set subscription ratio to RRBs of 60: 20: 20 each.

Management tools

A Board of Directors oversees the operation of each RRB. It has a general superintendent and a board of directors made up of nine people. Three directors are chosen by the Central Government, two by the State Government, and three by the sponsor bank. The Central Government appoints the chairman, who is usually an executive of the sponsor bank. The Board of Directors must follow the Reserve Bank's directions and standards as well as sound business practises. State Level Coordination Committees have also been established at the state level to ensure consistency in the methods used by various RRBs [7], [8].

Resources

RRBs get their resources in the following ways: Share capital; Public deposits; Borrowing from sponsor banks.

Refinancing via NABARD

The Reserve Bank of India compares RRB to cooperative banks and offers refinancing at a rate that is 2% less than the bank rate. The RRBs have been granted eligibility for accommodations, just like commercial banks, based only on their declaration of qualifying loans and advances. Additionally, the Reserve Bank of India has given RRBs the status of scheduled banks. Up to December 2002, they are permitted to keep cash reserves at a rate of 3% of their demand and time obligations. The RRBs are permitted to provide a deposit interest rate of up to 12% higher than that of commercial banks. Deposit Insurance and Credit Guarantee Corporation of India Ltd. also insures bank deposits. This is done to safeguard depositors' interests.

Functions

The following are general categories for RRB functions: Activities relating to agriculture: RRBs carry out the following duties in the context of agricultural activities:

RRBs provide small and marginal farmers, as well as agricultural workers, with loans and advances. Individual farmers, groups of farmers, or co-operative organisations may apply for loans and advances. This is done to make sure that the loans are used to fund profitable ventures that provide value and create jobs. It is required of the agricultural marketing organisations (getting such loans) to sell the farmers' product at the proper time, location, and price. RRBs serve a critical role in eradicating the threat of moneylenders and land landlords, who would want to maintain the borrowers in a condition of perceived dependency and vulnerability, by providing loans to small and marginal farmers.

Doorstep banking service: RRBs provide financial services to rural residents, especially in locations where commercial banks do not operate. The RRBs receive deposits and mobilise

rural savings. These are directed towards beneficial pursuits. This RRB feature encourages rural residents to preserve money instead than engaging in ostentatious consumerism. Non-agricultural activity-related tasks: RRBs carry out the following non-agricultural activity-related tasks:

Loans to craftsmen: To promote the creation of creative and related commodities, RRBs provide money to craftspeople. We are aware that rural craftsmen struggle to earn a livelihood by selling their handcrafted creations due to their incredibly limited resources. Although they do have an entrepreneurial mentality, it is dormant because of a lack of resources. The RRBs assist skilled professionals and artists to make ends meet by selling their unique creations in the market by providing simple and affordable financing. If these individuals get financial assistance, they will be able to purchase the raw materials and other materials needed for the creation of their items, improving the quality of those products. They may better their level of life by selling the things of higher quality and earning a decent livelihood doing so. Loans to small business owners: small business owners who are involved in retail trade, commerce, and other productive activities abound in small towns, suburbs, and rural locations.

These company owners lack the resources necessary to carry out their operations. They may borrow money from the RRBs at very cheap interest rates. It is intended to assist them in purchasing raw materials and replacement components for the upkeep of their fixed assets. The RRBs also provide loans to independent contractors so they may increase their income and maintain a livable quality of life.

Consumer loans: RRBs provide consumer loans to weaker groups, including as small and marginal farmers, members of Scheduled Castes and Tribes, and other low-income borrowers. This will prevent the weaker groups in society from going without basic necessities.

Poverty alleviation program: RRBs are anticipated to be crucial in integrating those who live below the poverty line into society. RRBs are anticipated to begin similar schemes that aim to help the poor escape poverty as part of the national objective for economic reforms. The main focus of the plans to reduce poverty will be the creation of job possibilities at the local level.

RRBs' banking responsibilities have tended to grow over time. Additionally, they have begun to provide loans and advances secured by gold jewelry for the purchase of consumer goods as well as other uses. Additionally, they are able to make assurances on behalf of their customers. As representatives of their sponsoring bank, these banks may also issue traveler's checks and provide locker facilities. For each client and branch, they may buy draughts and checks for up to $25,000 and $1,000,000, respectively [9], [10].

Indian Cooperative Movement

The cooperative movement has been around for more than a century, as you have already learned from a previous course. Many detractors claim that the movement is a complete failure and ought to be abandoned. Nothing has been accomplished by the campaign to address the widespread rural poverty. Additionally, it hasn't helped to improve living standards, create better marketing conditions, or boost agricultural productivity. Even the predatory moneylenders still exist in rural areas.The fact that in 1954, precisely fifty years after it began, co-operative institutions only provided 3% of the credit needs of farmers, demonstrated the co-operative movement's complete insignificance. According to the All-India Rural Credit Survey Committee, "Cooperation has failed, but co-operation must succeed" in 1954.The cooperative movement has advanced significantly since then thanks to

the Reserve Bank and Government's strong attention. Compared to the first 50 years of its existence, the development made in the past 40 years is far greater.

Benefits

Farmers have access to low-cost finance thanks to cooperative associations. Since 1954, the needs of farmers have been gradually being met by cooperative credit institutions. The co-operative societies cover more than 60% of farmers' credit seed needs. In the villages, the monopoly of landowners, moneylenders, etc. is being shattered.

Previously meeting more than 70% of the farmer's loan demands, moneylenders today only cover fewer than 35% of such needs. Therefore, over time, co-operative credit would grow to be so substantial that village moneylenders would no longer be necessary for rural financing.Better agricultural practises, such as the use of improved seeds, manures, etc., have been made possible through cooperative groups. The marketing and processing societies have aided members in finding affordable ways to purchase their needs and in finding lucrative markets for their agricultural output. The farmers have also benefited from having excellent storage options.

The quality of life in rural regions has also been improved through cooperative groups. Farmers have received education to help them kick various harmful habits like drinking, gambling, etc. Unwanted social practises like extravagant expenditure at marriage and other religious rites have been tried to eradicate. They have made an effort to settle issues at the village level itself; they have discouraged farmers from going to court and engaging in costly litigation. In other words, they have been working to make the farmers better people on the inside.

The non-credit societies have assisted its members in improving their economic circumstances and have protected them from the abuse of strong organisations. Examples include housing cooperative societies, consumer cooperative societies, and others. For instance, housing cooperatives have made it possible for middle-class groups to obtain home sites and build their own homes in numerous metropolitan locations. By assisting in the distribution of items that are in limited supply and by selling goods at fair rates, consumer cooperatives have done a great deal for the community. They have played a significant role in many locations in stopping individual shops from exploiting supply shortages and charging high rates. Similarly, organisations created to support artists like handloom weavers may have provided their members with access to financing and marketing resources.In the fields of lending, agricultural production, agricultural processing, and marketing, rural cooperatives have been very important. Cooperatives are governed by the voluntary, open-membership, democratic control, fair profit distribution, and efficient use of resources principles. Building an economically successful, democratically active, and self-reliant cooperative movement in India has been the movement's current focus [11], [12].

Limitations of the Movement

The movement's excruciatingly sluggish expansion throughout its first fifty years of existence has a number of causes. Numerous people and organisations, like the All-India Rural Credit Survey Committee, have identified the major flaws in the Indian movement and offered solutions for strengthening and reorganising it.

Lack of spontaneity: The Indian cooperative movement did not originate with the populace. People did not step forward to form organisations to meet their needs, hence the movement was not voluntary. On the other hand, the movement resembled a department of the

government. The people among whom the credit societies were founded saw the organisations in general as lending institutions run by the government. The movement was led by government officials who had little understanding of cooperative principles. They lacked both sufficient training and awareness of the requirements of the farmers.

Lack of resources: The co-operative movement's core flaw was a lack of resources. It was believed that the members themselves ought to save and deposit their resources in order to make a significant contribution to the societies' operational capital.

The federal and state cooperative credit organisations were unable to secure the amount of public deposits that were projected. Even now, this is the circumstance. Even if the Reserve Bank was eager to lend to cooperative banks at favourable rates, the state co-operative banks were unable to take advantage of this opportunity. One of the movement's fundamental flaws was a lack of funding.

Loans that may only be used for productive purposes: Cooperative credit organisations did not assist farmers in satisfying all of their credit needs. They only provided loans for agricultural activities, but the farmers also needed loans to cover many of their other needs. The farmers had to rely on money-lenders for these things. In other words, the cooperative credit organisations needed to fulfil all the demands of the farmers in order to earn their entire support.

Credit provision only: The cooperative movement did not understand the natural link between credit, marketing, and processing. As a consequence, the cooperative organisations gave the farmers loans but did little further to assist them. In several places, various organisations were founded with various goals. A co-operative organisation that would cater to the requirements of the farmers and be in constant communication with them throughout the year was what was really required. One of the main reasons for the movement's failure in India was the lack of support for the farmers in the form of loans, marketing, processing, improved farming, etc.

Competition from private organisations: The co-operative movement encountered opposition from strong entrenched interests right from the start. The collapse of village societies was a goal of money lenders and businessmen in communities. Consumer groups encountered ferocious resistance and antagonism from dealers and speculators in metropolitan areas. However, India was not the only nation to face such hostility to the cooperative movement; other nations also encountered it. However, cooperation was unable to overcome the movement in India's financial plight.

Tremendous progress despite fierce competition. The people's lack of cooperation: The majority of Indians are uneducated, uninformed, and very conservative. For starters, the most of them were unaware of the true purpose and meaning of cooperation. Another reason was that the better farmers were unable to join the campaign due to the village credit organisations' founding tenet of limitless liability. Without the people's full and voluntary cooperation, cooperation cannot flourish.

Poor management and leadership: Poor management and leadership were a major factor in the demise of several societies in rural regions. The landlords controlled the local economy, as was already indicated. The little farmers owed the landowners complete loyalty. However, these landlords were unconcerned with the co-operative movement's success. They also showed no sincere concern in advancing the welfare of the farmers. In addition, the societies' work was hampered by prejudice, favouritism, and nepotism. For instance, wealthy farmers and the family members and friends of office holders received loans and other forms of help with ease. The poor and those in need did not get any help. Additionally, the office holders

were not stringent about demanding payback from those they were interested in. The management was often ineffective and feeble.

The government's stance: The government did the right thing by supporting the movement in every manner. It made the error of turning cooperatives into a government department, along with all the rigidities and shortsightedness that go along with it. The trend was to overly formalise the movement and provide little room for individual initiative. Additionally, the government prioritised accelerating the movement's speed rather than consolidating it. The government did not show enough interest in enhancing the societies' financial stability, especially the rural primary credit societies [13], [14].

The character of rural Indian society: The environment did not encourage interpersonal cooperation. The typical Indian farmer lacks literacy, is uneducated, and is unable to comprehend the value and need of collaboration. Additionally, the cooperative movement and the spirit of cooperation are hampered by the caste system, religious sentiments, and other aspects of rural culture. These circumstances are still present to a considerable degree nowadays.

CONCLUSION

In conclusion, India's agricultural credit system is essential for assisting the agricultural industry, giving farmers financial help, and fostering rural development. The Indian government has adopted a number of programs and policies over the years to improve loan availability and accessibility for farmers all around the nation. In addition, recent years have seen technology breakthroughs that have an impact on the agricultural financing sector. The implementation of digital platforms and mobile banking has sped up the distribution of funding to farmers and made the loan application procedure simpler. This has increased the credit distribution system's efficiency as well as its openness and accountability. In conclusion, India's agricultural credit system has made considerable strides in assisting farmers financially and promoting agricultural development. To further enhance the system, fix current issues, and make sure that credit efficiently reaches all qualifying farmers, continued efforts are nonetheless required. India can create a strong agricultural credit system that supports sustainable farming practises, enhances livelihoods, and helps to the general growth and development of rural people by continuously improving the policies and implementation methodologies.

REFERENCES:

[1] Pooja Rakhecha, “ROLE OF BANKS IN BRINGING FINANCIAL INCLUSION IN RURAL INDIA,” *Glob. J. Commer. Manag. Perspect.*, 2018, doi: 10.24105/gjcmp.7.2.1802.

[2] D. Chaubey, V. Prakash, T. C. Yadav, and G. Singh, “Doubling of Farmers’ Income though Integrated Farming System Approaches in Bihar- A Review,” *Int. J. Curr. Microbiol. Appl. Sci.*, 2018, doi: 10.20546/ijcmas.2018.712.188.

[3] A. R. Mohanty, S. K. Patra, and . S. K., “Efficiency in Value Added Tax in Sub-National Governments in India: An Empirical Analysis,” *Vis. J. Indian Tax.*, 2018, doi: 10.17492/vision.v4i02.11779.

[4] V. Tripathi and V. Tripathi, “Recent Development of Microfinance in India,” *SSRN Electron. J.*, 2018, doi: 10.2139/ssrn.2462251.

[5] M. Patra, P. Samal, and A. Kumar Panda, "Constraints and opportunities for women in agriculture in India," *J. Pharmacogn. Phytochem.*, 2018.

[6] P. Selvaraju, "Operational Efficiency of the Pondicherry Health Employees Co-operative Society: A Study," *Asian Rev. Soc. Sci.*, 2018, doi: 10.51983/arss-2018.7.2.1427.

[7] M. Kumar and M. Kansal, "Impact of merger & acquisition of regional rural bank with special reference of western U.P," *Int. J. Res. Anal. Rev.*, 2018.

[8] M. Mittal, A.K., Pandey, "Role of Regional Rural Bank (RRB ' s) in the Economic Development of India," *Int. J. Trade Commer.*, 2018.

[9] D. Ramakrishna, "NABARD: A Financial Inclusion through Regional Rural Banks RRB's in India," *Int. J. Trend Sci. Res. Dev.*, 2018, doi: 10.31142/ijtsrd8341.

[10] V. Tagat and A. Tagat, "The Potential of Farmer Producer Organizations in India," *SSRN Electron. J.*, 2018, doi: 10.2139/ssrn.2972488.

[11] Satyajeet S Deshpande, "GROWTH OF COOPERATIVES IN INDIA," *GAP Interdiscip. - A Glob. J. Interdiscip. Stud.*, 2018, doi: 10.47968/gapin.12005.

[12] P. Selvaraju, "Non-Performing Assets (NPAs) of Urban Co-operative Banks (UCBs) in Coimbatore District of Tamil Nadu: An Empirical Study," *Asian J. Manag. Sci.*, 2018, doi: 10.51983/ajms-2018.7.2.1327.

[13] R. Agarwala and S. Saha, "The Employment Relationship and Movement Strategies among Domestic Workers in India," *Crit. Sociol.*, 2018, doi: 10.1177/0896920518765925.

[14] C. C. Cantarelli, B. Flybjerg, E. J. E. Molin, and B. van Wee, "Cost Overruns in Large-Scale Transport Infrastructure Projects," *Autom. Constr.*, 2018.

CHAPTER 22

DEVELOPMENT OF VARIOUS SOCIETAL FORMS: A REVIEW STUDY

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ABSTRACT:

Numerous variables including culture, economics, politics, and technology have all had an impact on how different society forms have evolved through time. This abstract seeks to provide a quick summary of the development and characteristics of various society types across time. Small hunter-gatherer tribes have developed into sophisticated civilizations as human cultures have. Early societies were characterised by nomadic lives, with a focus on hunting, gathering, and subsistence cultivation. With the expansion of agriculture came established agricultural communities, which sparked the growth of cities and villages. The development of social hierarchies, the division of labour, and the rise of governmental structures were characteristics of these societies. Complex civilizations gave rise to city-states and empires. While empires covered huge areas and were characterised by centralised political control, city-states were autonomous urban hubs. These societal patterns were typified in earlier civilizations like Mesopotamia, Egypt, Greece, and Rome, each with its own distinct political, social, and cultural frameworks. Feudal societies, when the majority of people were peasants and authority and land ownership were concentrated in the hands of feudal lords, came into being throughout the Middle Ages. The Renaissance and the Enlightenment replaced feudalism and brought about enormous intellectual and social upheaval. These movements created the framework for the contemporary nation-state, which is distinguished by clearly delineated boundaries, centralised administration, and the idea of citizenship.

KEYWORDS:

Bank, Credit, Development, Finance, Societies.

INTRODUCTION

Cooperation was seen by Indian planners as a tool for the economic development of the underprivileged, especially in rural regions. A village Panchayat, a village co-operative, and a village school were portrayed as a trio of institutions upon which you might construct a self-sufficient and just economic and social structure. The primary goals of the co-operative movement in India were to shield the impoverished farmers from the influence of moneylenders and provide them low-interest funding for agricultural activities.

Agricultural Credit Society

The Primary Agricultural Credit Society (PACS), also known as a cooperative credit society, is often founded by 10 or more people. Most of these individuals belonged to a single community. Each share of this society often costs nothing, making it possible for even the poorest farmer to join. In the short-term cooperative credit framework, Primary Agricultural Credit Societies (PACs) are at the base. These associations work directly with farmers and perform marketing and distribution tasks.

A president, secretary, and treasurer are the three members of the elected body that oversees the operation of the organisation. The sole paid member of the management is the accountant;

the others are often honorary. In this civilization, loans are often granted for short terms, typically one year. These are provided for the purpose of carrying out agricultural activities, and the interest rate is often relatively low. Instead of being split, the proceeds are utilised to improve the welfare of the community [1], [2].

The worth of PACs has been steadily rising. It made loans of 23 crores in 1950–1951; 200 crores in 1960–1961; and 34,520 crores in 2000–2001. PACs have issued loans totaling 2,07,322 crores as of 2018. The PACs have increased their support for the marginalized and small farmers in particular. Although this improvement has been rather remarkable, it is insufficient in light of the need for financing from farmers. The major credit society, however, has persisted in being the co-operative structure's weakest link.

PACS Restructuring

The PACS has increased its support for the weaker groups, notably the small and marginal farmers, throughout the last several decades. Although this improvement has been rather remarkable, it is insufficient in light of the need for financing from farmers. The principal credit society, however, has remained to be the cooperative structure's weakest link. The PACS has received a lot of attention in the last several decades in order to become a solid institution. A project was initiated by the Government and RBI to reorganise and revitalise the primary agricultural credit societies. Such a structure, close to the farmers, is highly crucial for disbursing rural loans, especially to small farmers. It was finished in Gujarat, Madhya Pradesh, Orissa, Rajasthan, Kerala, Tamil Nadu, and Madhya Pradesh. It did not advance significantly in other states. PACSs had decreased from 2,12,000 in 1960–1960 to 1,61,000 and 1970-1971 and 92,000 in 1999-2000. And there were around 95,238 PACS as of 2018. There are around one lakh PACS, with 10 crore farmers as members, according to estimates. The majority of PACS are reliant on financing from Central Cooperative Banks (CCBs). If the CCBs are weak, the PACS will be financially starved, which will have an impact on the extension of the PACS's credit functions. The quantity of loans still due for PACS as of 2018 was over 32,520 as of the end of March 2002.

PACS's financial stability

The Reverse Bank of India and the state government established PACS in order to make all primary agricultural societies functional and to guarantee that they support rural communities. Its primary goal was to address regional disparities in cooperative development. Farmers' service societies or large multi-purpose societies were used to assist non-viable societies in a number of ways. Giving stronger money to weaker societies to cover losses, bad debts, and overdue amounts supported these initiatives. Except for Gujarat, Maharashtra, and Jammu & Kashmir, the PACS reorganization process has been in place for the last 20 years and is practically complete in all of them.

PACS and weakened areas

The main goal of cooperative development projects is to make sure that the advantages of cooperative activities are distributed more and more to weaker groups. Scheduled Castes and Scheduled Tribes are included in these categories. By increasing the participation of the weaker groups in the already-existing PACSs and assuring a wider flow of resources and services to them, the government strives to accomplish this. Large multipurpose societies are being set up in tribal communities for the benefit of the tribe [3], [4].

Commercial banks and PACS

In 1970, the Indian commercial banks created a funding plan for PACS via which those institutions' money were made accessible to PACS. Commercial banks found this system useful since they could use it to disburse agricultural loans through PACS, solving the severe issue of not having direct touch with farmers through their own branches and field workers. However, the plan hasn't been as effective as was hoped. First off, it was impossible to properly combine two systems with two distinct culturesone commercial and the other cooperative.

The result of this fundamental contradiction has been difficulties. Second, successful PACS being removed from their fold by the commercial banks has not gone down well with state cooperative banks or central cooperative banks. However, there is a lot of room for collaboration between PACS and the commercial bank branches in rural regions. Commercial banks' rural branches may help PACS members who qualify for loans but are unable to get financing through PACS due to a shortage of cash. They may also provide management guidance to the PACS, such as recommendations for keeping financial records properly up to date. The PACS, in turn, may assist commercial bank branches in locating qualified borrowers and in loan recovery.

PACS's shortcoming

The cooperative credit system has a thorough understanding of the local circumstances and issues and makes loans accessible to farmers at reasonable distances. However, it lacks organisational strength and financial stability, making it practically unable to provide lending to the agricultural sector. The following shortcomings of the primary credit societies were identified by the All-India Rural Credit Review Committee: Co-operative financing still makes up a very tiny fraction of all farmer borrowings. It might be difficult for tenants and small farmers to completely meet their financial needs with PACS alone. The majority of primary credit societies are weak and unable to properly satiate farmers' needs for production-oriented loans. PACS has not been successful in providing the borrowing farmers with sufficient and timely loans.

Central District Cooperative Banks

About 363 district central cooperative banks existed in 2018. These are associations of local main credit societies that often cover the whole territory. Some private persons are stockholders in these institutions, contributing both money and management. They were anticipated to draw deposits from the general public, although their principal responsibility is lending to local primary organisations. The State Co-operative Bank and the local primary credit societies are interceded for by a number of cooperative central banks, but this expectation has not been met.

For the treatment of weak central cooperative banks, NABARD has developed a plan. It offers the State Governments generous support in the form of contributions to the share capital of the weak central cooperative banks chosen to serve as State Cooperative Banks. There are now 20 State Cooperative Banks (SCBs) operating in the nation. They are the apex of each state's cooperative credit organisation. The State's central cooperative banks are financed by and subject to oversight by the SCB. It serves as a connection point for the cooperative central banks, local primary societies, and NABARD. The SCB obtains its operating capital from its own share capital, reserves, public deposits, loans and advances from NABARD (previously RBI), and public deposits [2], [5].

The Issues with Cooperative Societies

The enormous overdue of cooperative credit institutions, which is now estimated to be between 9,000 crores and 10,000 crores, is a very upsetting aspect of co-operative credit. Along with the usual causes of a significant amount of past-due debt, the following external forces' involvement also significantly impacted the ability of credit institutions to revive their performance: Waiver of loans. A variety of concessions for principal payback

Making interest payments

The issue has become worse due to the State Government's inability to fulfil its financial obligations to cooperative banks, which include loan waivers, interest subsidies, etc. The fact that 45% of loans in India are still unpaid raises alarm; the proportion of these loans' ranges from 23% in Tamil Nadu to 77% in Bihar. The forgiveness of their obligations to banks and cooperative societies is one of the fundamental demands of the farmers union, which is a sign of how organised farmers are today. To cancel these obligations, states have covertly acceded to such requests. It is quite concerning that governments have a propensity to write off debts since doing so makes it more difficult to collect payments owed by farmers. The National Front Government's poorly thought-out decision to forgive farmer debts up to $10,000 was regrettable. The issue of past-due loans warrants substantial attention since it has an impact on both the financial health of the lending institutions and the extension of credit.

Tenants, sharecroppers, landless agricultural workers, and rural craftsmen who are the poorest and hence most in need are another shortcoming of credit cooperation. Over the years, the percentage share of cooperative credit flow has varied between 3 and 5%. Since these farmers often rely on credit to buy their inputs, the credit that is accessible to them is still insufficient. Finally, despite the fact that the percentage of the rural community's weaker segments has been steadily rising and is now estimated to be approximately 40%, it still falls short of meeting their basic production requirements. Another issue is the unequal distribution of cooperative advantages among the several states. In Orissa, Bihar, and Uttar Pradesh, for example, farmers received substantially less money than those in Gujarat, Punjab, Haryana, and Tamil Nadu. West Bengal, too. To put it another way, only five states, namely Gujarat, Haryana, Kerala, Punjab, and Tamil Nadu, have average credit levels that are much greater than (twice or more than double) the All-India average.

The co-operatives have not been able to guarantee an expanding flow of production loans and investment credit in the majority of the tribal and mountainous regions, apart from significant regional differences in credit availability. However, despite the fact that co-operatives now roughly cover the whole countryside, only around 45% of rural households are members, and only 10% of all members are agricultural labour and rural craftsmen. The membership roll still does not fully reflect the less wealthy segments of the rural population.In the end, the management area represents the most notable weakness and the source of numerous shortcomings in the cooperative performance. The need of adequate staff development in the cooperative sector has been heavily debated throughout the years at all levels. However, little progress has been made. The cooperatives themselves have shown an odd lack of understanding of this issue. In this part, we examine various more methods for getting agricultural information [6], [7].

Microcredit through self-help organizations

Numerous creative initiatives have emerged as a result of formal finance's inefficiencies. The Self-Help Groups (SHGs) with bank linkage programmes have become a new source of credit for rural India. NABARD invented the idea of thrift and savings groups, or SHGs, to

get around the obstacles and high costs of providing banking services to the rural poor. Governmental and non-governmental organisations support the development of SHGs.

A group of no more than twenty persons from similar social backgrounds is assembled. Since a group larger than twenty must register under the Cooperative Credit Societies Act of 1904 or another Act, this number was selected to keep the organisation's operations informal and flexible. Members commit to save aside a little amount of money each week to deposit in a savings account set up in the group's name. Every participant receives a passbook to keep track of their savings, loans, repayments, interest, and bonuses. Anyone in the group is welcome to ask for a useful loan.

If the loan is approved, members will pay (18–24%) basic interest annually. A mature and consistent organisation may get a matching loan from their own bank under the NABARD plan at a reasonable interest rate. If the loan is repaid on time, the organisation may borrow up to four times its own resources, increasing its available funds to meet the rising financial demands of its members who want to launch their own businesses. NABARD refinances the loans of the neighbourhood banks at discounted rates. The south of the nation has seen the majority of the country's SHG migration (64% share). In Andhra Pradesh alone, there are around 50% of SHGs, and 90% of them are women's organisations. More than 90% of these groups have recovered, and in other regions of India, this process is only getting started.

Microfinance Organizations

A new breed of rural financial institutions called Micro Finance Institutions (MFIs) fills in the gaps left by the official financial system. These MFIs are prepared to lend money to the lowest people with the fewest requirements and no collateral. Always, a group of people receives this credit, and the MFI works with the group as a whole. This has proven to be the most effective microfinance model, with the majority of MFIs serving as an intermediary between SHGs and the banking system. These institutions represent a development in the delivery of high-quality financial services to the underprivileged without the rigidity and bureaucratic structure of the cooperative system.

DISCUSSION

A definition of micro finance that included both urban and rural settings. In general, micro finance refers to small-scale financial services for both credit and deposits that are given to people in developing countries who own/operate small or micro enterprises where goods are produced, repaired, recycled, or traded, provide services, work for wages or commission, or who make money by renting out small parcels of land, vehicles, drift animals, machinery, and tools. The Asian Development Bank has broadened the scope of services available, defining microcredit as the provision of a wide array of services to low-income individuals and their microbusinesses, including deposits, loans, payment services, money transfers, and insurance (ADB 2000).

Many borrowers utilise microcredit in general to meet their needs for social duties, consumption, and investment, as well as to pay off previous loans. However, recovery rates are 90%. BASIX, Spandana, and SHARE Microfin in Andhra Pradesh, ASA and Dhan Foundation in Tamil Nadu, MYRADA in Karnataka, Adithi in Bihar, RGVN in Assam and Orissa, Cashpor in UP, and PRADAN in Jharkhand are a few of the most successful institutions [8], [9].

NGO funding for agriculture

A major source of agricultural financing help comes from non-governmental organisations. The non-governmental organisations' local area of concentration is their main advantage. The majority of NGOs either specialise or focus on certain areas of the world. As a result, they are in a good position since they are connected to the farmers and their issues. So that they may generate money, give them contributions, and assist them with their urgent needs and problems. Through laws and regulations, the government also controls how they are funded. However, NGOs are insufficient financial middlemen. These organisations can only provide assistance to the farmers in the area of finance since their financing comes mostly from donors.

India's Agriculture Insurance

In India, crop output has been affected by weather variations and shifts as well as significant losses brought on by insect and disease infestations. Crop insurance therefore plays a crucial role in the sector's steady expansion. Due to natural disasters and price swings, farmers' conditions remain insecure despite economic and technical progress. The Indian government introduced an agricultural insurance programme for farmers with this in mind.

With capital contributions from four public sector general insurance companiesNational Insurance Company, New India Assurance Company Ltd, Oriental Insurance Company Ltd, and United India Insurance Company Ltdas well as NABARD, the government has now established a separate Agriculture Insurance Company. Of the total paid up capital, 35% is provided by GIC, 30% by NABARD, and 8.75% by the four public sector general insurance companies.

NAIS, or the National Agricultural Insurance Scheme

Since the Rabi 1999–2000 season, the Comprehensive Crop Insurance Scheme has been replaced by the National Agricultural Insurance Scheme (NAIS). The programme was established with the intention of giving farmers insurance protection and monetary assistance in the event that any of the registered crops failed due to natural disasters, pests, or disease, as well as to stabilise farm earnings, especially during catastrophe years. The NAIS plan is being implemented by the Agricultural Insurance Company of India Ltd (AICIL), which was established in 2002 and began operations in 2003. In 23 states and 2 Union Territories, this plan is in operation. It is accessible to all farmers, loaners and non-loaners alike, regardless of the size of their holdings. All food crops (cereals, millets, and pulses), oilseeds, and annual commercial/horticultural crops are all expected to be covered under NAIS. The programme has previously covered sugarcane, ginger, onion, garlic, potato, cotton, turmeric, chilli, pineapple, banana, coriander, cumin, jute, and tapioca. Additionally, the insurance sum under NAIS has no maximum.

The insurance rates vary from 1.5 to 3.5% of the insured amount and are dependent on the kind of crop; 3.5% for bajra and oilseeds, 2 percent for other Rabi crops, 2.5 percent for other Kharif crops, and 1.5 percent for wheat. Annual commercial and horticultural crops are subject to actuarial rates. In addition, the central and state governments each share 50 percent of the premium subsidy with small and marginal farmers. The premium subsidy has been reduced over time, and small and marginal farmers now only get a 10% subsidy.

For broad catastrophes, the plan operates on an "area approach" (specified regions for each registered crop), while for localised calamities like hailstorms, landslides, cyclones, and floods, it operates on an "individual basis." He would be entitled for reimbursement from

AICIL to the level of indemnity if his real income fell below the guaranteed income (the sum of average yield and MSP). The insured crop's actual yield and price are measured using the area technique in NAIS. The programme initially only covered paddy and wheat and was intended to be optional for farmers who weren't on loans and mandatory for those who were. For wheat and paddy (rice), the programme was piloted in 19 chosen districts across 13 States during Rabi 2003–2004. In Kharif 2004, the pilot project was expanded to include a number of districts and states [10], [11].

Scheme for Farm Income Insurance

The Farm Income Insurance Scheme (FIIS) was created by the Department of Agriculture and Cooperation to target the yield and price, the two key determinants of a farmer's income, using a single policy tool. By incorporating a system of production and market risk insurance, FIIS was designed to provide farmers protection for their minimal guaranteed income. The programme was put into place as a trial initiative for wheat and paddy (rice) in 18 chosen districts across 12 states during the Rabi 2002–03 periods. Under this plan, the government also offers a larger level of subsidies. The premium rates under this plan are determined by actuarial calculations. Currently, small and marginal farmers get a subsidy of around 75%, while other farmers receive a subsidy of 50%.

The following are the primary characteristics of this plan: The Agriculture Insurance Company of India Ltd. would compensate the farmer to the amount of the insurance in the event that his real income falls short of the promised income (the sum of the average yield plus MSP). The insured crop's actual yield and price would be measured using the area technique (similar to NAIS). This programme will be mandatory for farmers with loans and optional for farmers without loans. NAIS will eventually cease to be relevant for the crops covered by FIIS, but it will still be valid for other crops. For wheat and rice, which are considerably less dangerous crops, FIIS is offered. Other crops should be included in the programme as well. Farmers should be encouraged to make goods that cater to the market since doing so would increase their profitability. Insurance may pay for the higher-risk investment made in order to generate greater earnings.

Rainfall Insurance Scheme Varsha Bima

AICIL established the "Varsha Bima" insurance programme, sometimes referred to as the rainfall insurance programme, in 2004. Based on rainfall patterns, this programme was tested in 20 locations in Andhra Pradesh, Karnataka, Rajasthan, and Uttar Pradesh. The programme was put into effect in 150 districts across sixteen states during Kharif 2006. The farmers have a choice among five choices under this programme. Which ia insurance against seasonal rainfall (based on total rainfall from June to September). Agronomic index based on the water requirements of various crops in particular areas; Sowing failure insurance based on rainfall from 15 June to 15 August; Rainfall distribution insurance based on weighted average of rainfall during the weeks from June to September; Calamity causing extreme adverse deviation of 50% or more in rainfall during the season.

Controversies with Capital Formation

The issue of rural debt includes two components, and as a result, so does the solution. First, strategies for erasing past-due loans might be developed. Second, policies should be developed to ensure that new borrowing is kept to the bare minimal amount required for productive purposes. Controlling and regulating the behaviour of lenders is also essential. Solutions to the Agricultural Debt Problem Payment of previous debt: The majority of state governments and union territories have passed the necessary laws to reduce small farmers'

loans and to forgive the non-institutional obligations of vulnerable groups including migrant workers and rural craftsmen. Most states have laws requiring the repayment of ancestors' debts, and some even allow for their liquidation. The issue with such law is that farmers and workers who do not own land may not be able to take advantage of it, either because they are unaware of the legislation or because they are fearful of the moneylender.

Lessen reliance on moneylenders: The network of institutional credit structures is fast expanding across the nation to offer small farmers and craftsmen with timely and appropriate loan assistance in an effort to lessen their reliance on local moneylenders. Management of fresh loans: It is insufficient to aid in the forgiveness of prior debts. It is crucial to ensure that farmers only borrow money for the most required and beneficial uses. Loans that are not productive should be avoided. The social and religious activities play a significant role in Indian rural life. By giving farmers advice, the costs associated with them cannot be readily removed. Actually, some institutional financing has to be set up for this. The following recommendations were made by the Sivaraman Committee in their report, which was turned in in April 1976.

Small farmers, landless workers, and craftsmen should be able to get consumption loans from government enterprises and nationalised banks for things like weddings, births, funerals, religious expenditures, medical costs, education, etc. Similar loans should be made available to marginal farmers by cooperatives and banks, and repayment plans should be developed for different classes of borrowers. In some states, legislation has been passed to forbid farmers from selling their land to professional money-lenders who are not farmers. In addition, steps should be done to regulate money lenders' operations [12], [13].

Government policies and issues since independence

Since independence, Indian farmers have encountered the following issues: The average size of land holdings is relatively modest. Because of land ceiling laws and family conflicts, it causes fragmentation. Small farm holdings are often overstaffed, which results in covert unemployment and poor worker productivity. The use of cutting-edge agricultural techniques and technology is often insufficient. High expenditures and impracticality in the case of small land holdings make it difficult. A general lack of socioeconomic advancement.

The implementation of land reforms is moving slowly. Insufficient or ineffective financing and marketing services for agricultural products. Inconsistent government policies. Inefficient supply systems cause one-third of all food to go bad. The government has changed its agriculture strategy to address the widespread agricultural issues.The following are the key components of the government's new agriculture policy: A growth rate of over 4% annually; increased private sector involvement through contract farming; price protection for farmers; introduction of the national agricultural insurance programme; removal of restrictions on the movement of agricultural commodities across the nation; rational use of the nation's water resources for the best possible use of irrigation potential; and high priority given to the development of the following: o Animal husbandry o Poultry o Dairy o Aquaculture o Capital inflow and guaranteed markets for crop production o Exemption from capital gains tax on forced acquisition of agricultural land o Minimise fluctuations in commodity prices o Continuous monitoring of international prices o Plant varieties to be protected through legislation o Adequate and timely supply of quality inputs to farmers o High priority to rural electrification o Setting up of agro-processing facilities

Several creative innovations have come forth as a result of inefficiencies in formal finance. The Self-Help Groups (SHGs) with bank linkage programmes have become a new source of credit for rural India. New breed of rural financial institutions called Micro Finance

Institutions (MFIs) fills in the gaps left by the official financial system. The lowest of the impoverished may borrow money from these MFIs with little to no documentation. Non-governmental organisations are a significant source of financing for agriculture. The non-governmental organisations' local area of concentration is their main advantage. The majority of NGOs either specialise or focus on certain areas of the world.

Weather variations and large-scale crop loss brought on by insect and disease outbreaks have both affected crop output in India. The Comprehensive Crop Insurance Scheme was replaced by the National Agricultural Insurance Scheme (NAIS) starting of the Rabi 1999–2000 season. The Farm Income Insurance Scheme (FIIS) was established by the Department of Agriculture and Cooperation to target the yield and price, the two crucial elements of a farmer's income, using a single policy tool. Because there are two sides to the issue of rural debt, there are also two parts to the solution. First, strategies for erasing past-due loans might be developed. Second, policies should be developed to ensure that new borrowing is kept to the bare minimal amount required for productive purposes. Controlling and regulating the behavior of lenders is also essential.

CONCLUSION

Socialist and communist societies, which sought to solve social inequalities and advance community resource ownership, rose to prominence in the 20th century, among other societal types. Democratic societies developed at the same period, placing a strong emphasis on individual liberties, representative government, and market-based economy. Global civilizations linked via commerce, communication, and cultural interaction have emerged in recent decades thanks to technological development and globalisation. Transnational flows of products, money, and information, as well as many cultural influences, define these societies. In conclusion, historical, economic, political, and technical pressures have all had a role in the formation of society structures. Each kind of human society, from the earliest hunter-gatherer groups to modern, globalised cultures, has shown certain traits and had a particular impact on human existence. Understanding how social forms have changed throughout time is essential for understanding the present and predicting how human societies may change in the future.

REFERENCES:

[1] B. Ribeiro *et al.*, “Introducing the dilemma of societal alignment for inclusive and responsible research and innovation,” *Journal of Responsible Innovation*. 2018. doi: 10.1080/23299460.2018.1495033.

[2] K. Stephen, “Societal Impacts of a Rapidly Changing Arctic,” *Current Climate Change Reports*. 2018. doi: 10.1007/s40641-018-0106-1.

[3] R. Albin, “Two Forms of Responsibility – Organizational and Societal,” *Philos. Manag.*, 2018, doi: 10.1007/s40926-017-0071-0.

[4] M. Frasquet, J. Dawson, H. Calderón, and T. Fayos, “Integrating embeddedness with dynamic capabilities in the internationalisation of fashion retailers,” *Int. Bus. Rev.*, 2018, doi: 10.1016/j.ibusrev.2018.02.002.

[5] T. Benos, N. Kalogeras, M. Wetzels, K. de Ruyter, and J. M. E. Pennings, “Harnessing a ‘currency matrix’ for performance measurement in cooperatives: A multi-phased study,” *Sustain.*, 2018, doi: 10.3390/su10124536.

[6] N. Robinson-Garcia, T. N. van Leeuwen, and I. Ràfols, "Using altmetrics for contextualised mapping of societal impact: From hits to networks," *Sci. Public Policy*, 2018, doi: 10.1093/SCIPOL/SCY024.

[7] N. Cass, T. Schwanen, and E. Shove, "Infrastructures, intersections and societal transformations," *Technol. Forecast. Soc. Change*, 2018, doi: 10.1016/j.techfore.2018.07.039.

[8] M. Mintrom and M. Thomas, "Policy entrepreneurs and collaborative action: Pursuit of the sustainable development goals," *Int. J. Entrep. Ventur.*, 2018, doi: 10.1504/IJEV.2018.092710.

[9] N. Panthi, A. Gupta, and E. Baby, "Footstep Energy Harvester Using Piezoelectric Transducer," *Artic. Int. J. Latest Res. Sci. Technol.*, 2018.

[10] Uma Lele, "Doubling Farmers' Income under Climate Change," 2018.

[11] H. G. Ashwani Kumar, "(Pdf) a Study of Financial Inclusion for Farmers Empowerment," *Res. Gate* , 2018.

[12] A. Bhatnagar, "Perception of Farmers towards Agriculture Insurance Schemes," *Pacific Bus. Rev. Int.*, 2018.

[13] K. P. Timsina, Y. N. Ghimire, G. Kandel, and D. Devkota, "Does program linking with insurance makes agriculture insurance sustainable?," *J. Agric. Nat. Resour.*, 2018, doi: 10.3126/janr.v1i1.22218.

CHAPTER 23

EXPLORING THE FARM MANAGEMENT AND PRODUCTION ECONOMICS

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ABSTRACT:

Farm management and production economics are crucial elements of agricultural systems, helping to maximise farm output and profitability and the optimal use of resources. The essential ideas, tenets, and applications of farm management and agricultural economics are briefly summarised in this abstract. In order to increase their agricultural production, farmers use a variety of decision-making processes, including crop selection, resource allocation, risk management, and investment strategies. It also looks at income generation, cost structures, production activities, and performance monitoring at the farm level from an economic perspective. The abstract also emphasises how market factors, environmental issues, and technology improvements are crucial in influencing farm management practises. For policymakers, academics, and practitioners to create successful strategies and policies that promote the long-term survival and competitiveness of agricultural operations, an understanding of the dynamics of farm management and production economics is essential.

KEYWORDS:

Decision-Making, Economic, Farm Management, Investment Strategies, Market, Production Economics, Risk Management.

INTRODUCTION

Farm and management are the first two terms of the phrase farm management. A farm is a designated area of land with well defined borders where agricultural and livestock businesses are carried out under common supervision. A farmer's livelihood comes from his or her farm, which also brings him or her and his family pleasure. It is also a place where the farmer makes decisions on how to allocate his resources for the disposal of his livestock and agricultural producing companies. Farms are thus the crucial microunits at the focus of dynamic decision-making about the allocation of farm resources to the industrial process. Events in the arrangement of each agricultural unit have an impact on the wellbeing of a country. It is obvious that a country's agricultural output is the total of the contributions from each individual farm unit, and that the growth of agriculture entails the growth of millions of individual farms.

The art of management is obtaining the most work possible from a team of people. Management is the act of creating and sustaining an environment in which people collaborate to achieve predetermined goals. The essential component is management. A manager may make or ruin a company. Agriculture that is mechanised, utilises several technical breakthroughs, and runs on a significant amount of borrowed money takes on a new dimension and significance. Any nation's success relies on its farmers, who in turn rely on the wise distribution of resources among diverse purposes and the use of advanced technologies. Since food and clothes are produced by the farming business, the human species relies more on agricultural goods than anything else for its survival. Agriculture industry provides the fundamental framework for industrial success. Therefore, the study of farm management is of utmost significance in any economy, but especially in agricultural economies [1], [2].

Terms used to define farm management

Farm management is the skill of effectively running a farm, as determined by the test of profitability. The science of organising and managing farm operations with the aim of guaranteeing the highest possible level of ongoing earnings is referred to as farm management. Farm management is the science that deals with how to organise and run a farm in a way that maximises productivity and ongoing profitability. Farm management is the study of the commercial aspect of farming. Farm management is a subfield of agricultural economics that examines how to organise and run each individual farm unit to provide the highest potential net revenue. It also examines how to spend and generate money. Johnson and Bradford.

Farm management type

Farm management examines farming's economic concepts from the perspective of a single farm. Its focus is just on a single farm as a whole unit, and it is concerned with giving the individual farmer the highest potential profits. It uses scientific findings and local knowledge to each particular agricultural company. In a nutshell, farm management may be described as a science of decision-making. Farm management is often thought of as having a MICROECONOMIC scope. It deals with resource distribution at the level of the individual farm. The farm as a whole is the management's first priority. Decisions that impact a farm's profitability are dealt with in farm management. Farm management aims to aid farmers in making decisions on issues such as what to produce, purchase, or sell, how to produce, buy, or sell, and how much to produce, among other things. It encompasses all facets of farming that affect a farm's economic viability.

Farm management and other sciences in relation. The Farm Management synthesises and combines a variety of data from agricultural physical and biological disciplines. The physical and biological sciences, such as agronomy, animal husbandry, soil science, horticulture, plant breeding, and agricultural engineering, define production possibilities within which various decisions can be made and provide input-output relationships in their respective fields. The management of the farm may use this information to address issues with production efficiency.

From the perspective of a single farmer, farm management is the application of business ideas to farming. It is a subset of the broader area of economics. The methods and instruments for managing a farm are provided by general economic theory. In farm management analysis, the law of variable proportion, the concept of component substitution, and the principle of product substitution are all employed as examples of economic theory's tools. The agricultural economist has made great use of statistics, another discipline. This science aids in the collection, analysis, and evaluation of data pertaining to particular agricultural concerns by offering techniques and processes. Human motives and attitudes are revealed by psychology, and a decision-maker's attitude towards risks is influenced by their psychological makeup [3], [4].

DISCUSSION

Sometimes, despite the fact that certain farming ventures are very successful, philosophy and religion restrict farmers from expanding them. For instance, whereas Hinduism forbids the raising of meat, Islam forbids piggeries among Muslims. The different laws and policies of the government, such as land use restrictions, price supports, food security zones, etc., have an impact on how much is produced by farmers. The physical sciences define what can be created, the economic sciences define how resources should be employed, and the social,

psychological, and political sciences define the constraints imposed on decision by laws, conventions, and other factors.

Application of economic principles to farm management

The proliferation of new technology knowledge is making agricultural issues more difficult and offering alluring chances for optimising profitability. For the administration of the farm company to be successful, economic ideas must be applied to farming. Among the economic considerations that assist in making sensible judgements about farm management are:

1. The principle of varying proportions How much to produce? is solved by the law of diminishing returns. It aids in choosing the best input to utilise and the best output to make. It discusses the factor-product connection, one of the fundamental production relationships.

2. The cost principle illustrates how losses might be reduced when there is a drop in price.

3. The factor substitution principle: It provides an answer to the question "How to Produce?" It provides guidance for determining the resource combinations with the lowest cost. The link between factors is explained.

4. Product substitution principle: It addresses the issue of "what to produce?"

It helps in choosing the best possible mix of businesses (items). It explains the link between products.

5. Equi-marginal returns principle: It directs the distribution of resources in times of shortage.

6. The time comparison concept directs investment choices.

7. The theory of comparative advantage explains why some regions specialise in producing certain goods.

Aspects of types of agriculture:

Climate, soils, and terrain are physical variables.

Economic Aspects

1. Marketing expenses
2. Relative business profitability
3. The accessibility of capital
4. The workforce pool is available.
5. Land values
6. Overproduction and underproduction cycles
7. Enterprise-to-enterprise competition
8. A farmer's likes and dislikes personally [5], [6].

Agribusiness Systems

The organisational structure that a farm is managed under is referred to as the system of farming. It encompasses issues including who owns the property, whether resources are shared or utilised exclusively, and who makes administrative choices. Five main categories may be used to classify agricultural systems, depending on their organisational foundations:

1. Capitalist or estate farming: In what is referred to as capitalistic, estate, or corporate farming, enormous tracts of land are owned privately by companies, syndicates, or businesses. When many people, a small number of people, or both provide the capital, the

entity operates similarly to a joint stock corporation. These farms are efficient because they have a large organisational unit and utilise hired people to complete tasks. They also use a lot of machinery and the most recent technology. This style of farming is prevalent in the USA, Australia, Canada, and a little amount in India as well. In the states of Bombay, Madras, and Mysore, these sorts of farms have been set up for the planting of coffee, tea, rubber, and sugarcane.Such farming has several benefits, including effective management, a solid organisational structure, enough resources, etc. The fact that it causes socioeconomic disparities and that the real cultivator is not the farm owner is two of its drawbacks.

2. State farming: As its name suggests, state farming is governed by the state. In this area, the state owns the land. Government employees run and administer the organisation. The role of taking risks and making decisions is carried out by the state, while the cultivation is done with the aid of hired personnel. All workers are employed on a daily or monthly basis, and they have no say in how the farm is run. Due of a lack of incentives, these farms do not pay well. Such farms have plenty of resources, but sometimes they are not used properly or are not accessible in a timely manner.

3.Collective farming: The word "collective farming" denotes the management of land by a large number of families or people living in the same village pooling their resources, such as land, animals, and equipment. Farms are managed by a general body that has the most authority. The resources are collectively owned by society rather than any one family or farmer. Collective farming has gained a lot of attention and been implemented by certain nations, most notably Russia and China. The worst aspect of this system is that there is no voice for the person. The majority of farming is mechanised since it is often done on a huge scale. In our nation, this method is not widely used.

4. Peasant farming: This form of agriculture describes the kind of organisation in which a single farmer serves as the farm's owner, manager, and organiser. In accordance with his resources, which are often limited in contrast to other farming methods, he makes decisions and plans for his farm. The primary benefit of this arrangement is that the farmer is the owner and has full decision-making authority. The fact that fewer resources are available to the person is a common shortcoming of this system. The inheritance law also presents a challenge. As each family member has equal ownership rights over the property, a single holding continues to decline.

5.Cooperative farming: Cooperative farming is a voluntary association in which workers who are not landowners and small farmers combine their resources to improve revenue. Cooperative farming inevitably entails land pooling and shared management, according to the planning commission. A co-operative farming society is described by the working group on cooperative farming as "a voluntary association of cultivators for better utilisation of resources, including manpower and pooled land and in which majority of the members participate in farm operation with a view to increasing agricultural production, employment and income." One of the following four kinds is produced by an agricultural co-operative group [7], [8].

1. Cooperative farming is superior
2. Joint farming that is cooperative
3. Cooperative tenant farming
4. Collective co-operative farming

Better farming via cooperatives: These organisations are built on the principles of individual ownership and management. Small-scale farmers get together to create a society for a particular objective, such as the use of equipment or the selling of goods. They are set up to

introduce more advanced agricultural practises. Each farmer makes a payment for the social services he uses. The income a member receives from a piece of land, net of expenditures, is his profit.

Farming in collaboration: This style acknowledges and respects the individual's right to property ownership, but the smaller landowners pool their lands for cooperative farming. Although the ownership is private, the operations are joint. The members of the society vote to elect the administration, which is democratic. Each farmworker gets a daily salary for his or her labour each day, and the farm's profits are divided according to each person's allotment of the land.

Cooperative tenant farming: Landless farmers often form these associations. Typically, under this arrangement, society owns the land. The property is split into pieces that are leased to certain family members for farming. The association handles all aspects of farming, including financing, seeds, manures, selling the harvest, etc.

The rent on each member's plot is their responsibility to pay to the society. He has the freedom to dispose of his product whatever he pleases. Cooperative communal farming: This system is collective in both ownership and operation. Members are led by a supreme general body and have no ownership rights and no authority to make choices about farming on their own. It engages in collaborative cultivation for which all of the members pool their resources. Profit is allocated based on the members' work and capital investments.

Resource allocation, which includes the best use of land, labour, money, and technology, is a crucial component of farm management. By ensuring that resources are allocated where they can provide the greatest results, efficient allocation boosts production and profitability. Crop insurance, hedging, and diversification are three risk management techniques that aid farmers in reducing possible losses brought on by erratic events including weather changes, price volatility, and market turbulence. Farmers may secure their operations and reduce financial risks by putting in place the proper risk management procedures.

A key technique in production economics, economic analysis enables farmers to evaluate expenses, income, and profitability. Farmers may find inefficient areas in their operations and improve them by understanding production functions, cost structures, and income generating. Metrics for performance measurement provide insightful information about the farm's total production, allowing farmers to track their progress and make wise choices to raise performance. Precision agriculture, biotechnology, mechanisation, and information technologies have all revolutionised farm management by providing new prospects for increased productivity, resource conservation, and precise decision-making. Adopting these innovations may help agricultural enterprises become more productive, spend less money, and be more sustainably run [9], [10].

As consumer demand for products made with sustainability in mind and environmental concerns expand, sustainable farm management practises are becoming more and more important. The long-term profitability and resilience of agricultural operations are ensured through the integration of climate change adaptation measures, organic farming, and conservation agriculture into farm management. Market variables, such as supply and demand dynamics, price volatility, and global commerce, have a big impact on how farms are managed. Success in a cutthroat agricultural market requires an understanding of market trends, good pricing risk management, and flexibility to changing market circumstances. For farmers to keep up-to-date on the most recent techniques, technologies, and policies in farm management, they must have access to continuing education opportunities, extension

services, and information and advisory services. Increasing capacity and bolstering support networks may enable farmers to take informed choices and use novel strategies.

CONCLUSION

To sum up, farm management and production economics are crucial to the prosperity and long-term viability of agricultural companies. Farmers may optimise their output, maximise profitability, and overcome obstacles in the agricultural industry by using sound decision-making, resource allocation, risk management, and investment strategies. When it comes to crop selection, input utilisation, and farm size optimisation, farmers may make well-informed decisions thanks to the principles of farm management. Farmers may match their output with market trends and seize expansion possibilities by taking into account variables including market demand, input prices, and production capacity. In conclusion, effective farm management and production economics are essential elements of agricultural businesses. Farmers may maximise their output, increase profitability, and contribute to the long-term sustainability of the agricultural industry by using effective decision-making, resource allocation, risk management, and adoption of technology improvements. It is essential to do more research, disseminate information, and support policies in order to provide farmers the tools they need to overcome obstacles, adjust to shifting circumstances, and prosper in an agricultural environment that is becoming more complicated and dynamic.

REFERENCES:

[1] S. K. MALLICK, “Agricultural Finance in Odisha: a Comparative Study of Farmer’S Perception and Bankers Attitude Towards Agricultural Credit,” *Clear Int. J. Res. Commer. Manag.*, 2018.

[2] M. Carauta *et al.*, “Can preferential credit programs speed up the adoption of low-carbon agricultural systems in Mato Grosso, Brazil? Results from bioeconomic microsimulation,” *Reg. Environ. Chang.*, 2018, doi: 10.1007/s10113-017-1104-x.

[3] A. F. Oluwamayokun, “Smallholder agricultural finance in Nigeria: The research gap,” *J. Dev. Agric. Econ.*, 2018, doi: 10.5897/jdae2018.0976.

[4] A. B. B. Aziz and A. I. Mohammed, “Farmland, farm credit and agricultural output growth in Kano State, Nigeria: The Moderating role of Murabahah finance as a proposed framework,” *Int. J. Eng. Technol.*, 2018, doi: 10.14419/ijet.v7i3.21.17164.

[5] R. P. Balachandran and S. C. Dhal, “Relationship between money lenders and farmers: Theoretical perspective and evidence from potato farmers of West Bengal, India,” *Agric. Financ. Rev.*, 2018, doi: 10.1108/AFR-07-2016-0066.

[6] A. M. Featherstone, “The farm economy: Future research and education priorities,” *Appl. Econ. Perspect. Policy*, 2018, doi: 10.1093/aepp/ppy001.

[7] A. B. Aziz and A. I. Mohammed, “Significance of Murabahah finance towards the imrovement of agricultural productivity in Kano State, Nigeria,” *Int. J. Eng. Technol.*, 2018, doi: 10.14419/ijet.v7i3.21.17156.

[8] M. Deresse and A. Zerihun, “Financing challenges of smallholder farmers: A study on members of agricultural cooperatives in Southwest Oromia Region, Ethiopia,” *African J. Bus. Manag.*, 2018, doi: 10.5897/ajbm2018.8517.

[9] J. Li, "Agricultural Subsidies and Rural Family Entrepreneurship—Empirical Analysis Based on Chinese Microdata," *Am. J. Ind. Bus. Manag.*, 2018, doi: 10.4236/ajibm.2018.84066.

[10] S. Herliana, A. Sutardi, Q. Aina, Q. Himmatul Aliya, and N. Lawiyah, "The constraints of agricultural credit and government policy strategy," in *MATEC Web of Conferences*, 2018. doi: 10.1051/matecconf/201821502008.

CHAPTER 24

IMPERFECTIONS OF AGRICULTURAL CREDIT MARKETS

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ABSTRACT:

Farmers need financial resources in order to invest in agricultural supplies, machinery, and technology, and agricultural credit markets are essential for supplying them with these resources. However, these credit markets often have flaws that reduce their efficiency and restrict the amount of loans available to farmers. This presentation offers a succinct summary of the major flaws in agricultural finance markets. It talks about the adverse selection and moral hazard issues that affect lending and borrowing in these markets, as well as information asymmetry, collateral restrictions, high transaction costs, and all of these issues. These flaws make it difficult for small and marginalised farmers to acquire financing, which may result in inefficient resource allocation, poor productivity, and restricted agricultural growth. The abstract emphasises the significance of addressing these flaws through institutional reforms, credit information systems improvements, creative collateral mechanisms development, financial literacy promotion, and other policy interventions to increase the effectiveness and inclusiveness of agricultural credit markets.

KEYWORDS:

Agricultural Credit, Market Imperfections, Information Asymmetry, Collateral Constraints, Transaction Costs, Adverse Selection.

INTRODUCTION

The difficulties of transitioning CEE farm finance and the involvement of the government in this process. First, we examine the reasons why credit markets are inefficient even in highly established market economies, which prompts extensive government involvement in this area. Next, we talk about other issues with the financial market that develop as CEE agriculture changes. The prospective role of governments is then discussed, and actual government action in CEE nations is reviewed.

Market imperfections for agricultural credit

The most advanced market economies have flawed credit and risk markets, primarily because of inaccurate and expensive information. In agriculture, issues with inadequate risk markets and poor information are of special importance. Agriculture is vulnerable to the erratic effect of weather, illnesses, and pests, as well as the temporal delays that are inherent in biological processes. On futures markets, producers may trade away some price risk, but farmers often have less knowledge than bigger trading firms. Farmers hardly ever utilise futures markets, even in the most advanced economies. While informational asymmetries make it difficult to protect against price risk, it is impossible to entirely protect against yield risk without weakening incentives. Farmers often have very little capacity to transfer risk.

The distinction between financial markets and more traditional markets for commodities and services is becoming more widely acknowledged by economists. The appraisal and pricing of financial contracts are the only issues that interest participants in the financial markets. These financial agreements might be seen of as the monetisation of promises, the exchange of money now for a promise of reciprocity tomorrow. These financial contracts are therefore

given value based on the prices they fetch when bought and sold in the market. Loans, which involve exchanging present cash for a commitment to pay cash in the future, are how credit markets generate value. Additional limits and covenants that specify the parties' obligations and conduct are often added to the commitment. However, the borrower will sometimes fail to keep their pledge. Lenders must scrutinise various loan applications to identify borrowers who are more likely to repay in light of this incomplete information; they must also keep an eye on the usage of money to make sure that it is done in a way that increases the possibility of payback [1], [2].

Credit markets often seem to perform poorly as a consequence of these informational flaws. Credit rationing, which prevents certain people or groups from obtaining loans at any interest rate, is a common feature of credit markets. Farmers, for instance, may only have limited or no access to finance in certain areas or at some times, even if some of them may offer financial institutions wise investments. To see why credit is rationed, keep in mind that the lender wants to maximise his anticipated earnings. Lenders will only boost interest rates if doing so would result in higher predicted profits. However, predicted earnings rely not only on interest payments but also on the likelihood of default. Higher promised returns will result from higher lending rates, but default risk may also rise. If the latter is significant enough, it may result in lower predicted earnings. Therefore, it is often in the banks' best interests to restrict the amount of credit that is accessible rather than raising interest rates.

Asymmetric information marketplaces are also plagued by moral hazard and adverse selection. This is related to the significance of a borrower's wealth in deciding the amount invested and the kind of contract employed. Financial markets experience adverse selection when prospective borrowers who are most likely to result in a bad outcome are those who actively seek loans and are therefore most likely to be chosen, since lenders could not be familiar with the borrower or merely with a few of his traits. Even when there are excellent credit risks in the market, lenders may opt not to distribute any loans because adverse selection increases the likelihood that loans would be issued to borrowers with poor credit. Since credit is restricted, the market's system for allocating credit is no longer effective. Because of this, even agricultural producers with good business plans could have trouble getting the credit they need to fund a certain project.

The risk that the borrower has an incentive to engage in actions that are undesirable from the lender's point of view is known as "moral hazard" in the financial markets. The risk of the borrower's capacity to repay the loan may rise if the borrower lacks sufficient incentives to manage financial resources as effectively as feasible for specific goals or changes the reason for which a loan is issued. These are referred to as the moral risks of effort and purpose choices, respectively. Credit rationing might happen as a consequence, depending on the lender's capacity to keep an eye on the borrower's behaviour.

Initial corporate wealth is important since it influences the prevalent contractual arrangements. In a world with complete knowledge, it can be shown that the distribution of wealth is unrelated to the allocation of investment capital and that contractual relationships are characterised by totally state contingent Arrow-Debreu securities. However, when there is little information, both the financial structure and the variety of financial instruments are important [3], [4].

DISCUSSION

The idea that the cost of external funding is high and that adjustments to internal finance might have an impact on investment's allocation efficiency is now supported by a sizable body of microeconomic research, particularly when it comes to small, developing businesses.

Firms that put their money at risk boost lenders' trust in their skills and efforts and need less external funding as a result of asymmetric information. As a result, shocks to a company's endowments may have a negative impact on investment. A small selection of financial instruments may also be preferable since they may influence the borrower's incentives or lower the lender's monitoring expenses.

Short-term vs long-term debt is a significant intertemporal problem. Due to the implied impact on liquidity that longer-term loan contracts offer, borrowers often favour them. They run the danger of credit rationing, higher interest rates, and greater transaction costs when using short-term loan contracts. However, the longevity and acceptability of the underlying assets and collateral directly affect the lenders' readiness to provide long-term contracts. Before renewing the loan contract, using short-term debt gives the lender the chance to study the borrower, limiting the risk of poor project selection. Short-term debt exposes a borrower with 'bad' information by requiring them to disclose their risk to the lender while allowing a borrower with confidential project knowledge to signal the 'positive' information to the lender. Utilising short-term financing also improves lender liquidity and lessens agency issues. Borrowers are limited in their capacity to slack off or otherwise gain from the diversion of extra cash if they must constantly return for credit. The constant renewal and rolling over of debt also makes the borrower feel obligated to provide the lender more helpful information, which helps to solve many of the asymmetric information issues mentioned above. Therefore, the ideal loan maturity structure involves balancing a number of competing considerations and agency costs, with even "good" borrowers preferring longer contracts owing to liquidity restrictions and transaction costs.

Some of these alleged flaws are really expenses to the economy. Credit restriction and high interest rates may not be the result of banks and moneylenders taking advantage of borrowers, but rather may be a logical and effective reaction to the information issues that agricultural credit markets are prone to. High default rates or high screening and monitoring expenses for loans may be the cause of high interest rates. Additionally, as imperfect competition is sometimes caused by incomplete information, there may be some room for lenders to take advantage of borrowers.

Having trouble obtaining the cash required for modern agriculture is sometimes attributed to a lack of credit and excessive interest rates. The issues with moral hazard, adverse selection, and other market defects may make such markets less viable or restrict trade by raising effective transaction costs to unsustainable levels. The impression of this apparent market failure is what often leads to calls for government action.

Transitional Agricultural Credit Markets

In well-established and operating market economies, agricultural loan markets operate imperfectly. Additionally, since 1989, a number of distinct, transition-related issues have made it more difficult to finance the agricultural economies of Central and Eastern Europe. This section tries to elaborate on some of these concerns, including examples as necessary [5], [6].

The idea of credit in relation to central planning

In a planned economy as opposed to a market economy, "credit" has a very different meaning, nature, and function. In a market economy, controlling the overall money supply serves as the primary tool for monetary policy, leaving autonomous financial institutions with the primary responsibility for allocating credit to the economy. These institutions base their lending decisions on evaluations of risk and financial rewards. Credit allocation served as the

primary tool for monetary policy in centrally planned economies. Physical goals set out in the state plan were realised thanks to a financial plan. For operating capital, long-term loans to finance investments, and public money holdings, the plan set quotas. Farmers were given credit via the central bank for these investments, generally at a negative real interest rate, without consideration for their merits, and frequently as a means of supporting disastrous ventures.

One may even argue that credit was more of an accounting tool than a money one under the centrally managed economy. The agricultural producers' strong preference for preferred credit, or credit with low interest rates, might be attributed to this distinct function of credit. After all, why should one pay for utilising an accounting mechanism. In order to solve the "credit issue," it is necessary to explain the function of credit in an economy and the fact that using credit has a cost, or interest rate, in addition to the issues with economic allocation. Similar to this, both systems have extremely different attitudes towards trade and marketing. Although marketing and trading are seen as essential components of a market system that works properly, traders are often accused of driving up prices and making money off of "producers" without adding anything to the economy.

Systemic Banking Reform

The financial institutions in CEE nations are experiencing a significant overhaul at the same time as the other changes. The financial system has been restructured to establish a system of independent banks, while under central planning the majority of banks were just branches of one bank with very little independent decision-making. However, the politicians still want to utilise these banks mainly as a distribution vehicle for government transfers via exclusive credit quotas and pass-through loan subsidies, just as they did under the previous system. Such policies often impair the system's capacity to lend to unfavourable borrowers and significantly reduce its capital allocative efficiency. Instead of the amount of savings or the absence of proper financial institutions, the issue in these economies is the distribution of savings and financial resources to unproductive uses as a result of unsuitable incentives. The allocation of the economy's financial resources often follows political goals rather than sound economic principles. This causes resource waste and corruption inside the bureaucracy in the pursuit of political rent.

Accumulated bad debts from the time of centrally planned economies have posed issues in two ways: first, they have limited credit availability, and second, they have slowed down the pace of privatisation and land restitution. A clear system of property rights and incentives, required for effective decision-making and investment, won't emerge until this issue is resolved. Many CEE nations have sought to solve this situation by giving debt rescheduling and new loans at subsidised interest rates, frequently nil, for prior "old" debts e.g. Romania. The cause, which is an original wealth issue made worse by the distribution of improper loans from the previous system, is not being addressed; rather the symptoms are being treated. To address this issue, pre-reform debts will probably need to be partially or entirely written off. However, it has to be done in collaboration with the businesses that provide loans; otherwise, there may be a credibility issue. In this scenario, all stakeholders negotiate the fair and equitable right-off of a portion of these bad debts, restoring the company to long-term economic sustainability or, in the event that acceptable terms cannot be achieved, liquidation. Additionally, this will guarantee that only those farmers who are profitable would get aid. Market economies undergoing transitional changes, such as the U.S., have effectively employed this strategy. After the termination of agricultural assistance in 1984, New Zealand implemented a debt forgiveness programme in the late 1980s.

Because of the transitional economy's contraction, the availability of credit in the system is more constrained. The CEE nations are unable to produce the necessary amounts of capital to support the growth of their economies. The industries offering the best risk/return trade-offcurrently not agricultureare receiving the resources that are now available. Additionally, less foreign finance has slowed the transformation along.

The inexperience and lack of expertise of banking officials provide additional issues for the effective functioning of the intermediate institutions. The appraisal of loan applications must take a different tack in light of the market mechanism. Therefore, bankers must be trained in the usage of modern approaches such as credit scoring algorithms. Bankers need to be more knowledgeable about the cash flows in the agriculture industry [7], [8].

Incomplete land reform and unclear property rights

Land reform is still not complete in the majority of CEE nations. In other words, land cannot be completely traded, which prevents the development of a land market and the use of property as collateral. Due to this, the supply of agricultural credit is constrained in compared to a market structure that is fully established. Normally, laws forbid pledging of property while it is being privatised and returned to its rightful owners. Government guarantees for the loans will be required as long as property rights are not completely restored on all types of assets.

Issues with the loans' collateralization

For short-term loans, farmers must pledge long-term assets as security. Because the market for real estate in rural regions is weak and they won't be able to sell the property when the borrower defaults, banks often need residential property in metropolitan areas. Because there is no land market or land values are too low in many CEE nations, banks often reject agricultural land as collateral even after property rights have been completely restored. For instance, lenders in Bulgaria accept as collateral roughly 80% of the market value of fixed assets in urban regions and 60% in rural areas. The amount of money needed as loan collateral rises as a result.

Banks also demand a very high amount of collateral to prevent additional risk and uncertainty during the changeover phase. The high rate of inflation and the fluctuation in the value of the asset pledged as collateral are two significant factors in the high collateralization of loans. The amount of the requested loan collateral might range from 150% to 180% of the total loan amount in Bulgaria and Hungary. Furthermore, it is evident that farmers are often reluctant to use their land as collateral for loans.

A rise in the expense of monitoring and vetting loans

In compared to a generally stable market structure, monitoring and screening loan costs are greater throughout the transition. From a banker's perspective, agriculture is an undesirable area for investment due to the constant restructuring of agricultural firm structures and challenges with monitoring agricultural operations. A poorly constructed accounting system results in a lack of information and makes it difficult to manage loans. As a result, several CEE nations have made a determined effort to enhance public support for initiatives linked to the creation of agricultural information systems, extension services, professional and vocational training, taxation systems, and the creation of business strategies. Without interfering with the actual market allocation processes, these efforts seek to reduce many of the asymmetric information issues that lenders confront and to reduce the transaction costs for both contractual parties [9], [10].

Obligation of the producers

Large bad debts were accrued in the agriculture industry. The majority of them are carried on by still-running state farms or interim organisational entities that are in charge of former communal farms. During the time of the centrally planned economy, national banking institutions were used to arrange the credit supply for agriculture. Without committing any loans, the credit quality of the borrowers was calculated based on their cash flow needs. The state wiped off unpaid debts since there were no property rights or accountability for the choices that were made. Due to this, there were less incentives for improved management, and the distinction between credit and subsidies was murky. The process of land restitution and the restoration of property rights are all hampered by debt, which also prevents the granting of fresh loans.

Lower agricultural income

Due to the stagnation of the domestic markets and the demise of the erstwhile CMEA trading system, farmers are finding it difficult to sell their goods. The trading ties with the EU and EFTA are still in the early stages of growth, and it is unclear what the future holds. All of the CEE nations' farm earnings have decreased as a result of input costs rising far faster than output prices. The monopsonistic strength of the wholesale corporations is another significant element that might affect the amount of agricultural revenue. They often buy the goods but put off paying for them. Between the time the goods are delivered and the time the producers are paid, the payments are not adjusted for inflation. To address this issue, a number of CCEC governments were forced to set up unique loan programmes and funds. These programmes often buy the outstanding loans and reimburse the agricultural producers for a portion of its value; the Czech Republic, for example, accomplishes this via the Support and Guarantee Fund for Farmer and Forestry.

PPI for producers and inflation rate

The price rise of agricultural products is often slower than the rise in the general price index. While real interest rates have, with few exceptions, historically been positive when compared to the CPI-index in various CEE nations, they have often been negative when compared to the agricultural producer's price index. High nominal inflation also breeds uncertainty, which is exacerbated for farmers in several CEE nations by uncertainty about upcoming government initiatives.

The Government's Function in the Agricultural Credit Markets. In order for agriculture to shift to a market economy, the state's role must be fundamentally redefined rather than just fading away. But it's not always apparent what the government should be doing. For instance, capital market flaws create a need for government involvement, yet the government may not always have an edge over private lenders in terms of information. Governments often interfere with the markets for agricultural credit, for instance by guaranteeing bank loans, creating organisations specifically for agricultural credit, and subsidising credit to agricultural producers. Is this a reaction to a market failing or to demands for covert subsidies from people in the agriculture sector? The government faces the same information problems; it is no better a screener of loan applications, and it is no better a monitor. Worse yet, it frequently faces political pressures, according to Stiglitz, who claims that "[t]here is a growing consensus that if the government goes where the private market fairs to tread, it should do so only cautiously and with safeguards."

Lenders see lending as being riskier and incurring greater costs when there is an information imbalance about the creditworthiness of borrowers. Collateral shortages make the problem

worse since many farmers cannot get loans with enough collateral, which limits their access to finance. Lenders' inability to precisely determine borrowers' capacities and desire to repay loans also leads to issues with moral hazard and adverse selection. In the agriculture sector, this may result in higher interest rates, fewer credit options, and insufficient resource allocation. It need a multifaceted strategy that includes institutional changes, policy initiatives, and creative solutions to address these flaws. Enhancing transparency and reducing information asymmetry may be achieved by developing credit information systems and encouraging financial literacy among farmers. To get around collateral restrictions and increase loan availability, alternative collateral mechanisms like crop insurance or group lending agreements may be developed [11], [12].

Efficiency and affordability may be increased by lowering transaction costs via the use of technology and streamlining loan application procedures. Adverse selection and moral hazard issues may be reduced and lenders can be incentivized to provide loans to underserved farmers by using risk-sharing methods, such as loan guarantees or credit subsidies. Institutional changes, such as the creation of specialised agricultural lending institutions, may also be directed at meeting the unique requirements of farmers while promoting the growth of inclusive and flexible loan markets.

CONCLUSION

Farmers face considerable obstacles in obtaining loans, and the overall efficacy and efficiency of these markets is hampered by the flaws prevalent in the agricultural credit markets. Credit availability is restricted, especially for small and marginalised farmers, due to information asymmetry, collateral restrictions, high transaction costs, adverse selection, and moral hazard issues. Additional difficulties are posed by the high transaction expenses related to loan application procedures, paperwork requirements, and loan monitoring procedures. Small-scale farmers are disproportionately impacted by these expenses, which makes it difficult for them to invest in agricultural inputs and technology that might increase production and to have access to inexpensive loans. In conclusion, fixing agricultural credit market flaws is essential for promoting fair credit access, raising agricultural production, and accelerating rural development. Policymakers can create an environment that supports effective and inclusive agricultural credit markets by putting in place the necessary institutional changes and policy interventions. This will enable farmers to invest in their operations, enhance their standard of living, and support the sustainable expansion of agriculture.

REFERENCES:

[1] H. Jaka and E. Shava, “Resilient rural women’s livelihoods for poverty alleviation and economic empowerment in semi-arid regions of Zimbabwe,” *Jamba J. Disaster Risk Stud.*, 2018, doi: 10.4102/jamba.v10i1.524.

[2] S. Popović, I. Janković, and Ž. Stojanović, “The importance of bank credits for agricultural financing in Serbia,” *Ekon. Poljopr.*, 2018, doi: 10.5937/ekopolj1801065p.

[3] M. Andrade, A. Feiden, W. J. Zonin, F. G. Besen, and T. V. de Araújo, “Socio-environmental costs: Financial quantification of carbon credits in agriculture and sustainability in the relation of produced agroenergy with used energy matrix,” *Custos e Agronegocio*, 2018.

[4] A. M. Featherstone, “The farm economy: Future research and education priorities,” *Appl. Econ. Perspect. Policy*, 2018, doi: 10.1093/aepp/ppy001.

[5] E. Assan, M. Suvedi, L. S. Olabisi, and A. Allen, “Coping with and adapting to climate change: A gender perspective from smallholder farming in Ghana,” *Environ. - MDPI*, 2018, doi: 10.3390/environments5080086.

[6] M. Tripoli and J. Schmidhuber, “Emerging Opportunities for the Application of Blockchain in the Agri-food Industry Agriculture,” *Food Agric. Organ. United Nations*, 2018.

[7] P. Stankov, “Banking crises and reversals in financial reforms,” *Financ. a Uver - Czech J. Econ. Financ.*, 2018, doi: 10.2139/ssrn.2191097.

[8] D. Anginer, A. Demirguc-Kunt, H. Huizinga, and K. Ma, “Corporate governance of banks and financial stability,” *J. financ. econ.*, 2018, doi: 10.1016/j.jfineco.2018.06.011.

[9] R. Cerrone, “Deposit guarantee reform in Europe: does European deposit insurance scheme increase banking stability?,” *J. Econ. Policy Reform*, 2018, doi: 10.1080/17487870.2017.1400434.

[10] T. Gehrig and M. C. Iannino, “Capital regulation and systemic risk in the insurance sector,” *J. Financ. Econ. Policy*, 2018, doi: 10.1108/JFEP-11-2017-0105.

[11] S. Subedi and D. Dhakal, “Economics of poultry manure as an alternative to chemical fertilizer for agricultural production in Nepal,” *J. Inst. Agric. Anim. Sci.*, 2018, doi: 10.3126/jiaas.v33i0.20713.

[12] C. Agyekumhene, J. R. de Vries, A. van Paassen, P. Macnaghten, M. Schut, and A. Bregt, “Digital platforms for smallholder credit access: The mediation of trust for cooperation in maize value chain financing,” *NJAS - Wageningen J. Life Sci.*, 2018, doi: 10.1016/j.njas.2018.06.001.

CHAPTER 25

ANALYSIS OF AGRICULTURAL DEVELOPMENT AND RURAL ECONOMICS

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ABSTRACT:

Rural economics and agricultural development are essential to achieving sustainable economic growth and eradicating poverty in rural regions. The major ideas, problems, and approaches in agricultural development and rural economics are briefly summarised in this summary. It examines the many facets of agricultural development, such as the contribution agriculture makes to rural economies, the significance of agricultural production, and the connections between agricultural expansion and the eradication of poverty. It also looks at the difficulties that rural communities confront, including poor infrastructure, a lack of markets, and social inequality. In order to promote inclusive agricultural growth and solve the particular difficulties faced by rural economies, the abstract outlines a number of policies and interventions, including agricultural diversification, value chain development, rural infrastructure investment, and social safety nets. Policymakers, academics, and practitioners must comprehend the dynamics of agricultural development and rural economics in order to create successful policies and programmes that promote sustainable rural development, improve livelihoods, and reduce poverty.

KEYWORDS:

Agricultural, Development, Poverty Reduction, Rural, Safety.

INTRODUCTION

The various obstacles that rural communities must overcome limit their ability to flourish. The main issues that need to be addressed are limited market access, poor rural infrastructure, and social inequality. The key to encouraging inclusive rural economic growth is to increase market access via enhanced transportation networks, support the development of rural infrastructure, and address social inequalities. A variety of tactics and initiatives may support the growth of agriculture and rural economies. Agribusiness promotion, value chain development, and agricultural diversification may provide farmers the chance to participate in higher-value agricultural pursuits and diversify their sources of income. Irrigation systems, roads, and storage facilities are examples of rural infrastructure investments that may boost output and market accessibility. Social safety nets may aid in reducing poverty and fostering social inclusion in rural regions, including targeted welfare programmes and skill development efforts.

Collaboration among policymakers, academics, and practitioners is essential in order to develop policies and programmes that are tailored to the particular issues encountered by rural economies. Interventions may be adapted to fulfil the requirements of rural communities, encourage agricultural growth, and support sustainable rural economy by taking into consideration the local context, cultural norms, and resource accessibility. Agricultural growth and rural economies are crucial to sustainable development, to sum up. We can promote inclusive rural economic growth, eradicate poverty, and stimulate the development of wealthy and resilient rural communities by concentrating on raising agricultural production, expanding market access, funding rural infrastructure, and tackling

social inequities. The secret to realising the goals of rural economies and maximising the potential of agricultural growth is to adopt a holistic and integrated strategy that integrates agricultural, economic, social, and environmental components [1], [2].

Country-specific definitions of "rural" exist, however it is often used in opposition to "urban" For instance, this term refers to a region other than "an area with over 5,000 people, consisting of each district with a population density of over 4,000 per square kilometre," according to the definition of the term used in Japan. We cannot, however, simply apply this concept to other nations. Furthermore, it is difficult to define "rural" consistently since it differs from Asia to Africa. Therefore, depending on the social, economic, and environmental circumstances in each nation, using "rural" (including fishing and mountain communities) as a relative notion to "urban" may be the most appropriate. The phrase might also be used to characterise places where the vast majority of people live a life centred on agriculture, including fisheries, forestry, and livestock rearing.

Locals in both rural and urban regions are the ultimate recipients of development aid. However, the social, economic, and physical settings in which they live are quite different. The majority of rural people in many developing nations, particularly in the least developed countries (LLDC), work in and rely on the region's agriculture, forestry, and fisheries for a livelihood. The goal of rural development may be described as the enhancement of sustainable livelihoods (particularly for underprivileged groups), with careful consideration of local peculiarities, if the local population is the end beneficiary of development assistance. The alleviation of poverty is emphasised by many aid organisations as a crucial objective. The fact that most underprivileged populations reside in rural regions has led to an increase in the number of organisations that concentrate on rural development as a means of reducing poverty. Following are the main global trends for reducing poverty and promoting rural development.

The objective of cutting global absolute poverty in half via people-centered social development was set during the 1995 World Summit for Social Development in Copenhagen. In response to this meeting, the DAC High Level Meeting of the OECD in 1996 approved the target of halving the proportion of the impoverished between 1990 and 2015. Additionally, this initiative was endorsed as one of the Millennium Development Goals (MDGs) by the UN General Assembly (Millennium Summit) in 2000, together with the World Bank and IMF.

The number of organisations working on rural development has expanded as a consequence of these global tendencies towards the alleviation of poverty. For instance, the World Bank is creating a new strategy for rural development in addition to the Poverty Reduction Strategy Papers (PRSP) and the Asian Development Bank (ADB) is refocusing its development support on eradicating poverty. The Sustainable Livelihood idea was embraced by the Department for International Development (DFID) in the United Kingdom as an alternative to the current rural development paradigm and for successful anti-poverty initiatives. Additionally, the majority of NGOs have broadened their efforts to include distant rural regions like those in Southeast Asia because they believe that rural development is successful in eliminating poverty. With many organisations implementing multi-sectoral activities based on local conditions, such as activities in agriculture, forestry, and fisheries as well as in non-agricultural income generation, education, health care, and hygiene, or infrastructure improvement, community participation has been recognised as an essential asset in the promotion of the independence of local people [3], [4].

Assistance from Japan for Rural Development

In the past, Japanese aid prioritised agricultural development and raising agricultural production rather than rural development. As a result, strategies centred on technological transfers were used, including the building of irrigation infrastructure and the implementation of agricultural practises. The agricultural strategy was inadequate on its own, however. Multisectoral activity expanded as a consequence. This encompassed the production of non-agricultural revenue, the development of farmer capacity, health and sanitation, infrastructure, education, the environment, and capacity building. Comprehensive efforts on a global scale have also contributed to this transformation.

According to the 1992 ODA Charter in Japan, it is important to consider global poverty for humanitarian grounds. Additionally, the Japanese government expressed its desire to execute ODA under the Charter while keeping the goals of the new DAC policy from 1996 in mind in its Medium-Term ODA Policy from 1999. This strategy places a strong emphasis on the value of economic progress, the equitable distribution of its advantages, and help for the underprivileged. The Japanese government also places a strong emphasis on the value of basic education, health care, support for women in developing nations, access to clean water, and reducing regional disparities through helping underdeveloped rural regions.

Assistance for Rural Development Concept

Issues with Rural Development

Problems with rural development and reducing poverty are often conflated. Income poverty is used as a broad guideline in determining poverty, despite the fact that the definition of poverty varies5. If "three-quarters of impoverished groups live in rural areas," "impoverished (poverty)" refers to living situations brought on by lack of resources. A key element of rural development is the improvement of livelihood. Additionally, there is a viewpoint that is spreading among the general public that living standards cannot be determined just by money and consumption but rather call for a broader perspective. According to individuals who agree with this claim, raising living conditions requires meeting basic human needs (BHN). The Human Development Indicator (HDI), which is based on life expectancy, literacy rate, gross enrollment ratio, and real GDP per capita, has also been used by the United Nations Development Programme (UNDP) from 19907 in its Human Development Reports.

The importance of assistance

By implementing comprehensive development for rural regions, where the bulk of those living in poverty reside, rural development seeks to enhance livelihoods. By limiting excessive migration from rural regions, rural development may also help to lower poverty in metropolitan areas.

Strategies that Work for Rural Development

Although the trickle-down hypothesis was founded on the idea that a growing macro economy may raise the quality of life for those living in poverty, its efficacy has been called into doubt. Its failure, however, does not automatically imply that efforts should solely be focused at the grassroots level. This is due to the fact that metropolitan regions, which are the primary consumers of agricultural goods, must be taken into consideration for rural areas to thrive. If traditional development initiatives had been successful, rural poverty would have greatly decreased. It is obvious that the conventional rural development method has to be changed as a result [5], [6].

Until until, rural development was dependent on aid from other nations. However, because of the donors' present precarious financial situation, foreign contributions have been limited. As a consequence, in order to provide enough results and the potential for future advancement, the promotion of rural development needs efficient external inputs. Therefore, for this to be realised, it is necessary to have a broad and cross-sectional understanding of development challenges. It is also essential to make the most of human and natural resources in rural regions. The following describes a few such strategies.

DISCUSSION

To place a focus on local development that is comprehensive and focused on human development, advocacy for human rights, and qualitative improvement in living conditions. Environmental protection and enduring socioeconomic progress. Should embrace a development strategy that values mixed-income working environments and encourages inter-industrial partnerships by fully utilising local resources, industries, people resources, cultures, and networks. Moreover, to put in place the essential laws and guidelines to encourage collaboration between cities and the local economy. To encourage community involvement in policymaking. to achieve local autonomy via neighbourhood self-government, decentralisation, and community involvement. Creating project implementation bodies based on regional realities is also necessary at the same time.

Participatory Development

Recognizing that local people are the primary implementers of development programmes is necessary to support the development of human and physical resources in rural regions. People who engage in initiatives in a passive manner become inert and rely on outside resources. Local decision-making in project design and execution is crucial to preventing this predicament. In other words, a project that the local people themselves develop and carry out is given priority since the local people's initiative and responsibility efficiently use local resources, including materials and labour. The efficient utilisation of local resources promotes local independence and sustainable project results.

Development of a Development Objectives Chart

The chart deductively segments elements connected to five capacities of the DAC Guidelines on Poverty Reduction into "Development Objective," "Mid-term Objective," "Sub-targets of Mid-term Objective," and "Examples of Activities." Despite being included as one of the five necessary skills in the DAC Guidelines on Poverty Reduction, "SocioCultural Capabilities" is not shown in the chart since it is a factor that should be given extra attention when projects are implemented. Additionally, charts on protective and political capabilities were made by emphasising issues related to agriculture and JICA such as administrative capabilities and measures against natural disasters as political capabilities issues, and environmental conservation as political capabilities issues.

Development Objective Improvement of Political Capabilities includes the enhancement of all political competencies. Under Development Objectives 1–3, effective administrative capacities for each sector were listed. For each project, the level of experience was indicated by four symbols () in the column "Examples of Activities." denotes that JICA has a wide range of experience, denotes that JICA has a specific range of experience, denotes that JICA has experience as a component of projects, and denotes regions where JICA has limited expertise [7], [8].

The key JICA interventions in the domains of rural development are included in the "JICA's Schemes" column for Sub-targets of Mid-Term Objectives. A project that could serve as a template for other initiatives like it is denoted by the sign. In addition, the section titled "Relevant Projects on Rural Development" in the appendix titled "JICA's Main Operations in Rural Development" displays notable examples of JICA's rural development initiatives. Not every rural development initiative is represented.

Improvement in Non-Agricultural Income

Poorer groups have job chances when small and medium-sized businesses grow. Although the pricing of basic goods from agricultural products do tend to be cheaper, the processing of primary products in rural regions enhances money earned and labour possibilities by adding value. Additionally, small-scale farmers might increase their income via non-agricultural endeavours notwithstanding the limited revenue that can be generated through increasing land productivity (except from situations when land reforms result in an extension of the cultivated areas). In situations when there is not enough land due to population increase, generating money from non-agricultural sources or working away from home may be advantageous. However, an overwhelming intake of migrant workers increases poverty in cities since there aren't enough jobs available for them. Therefore, it's crucial to increase non-agricultural revenue creation in rural regions. Non-agricultural improvement may be roughly divided into two goals: 1) to enhance already-existing non-agricultural enterprises, and 2) to launch new ones in order to generate money [9], [10].

The improvement of farmers' business skills

Examples of business capacity development via seminars and vocational training to bolster business knowledge are available. JICA has executed initiatives in the past related to apiculture, handicrafts, soy milk, sewing supplies, plant dyes, weaving, pottery, bamboo crafts, processing butter, wood carving, basket manufacturing, and other fields. Such support can concentrate on introducing new items or improving current ones technically.

The majority of JICA programmes for increasing non-agricultural income have focused on women's organisations. As stated in b), vocational training and seminars are often used to better the circumstances for small-scale firms and entrepreneurs (e.g., the introduction of microcredit, improved access to markets, and so on). Additionally, there are other instances when literacy instruction is used since it is beneficial for management and commercial contracts.The improvement of conditions for entrepreneurs and small businesses. Along with the use of contemporary methods and technical skills, improving non-agricultural revenue necessitates the creation of circumstances for product sales and the acquisition of company finances. As a result, JICA has carried out a number of initiatives, including market development, shipping and distribution cooperatives, and financial services, as indicated in the following:

Microcredit

Microfinance is a useful instrument for increasing farmers' access to financing in rural regions. As a consequence, several donor organisations carry out microcredit-related programmes. JICA offers support on administrative and technical elements of farmers' businesses that require credit, such as screening and fund administration for organisations without expertise in microcredit, but it cannot give funding for such activities. Grant Assistance from Japan for Small-Scale Projects, however, may contribute up to 10 million yen in direct funding for microcredit.

A Local Organisation

Community organisation reduces the vulnerability of underprivileged groups and increases the effectiveness of development initiatives. Below are some advantages of community organisation: Farmers' organisations are more efficient from a donor agency's standpoint than individual aid, and they also provide an opportunity for poor farmers to become independent as active beneficiaries of development. The group increases the options available to farmers for development. An organisation could be able to build marketplaces or repair roads where individuals cannot. Before beginning initiatives, it is crucial to thoroughly research local social structures, norms, and cultural practises, nevertheless, since the success of organisations often rely on strong regional leaders. Projects may be created by integrating such surveys and local residents' perspectives. It will be encouraged to support community engagement, mutual understanding amongst locals, and collaboration with neighbourhood NGOs and community-based organisations (CBOs) from the project-design phases [11], [12].

CONCLUSION

In conclusion, rural economics and agricultural development are crucial for promoting overall development in rural regions as well as sustainable economic growth and the eradication of poverty. Strong agricultural sectors are essential for fostering rural development, as shown by the link between agriculture and rural economies. Agricultural productivity is a key component of agricultural development since it not only improves food security but also creates revenue and job possibilities in rural areas. Improved agricultural production may result in higher earnings and better living conditions for rural communities by using contemporary farming methods, making investments in research and development, and giving farmers access to the tools and information they need.

REFERENCES:

[1] B. Chen, Z. Qiu, N. Usio, and K. Nakamura, “Tourism’s impacts on rural livelihood in the sustainability of an aging community in Japan,” *Sustain.*, 2018, doi: 10.3390/su10082896.

[2] M. Dudzińska, S. Bacior, and B. Prus, “Considering the level of socio-economic development of rural areas in the context of infrastructural and traditional consolidations in Poland,” *Land use policy*, 2018, doi: 10.1016/j.landusepol.2018.09.015.

[3] L. Schaller *et al.*, “Agricultural landscapes, ecosystem services and regional competitiveness-Assessing drivers and mechanisms in nine European case study areas,” *Land use policy*, 2018, doi: 10.1016/j.landusepol.2018.03.001.

[4] A. B. Burhan, “Utilization of Information and Communication Technology for Development of Agricultural Economics and Poverty Reduction,” *J. Komun. Pembang.* , 2018.

[5] J. Suleiman, “The Media, Implementation of the Nigerian National Communication Policy, and Citizens’ Participation in Development,” *Eur. Sci. Journal, ESJ*, 2018, doi: 10.19044/esj.2018.v14n26p193.

[6] H. Bjørkhaug and K. Knickel, “Rethinking the links between farm modernisation, rural development and resilience,” *Journal of Rural Studies*. 2018. doi: 10.1016/j.jrurstud.2017.09.018.

[7] J. Yu and J. Wu, "The sustainability of agricultural development in China: The agriculture-environment nexus," *Sustainability (Switzerland)*. 2018. doi: 10.3390/su10061776.

[8] D. Morea and M. Balzarini, "Financial sustainability of a public-private partnership for an agricultural development project in sub-saharan Africa," *Agric. Econ. (Czech Republic)*, 2018, doi: 10.17221/161/2017-AGRICECON.

[9] R. Schurman, "Microsoft managing a 'green revolution' for Africa: The new donor culture and international agricultural development," *World Dev.*, 2018, doi: 10.1016/j.worlddev.2018.08.003.

[10] U. JC, "Theories and Models of Agricultural Development," *Ann. Rev. Res.*, 2018, doi: 10.19080/arr.2018.01.555574.

[11] M. P. Pimbert and N. I. Moeller, "Absent agroecology aid: On UK agricultural development assistance since 2010," *Sustain.*, 2018, doi: 10.3390/su10020505.

[12] A. A. Ogundeji, E. Donkor, C. Motsoari, and S. Onakuse, "Impact of access to credit on farm income: policy implications for rural agricultural development in Lesotho," *Agrekon*, 2018, doi: 10.1080/03031853.2018.1483251.