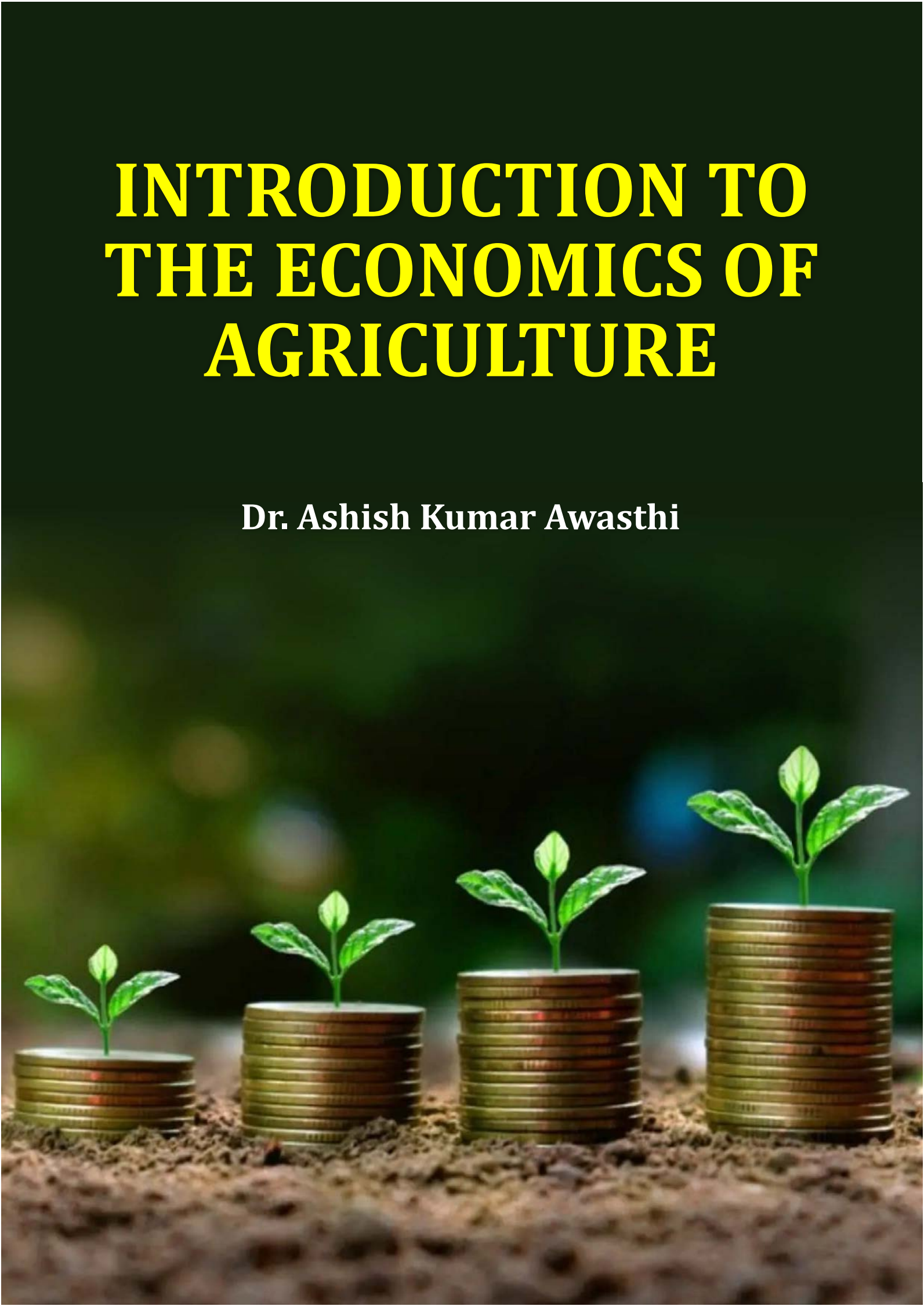
INTRODUCTION TO THE ECONOMICS OF AGRICULTURE

Dr. Ashish Kumar Awasthi



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CHAPTER 1

INVESTIGATION AND OVERVIEW ON ECONOMICS OF AGRICULTURE

Dr. Ashish Kumar Awasthi, Assistant Professor,
Department of Science, Maharishi University of Information Technology, Uttar Pradesh, India.
Email Id-ashish.awasthi@muit.in

ABSTRACT:

The economics of agriculture is investigated and summarized in this study, which looks at the economic theories, methods, and difficulties that the agricultural industry faces. In order to support livelihoods, rural development, and food security, agriculture is vital to world economies. This study examines the production, distribution, consumption, and market dynamics of agriculture via the use of economic theories, empirical research, and case studies. It looks at the variables that affect agricultural profitability and production, including market trends, government regulations, climate change, and technology developments. It also examines the financial effects of farming methods on rural communities, environmental sustainability, and world food chains. This work seeks to expand knowledge of farm economics and its relevance to social progress, economic growth, and environmental sustainability via a thorough analysis.

KEYWORDS:

Agriculture, Economics, Environment, Production, Sustainability.

INTRODUCTION

Economics is the study of how to effectively employ finite resources to satisfy infinite human desires. Humans have limitless wants and desires, yet there are finite resources and ways available to satisfy these needs and aspirations. Therefore, the field of economics is concerned with allocating resources as efficiently as possible to satisfy these limitless desires.There are limits and restrictions on the amount of resources available to a whole civilization, a nation, or the planet at large[1], [2]. Typically, when the term resource is used, one thinks of common natural resources like iron ore and gas and oil. But the word has a much wider economic connotation, and economists include a wide range of other things that people who haven't studied economics would not think of, in addition to fundamental natural resources.

The quantity of work that exists within a community is a valuable resource. Another fundamental resource in a society is the capital that is utilized to build industrial facilities that make goods that people desire to buy. There is still more room for definitions of resources. People are not all equally skilled at executing tasks. A society where the majority of people are highly educated and skilled will be much more productive than one where the majority lacks these talents. As a result, one must consider the education and skill sets of job holders within an economy as a limited resource. College attendance may be motivated by the desire to acquire skills that will enable increased revenue earning[3], [4]. They believe that their inability to get a college degree limit or restricts their capacity to make money. This is fundamentally motivated by the limitless human desires. The fundamental issue that must be addressed by both people and society is how to go about using restricted resources in an effort to meet these boundless demands since human

wants and desires are limitless yet the resources usable in fulfilling these wants are limited. There have been many efforts by economists and others to define the term theory. Economists generally agree that a theory is a representation of a collection of connections. Either the collection of interactions guiding the actions of individual producers and consumers or the set of relationships governing the economy as a whole within a community or country may be represented by economic theory.But some scientists economists among them also use the word theory to refer to a hypothesis, or a claim about how something functions[5], [6]. Certain hypotheses could have little, if any, empirical support. A hypothesis explaining how the cosmos came to be is one example. In physics, theories often come before actual observations. Even though there is a dearth of empirical data, physicists have quite sophisticated ideas on the behavior of electrons, protons, and neutrons in atoms. Theories don't always have to be supported by empirical observation; they might serve as a foundation for describing things that occur in the real world. A depiction of a system of connections that control behavior of individuals within a certain segment of an economy is known as an economic theory.

A hypothesis, or collection of hypotheses, about the functioning of a certain economic component may also be referred to as an economic theory. One way to examine these theories is to see whether they match the behavior that has been seen in the economy. The applicability of a theory to explain the behavior of a certain person or group of people is examined, not the theory itself. A social scientist's finding that a theory falls short of explaining the behavior of a certain set of individuals does not mean that the theory is wrong in and of itself. In somewhat different conditions, the same principle may apply to other individuals. The actual world is very intricate. Economists spend a great deal of time trying to identify the underlying ideas that control how people behave in relation to production and consumption, rather than spending much time in the actual world. The economics of any industrialized culture, or rather the economy of almost any society or country, is very complicated, much as the actual world is. Because of the intricacy, it is sometimes difficult to understand the underlying linkages[7], [8].

Economists abstract from reality while creating theories in an attempt to better understand the linkages that are significant. They exclude ties that have been determined to be unimportant to the issue in an attempt to concentrate more intently on the relationships that they believe to be crucial. A person without any background in economics may find economic theory to be an unrealistic or even ridiculous simplification of reality. Furthermore, it seems like economists are always debating. It seems to someone who is not familiar with economics that there is never any consensus among economists. Simplifying is a necessary step in developing an economic theory as a formal set of connections regulating a particular component of an economy. There will be some relationships that are included and others that are not. The linkages that are included are those that the economist who developed the theory thought were significant and that exemplified the salient characteristics of the specific economic issue that the economist wished to investigate.

Economists may, and often do, disagree sharply over whether a given theory which incorporates some links while leaving out others—is an accurate portrayal of the world. Economists engage in debate as a fairly common and everyday aspect of their work, and it is this ongoing refinement of economic theories that propels them forward throughout time. Economics as a field in the social sciences would not advance without it. The phrases "model" and "theory" are sometimes used interchangeably by economists. A model might be seen by a young kid as a toy or small replica of an object, such as a farm tractor or car. This is not an incorrect method to approach an economic model. A certain level of detail is necessary for a model to appear realistic. The key

components of the actual object must be represented in the model for it to be recognized. However, it wouldn't be expected of the model to carry out the same tasks as the actual thing. An economist would not expect to govern the operations of the US economy with a model of the economy, any more than one would expect to travel in a toy car[9], [10]. But just as a car designer might build a model of a new car before the real thing is built to try and get a better idea of how the real thing might look, an economist might build a model of the US economy to try and get a better idea of how a specific government policy, if put into effect, might affect people and businesses within the economy.

DISCUSSION

Models are a useful tool for economists to quantify or simulate the results of a policy without actually putting it into practice. There are several methods to depict economic ideas and models. Since Adam Smith's renowned book The Wealth of Nations was published in the eighteenth century, economists have mostly depended on language to describe economic connections. Words were becoming less and less useful in providing precise answers to "what if" scenarios. Graphical tools were the primary tool used by economists in the late 19th and early 20th century to represent economic linkages. Though there were drawbacks to using graphics in complicated verbal debates, they were often a useful tool for improving precision. As an example, a graph depicting a farm's production function could only have two inputs and one output since more than three dimensions may be drawn in.

The 1947 release of Paul Samuelson's Foundations of Economic Analysis marked a significant advancement in the use of mathematics to the description of economic theories and models. Since then, the use of mathematics as a tool to build theories and models has grown in significance. A theory presented in mathematical terms cannot include fuzzy connections. Furthermore, mathematics provided new ways to represent intricate connections. On the production side, there were no longer any restrictions on the quantity of inputs or outputs that may be acquired by a production function.

The use of statistics to estimate economic links from real-world data expanded along with the use of mathematics to describe economic interactions. Economic measurement, or econometrics, emerged as a brand-new discipline. It was now possible to quantify the links found in the theoretical model with a mathematical foundation. The last significant development affecting economics in the latter part of the 20th century was the quick rise in the use of computers for relationship estimation and measurement. Only five or 10 years ago, it would have been thought impossible for economists to meet the computing requirements for the models they frequently estimate. Economics requires making decisions. Nobody has unlimited money, so those who do have to make tough decisions about what to buy must decide what makes them feel the happiest, given the limits placed on their income. The core of consumer economics is choice. According to economists, a person gets enjoyment from an object that provides utility. The primary issue in consumer economics is maximizing utility, or enjoyment, while keeping in mind the limitations placed on by money availability.

This book addresses the choices that producers of products and services that consumers demand must make, which is a different set of options. Additionally, the manufacturer aims to maximize usefulness. The producer is driven to maximize utility by a desire for financial gain, once again to better satisfy their limitless desires. In order to achieve usefulness or enjoyment, producers often aim to maximize profit, even if they may have other objectives. The difference between the

sales proceeds and the expenses of manufacturing the items is known as profit. But manufacturers also have limitations. Producing as much as possible of anything that might be sold for more than the cost of production would be the producer's answer to the profit-maximization challenge if they were not constrained.To get the most utility or happiness, producers could try to optimize anything other than profit. It is possible that some farmers want to maximize their farm's earnings by using resources like labor, land, and agricultural equipment. The fundamental driving force behind farming profit maximization is the expectation that a portion of these earnings would be used as cash to pay for products and services that will provide the farmer and his or her family with happiness or usefulness. This kind of farmer acts just like any other customer. To feel satisfied, other farmers could want to maximize something else, like the quantity of land they possess.

An allocation issue similar to the consumer's exists for the producer. A consumer's interest in allocating money to maximize utility or pleasure is common. Often, the producer wants to allocate resources in a way that maximizes profitability. The fundamental decisions that must be taken in order to accomplish these goals are the focus of economics. The utility maximization issue is the main focus of consumption economics, while the profit maximization problem is the main focus of production economics. Nonetheless, the business's owner uses the revenues to buy products and services that are useful or satisfying. Microeconomics and macroeconomics are the two main subcategories of economics. Individual decision-making units' behavior is the focus of microeconomics. Small items are often associated with the prefix micro-. Microeconomics studies how an individual consumer allocates their money and how an individual company management, like a farmer, tries to allocate resources in a way that advances their objectives.

Large objects are often associated with the prefix macro. Macroeconomics is the study of the larger picture. For instance, a student of macroeconomics may address problems facing an economy as a whole. Macroeconomists' traditional areas of concern include unemployment and inflation. They are interested in the whole interactions between producers and consumers in a community, a country, or the entire planet. Despite the fact that macroeconomics and microeconomics are often seen as distinct fields of study within economics, they are really extremely closely related. Producers and consumers individually make up the macroeconomy. Furthermore, choices made by specific producers and consumers are inextricably linked to macroeconomic developments.The federal government's tax cuts and hikes affect the amount of money that each individual consumer has available for spending. The prices that individual farmers get for the goods they produce are mostly influenced by the total amount of money that farmers generate in a given year, but they also have a significant impact on the choices that individual farmers make as business managers. This article focuses on the farm company as a separate decision-making unit and discusses production economics. However, each farm business does not function in a vacuum; rather, it is greatly impacted by events that occur collectively.

Time is irrelevant, and no effort is made to identify the mechanisms leading to the increase in revenues in an examination using comparative statistics. This is frequently described as a timeless, motionless setting. When the study is focused on the effects of an economic shock rather than the mechanisms that cause it, it is a helpful tool. Also take note of the fact that comparative statics may be utilized to clarify macroeconomic or microeconomic problems.

In dynamics, time is a crucial component, as opposed to statics. The goal of dynamic economics is to illustrate how a single customer, business, or economy shifts from one equilibrium to another. Let's say, for instance, that a thing or commodity's price drops. Using dynamic economics, one may look at variations in the amount that would be removed from the market after an hour, day, week, and month. The topic of agricultural economics and its connection to economics have not received much attention up to this point. This has been the case for a reason. An agricultural economist is first and foremost an economist since they have a thorough understanding of economic theory. But an economist with a focus on agriculture is still an agricultural economist. The main focus is on using economic reasoning to solve agricultural issues. A grasp of agriculture is just as vital to an agricultural economist as understanding of economics. An agricultural economist must be aware of these linkages in order to appropriately depict them in a model that represents a particular aspect of the agricultural industry. s to the company that produces agricultural goods. The following are some of the main issues in agricultural production economics.

The aims and goals of the farm manager Agricultural economists often believe that the goal of any farm management is to maximize profits, which are calculated as the difference between the proceeds from the sale of cattle and crops minus the expenses incurred in their production. Individual farmers, however, have different objectives. The biggest farm in the county may be more appealing to one farmer than another. Possessing the greatest collection of agricultural equipment may be the objective of another. Another person may want to reduce the amount of debt they have. The aims and ambitions of a farm manager are strongly related to an individual's psychological composition, and an individual's chosen goals may not even be related to maximizing profits. However, the majority of economic models that are used to simulate the actions of farm managers include the assumption that the manager is motivated to maximize profits, or at the very least, is motivated to maximize income while taking into account limitations imposed by the availability of resources.

The selection of the outputs to be generated. When it comes to choosing what to produce given the resources of land, personnel, machinery, and equipment, a farm manager has several possibilities. The manager is responsible for determining not just the quantity of each specific item to be produced, but also the distribution of available resources among other commodities. Although the farmer may have other objectives, increasing earnings may be one of them. Other limitations often arise. For instance, the government could only allow the farmer to plant a certain crop on a predetermined amount of acres. It's possible that the farmer has specific expertise on, or a desire for, a given product. Certain kinds of crops or animals may do better on the farmland than others.

The distribution of resources among the results. Following selections about the product or commodities to be produced, the farmer must choose how to divide the resources at hand amongst the various outputs. Which field should be utilized for the production of each crop is a straightforward issue, but the answers soon become much more complex. Every farm has a finite supply of agricultural workers and equipment. Each crop and livestock operation has to have a certain amount of labor and machinery time dedicated to it in accordance with the farmer's overall goal. The majority of this article is dedicated to addressing the fundamental concerns that farm managers have when distributing resources or inputs across various outputs or businesses.

The acceptance of danger and unpredictability. Production economics models often assume that the manager is fully aware of the appropriate production function (such as the yield that a crop would produce if a certain quantity of fertilizer were applied) and the costs associated with purchasing inputs and selling products. On the other hand, the production function knowledge assumption is seldom ever satisfied in agriculture. The primary variable is, of course, the weather, but nature also poses other difficulties. Insects and disease harm crops, and cattle get illnesses and pass away. Economic theory that presumes that a production function is known for sure would be laughed at by the majority of farmers.At the time each input is acquired, farmers may be completely aware of the prices they must pay for gasoline, fertilizer, and seed, but at the start of the production season, they are practically never informed of the prices that will prevail when outputs are sold. Because agricultural production is a time-consuming process, producers of almost any commodity have biological lag, which contributes to price volatility.

Economists often make the oversimplifying assumption that production occurs instantly and that inputs are miraculously and instantly converted into outputs at the time of acquisition. It takes time for agricultural productivity to undergo this transition. Most crops need many months to produce. The period of time between the conception of a calf and the sale of the fattened steer may be expressed in years. Therefore, farmers are forced to decide how to produce their goods based on incomplete information about what the final product will sell for when it is put on the market. the agricultural firm's operating environment, which is characterized by economic competition. The most comparable real-world example of the conventional concept of pure competition, according to economists, is farming. However, a farmer's operating environment is highly dependent on the specific product being produced in a competitive market.The notion of pure competition is a fundamental framework that economists often use to describe how businesses behave within an industry. Currently, it is helpful to go over the tenets of the traditional economic model of pure competition and determine how much of them could be relevant to American farming. The following is predicated on the pure competition concept.

In the sector, there are a lot of buyers and sellers. Few people would believe that farming does not have a huge number of vendors. In 1980, the US Department of Agriculture (USDA) estimated that there were about 2.4 million farms in the US; however, the number of farms is much lower for several agricultural commodities. For example, all of the country's parsley requirements are met by a small number of farms. At a major grain exchange in Minneapolis or Chicago, or at a local cattle auction, the assumption of a high number of purchasers may be partially realized; nevertheless, many agricultural goods trade in marketplaces where there are only relatively few buyers. The tobacco producer may only deal with the three or four largest cigarette makers, and pricing are set in a non-competitive market. A small number of significant producers have controlled the broiler production market in the cattle industry in recent years.

CONCLUSION

The examination and synopsis of agricultural economics highlight the sector's significance for economic growth, food security, and environmental sustainability. With agriculture supplying food, fiber, and a means of subsistence for billions of people worldwide, it is a vital part of the world's economy. Numerous elements, such as government regulations, market dynamics, technology breakthroughs, and environmental circumstances, all have an impact on the economics of agriculture. Careful evaluation of these variables is necessary to maximize agricultural profitability and output. Research, infrastructure, and sustainable practices must also

be funded. Furthermore, the economics of agriculture have a big impact on rural development, environmental sustainability, and world food security. To mitigate environmental deterioration, preserve natural resources, and ensure the long-term survival of agricultural systems, sustainable agricultural techniques are crucial. Examples of these methods include organic farming, agroecology, and conservation agriculture.

REFERENCES:

[1] Palgrave *et al.*, "Agriculture Economics (Palgrave)," *Palgrave Econ.*, 2018.

[2] M. A. Altieri, *Agroecology: The science of sustainable agriculture*. 2018. doi: 10.1201/9780429495465.

[3] D. Pannell, "Agriculture, Economics and Nature," *Coursera*, 2018.

[4] O. Mertz *et al.*, "the Intersection of Global Fragility and Climate Risks," *Int. J. Environ. Stud.*, 2018.

[5] C. C. Amos, A. Rahman, F. Karim, and J. M. Gathenya, "A scoping review of roof harvested rainwater usage in urban agriculture: Australia and Kenya in focus," *Journal of Cleaner Production*. 2018. doi: 10.1016/j.jclepro.2018.08.108.

[6] C. C. Apeh, "Farmers' perception of the health effects of agrochemicals in Southeast Nigeria," *J. Heal. Pollut.*, 2018, doi: 10.5696/2156-9614-8.19.180901.

[7] R. J. Blakemore, "Critical decline of earthworms from organic origins under intensive, humic som-depleting agriculture," *Soil Syst.*, 2018, doi: 10.3390/soilsystems2020033.

[8] M. Meerhoff and R. Bernardi, "Climate Report from Uruguay," *Perform. Res.*, 2018, doi: 10.1080/13528165.2018.1495949.

[9] S. Reeve, "Agriculture: a springboard to livelihood diversification," *Spore*, 2018.

[10] J. Eaves and S. Eaves, "Comparing the Profitability of a Greenhouse to a Vertical Farm in Quebec," *Can. J. Agric. Econ.*, 2018, doi: 10.1111/cjag.12161.

CHAPTER 2

SCOPE, NATURE AND IMPORTANCE OF AGRICULTURAL ECONOMICS

Dr. Ashish Kumar Awasthi, Assistant Professor,
Department of Science, Maharishi University of Information Technology, Uttar Pradesh, India.
Email Id-ashish.awasthi@muit.in

ABSTRACT:

The breadth, character, and significance of agricultural economics—a discipline that studies the financial aspects of agriculture production, distribution, and consumption—are all explored in this essay. Understanding and resolving issues like resource allocation, market dynamics, and rural development are critical functions of agricultural economics. This work offers an overview of the field and nature of agricultural economics, including its multidisciplinary character, central ideas, and methodology, by drawing on economic theory, empirical research, and case studies. It looks at how crucial agricultural economics is for guiding policy choices, encouraging environmentally friendly farming methods, and enhancing food security and rural lives. This research seeks to expand knowledge of the role that agricultural economics plays in resolving global issues and promoting agricultural growth via a thorough examination.

KEYWORDS:

Agricultural Economics, Agriculture, Economic Development, Policy, Sustainability.

INTRODUCTION

The study of agricultural economics has greatly broadened throughout the years, with its present scope having grown at a fast pace. Several applied fields that have significant conceptual similarities with normal economics are included in the field of agricultural economics. Agricultural economics uses the production function and several programming models to build a link between cause and effect as well as supply and demand. Various economic, mathematical, and statistical theories are used to the problems facing agricultural and agribusiness[1], [2]. The agricultural slump of the 19th and 20th centuries raised concerns about the reasons and remedies for the world's agricultural issues, which is why this subject of research is so important.

With a basic connection to the systems of crop and animal production, agriculture is an essential component of the global food system. Comprehending the complexities of foundation systems is a crucial task for agricultural economics. It is essential that agricultural economics students possess a comprehensive comprehension of the impact of weather patterns on the production and marketing of commodities to meet consumer demands. To identify appropriate solutions for farm problems, agricultural economics requires in-depth understanding of issues related to production, financing, marketing, and government laws[3], [4]. These factors have a significant influence on both output and distribution. Hence, the processes influencing the costs of the agricultural goods a farmer purchases and sells, or the connection between agriculture and the rest of the economy, are the focus of agricultural economics. Developing strategies, tactics, and processes to address agricultural issues is a key responsibility of agricultural economics. Probably the most challenging task assigned to an agricultural economist is this one. Consequently, agricultural

economics is "an applied science and as such, is concerned with the identification, description, and classification of the economic problems of agriculture, to the end that these problems may be solved," according to renowned economists G.W. Forster and MC. Leager[5], [6].

Due to the scarcity of land, which is the foundation of all agricultural activities, the issue of allocating scarce resources for various purposes may be more important 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 aid in making the most use of agricultural resources to the satisfaction of society, the theoretical framework of agricultural economics has to be more rigorous and attentive. Thus, the nature of agricultural economics is both theoretical and practical. As an applied discipline, the theory of agricultural economics deals with the development of resource economics' tenets and how these tenets are applied to various productive activities associated with agriculture.

Agricultural economics makes use of all the same analytical techniques as general economics. Similar to general economics, some significant areas of agricultural economics include the study of production, consumption, distribution, marketing, finance, planning, and policymaking. Additionally, a macro- and micro-level analysis is conducted for the agriculture industry. Analysis, both static and dynamic, is pertinent to the agriculture sector of the economy. Put another way, agricultural economics studies how a farmer selects different businesses, like growing crops or rearing cattle, as well as how he selects different activities within a single business, like deciding which crop to grow and which to drop; how costs are to be kept to a minimum; what combination of inputs is to be chosen for an activity; how much of each crop is to be produced; and what kind of business relationships farmers should have with those they buy inputs from or sell their products to[7], [8].

The issues that need to be addressed include agricultural unemployment and instability, mostly on a macro level. In addition, there are the standard issues with agricultural expansion as well as issues that are mostly of a macro nature, such as those pertaining to tenurial systems and arrangements, research, and extension services. Agricultural economics studies such problems, emphasizing their causes, effects, and potential remedies. Once again, the field of agricultural economics now encompasses more than only the theories of macro- and microeconomic resource efficiency, as well as "static" and "dynamic" viewpoints. Agricultural economics encompasses more than just "mere resource economizing." As is commonly known, different economic sectors are mutually dependent on one another.

For the other sector to flourish, the first sector must grow. Therefore, we also study how labor and capital can flow into non-agricultural sectors, how agricultural development starts and maintains the development of other economic sectors, and how the development of agriculture helps the development of other economic sectors in agricultural economics. This suggests that the study of agricultural economics goes beyond formulating theories on how best to use limited resources. The study of food and fiber production, processing, distribution, and consumption is known as agricultural economics. The distribution of limited resources among the conflicting alternative uses present in the production, processing, distribution, and consumption of food and fiber is the subject of this social science[9], [10].

Using the proper tools from the sciences—especially mathematics and statistics—agricultural economics has advanced in a number of ways and fields. The concepts of general economics are used in agricultural economics.Firstly, it is important to acknowledge that agricultural economics

primarily draws its concepts from the field of general economics, which is its parent body of knowledge. There are even similarities between the primary fields of agriculture and general economics. The issue therefore becomes, "Why is there a need for a separate study of agricultural economics if the principles of general economics and agricultural economics are the same?" The explanation for this is that agricultural economics involves more than just applying theoretical concepts directly to the agricultural sector. The general theory of economics has been seen as an abstraction from reality, and the principles of economics are too broadly defined.

Prior to applying this theory to agriculture for the purpose of economic analysis, its tenets must be adjusted so that its hypotheses fully align with the salient characteristics of the agricultural industry. It is evident from a few instances. under economic theory, we examine how prices are formed under oligopolies, monopolies, and perfect competition, among other structures. Here, the study of agricultural product price formation under oligopolistic, monopolistic, or monopolistic competitive situations will be all but ignored.Agricultural economics is not a distinct branch of economics with application limited to agriculture. Rather, it is a distinct body of economic ideas and methods.

The economic theory's broad structure applies to both industrial and agricultural company operations. Both in industry and agriculture, the study of supply and demand equilibrium, value and pricing, etc., is relevant. After all, if the agricultural sector can be explained by basic economic concepts, then why should agricultural economics be studied in isolation? It's true that industrial and agricultural production have very comparable output objectives and need management judgments on resource allocation. However, there are significant variations in the environmental requirements for production as well as the sociocultural context of the agricultural industry, necessitating a distinct study of agricultural economics.

First of all, farming is a special kind of business where business and lifestyle are blended together. The modern industry no longer uses this combination. On this point, societal, political, and emotional factors have a greater effect.The farmer produces primarily for his own needs, which is another feature of agricultural production that sets it apart from industrial production. hasn't entirely vanished. Even now, the majority of developing nations still cultivate for self-sufficiency. Thirdly, since they are both parts of the same plant or animal, many agricultural commodities are joint products, such as wheat and affals or mutton and wool. Even when many goods are manufactured in the same factory, the expenses associated with the different products cannot be separated, as they often may be in industry. Therefore, it is seldom acceptable to think about a product's supply in isolation in the agricultural industry.

Fourthly, compared to industry, agriculture uses a significantly greater amount of land in ratio to the employment of other variables. This is the cause of the broad distribution of output, the early trend of decreasing returns in law, and the significance of the land tenure system. Fifth, there is little room for labor division in farming since it is often done in small units. Large-scale organization and its advantages, which are characteristic of industry, are thus less relevant to agriculture. Sixth, since there are so many little farm holdings in farming, unlike in the industrial sector, combinations are not feasible. Farmers now face intense competition as a consequence of this.

farmers have relatively little influence over output in the agricultural industry. Serious maladjustments are likely to happen when production is either uncontrolled or not manageable since, in some cases, more items will be created than are needed and might be sold economically,

while in other cases, there won't be enough products available when prices are high. Over time, the Indian economy underwent a structural transformation, transitioning from a mostly agro-based economy in the 1970s to a service-based economy that now dominates the economy. The production and demand relationship in the Indian economy saw a significant shift as a result of this structural shift and the erratic pattern of sectoral expansion.

DISCUSSION

The landscape of the Indian agricultural industry has transformed as a result of the WTO reforms and the country's absorption into the global economy. Given that India is dedicated to attaining the Sustainable Development Goals (SDGs), the significance of agriculture and its sustainable development cannot be understated. Strong backward and forward links between agriculture and other economic sectors are essential to the process of economic growth.Basic food and materials that are collected from the soil are essential to the primary sector of the economy. Grazing, mining, forestry, fishing, quarrying, and agriculture are among the primary sector's activities. This industry also includes food processing and packaging.

Because completed items are made from raw materials that are harvested by the primary sector, this industry is reliant on it. This industry includes the manufacture of automobiles, textiles, metals and smelting, energy utilities, chemical and engineering industries, aerospace manufacturing, breweries and bottlers, construction, and shipbuilding. The tertiary sector, also referred to as the service sector, is dependent upon the secondary sector. This industry sells commodities that the primary sector extracts and the secondary sector converts into finished items. This industry provides its services to both corporations and the general public. This sector includes operations in retail and wholesale sales, dining establishments, banking, media, tourism, transportation and distribution, clerical services, insurance, health care, and law. The majority of economic theories split an economy into three sectors, although some even split it into four or five. This sector, which encompasses industries like government, libraries, culture, scientific research, education, and information technology, is closely related to the tertiary sector.

Agriculture becomes more productive because to the research and innovation carried out by these kinds of operations. This industry develops innovative agricultural technologies to maximize productivity and make the most use of limited resources.Industrialization is based on the idea of significant expansion, and it can be limited if food supplies aren't increased. Agriculture supplies the industry with food, raw materials, and products. A significant increase in food costs might arise if food supplies are unable to keep up with the growing demand. This would further strain the wage rate and have a negative impact on industrial earnings, investment, and growth. Conversely, the great majority of unskilled and semi-skilled workers in the agricultural sector will be employed by the industry as labor. However, industry provides agriculture with industrial inputs like equipment, fertilizers, and insecticides. As a result, there is dependence and connectivity between industry and agriculture. Emerging nations are dependent on the agriculture sector, which produces the majority of their national revenue.

A well-developed and interconnected agricultural sector has the potential to contribute positively to capital creation. The fact that agriculture has a lower capital-output ratio than other industries lend credence to this claim. As a result, there is a lot of potential to increase agricultural output since it only needs a little financial investment. Primary goods are the result of agricultural production, and their exports bring in foreign currency. The workers in agriculture and those reliant on agriculture are the customers of industrial products, making up a significant portion of

market demand that propels expansion in the manufacturing and related industries. The banking industry is persuaded to lend more to the agricultural sector by the shifting policies and environment.

In addition, banks are providing training and establishing consultancies for the farming community in order to facilitate the financial integration of agriculture into society and to sell agricultural products. The banking industry plays a vital role in the banking sector, ranging from loan to consultancy, especially in a nation like India where agriculture is heavily dependent on the monsoon. Since American firms employ guar to extract shale gas, agricultural products like this has become India's most precious commodity. In 2011, American drilling firms invested over $2.5 billion; by 2012, India's guar output had quadrupled, and it had formerly been India's most valued export. For the purpose of extracting shale gas, farmers in Rajasthan, Andhra Pradesh, Karnataka, Haryana, and Punjab are wealthy in growing and exporting guar. As a result, traditional Indian agriculture has given way to consumer-driven agriculture.

As more nations transition from using fossil fuels to more environmentally friendly fuels like biofuels and renewable energy, the demand for biofuels is rising globally. When the government met its goal of having 2% of ethanol blended with gasoline in 2017, ethanol output rose dramatically. In addition, the government wants to produce 20 percent ethanol by 2030 to be blended into gasoline. This plan would lower India's energy import cost and boost agriculture in the country. Agriculture's contribution to energy security, sustainable development, and climate change will open up new avenues for research and agricultural technology advancement. It will also improve the use of agricultural residue, which is currently underutilized, particularly in nations like India.

Buying animals and selling meat is how the meat processing business makes money. After years of consolidation via mergers and acquisitions, more than 80 percent of all beef marketed in the US is now controlled by four beef packers: Tyson, Cargill, JBS USA, and National Beef. Many people and companies in the beef industry are curious as to whether the quantity and size of the packing facilities, or the "structure" of the industry, influences the profitability of the cattle sector and the price of meat in nearby supermarkets.

Purchasing cattle from livestock farmers may be less competitive given the existence of only four big packers. The price of cattle may decline as a consequence of this. Big packers do have some advantageous pricing impacts, however. Large packing factories make it possible for the meat manufacturing process to become more efficient, which lowers consumer prices and encourages people to buy more meat

The price of cattle is under pressure to rise as a result of these higher meat sales. Experts on this complex matter assert that producers, packers, and consumers do not share fairly in the increased profits and expenses resulting from the packing industry's restructuring. A better comprehension of the reasons behind and effects of mergers and acquisitions in almost every segment of the food and agriculture sectors is made possible by the study of economics. Producer is aware of input and output pricing in addition to the prices at which outputs will be sold. Furthermore, in a market with perfect competition, consumers are fully informed about pricing.

The producer is presumed to be fully aware of the function or process by which resources or inputs are converted into commodities or outputs. It is considered that nature doesn't change from year to year. This presumption is obviously broken in the agricultural industry. The whims

of nature affect almost everything a farmer does, affecting both the amount of inputs required and the output levels. It has been shown that farming in the United States does not precisely meet the assumptions of the strictly competitive model. Naturally, the next question is, "Why keep it?" This question has a straightforward response.

The strictly competitive model, with all its flaws, is the most accurate representation of farming of any complete model of economic activity. Clearly, if a monopoly is defined as an industry in which one business dominates, then an individual farm is not a monopoly. Additionally, farmers do not form an oligopoly for the majority of commodities, if an oligopoly is defined as a model in which a small number of companies compete in a market where choices about prices and production made by one company are heavily influenced by those made by other firms. Furthermore, farming often fails to fulfill the fundamental presumption of monopolistic competition, which holds that small variations in product pricing may be sustained over time provided individual producers are able to marginally distinguish their goods from those of a competing company.

As it is the closest to the other models of competitive behavior, the purely competitive model has been kept as the foundational model for application within agricultural production economics to farming. This does not negate the significance of other competitive behavior theories in the next sections of the article. Instead, the strictly competitive model will serve as the foundation for the majority of our study, with adjustments made as necessary to account for the unique characteristics of the issue.Environmental concerns are becoming more and more significant in the agricultural sector. Many Midwestern states are ideal for producing corn (Iowa, Illinois, and Nebraska are usually the top three states in corn output); yet, in order to get rid of weeds, atrazine is a common pesticide used in corn cultivation nowadays. For the maize producers in this region, atrazine offers significant agronomic and financial benefits. Regretfully, when the chemical gets into a home's water supply, it is also linked to health issues for people.

Atrazine has a range of effects. From one perspective, the pesticide effectively suppresses weeds, enabling corn producers to increase yields and profits. However, atrazine contaminates groundwater, which may have negative health effects on downstream water consumers as well as corn farmers and their families. To sort out the implications of this trade-off between environmental damage and economic benefits, economists use a variety of analytical techniques. Knowing how to apply the "optimal" dose of atrazine to cornfields in the American Corn Belt is essential for people, businesses, and governments to make successful decisions. Water supply have voiced concerns about the extensive use of almost all agricultural pesticides. Because of this, the major agrochemical corporations Monsanto, Dow, Novartis, Union Carbide, and so forth are anticipating the day when environmental regulations would likely cause a decline in the usage of chemicals.

For instance, in order to diversify its business and grow beyond agricultural chemicals in the event that regulations were tightened and the chemical business was impacted, Monsanto, a multinational agricultural biotechnology corporation, bought several sizable agricultural seed companies between 2004 and 2008. A major chemical corporation would be wise to diversify their business in this way since future environmental laws and regulations could make producing agricultural chemicals more expensive. Consumer interest in organic food is projected to rise along with income levels, leading a big chemical company like Monsanto to shift from producing chemicals to developing biotechnology. The scope of environmental challenges is

significantly wider. A number of major agricultural companies, including General Mills, Heinz, ConAgra, and Gerber, have made significant investments in organic food products as a result of the recent increase in the consumption of food produced without the use of chemicals.

CONCLUSION

The breadth, complexity, and significance of agricultural economics highlight the critical role that it plays in resolving issues and fostering growth in the agricultural industry. Agricultural economics is an interdisciplinary discipline that relies on concepts from economics, agronomy, sociology, and environmental science. It covers a broad variety of themes, including production, distribution, consumption, market analysis, and rural development. Agriculture economics is significant because it may help allocate resources, direct policy choices, and encourage sustainable agriculture practices. Agricultural economists assist in the creation of practical plans for raising agricultural production, expanding market access, and reducing rural poverty via the analysis of market trends, evaluation of policy effects, and cost-benefit calculations.Moreover, agricultural economics is essential for maintaining environmental sustainability, guaranteeing food security, and improving rural lives. Policymakers, farmers, and other stakeholders can construct resilient and equitable food systems that benefit producers and consumers by understanding the economic drivers of agricultural production and consumption. All things considered, agricultural economics is a useful instrument for tackling world issues like environmental degradation, hunger, and poverty. Societies may strive toward sustainable agricultural growth and guaranteeing the welfare of current and future generations by integrating economic theories and methods into agricultural systems.

REFERENCES:

[1] J. M. Gillespie and M. Bampasidou, “Designing agricultural economics and agribusiness undergraduate programs,” *J. Agric. Appl. Econ.*, 2018, doi: 10.1017/aae.2017.36.

[2] V. J. P. D. Martinho, “Interrelationships between renewable energy and agricultural economics: An overview,” *Energy Strategy Reviews*. 2018. doi: 10.1016/j.esr.2018.11.002.

[3] B. K. Coffey and A. Barkley, “Evaluation of Teaching in Departments of Agricultural Economics,” *NACTA J.*, 2018.

[4] A. Josephson and J. D. Michler, “Viewpoint: Beasts of the field? Ethics in agricultural and applied economics,” *Food Policy*, 2018, doi: 10.1016/j.foodpol.2018.08.001.

[5] G. P. Herrera *et al.*, “Econometric analysis of income, productivity and diversification among smallholders in Brazil,” *Land use policy*, 2018, doi: 10.1016/j.landusepol.2018.02.025.

[6] A. N. González and G. F. Alfonso, “Recent transformations in Cuban agricultural policy and impacts on markets and production,” *Elementa*, 2018, doi: 10.1525/elementa.323.

[7] N. C. Rao, S. Bathla, A. Kumar, and G. K. Jha, “Agriculture and sustainable development goals: an overview and issues,” *Agric. Econ. Res. Rev.*, 2018, doi: 10.5958/0974-0279.2018.00016.2.

[8] I. Musafiri and P. Sjölander, "The importance of off-farm employment for smallholder farmers in Rwanda," *J. Econ. Stud.*, 2018, doi: 10.1108/JES-07-2016-0129.

[9] L. Muralikrishnan and R. Singh, "Social capital based agripreneurship models for inclusive and sustainable development in India," *Trends Biosci.*, 2018.

[10] N. Iqbal and M. H. Sial, "Semi-parametric analysis of agricultural production under dichotomy of inputs," *Agric. Econ. (Czech Republic)*, 2018, doi: 10.17221/327/2016-AGRICECON.

CHAPTER 3

INVESTIGATION OF AGRICULTURAL LINKAGES WITH OTHERSECTORS

Dr. Vijay Srivastava, Associate Professor,
School of Science & Humanities, Maharishi University of Information Technology, Uttar Pradesh, India.
Email Id-vijay.srivastava@muit.in

ABSTRACT:

In order to demonstrate the interdependence and significance of agriculture in larger economic systems, this article investigates the connections between agriculture and other industries. With strong connections to a number of businesses, such as food processing, manufacturing, transportation, and services, agriculture functions as a fundamental industry. This study investigates the nature and breadth of agricultural links with other sectors, looking at how agricultural operations affect and are impacted by downstream and upstream businesses. It does this by drawing on economic theories, empirical research, and case analysis. It looks at how these connections affect the economy, society, and environment while highlighting how important agriculture is to rural development, job creation, and economic progress. This study attempts to increase awareness of the complex linkages between agriculture and other sectors and their consequences for overall economic growth and sustainability via a thorough investigation.

KEYWORDS:

Agriculture, Economic Development, Interconnectedness, Linkages, Sectoral Analysis.

INTRODUCTION

Over time, the Indian economy underwent a structural transformation, transitioning from a mostly agro-based economy in the 1970s to a largely service-based economy today. The production and demand relationship in the Indian economy saw a significant shift as a result of this structural shift and the erratic pattern of sectoral expansion.The landscape of the Indian agricultural industry has transformed as a result of the WTO reforms and the country's absorption into the global economy. Given that India is dedicated to attaining the Sustainable Development Goals (SDGs), the significance of agriculture and its sustainable development cannot be understated[1], [2]. A robust backward and forward relationship between agriculture and other economic sectors is essential to the process of economic growth.

As a result, it is important to consider the agricultural sector's concurrent expansion in conjunction with its connections to other economic sectors. Basic food and materials that are mined from the soil are the lifeblood of the economy. The undertakings associated with the Agriculture, mining, forestry, grazing, fishing, and quarrying are all considered fundamental sectors. This industry also includes food processing and packaging. Because completed items are made from raw materials that are harvested by the primary sector, this industry is reliant on it. This industry includes the manufacture of automobiles, textiles, metals and smelting, energy utilities, chemical and engineering industries, aerospace manufacturing, breweries and bottlers, construction, and shipbuilding. Also referred to as the service sector, the tertiary sector depends

on the secondary sector. This industry sells commodities that the primary sector extracts and the secondary sector converts into finished items. Both the general public and companies are served by this sector's services. This sector includes operations in retail and wholesale sales, dining establishments, banking, media, tourism, transportation and distribution, clerical services, insurance, health care, and law[3], [4]. The majority of economic theories split an economy into three sectors, although some even split it into four or five. This sector, which encompasses industries like government, libraries, culture, scientific research, education, and information technology, is closely related to the tertiary sector.

Agriculture becomes more productive as a result of the research and innovation carried out by these activities. This industry develops innovative agricultural technologies to maximize productivity and make the most use of limited resources. Because industrialization is predicated on significant expansion, it may be limited if food supplies aren't increased. Agriculture supplies the industry with food, raw materials, and products. Food prices may increase significantly if supply cannot keep up with demand, which would further pressure wage rates and have a negative impact on investment, growth, and industrial profits[5], [6].

On the other hand, the industry will use the great majority of unskilled and semi-skilled workers in the farm sector as labor. However, industry provides agriculture with industrial inputs like equipment, fertilizers, and insecticides. As a result, there exist links and dependencies between industry and agriculture. Emerging nations are dependent on the agriculture sector, which produces the majority of their national revenue. A well-developed and interconnected agricultural sector has the potential to contribute positively to capital creation. The fact that agriculture has a lower capital-output ratio than other industries lend credence to this claim. As a result, increasing agricultural output has a lot of potential since it only needs a little financial investment. Primary goods are what agriculture produces, and they are exported to bring in foreign money. The workers in agriculture and those reliant on agriculture are the customers of industrial products, which account for a significant portion of market demand and fuel expansion in the manufacturing and related industries. The banking industry is persuaded to lend more to the agricultural sector by the shifting policies and environment[7], [8].

In addition, banks are providing training and establishing consultancies for the farming community in order to facilitate the financial integration of agriculture into society and to sell agricultural products. The importance of the banking industry's role in India, where agriculture is heavily dependent on the monsoon, has increased from lending to consulting. Since American firms employ guar to extract shale gas, agricultural products like this has become India's most precious commodity. In 2011, American drilling firms invested over $2.5 billion; by 2012, India's guar output had quadrupled, and it had formerly been India's most valued export. For the purpose of extracting shale gas, farmers in Rajasthan, Andhra Pradesh, Karnataka, Haryana, and Punjab are wealthy in growing and exporting guar. Indian agriculture has shifted as a result, moving from traditional to consumer-driven agriculture[9], [10].

As more nations transition from using fossil fuels to more environmentally friendly fuels like biofuels and renewable energy, the demand for biofuels is rising globally. When the government met its goal of having 2% of ethanol blended with gasoline in 2017, ethanol output rose dramatically. In addition, the government wants to produce 20 percent ethanol by 2030 to be blended into gasoline. This plan would lower India's energy import cost and boost agriculture in the country.The contribution of agriculture to energy security, sustainable development, and

climate change will open up new avenues for research and agricultural technology advancement. It will also result in better uses of agricultural residue that is currently underutilized, particularly in a nation like mine. Agricultural economics is seen as an applied science by some agricultural economists. Applying the ideas of a pure science to a specific circumstance is known as applied science. General economic concepts are changed in agricultural economics. Consequently, it may be said that agricultural economics is a subfield of pure science rather than an applied science. As such, it provides an explanation of the causal linkages between different economic factors that are involved in agriculture, which may be used to the resolution of a variety of agriculturally-related issues. Basic materials and food that are mined from the soil are the lifeblood of the economy. The primary sector includes the following industries: mining, forestry, agriculture, fishing, and quarrying. This industry also includes food processing and packaging. The knowledge-oriented economic sectors that comprise the quaternary sector, sometimes referred to as the knowledge-based economy, include information technology, research and development, consulting, education, financial planning, blogging, and designing.

DISCUSSION

Every one of these instances highlights a problem that impacts the lives of all customers. For those who want to comprehend the origins and effects of these circumstances and occurrences, economics might be useful. Later chapters may sometimes make mention of these concerns. A better knowledge of agriculture, consumer decisions, and our complex society is made possible by the study of economics. Decisions about one's company, profession, and personal life are enhanced by using economic concepts and the framework of economic analysis. Having a basic understanding of a few economic concepts makes decision-making easier. This book aims to assist readers in "thinking like economists." Simple economic concepts will be used to analyze events and problems that show up in newspapers, on television, and online throughout the book. Accurate information is essential for success in the quickly evolving global agricultural economy, as is the capacity to understand how these changes affect people's lives. A clear and exact approach to handling current events, professional choices, and personal issues is frequently made possible by having a solid understanding of economics.

It is crucial to remember that complicated and persistent issues and challenges are what define the human experience. Although economics helps us make better decisions, it hasn't yet found a solution to the underlying issues of illness, scarcity, and restriction. Nonetheless, a great deal of economists see recent history as a victory of the economic paradigm and a significant advancement in the length of human life and standard of living. These tendencies are probably here to stay, led by wise economic decisions. Anyone who purchases goods, whether it a company, organization, or individual, is considered a consumer.

Food products like milk and pepperoni pizza are purchased by consumers. In addition, they purchase real estate, laptops, mobile phones, homes, and apparel. Because their purchases send signals to manufacturers directing what items to put on the market, consumers are the engine of the economy.Most people are both producers and consumers at the same time. To earn a livelihood, a wheat farmer in North Dakota grows wheat and sells it. The same wheat grower purchases groceries (whole wheat bread), clothes (Wranglers), and maybe a pick-up vehicle (Ford) from the store. Even though the majority of people do both production and consumption, studying the two tasks separately makes understanding economic concepts much easier. Economics is a social science that studies issues that have a significant impact on public

policy.Regarding topics like the minimum wage, access to healthcare, affirmative action, NAFTA, welfare (including Social Security), animal rights, the environment, the War on Terror, and similar matters, there are a lot of opposing viewpoints. Price adjustments may have positive and negative effects simultaneously. The producer of the item benefits from a price rise, while the buyer suffers consequences. In a similar vein, oil businesses see an increase in profits when the price of oil rises. In the meanwhile, the situation worsens for farmers who have to buy oil and goods derived from it (diesel, gasoline, fertilizer, chemicals, etc.). Because "facts" may mean various things to different people, economists must exercise caution when forming normative conclusions and assertions.

Normative statements are avoided by economists in economic discourse since what is beneficial for one person may not be for another. The fact that the world's four great religions—Buddhism, Islam, Christianity, and Judaism all advocate giving rather than receiving raises an intriguing question about scarcity. The economic tenet that "people always desire more" seems to be in direct opposition to this significant ethical precept. Mother Teresa was a Roman Catholic nun who spent her whole life serving Calcutta, India's impoverished. Was Mother Teresa influenced by the maxim "more is better than less Indeed, additional funds would be nice for philanthropists as well in order to aid the underprivileged and feed the hungry. The universal yearning for more than what is now provided unites individuals of all backgrounds and beliefs.

Economists discuss "goods" in great detail. A good qualifies as an economic good if it is rare. A scarce good is one that people have an unquenchable need for, such food, clothing, housing, time, and vacations. Noneconomic things are free things that are accessible to everyone in any amount and are not scarce. A customer is not charged for as much as they want. Since it is free, taking in a stunning sunset is a noneconomic good. Since everyone has access to an infinite amount of air to breathe, it is free. On the other hand, not all situations may be considered free goods. If air were free, more people would use it such as test pilots, scuba divers, mountain climbers, and submariners. Is there really no air in a lecture hall?

It has an indirect cost since it has to be heated or cooled before being brought into the lecture hall.Not all clean air is given away: if more clean air were accessible, residents of cities would prefer it. The basic issue with economics is that "scarcity forces us to choose." Economics is defined as "the allocation of scarce resources among competing ends" in a definition that is often used. There is always a continual struggle to make decisions about what to purchase, how to spend one's time, and what kind of profession to pursue. Making wise judgments is at the heart of economics. People who study and use economics are able to make better judgments in their personal, professional, and commercial lives.In the United States, the hog and cattle industries often operate in an environment that is more closely aligned with pure competition, when many agricultural enterprises accept prices that are determined by the aggregate supply and demand for pigs and cattle. But there aren't many people who are really in the market for pigs and cattle, so the pure competition concept isn't quite applicable.

There is no one company big enough to control the price of the product being produced, therefore the company may sell as much as it wants at the prevailing market price. The farmer may sell as much as they like at the going rate for a lot of agricultural items.When it comes to the production of commodities like wheat, maize, cattle, and pig, farmers are price takers rather than price makers. On the other hand, in certain cases, farmers may have some influence over the price they get due to the scarcity of farms.The final result is uniform. According to the

homogeneity assumption, every company in the sector produces the same product. Because there is nothing to set one company's work apart from another, advertising is thus unnecessary. In farming, this presumption is often accurate. The number 2 corn produced by different producers is essentially the same. There have been some initiatives to differentiate some goods, such as Sunkist oranges grown by the farmers' cooperative and branded chicken produced by individual broiler producers.

Free movement of resources (inputs or components of production) occurs both within and outside of farming because there is free access and exit. In agriculture today, the free-mobility assumption is seldom satisfied. A farmer may have been able to start out with very little money and a lot of desire in the past. A typical farm may very easily be a million-dollar company these days. It is hard to understand how an industry where a single company can need a million dollars in initial capital can have free admission and exit.

Over the last ten years, inflation has significantly raised the initial capital needs for farming, which has affected resource mobility.Resources should be able to move freely in the absence of artificial constraints like government intervention. In farming, there are several artificial limitations. The federal government has influenced production choices for almost all major agricultural commodities as well as a large number of other commodities, and this involvement has continued. The amount of commodities like milk and oranges produced has been greatly impacted by agricultural cooperatives.Government initiatives can have a significant impact on grain output in the United States.

The feed grain and wheat programs are two such examples. In the case of milk production, dairy producers' pricing is mostly set by the government.The government is deeply engaged in the economic environment for several commodities with low output, in addition to key agricultural commodities.The producers of hops in Washington state and burley tobacco in central Kentucky, for instance, operate in an environment where the federal government controls a significant portion of who grows what and how much.Every factor that matters to both the manufacturer and the customer is known for sure.There are economists who make a distinction between perfect and pure competition.

In almost every country in the world, the agricultural sector depends heavily on the production of food. When productivity rises and production grows, farmers' incomes rise as well. Food demand rises significantly in tandem with growth in per capita income. The need for food rises in tandem with the population growth in cities and industrial regions. These all point to the reality that agricultural production should produce more than is needed to meet the demand for food. However, food costs will rise significantly if there is a shortage of agricultural supplies in comparison to demand. However, food imports may come at the expense of capital items that are crucial for growth in an attempt to avoid local shortages and price increases. Policies such as price control, mandatory food collection, and rationing may also be implemented. These all serve to emphasize how important it is for LDCs to enhance their food production.

A rise in agricultural surplus bolsters rural consumers' buying power, which is essential for the development of industry. The market for produced items is little in an impoverished economy. This is due to the low buying power of the populace, which is mostly made up of two-thirds to four-fifths of peasants, agricultural laborers, and their families.The absence of actual buying power is further highlighted by agriculture's poor production. Consequently, the primary cause of the poor investment returns is the market's modest size.

Rural buying power will rise as a consequence of increased agricultural production and output. This would raise the size of the market, boost demand for produced products, and lead to the growth of the industrial sector. Additionally, as more agricultural surplus is transported to cities and manufactured goods is sent to rural regions, there will be a greater need for transportation and communication infrastructure. The consequences of secondary and tertiary sector growth will result in increased profits over time, whether they are operated in the public or private sector. These earnings, which would be reinvested, would cause the rate of capital creation to rise even more. The Russian-American economist Simon Smith Kuznets defined "market contribution" as agriculture's exchange with other industries.

Developing nations often concentrate on manufacturing fewer agricultural goods for export. The development of exportable items' productivity and production leads to a rise in their exports, which in turn boosts foreign currency revenues. Because of this, agricultural surplus generates capital creation in the form of foreign currency, which is then used to purchase capital. The share of agricultural exports in the nation's overall exports is predicted to decline as industrialization leads to greater economic growth as agricultural products are needed in large amounts for local manufacturing of goods in order to prevent imports. These goods serve as import alternatives and maintain foreign exchange.

Increased foodgrain surpluses on the market might also result in net foreign currency savings. Being self-sufficient in food production is the aim of the economy. As food and export crop production rises and further propels the growth of other economic sectors, foreign currency may also be gained and preserved. In addition to increasing the productivity of existing industries, foreign currency profits may create new ones by bringing in scarce raw materials, cutting-edge machinery, capital equipment, and technological know-how. This is what Kuznets refers to as the "product contribution" of agriculture, which boosts the economy's rise in net production per capita.

An impoverished nation needs a sizable quantity of cash to build and develop its infrastructure, as well as to enhance and advance its heavy and basic industries. Capital may be secured during the early phases of growth by increasing the rural sector's marketable excess of agricultural goods. Yet, this shouldn't have an impact on the rural population's level of consumption. According to Bruce F. Johnston and John W. Mellor's book The Role of Agriculture in Economic Development, "an increase in agricultural productivity implies some combination of reduced inputs, reduced agricultural prices, or increased farm receipts." When labor is used more for building than for agricultural output, it may be a significant source of capital creation. This option is constrained, too, since building projects need skilled labor, and hiring farm laborers would mean training them a process that would cost additional money and time.

CONCLUSION

Examining how agriculture interacts with other industries highlights how important agriculture is to advancing sustainability, creating jobs, and advancing economic growth. Agriculture and other sectors are closely related, creating essential connections that support stability and development in the economy as a whole. Agriculture provides raw materials, inputs, and market possibilities that have a substantial knock-on impact on businesses including food processing, manufacturing, and retail. In a similar vein, agricultural output is supported by upstream businesses like agrochemicals, equipment, and infrastructure, which raise productivity and efficiency. Moreover, agriculture is essential to rural development since it provides social services, infrastructure, and

means of subsistence. The connections that exist between agriculture and other industries help to raise income levels, reduce poverty, and enhance living conditions in rural areas. These connections do, however, come with drawbacks, including resource depletion, environmental deterioration, and susceptibility to outside shocks. Integrated policies and methods that support value addition, diversification of rural economies, and sustainable farming practices are needed to address these issues. To put it simply, promoting equitable and sustainable economic growth requires an awareness of and ability to capitalize on the connections between agriculture and other industries. Policymakers, companies, and stakeholders may harness the potential of agriculture to propel prosperity and well-being for society at large by encouraging cross-industry synergies and cooperation.

REFERENCES:

[1] T. SISAY, "Review: Agriculture-industry linkage and technology adoption in Ethiopia: Challenges and opportunities," *Trop. Drylands*, 2018, doi: 10.13057/tropdrylands/t020104.

[2] O. Ecker, "Agricultural transformation and food and nutrition security in Ghana: Does farm production diversity (still) matter for household dietary diversity?," *Food Policy*, 2018, doi: 10.1016/j.foodpol.2018.08.002.

[3] C. N. Jona and S. E. Terblanché, "Proposed Framework To Improve The Coordination Of And To Strengthen Agricultural Support Services Linkages In The Oshikoto Region In Namibia," *South African J. Agric. Ext.*, 2018, doi: 10.17159/2413-3221/2018/v46n2a460.

[4] Y. A. Yigezu *et al.*, "Enhancing adoption of agricultural technologies requiring high initial investment among smallholders," *Technol. Forecast. Soc. Change*, 2018, doi: 10.1016/j.techfore.2018.06.006.

[5] K. Kaur and P. Kaur, "Agricultural Extension Approaches to Enhance the Knowledge of Farmers – A Review," *Int. J. Curr. Microbiol. Appl. Sci.*, 2018, doi: 10.20546/ijcmas.2018.702.289.

[6] S. Saghaian, M. Nemati, C. Walters, and B. Chen, "Asymmetric price volatility transmission between U.S. Biofuel, Corn, and Oil Markets," *J. Agric. Resour. Econ.*, 2018, doi: 10.2139/ssrn.2906336.

[7] V. R. Reddy, D. G. F. Cunha, and M. Kurian, "A water-energy-food nexus perspective on the challenge of eutrophication," *Water (Switzerland)*. 2018. doi: 10.3390/w10020101.

[8] S. R. Carpenter, E. G. Booth, and C. J. Kucharik, "Extreme precipitation and phosphorus loads from two agricultural watersheds," *Limnol. Oceanogr.*, 2018, doi: 10.1002/lno.10767.

[9] K. A. G. Kremling *et al.*, "Dysregulation of expression correlates with rare-allele burden and fitness loss in maize," *Nature*, 2018, doi: 10.1038/nature25966.

[10] E. O. Benjamin and J. Sauer, "The cost effectiveness of payments for ecosystem services—Smallholders and agroforestry in Africa," *Land use policy*, 2018, doi: 10.1016/j.landusepol.2017.12.001.

CHAPTER 4

INVESTIGATION OF THE CONCEPT OF AGRICULTURE AND ECONOMIC DEVELOPMENT

Dr. Vijay Srivastava, Associate Professor,
School of Science & Humanities, Maharishi University of Information Technology, Uttar Pradesh, India.
Email Id-vijay.srivastava@muit.in

ABSTRACT:

In order to better understand the complex link between agricultural operations and overall economic growth, this article investigates the idea of agriculture and economic development. An essential component of economic growth, agriculture is crucial for creating jobs, revenue, and food security, especially in emerging nations. This study examines the many ways that agriculture contributes to economic development, using case studies, empirical research, and economic theory. It looks at how market integration, agricultural productivity, and technology improvements affect general economic development and the fight against poverty. Furthermore, it looks at how agriculture contributes to equitable growth, rural development, and environmental sustainability. This research seeks to expand knowledge of the crucial role that agriculture plays in propelling economic growth and determining the paths taken by civilizations via an extensive examination.

KEYWORDS:

Agriculture, Economic Development, Food Security, Poverty Reduction, Rural Development.

INTRODUCTION

Reducing agricultural prices in order to stimulate capital creation is likewise impractical when price increases are inevitable. Even if agricultural prices may be lowered in the future, democratic nations may choose not to implement this strategy for political reasons. Therefore, stabilizing the price of agricultural goods would be a feasible solution to this problem. An further significant source of capital formation Consequently, agricultural taxes is crucial for raising agricultural surplus, which helps to accelerate economic growth, in nations where agriculture dominates the economy[1], [2]. When resources are moved from one sector to another in agriculture, Kuznets refers to this as "factor contribution.

In rural regions, agriculture is also essential for creating and growing job prospects. The growth in agricultural production and farm revenue is accompanied by a rise and diversification of non-farm rural employment. The majority of marginal and landless farmers' work is in non-agricultural pursuits that meet local demand. Additionally, agricultural surplus contributes to improved rural wellbeing by raising rural incomes. Farmers begin to consume a greater variety of nutrient-dense foods, such milk, ghee, premium cereals, fruits, etc., as a consequence of their higher earnings. They also begin to construct nicer, more contemporary homes. By investing in cutting-edge communication and transportation infrastructure and using services like banking, irrigation, schools, and health centers, they also raise their level of life. One of the main characteristics of economic progress is the shift of agriculture from a major sector, particularly in developing and rising nations, to a minor one in industrialized nations[3], [4]. A byproduct of

economic progress is agricultural decline, which occurs as it does. The Indian populace that depends on agriculture for more than 50% of their income is especially susceptible to a collapse in this industry. In the last 20 years, India's economic growth and reforms have reduced the agricultural sector's share of the country's GDP to only 15%. In India right now, agriculture is considered to be the least desirable industry for employment. Even with more agricultural growth since independence, India still hosts more than 25% of the world's hungry population. Thus, it begs the question: Is agriculture in India paradoxical?

The precise cause of the inverse link between agricultural decline and economic progress has long been a mystery, despite the efforts of several ideas to explain it. Consequently, in order to comprehend the relationship between agricultural decline and economic progress, we must categorize the causes and increase our grasp of The term "Green Revolution" describes a time when the introduction of contemporary techniques, including high-yielding variety seeds, irrigation, tractors, herbicides, and fertilizers, significantly changed Indian agriculture. There is no doubting that the Green Revolution was backed by many economists, as seen by the rise in agricultural yield brought about by the use of hybrid seeds, fertilizers, and pesticides. The seed sector then welcomed multinational corporations (MNCs) like Bayer and Monsanto. Genuine seeds are no longer accessible because these multinational corporations (MNCs), who arrived with the sole intention of making money, sold Indian farmers fake varieties of seeds. As a result, the market for real seeds crashed and most farmers stopped purchasing them. Although the hybrid seed boosts agricultural output temporarily, it ultimately jeopardizes productivity. Furthermore, overuse of pesticides and fertilizers over time deteriorates the quality of the groundwater and soil. Additionally, farmers stopped using the previous crop rotation method and started relying more on hybrid seeds[5], [6].

BT cotton is the finest example to support this claim. Ultimately, the decline of conventional farming and agricultural practices was caused by a lack of knowledge and access to contemporary farming techniques and technology. Soil and irrigation vulnerabilities to Green Revolution practices meant that agricultural progress was not sustainable alongside economic development India has a large population, making land a scarce resource for agriculture. India has a lower average landholding than the US and China. According to the Radha Krishna Committee study, "Report on Agriculture Indebtedness by Expert Group," the top landholders own between 10 and 54 percent of all agricultural land. Furthermore, fewer than 0.4 hectares of land are owned by 60% of Indian farmers. This discovery was made public in The Hindu Group's "Survey of Indian Agriculture 2011." Farmers that have unequal access to land are less productive and make less money overall.

The need for food rises in tandem with the population growth in cities and industrial regions. These all point to the reality that agricultural production should produce more than is needed to meet the demand for food. However, food costs will rise significantly if there is a shortage of agricultural supplies in comparison to demand. However, food imports may come at the expense of capital items that are crucial for growth in an attempt to avoid local shortages and price increases. Policies such as price control, mandatory food collection, and rationing may also be implemented. These all serve to emphasize how important it is for LDCs to enhance their food production. A rise in agricultural surplus bolsters rural consumers' buying power, which is essential for the development of industry. The market for produced items is little in an impoverished economy. This is due to the low buying power of the populace, which is mostly made up of two-thirds to four-fifths of peasants, agricultural laborers, and their families[7], [8].

The absence of actual buying power is further highlighted by agriculture's poor production. Consequently, the primary cause of the poor investment returns is the market's modest size.

DISCUSSION

Rural buying power will rise as a consequence of increased agricultural production and output. This would raise the size of the market, boost demand for produced products, and lead to the growth of the industrial sector. Additionally, as more agricultural surplus is transported to cities and manufactured goods is sent to rural regions, there will be a greater need for transportation and communication infrastructure. The consequences of secondary and tertiary sector growth will result in increased profits over time, whether they are operated in the public or private sector. These earnings, which would be reinvested, would cause the rate of capital creation to rise even more. The Russian-American economist Simon Smith Kuznets defined "market contribution" as agriculture's exchange with other industries[9], [10].

Developing nations often concentrate on manufacturing fewer agricultural goods for export. The development of exportable items' productivity and production leads to a rise in their exports, which in turn boosts foreign currency revenues. As a consequence, agricultural excess leads to capital creation in the form of foreign currency, which is then used to purchase capital goods. The share of agricultural exports in the nation's overall exports is predicted to decline as industrialization leads to greater economic growth as agricultural products are needed in large amounts for local manufacturing of goods in order to prevent imports. These goods serve as import alternatives and maintain foreign exchange.

Increased foodgrain surpluses on the market might also result in net foreign currency savings. Being self-sufficient in food production is the aim of the economy. As food and export crop production rises and further propels the growth of other economic sectors, foreign currency may also be gained and preserved. In addition to increasing the productivity of existing industries, foreign currency profits may create new ones by bringing in scarce raw materials, cutting-edge machinery, capital equipment, and technological know-how. This is what Kuznets refers to as the "product contribution" of agriculture, which boosts the economy's rise in net production per capita.

An impoverished nation needs a sizable quantity of cash to build and develop its infrastructure, as well as to enhance and advance its heavy and basic industries. Capital may be secured during the early phases of growth by increasing the rural sector's marketable excess of agricultural goods. Yet, this shouldn't have an impact on the rural population's level of consumption. According to Bruce F. Johnston and John W. Mellor's book The Role of Agriculture in Economic Development, "an increase in agricultural productivity implies some combination of reduced inputs, reduced agricultural prices, or increased farm receipts."

When labor is used more for building than for agricultural output, it may be a significant source of capital creation. This option is constrained, too, since building projects need skilled labor, and hiring farm laborers would mean training them—a process that would cost additional money and time. Reducing agricultural prices in order to stimulate capital creation is likewise impractical when price increases are inevitable. Even if agricultural prices may be lowered in the future, democratic nations may choose not to implement this strategy for political reasons. Therefore, stabilizing the price of agricultural goods would be a feasible solution to this problem. The population's reliance on agriculture, expressed as a percentage, makes them particularly

susceptible to a downturn in the industry. In the last 20 years, India's economic growth and reforms have reduced the agricultural sector's share of the country's GDP to only 15%. In India right now, agriculture is considered to be the least desirable industry for employment. Even with more agricultural growth since independence, India still hosts more than 25% of the world's hungry population. Thus, it begs the question: Is agriculture in India paradoxical? The actual cause of the inverse link between agricultural decline and economic progress has long been a mystery, despite the efforts of several ideas to explain it. The term "Green Revolution" describes a time when the introduction of contemporary techniques, including high-yielding variety seeds, irrigation, tractors, herbicides, and fertilizers, significantly changed Indian agriculture. There is no doubting that the Green Revolution was backed by many economists, as seen by the rise in agricultural yield brought about by the use of hybrid seeds, fertilizers, and pesticides.

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The majority of India's irrigation activity is derived from groundwater, which accounts for 61% of the country's agricultural output. Furthermore, only 29% of irrigation is provided by river and canal water systems; the remaining 79% is provided by monsoon rainfall, which occurs from July to September. The depletion of groundwater supplies due to the growing demand for irrigation causes the water level to drop.

Contrarily, there is no motivation for groundwater conservation. Cash crops, such as cotton and sugarcane, need more water. The water bodies are also being contaminated by the chemicals used in pesticides and fertilizers. Consequently, it is necessary to responsibly utilize groundwater and address the water problem using sustainable practices like rainwater gathering, which has the potential to replenish groundwater, and drip irrigation, which has the potential to transform irrigation in India going forward. Providing farmers with credit facilities has never been easy, particularly in emerging and impoverished nations. Farmers still have to rely on moneylenders to

get loans, which means they have to pay high interest rates. Banks may refuse to provide insurance to farmers out of concern that they won't pay back their loans. The government has recently introduced debt forgiveness programs to lessen farmers' suffering.

As a result, one might argue that agriculture has evolved into a high-risk, low-productivity industry. Upon completion of crop harvesting, the farmer must locate a market for their produce. It should be highlighted that market cartels and brokers are forcing farmers to sell at lower prices, which is eating away at their profitability. Farmers are forced to sell their produce at whatever price they get from intermediaries because they lack adequate storage facilities.

Farmers must have access to adequate food storage facilities and supply chain management in order to get a decent price for their produce.In addition, the majority of farmers in our nation lack formal education and sufficient knowledge of agricultural sales procedures. As a result, they are dependent on the market intermediaries. For farmers in India, the battle to recover at least the maximum support price (MSP) and the regular price fluctuations will always be difficult. Recently, rules favoring farmers have been introduced by the national government. Farmers are allowed to sell their product outside of 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 may engage into a contract farming agreement with the buyer for the purchase of crops at pre-approved rates under the Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Bill, 2020. Items such as onions, grains, pulses, potatoes, edible oilseeds, and oils are no longer considered essential under the Essential Commodities (Amendment) Bill, 2020. However, there have been several demonstrations from farmers all throughout the country, particularly from Punjab and Haryana, against the presentation of the legislation and the adoption of the Act. In almost every country in the world, the agricultural sector depends heavily on the production of food. When productivity rises and production grows, farmers' income rises along with it. Food demand rises significantly in tandem with increases in per capita income. Rural buying power will rise as a consequence of increased agricultural production and output. This would expand the market, boost the demand for produced products, and lead to the growth of the industrial sector.

Prices have an impact on consumer and producer incentives and behavior. Resources do not always flow to the manufacturer receiving the best return on investment or to the customer willing to pay the highest price in a command economy. Allocate resources by the person in control. Examples of command economies include the former Soviet Union, where senior Communist Party members employed a complex committee structure to select how resources would be distributed, and Cuba, where resources are distributed by a dictator named Raul Castro, Fidel Castro's brother. Many socialist nations, like Sweden, distribute resources via an elected assembly of decision-makers. Nonetheless, the use of resources may be commanded by a despot with total authority over the financial system.

In both scenarios, judgments are made based on factors other than price and resources are distributed at the whim of one or more typically limited number of decision makers. Resources don't always go to the application that yields the best results. Living in a command economy may make individuals want more fruits and veggies. These fruits and veggies won't be grown if the government has different objectives from the people. Instead of using land, labor, and other resources to produce fruits and vegetables, beef or pork may be produced. Producing crops may

provide larger economic benefits, but the group making the decisions will choose whether to produce meat, veggies, or fruit.Market-based economies that exhibit political and economic liberty include those found in the United States, Australia, Canada, Japan, and European Union (EU) member states. Countries such as China, North Korea, and Cuba do not share the same level of political and economic freedom. Since the 1980s, China has been transforming its economy into a market-based one, but it still lacks numerous political liberties and rights. The majority of economic systems are mixed economies, which include aspects of command and market economies. There are several marketplaces in the US without any government interference. On the other hand, sectors including banking, transportation, and agriculture are often supported and subject to regulations. Consequently, even though the US takes pleasure in being a capitalist democracy, its economy is really a mixed economy. China and the former Soviet Union (now Russia) were long seen as command economies, with elected officials deciding what needed to be produced and who would purchase it. But starting in the 1980s, developments in both nations shifted their economies toward free markets, especially in the agricultural sector. These two countries have mixed economies, which include aspects of command and market economies. This model may be used to any kind of economy, whether it is mixed, market, or command. The people who make up the economy are split into two groups: households, or consumers, and firms, or producers. Producers and consumers are one and the same in a subsistence economy, much like Robinson Crusoe marooned on a desert island: they can only eat what they create.

People must create all of their own food, clothes, and shelter if there is no commerce. Voluntary trade is a market economy's main characteristic. It is not necessary for producers or consumers to purchase or sell anything. Despite this, customers still need for the products and services they want to buy and use to be created. Production requires the usage of resources. This book's major goal is to demonstrate how economic theories, models, and methodologies may help us understand agriculture. There is a difference in emphasis between understanding economic concepts and using them in the agriculture industry. It's useful to know some background knowledge on American modern agriculture.

We start by outlining five trends that are particularly significant to the agriculture sector before going back to the economics research. Manufacturing Currently, 2 percent of US workers are employed in agriculture; but, the food and fiber business, which encompasses processing, transportation, retailing, and a host of other activities, employs around 16 percent. Despite the fact that "everyone eats," the number of people working in producing agriculture has been declining over the last century. There has been a significant push in the last several decades toward automation, or the replacement of laborers with machines. Relative price fluctuations are the cause of this pattern. Machines will be employed if their cost is lower than that of manpower. For example, cotton is picked using specialized machinery. Although they are pricey devices, their use is much less expensive than employing big teams of people to manually select cotton. McDonald's, the massive fast-food chain, employs thousands of workers at low pay. McDonald's will employ fewer people and utilize more automation to run the automated drink dispensers and French fry machines if the minimum wage is raised. Economic data is often summarized and interpreted using graphs. Graphs are helpful tools to identify the most crucial elements of a situation or choice since they can convey a lot of information in a little amount of space. A graph is a "model," and modeling is often used in economic research. Graphs make data presentation simpler, yet in order for social scientists to comprehend the actual world, it must be made

simpler. Most graphs let the user examine the connection between two variables while maintaining the same values for all other variables. A particular term for keeping everything else constant is Ceteris Paribus, which means "holding everything else constant" in Latin. A large portion of economics is concerned with figuring out how two variables interact. The demand curve, one of the most important ideas in economics, is shown in the following. The link between an economic good's price (P) and quantity sold (Q) is shown by the demand curve. A graph holds constants for time, location, prices of other items, income, and other variables, but isolates the connection between quantity and price (ceteris paribus). Price and quantity are two variables that may be shown concurrently on a two-dimensional surface, such a notebook page or a blackboard. While deciding which crop to plant for production, the fact that the market price of wheat is $3/bushel is not very relevant. Farmers must be aware of the cost of wheat in comparison to other crops like maize, cotton, and hay. This is due to the fact that the farmer may use the area to grow a different kind of crop. A wise economic choice is one that considers the relative costs of all crops that may be produced on the land in a reasonable amount since the farmer wants to make the most profit feasible from this land. Producers would often raise their output of an item in response to a relative price rise since doing so will boost their profits. On the flip side, consumers will purchase less goods in response to a price rise. Assume that all agricultural prices rise by the same proportion as a result of rising oil costs. In this instance, while the absolute prices of all crops rise, their relative values stay the same. The relative pricing did not change since all of the prices increased at the same time.

Think about this: nothing would happen in an economy if all prices doubled. This doesn't appear to make sense at first sight. On the other hand, relative prices stay constant if it is known that all prices in the economy rose by the same proportion, in this example doubled, meaning that neither producers nor consumers would alter their choices. Everything would be equal in price with respect to everything else.According to another data, prices would rise across the board by 10% if inflation were to reach 10% for all items in the economy. Wages and incomes would rise in line with the price of commodities as this would apply to all items, including labor services. Since every object in the economy would continue to have the same relative worth, nothing would happen. However, consumers would use more energy from other sources and less oil if there were a conflict in an oil-producing area close to the Persian Gulf, driving up oil prices.

CONCLUSION

The examination of the relationship between agricultural and economic development emphasizes how important agriculture is to rural development, poverty alleviation, and economic progress. In addition to providing food and raw resources, agriculture also acts as a catalyst for social progress and greater economic change. Enhancements in agricultural production, technical advancements, and market integration have significant effects on the growth of the economy as a whole, enabling millions of people to escape poverty and raise their quality of life. Furthermore, agriculture is essential to maintaining food security since it offers a steady supply of food to support expanding populations. Moreover, agriculture is a major force behind the development of rural communities, bringing infrastructure, social services, and jobs to these areas. Agriculture plays a vital role in creating more resilient and equitable communities via encouraging inclusive development and mitigating regional inequities.There are other difficulties facing agriculture, such market instability, climate change, and environmental degradation, which call for coordinated actions by communities, companies, and politicians. The long-term sustainability of agriculture and its contributions to economic growth depend on investments in rural

infrastructure, policies that assist smallholder farmers, and sustainable agricultural methods. Agriculture is essential to human well-being and the advancement of society in addition to being a major economic sector. Societies may endeavor to harness agriculture's potential to build more wealthy, resilient, and inclusive futures for everyone by realizing its vital role in economic growth.

REFERENCES:

[1] N. Zhu *et al.*, "Deep learning for smart agriculture: Concepts, tools, applications, and opportunities," *Int. J. Agric. Biol. Eng.*, 2018, doi: 10.25165/ijabe.v11i4.4475.

[2] J. Janker, S. Mann, and S. Rist, "What is sustainable agriculture? Critical analysis of the international political discourse," *Sustain.*, 2018, doi: 10.3390/su10124707.

[3] CIAT and World Bank, "Climate-Smart Agriculture in Tanzania," *Land use policy*, 2018.

[4] USAID/SPRING Project, "Nutrition-Sensitive Agriculture Training Resource Package," *Train. Packag.*, 2018.

[5] C. Delgado, "Contrasting practices and perceptions of urban agriculture in Portugal," *Int. J. Urban Sustain. Dev.*, 2018, doi: 10.1080/19463138.2018.1481069.

[6] E. Torquebiau, C. Rosenzweig, A. M. Chatrchyan, N. Andrieu, and R. Khosla, "Identifying Climate-smart agriculture research needs," *Cah. Agric.*, 2018, doi: 10.1051/cagri/2018010.

[7] I. A. Lakhiar, G. Jianmin, T. N. Syed, F. A. Chandio, N. A. Buttar, and W. A. Qureshi, "Monitoring and control systems in agriculture using intelligent sensor techniques: A review of the aeroponic system," *Journal of Sensors*. 2018. doi: 10.1155/2018/8672769.

[8] T. Gomiero, "Agriculture and degrowth: State of the art and assessment of organic and biotech-based agriculture from a degrowth perspective," *J. Clean. Prod.*, 2018, doi: 10.1016/j.jclepro.2017.03.237.

[9] X. Yu *et al.*, "Wetland recreational agriculture: Balancing wetland conservation and agro-development," *Environ. Sci. Policy*, 2018, doi: 10.1016/j.envsci.2018.05.015.

[10] C. Fausto and E. G. Neves, "Was there ever a Neolithic in the Neotropics? Plant familiarisation and biodiversity in the Amazon," *Antiquity*, 2018, doi: 10.15184/aqy.2018.157.

CHAPTER 5

ANALYSIS OF CONCEPT OF TRANSFORMING TRADITIONAL AGRICULTURE

Dr. Ashish Kumar Awasthi, Assistant Professor,
Department of Science, Maharishi University of Information Technology, Uttar Pradesh, India.
Email Id-ashish.awasthi@muit.in

ABSTRACT:

In order to analyze the idea of upgrading agricultural techniques in traditional farming systems, this study looks at the procedures, difficulties, and outcomes of doing so. Hand labor, subsistence farming, and a lack of technology are the hallmarks of traditional agriculture, which often confronts obstacles including poor production, environmental damage, and climate change susceptibility. This study examines the methods and techniques involved in converting conventional agriculture into more resilient, efficient, and sustainable systems, drawing on agricultural theories, case studies, and empirical research. It looks at the use of contemporary technology, better farming methods, and legislative initiatives meant to boost output, lessen negative effects on the environment, and enhance living standards in traditional farming communities. This research attempts to expand knowledge of the challenges of conventional agriculture transformation and its consequences for agricultural growth, food security, and rural communities via a thorough examination.

KEYWORDS:

Agriculture, Modernization, Rural Development, Sustainability, Traditional Agriculture.

INTRODUCTION

Production wouldn't rise if additional labor was used with land outside of N1.This is due to the fact that, of the labor force employed in agriculture, ON1 represents the non-redundant labor force and N1N2 represents the redundant labor force. The TP curve indicates that total productivity is constant in this area, meaning that the marginal productivity of MN labor is zero. The N1N2 number of workers contributes positively to production, and their marginal physical productivity approaches zero beyond point M. Minnesota has an excess of labor, thus moving that labor to the industrial sector won't have an impact on agricultural productivity. On the other hand, NX total agricultural production is produced if it is assumed that the complete labor force ON is employed in the agricultural sector[1], [2]. The actual wage is equivalent to NX/ON, or the slope of the ray OX, assuming that the whole production N is consumed by the entire labor force ON. The institutional wage is this. They get despite being positive in the range MR on the MPP curve NMRU. They are thus moved to the industrial sector and partially pass for jobless people. However, the minimal pay throughout this stage. This is due to the fact that when labor is moved to the industrial sector, agricultural production decreases.

Consequently, there is a scarcity of agricultural commodities, which drives up their cost in comparison to industrial items[3], [4]. As a result, the conditions for the industrial sector deteriorate, necessitating an increase in the nominal wage there. The institutional wage OW to LH and KQ is surpassed by the nominal wage. This is seen by the labor supply curve in Panel

(A), which rises from WT to H and Q as ML and LK labor eventually moves into the industrial sector. "The Lewis turning point" is the upward movement from T on the labor supply curve WTN1. Phase III starts when agricultural laborers begin to produce enough agricultural production to meet the institutional pay and eventually exceed it. This signals the conclusion of the launch and the start of the growth that is self-sustaining. The rising part U of the MPP curve in Panel (B), which is greater than the institutional wage KR (=NW), illustrates this. As a result, as shown in Panel (A) KC of labor will be moved from the agricultural sector to the industrial sector at a growing nominal salary above KQ. As a result, the agricultural industry's excess labor is exhausted and completely marketed[5], [6].

Fei and Ranis contend that a rise in the minimum wage at the source of supply indicates that the labor surpluses have reached their limit and that this occurrence should be viewed largely as a market phenomenon rather than as a real labor shortage. Fei and Ranis note that an excess of agricultural goods arises when workers from the agricultural sector are moved to the industrial sector. The result is the agriculture sector's total agricultural surplus, or TAS. The TAS is the excess amount of total agricultural production beyond the amount that is required for labor force consumption at the institutional wage or for agricultural output. The quantity of workers moved to the industrial sector at each stage of the development process determines the total amount of TAS. The vertical distance between the line OX and the TPP curve OCX in Panel (C) in the figure is used to calculate the TAS. When NM labor is transferred during Phase I, the TAS is BC. Phase II sees a spike in DE and FG levels of TAS as ML and LK personnel are moved into the industrial sector. TAS may be seen as agricultural resources that are made available to the market by redistributing agricultural laborers. These funds may be diverted to help the new industrial entrants via the loan lord class's investment activities, government tax policies, or other ways. The average agricultural surplus, or AAS, is another. The whole agricultural surplus per worker assigned to the industrial sector is known as the AAS. It seems as if every assigned worker travels with his own bag of supplies for sustenance[7], [8].

Fei and Ranis refer to the boundary between Phases I and II as the "shortage point," which is the point at which there is a shortage of agricultural goods, as shown by the AAS's (the portion AS of the WASO curve) decline below the NW, and the boundary between Phases II and III as the "commercialization point," which is the point at which MPP and the institutional wage in agriculture start to equalize. Therefore, the scarcity point of Fei and Ranis corresponds with the Lewis turning point, and the commercialization point accelerates the rise in the industrial wage. They demonstrate that the commercialization and scarcity points coincide if agricultural production rises. This is due to the fact that when agricultural production rises, the MPP rises as well, allowing the output to climb to the institutional wage level faster. It may be seen as the MRU migrating higher and to the left. Conversely, the AAS rises in tandem with an increase in overall physical output. As a result, ASO curve swings higher and to the right. The MRU and ASO curves will move higher if productivity increases enough, resulting in the shortage point A PP representing the initial labor demand curve and S1S1 representing the first labor supply curve. They come together at a point when the industrial sector employs OM labor force.

The industrial sector is making a profit equivalent to the area S1Pa at current level of employment. This profit represents the whole investment money that the economy has at its disposal when it is taking off. This fund's allocation to the agricultural sector will increase agricultural productivity and cause the industrial sector's labor supply curve to go from S1S1 to S2S2, to the right. The industrial sector receives the remaining portion of the investment budget,

which causes the industrial demand curve to go from PP to P1P1. A1 is where the S2S2 and P1P1 curves meet, and it is located on the balanced growth path S1 a3.When agricultural productivity increases after investment funds are allocated to it, the agricultural sector releases labor force, which is then absorbed by the industrial sector at a1[9], [10].

As long as investment dollars are continuously distributed to both sectors, the economy will develop in a balanced manner. However, there's a good chance that the real development route will sometimes stray from the balanced-growth path. However, a divergence of this kind will activate opposing balancing forces that work to return it to the path of balanced development. In actuality, the route is probably swinging about the path of balanced development. For instance, the real growth path will be above the balanced-growth route if, as a consequence of excessive investment in the industrial sector, the labor demand curve changes to P2P2 and crosses the labor supply curve S2S2 at a2. This will result in a lack of agricultural products, a decline in the industrial sector's terms of trade, and an increase in wages in this industry.

DISCUSSION

As a result, investment in the agricultural sector will increase and investment in the industrial sector will decline, bringing the real route closer to the level of the balanced-growth path A3. With a fixed amount of land, there will be some size of population which is large enough to render MPP zero," note Fei and Ranis. However, Schultz disagrees that the MPP is 0 in countries with a labor surplus. If that were the case, he said, there would be no institutional wage either. It is a reality that all workers get a minimum wage, which may be paid in kind or cash. Therefore, it is incorrect to claim that the agriculture sector's MPP is zero. The hypothesis states that the agricultural sector becomes commercialized when it reaches the third phase. But since inflationary pressures will begin to build, it is unlikely that the economy will transition easily into self-sustaining growth. There will be a labor shortage in the agriculture sector when a large number of people move into the industrial sector. Meanwhile, worker MPPs are matched by the institutional pay, and shortages of agricultural items occur. There will likely be inflationary pressures in the economy as a result of all these variables. The theory postulates that despite increases in agricultural output, the institutional wage stays constant over the first two periods. This is very implausible since farm salaries typically increase in tandem with an overall increase in agricultural production.

For example, during the Green Revolution (1967–72), the daily real pay rates (at 1966 prices) of agricultural laborers for different farmland activities in Punjab climbed from 41.7% to 55.2%. According to Professor Schultz, "differences in the quality of material capital are of great importance, differences in the amount and rate of increase of farm production are primarily explained by differences in farm people's capabilities." Some nations, like Japan and Mexico, have outperformed India in the agricultural sector—not because their soils are of higher quality, but rather because they have more advanced agricultural technology. Schultz thinks that conventional agriculture may be transformed without requiring excessive expenditure. A nation must abandon outdated customs and adopt modern manufacturing inputs. It must have the ability to manage the risks and uncertainties that might arise from the addition of additional elements. He states: "In this regard, the response is similar to that in modern agriculture. Farmers who have settled into traditional agriculture accept new factors of production at a rate that depends upon its profit, with due allowance for risk and uncertainty." The Guatemalan community has a capitalist atmosphere. The market is perfectly competitive, and the community is making full use of all

available production factors.The conclusion that people are extraordinarily efficient at allocating the resources at their disposal in current production is strongly supported by all the evidence provided by the meticulous documentation of the behavior of the participants in penny capitalism and the numerous tables displaying prices, costs, and returns. There are no appreciable indivisibilities in the factors, manufacturing processes, or final goods.

There are no underemployment nor covert unemployment. A scholar has come to similar conclusions about the Indian village.The researcher deduces the following from the village's data: "There is an exceptionally close correspondence between the various price estimates." In light of the existing technical correlations, it would seem that the sample farms' average allocations were effective. As long as the community uses outdated resources and technology, there is no proof that changing the current allocations will increase economic production. Many economists think that a segment of the labor force in traditional agriculture is still jobless but hides it. This theory implies that the overall production of the agricultural sector will not decrease if some workers are moved from the agricultural sector to another field of activity.

This widespread labor excess has been seen as a defining aspect of traditional agriculture, which contributes to the nation's poverty. Schultz disproves this theory. He tested this theory using the influenza epidemic year of 1918–19. People in India's rural regions suffered greatly during the year-long influenza pandemic. He saw that in the agricultural season that followed the outbreak, the overall production of agriculture decreased. He concluded from this that not even 5% of the labor force could be deemed excess. Another ingrained belief is that traditional agriculture yields high rates of return with very little capital expenditure. Rich peasants in these nations made investments in developed nations during the colonial era, whereas European nations directed their efforts toward underdeveloped nations. Schultz rejects this idea, pointing out that conventional agriculture has a poor rate of return and huge capital costs. Additionally, he demonstrates that foreign-acquired capital was used in allied fields like transportation rather than as a direct input in manufacturing in developing nations.

Schultz demonstrates how, in many impoverished farming areas, land rent makes up a very tiny portion of overall factor costs. This result is in line with economic theory, despite the fact that, when taking into account the many elements that contribute to agricultural productivity, it is sometimes forgotten that rent may be negligible or even nil. The second finding is that in many impoverished farming areas, replicable material capital is comparatively significant. In some of these areas, the rate of replicable capital is low, but its factor share is high. The stock could be small and the share relatively large if the rates of return were always high, but given the conventional economic belief that the stock of reproducible capital in impoverished agricultural communities is small, the situation would be puzzling if the rates of return are low, as they are in many of these communities. Additionally, Schultz disputes the claim that larger farms operate more profitably. He contends that there is no relationship between farm size and production, noting that both big and small farms may be equally productive under certain conditions.

According to Schultz, the availability and cost of non-traditional (modern) agricultural inputs determine how traditional agriculture will change. "The suppliers of these factors hold the key to such growth in a very real sense," he claims. Farmers would accept and utilize these inputs in agriculture if they were produced and distributed at affordable costs. Their agricultural investments would become lucrative as a result. Schultz claims that economists have not paid enough attention to the availability of contemporary factors of production.The two main factors

contributing to high productivity in contemporary agriculture are (i) modern material inputs and (ii) skilled farmers. Poor farmers should be allowed to readily employ modern material inputs in their farming operations. In this sense, research and development are quite important. These inputs' distributional aspects are equally significant. Profit-making companies or nonprofit organizations may distribute goods.

The cost of entrance and market size have an impact on distribution companies' profits. There isn't enough room for profit since the market is tiny and entry costs are high. Therefore, in order to draw in private companies, the distribution of these inputs must be made viable.

Bullocks, machinery, and other forms of capital are used. Traditional agriculture has poor productivity, therefore adding labor and capital causes returns to decline. In order to boost their revenue while maintaining a consistent labor force and capital, farmers are often interested in expanding the area of their land holdings. On the other hand, land holdings are increasing relatively slowly. In conventional agriculture, several unconventional inputs, such as fertilizers, have been used; nonetheless, their influence on overall yield is insignificant when combined with other auxiliary inputs. In a similar vein, institutional reforms like land reforms fail because technology advancements do not coincide with them.

To put it simply, phase I traditional agriculture is often characterized by poor productivity, low levels of resource consumption, and relatively high levels of efficiency in merging businesses and resources. These three elements work together. When taken as a whole, they point to limited opportunities for quickly raising overall output or productivity per unit of resources in the framework of conventional agriculture, but plenty of opportunities for raising both via technological advancement. Mellor asserts that the third phase of agricultural growth is about to begin as the second phase gathers steam. "In order to create a continuum of increasing labor productivity, this tends to be a technologically dynamic phase in which institutions are developed that create a stream of labor-saving mechanical innovations and facilities for providing, distributing, and servicing such machines," the author states.

This stage comes after the economic development process has been going on for a while. At this point, the average farm size is rising, the man-land ratio is falling, and capital creation is adequate to support both the progressive intensification of capital use in agriculture and the fast development of the non-farm sector.

It should be noted that the Mellor-suggested phased approach is now applicable in the majority of low-income countries. However, this order has not always been followed in the development of agriculture in many nations. For example, fundamental information for mechanical innovation has been accessible for a long time in the USA, thus agriculture there could go straight from phase I to phase III. The economics of agricultural production makes sense to start with the production of products and services.

Businesses, or producers, blend inputs into outputs to be sold to customers throughout the manufacturing process. Since the process may be very complicated, the production activities that firms engage in are covered in the following few chapters. The topic of customer or family behavior is then brought up. Taking into account the relationships between producers and consumers in marketplaces follows from all of this. The intricate nature of manufacturing processes in real life might make it challenging to comprehend the links between the many factors that are always changing. Solving this issue by focusing on one variable at a time is one

method. Agronomists may conduct controlled experiments to find the best way to apply nitrogen fertilizer on wheat fields by observing the effects of increasing or decreasing nitrogen on wheat yields.

Test plots, which are little wheat fields that are usually next to one another, are used for this kind of experimentation in order to maintain consistent weather, soil conditions, and growth circumstances across all of the plots. The purpose of the controlled experiment is to determine how varying nitrogen levels impact wheat yields while keeping all other inputs constant. Manufacturers of products and services continuously adjust their marketing and manufacturing strategies in an attempt to increase profits. Depending on the product they create, businesses might alter the way they manufacture and market their products. If the product is corn, then substantial modifications may be made at least once a year, with little adjustments happening all year round. When it comes to walnuts, significant production choices are made only once per generation or maybe longer, however a few minor tweaks can be made at any time throughout the growing season. When growing lettuce in greenhouses, significant modifications are made almost every time. The most important factors are timing and time. When making choices that maximize profits, time is a crucial factor.

A producer may purchase or sell land or equipment over an extended period of time. Farmers are able to change the size of their farm. The Moline, Illinois-based maker of agricultural implements, John Deere, is an example of an agribusiness. Since expanding a facility would entail buying land, constructing a factory, and hiring personnel, "Deere" is unable to do so in the near future. Over time, however, Deere will be able to construct a new plant and begin manufacturing a wider range of agricultural equipment. The key distinction between the short and long runs is that the latter are defined by the amount of time it takes to modify input levels, rather than by a fixed duration. This varies from company to company and from farm to farm.

Imagine for a moment that a Northern Plains farmer, who also happens to be a real estate dealer, is able to double his holdings of land in only two weeks. The duration of the lengthy run is merely two weeks if every input on this farm is changeable over a two-week period. The circumstances and the neighbors' willingness to sell property will determine how long the long run will last. The reality for most farmers is quite different since it might take years to obtain fresh land. A stark contrast is provided by a lemonade stand that the kids on a residential street put up. The long term in the lemonade industry is extremely short. By rushing inside the home, the kids may rapidly change the amounts of every input (water, glasses, lemonade mix, and stirring spoon). Maybe five minutes will pass throughout the lengthy run. The majority of industrial processes exhibit phases of rising returns, falling returns, and finally falling returns. What makes this pattern so common? Recall that, ceteris paribus (keeping everything else constant), the production function describes the physical connection between an output (Y) and a single input (X).

In order to produce wheat, the North Dakota wheat farmer used land, labor, money, and management. Assume that this farmer grows wheat on many thousand acres (large farms are common in North Dakota). He keeps all other inputs constant, with the exception of the quantity of combines. With the first combine, this farmer will be able to harvest a lot of grain throughout harvest season. The mechanical combine really gained its name by combining the threshing (i.e., separating the wheat kernels from the straw and chaff) and reaping (i.e., cutting and shocking the grain) functions. Even the oldest combines greatly increased yield as compared to manually

picking wheat. A very big volume of output may be processed by the first combine. The farmer will benefit from having two combines operating on the same field simultaneously if they have a second combine. Since efficiencies are increased, this may actually boost output even more than the first combination does.

CONCLUSION

In order to solve the issues of productivity, sustainability, and resilience in traditional agricultural systems, modernizing farming techniques is crucial, as the notion of changing traditional agriculture is examined. Due to its reliance on human labor and antiquated equipment, traditional agriculture is often beset by issues including poor production, environmental damage, and climate change susceptibility. Adopting new technology, better farming methods, and legislative initiatives targeted at raising output, lessening environmental effects, and boosting livelihoods in traditional farming communities are all parts of the transformation of traditional agriculture. This involves promoting sustainable agricultural methods such organic farming, conservation agriculture, agroecology, and automation as well as the use of irrigation, better seeds, fertilizers, and mechanization. In addition, modernizing traditional agriculture calls for funding for rural infrastructure, market and finance accessibility, and the development of farmers' skills to successfully use new techniques and technology. For agricultural transformation programs to be successful and long-lasting, policies that safeguard natural resources, assist smallholder farmers, and foster equitable development are crucial. It is essential to alter conventional agriculture in order to achieve sustained rural development, poverty reduction, and food security. Modern farming methods and sustainable agricultural systems may help society protect the environment for future generations while improving farming communities' resilience, productivity, and general well-being.

REFERENCES:

[1] 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.

[2] 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.

[3] C. Zlolniski, “Export agriculture, transnational farmworkers, and labor resistance in the Mexico–US borderlands,” *Dialect. Anthropol.*, 2018, doi: 10.1007/s10624-018-9491-z.

[4] 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.

[5] L. Brislen, “Meeting in the Middle: Scaling-up and Scaling-over in Alternative Food Networks,” *Cult. Agric. Food Environ.*, 2018, doi: 10.1111/cuag.12176.

[6] S. S. Sarmila, S. R. Ishwarya, N. B. Harshini, and C. R. Arati, “Smart farming: Sensing technologies,” in *Proceedings of the 2nd International Conference on Computing Methodologies and Communication, ICCMC 2018*, 2018. doi: 10.1109/ICCMC.2018.8487571.

[7] T. Gifford, “From Pastoral to Post-pastoral in British Nature Writing,” *Foreign Lit. Stud.*, 2018.

[8] B. Balázs and G. Pataki, “Cooperative research for bottom-up food sovereignty and policy change,” in *Action Research in Policy Analysis: Critical and Relational Approaches to Sustainability Transitions*, 2018. doi: 10.4324/9781315148724-4.

[9] M. M. Alemu, “Current Trends of Investment Effect on Land-Use Practices of Ethiopia,” *OALib*, 2017, doi: 10.4236/oalib.1103326.

[10] A. H. Nurdin, W. Hidayat, and G. Faisal, “Pusat Kerajinan Tangan Dan Oleh-Oleh Berbasis Ekowisata Di Bagansiapiapi Dengan Pendekatan Arsitektur Melayu Rokan,” *J. FTeknik*, 2017.

CHAPTER 6

INVESTIGATION OF THE PROCESS OF LAND HOLDING PATTERN AND LAND REFORMS

Dr. Vijay Srivastava, Associate Professor,
School of Science & Humanities, Maharishi University of Information Technology, Uttar Pradesh, India.
Email Id-vijay.srivastava@muit.in

ABSTRACT:

The dynamics, difficulties, and consequences of land ownership structures and reform attempts are the main topics of this paper's investigation into the process of land holding patterns and land reforms. A key aspect in determining agricultural systems, rural livelihoods, and socioeconomic development is land holding patterns, which are shaped by historical, social, and economic considerations. This article explores the history of land holding patterns and the justification for land reform initiatives meant to address problems of land inequality, landlessness, and rural poverty. It does this by drawing on historical analysis, case studies, and policy assessments. The processes of land consolidation, tenancy reform, land titling, and redistribution are examined, along with the political and socioeconomic ramifications of each change. This study seeks to expand knowledge of the intricacies of land holding patterns and land reforms and their relevance for social justice, rural development, and fair land allocation via a thorough research.

KEYWORDS:

Agriculture, Land Holding Patterns, Land Reform, Rural Development, Socio-economic Impact.

INTRODUCTION

All matters connected to land management and rules affecting the owners and laborers on these lands are governed by land reforms. Naturally, land reforms play a significant role in Indian agriculture. Yet, during the pre-independence period, when the primary goal of the British was to gather taxes from the land, these restrictions were not always favorable to the workers; in fact, they were highly skewed. You will learn about land ownership patterns and how land reforms affect agricultural output in this unit. The phrase "land holding," sometimes known as "agricultural holding," refers to the typical amount of land that Indian farmers own[1], [2]. The number of small and marginal agricultural land holdings in the nation, also known as operational holdings, increased slightly to 126 million, or 86.21 percent of total operational holdings, compared to 84.97 percent in the previous census of 2010–11, according to the 10th Edition of Agriculture Census data for 2015–2016, which was released in 2019. This suggested that a greater number of individuals than in the previous one possess smaller land holdings. This shows the amount of property that will enable a farmer's family to have the necessary support. In addition, this property has the possibility of yielding enough food, once required expenditures are paid, to allow the peasant and his family to live comfortably[3], [4].

In India, the extent of economic holdings varies by area. A few economists recommended 40–50 acres in some areas but 10–12 acres in others. The size of economic holdings is mostly determined by factors including the region's climate, soil composition, and irrigation infrastructure. The family holding idea was first implemented in India during the Five-Year Plan.

This suggests a landholding area that is comparable to a plow unit or a typical family unit with two bullocks. Additionally, the land reforms panel defined a family holding as one that gives an average farming family an annual income of $1,200. All changes pertaining to land ownership, holdings, and the landlord-tenant relationship are together referred to as land reforms[5], [6]. As per the report of the former Planning Commission, the goals of the land reform policy were to eliminate social injustice and exploitation within the agricultural system, as well as to remove obstacles that stem from the historical agrarian structure. This was done to guarantee equal opportunities and tenurial status for a large portion of the rural populace. Although land reform is still a state issue, the federal government offers a framework for its implementation. In accordance with the First Five Year Plan's policy directive, which placed a high premium on expanding agricultural output, the government established the Central Committee for Land Reforms to oversee the development of land reforms throughout various areas. The responsibility of assisting the states on their land reform plans was also given to this committee.

Under J.E. Kumarappa's leadership, the Congress Agrarian Reform Committee's 1949 report marked the first significant turning point in land policy. The Committee supported the elimination of feudal middlemen like as jagirdars and zamindars. Prior to creating the plans for the Second Five Year Plan (1956–1961), the Planning Commission established a panel to assess how the First Plan's land policy was being implemented and to consider further actions related to the Second Plan. Following the September 1970 Conference of Chief Ministers on Land Reforms in Delhi, it was resolved to assign a single organization to handle all land-related issues. As a result, the Union Minister of Agriculture chaired the Central Land Reforms Committee when it was formed. It examined issues related to cap, exemption, recompense, allocation of excess land, and reform implementation [7], [8].

If we trust Arthur Young, it has long been believed that giving a farmer ownership right would convert sand into gold. He had once said, "Give a man a barren rock and he will turn it into a garden; give him a nine-year garden lease and he turns it into a desert." According to proponents of granting ownership to cultivators, this point of view is founded on the psychology theory that the greatest motivation for labor is the guarantee of receiving a payment for one's labor. This guarantee is provided by ownership, which also serves as an incentive. When a landowner is also its cultivator, that person has the exclusive right to demand a portion of the benefits for their labor-intensive efforts. For this cultivator, the marginal return to various units of a variable input—in this case, fertilizers—combined with a specific plot of land is represented by the MVP (marginal value productivity curve). Assume that the sole financial outlay is the amount needed to buy fertilizers, which have a set price. The average cost of the input utilized is then shown in the diagram by CC□ (we have excluded the labor cost from this study to keep it simpler).

The cultivator will utilize OP units of fertilizer while in equilibrium if he could retain what he was generating to himself (as would be the case with an owner cultivator). (Production under perfect competition reaches equilibrium when the price and marginal value productivity of the inputs are equal.) Now, let's say that the cultivator is a tenant on the property he is cultivating, and he is required to pay 50% of the yield as rent. In such instance, the curve MVP' (i.e., half of the return for each unit of input, as contrasted with the initial condition) would demonstrate the marginal value productivity of various input units for his purposes. He should not utilize more than OR units of the input in his own self-interest. He will only make the most money when he applies OR units of fertilizer[9], [10]. The MVP curve, which also reflects the marginal value productivity for the owner, will indicate the marginal value productivity for the renter in the first

scenario. This is because the tenant's fixed rent payment is not regarded as a portion of production. It is considered an expense. In this instance, the CC1 curve will also correspond to the owner's curve. This is true because fixed rent is a component of fixed costs, and we are aware that adjustments to fixed costs have no effect on the cost of variable inputs. The equilibrium level with OP input will thus be shown by the junction of the MVP curve and the CC1 curve in the case of fixed rent. The tenant's gains will be offset by the amount of the fixed rent he pays, that's the only difference. In the second scenario, the CC1 curve will similarly descend by the same proportional amount, even though MVP1 will be taken into consideration instead of MVP. Thus, once again, the point where the two curves connect will show that input totaling OP has been used.

DISCUSSION

Nonetheless, it cannot be denied that in the case of share tenancy, which is the most common kind of tenancy, the resources are likely to stay unused and that giving the renters ownership would push the economy to the brink of output. In addition, owner cultivation will encourage the use of improved existing methods. Even though they are well-known, certain enhanced agricultural practices like drainage, for example—can only be implemented in concert. It is simpler to embrace something collectively if the group is homogeneous. Dore claims that by eradicating other tenantal groups, the universal preponderance of owner agriculture would achieve this homogeneity

In contrast to tenancy cultivation, owner cultivation promotes greater resource usage and aids in the adoption of a suitable production technology. Every land holding is unique and has characteristics that set it apart from the others. The most complete use of these attributes can only be achieved by a lengthy process of trial and error. The answers to all of these questions—which crop the land responds to most favorably, which crop rotation order is best, which fertilizer is best for the particular holding, and how much plowing is appropriate—can only be found after a long period of time spent with the particular holding. It goes without saying that ownership gives the farmer this chance. It will motivate the farmer to develop the best farming method for a particular farm.

The practice of land ownership as a means of generating money in agriculture. It goes without saying that there are two types of capital used in agriculture. Capital in the form of enhanced current inputs, like as fertilizer and seeds, is one of them. The second kind of capital consists of permanent assets, such as buildings, equipment, bullocks, and so on. If everything else is equal, it stands to reason that both owners and renters would be equally eager to invest in the first category of inputs. The amount of money a renter puts in the second category of assets will vary depending on how long he expects to get income from each asset. It goes without saying that if the land is owned, the owner will be able to benefit from the fixed capital for as long as the capital does. In light of this, he will happily invest in a variety of durable assets, provided he can be certain that the costs will be recouped over the course of the assets' lifetime. However, because of the instability of his lease, the tenant will be reluctant to make investments in permanent capital, such as buildings or wells, since he cannot be certain that he would get full compensation for them. Regardless of whether he has completely repaid the cost of the item he purchased especially for the tenanted farm, he may be asked to leave at any moment (barring legal protections). If property is leased to a tenant on the basis of crop sharing, production on the leased area is likely to decrease in another manner as well.

Under a crop sharing agreement, the renter and the owner have different perspectives on this kind of tenancy. The renter wants his part of the earnings after the rent is paid, as per the agreement, to be maximized, whereas the owner wants his rent to be maximized. With few exceptions, the two goals will always need a distinct pattern of resource allocation. The distribution of resources will undoubtedly suffer as a result of these competing interests. The two sides' disagreement will impede output optimization in a number of ways.

Based on the above discourse, one may draw a conclusion in support of giving the growers complete ownership. However, it would be quite illogical to unconditionally criticize the tenancy arrangement, which the award of ownership is intended to replace. Tenancy hasn't always resulted in a decline in tenant conditions or production. Due of their greater productivity, L.D. Schweng discovered that many renters in Middle Eastern nations were wealthier than the owner-cultivators. Studies on farm management conducted in the Punjab have shown that certain tenanted farms in the region produce more per acre than self-cultivated farms do. Granting ownership isn't a magic bullet, in actuality. If ownership transfer pushes the agricultural sector closer to its output frontier in one direction, it may do so in the other direction.

Tenancy farming will also, in another manner, keep the gap between potential and actual output from growing. If the farm is regarded as property, it may be split as it is passed down from one generation to the next, which might force the land out of cultivation or make farming unprofitable. A tenancy arrangement allows for the avoidance of this kind of subdivision. In this instance, Gadgil has recommended an alternative to tenancy. Let one co-sharer grow the property on behalf of the others; the other co-sharers will get a portion of the crop sales revenues, provided that the cost of cultivation and the labor of the cultivating co-sharer are appropriately deducted. But this is just another kind of tenancy; the only distinction is that the renter in this instance is one of the co-sharers rather than an outsider. We are aware that in order to cross the production frontier, all forces of production, including labor, must be fully mobile. Ownership forces a farmer to remain on a certain plot of land, which limits labor's movement and, by extension, his mobility. Conversely, the tenancy system

Land ownership and the movement of money into agriculture provide strong credit security, which in turn encourages borrowings from outside sources for land investment. This line of reasoning is rejected by a large number of economists. They contend that the farmer is not required to utilize the financing they have acquired to pay for fixed assets or other agricultural inputs. It's also applicable to consumption needs. This will be particularly true in a culture where social rituals account for a large portion of the budget, as in India. In this scenario, the loans that were obtained do not result in an increase in land productivity. These are depleted by fulfilling consumption costs. The land that is promised to the money lender in exchange for these loans eventually belongs to the money lender, who often rents it out to various tenants. In India, there is ample proof that a large portion of property is transferred from landowners who cultivate it to moneylenders as part of the ultimate settlement of the debts the former owes the latter. This was the rationale for the enactment of Land Alienation Acts by many Indian provinces prior to independence.

In certain cases, the only option to get the best possible mix of production parameters is via a tenancy system. If, for instance, a landowner has less capital than the amount of land he owns, he may borrow more to get the best possible combination. However, in the event that the landowner's capital is comparatively more specific and indivisible (for example, a yoke with two

bulls can generally cultivate 10 to 14 acres of land with ease), the tenancy system may assist him in obtaining the extra land required to achieve the ideal combination. In the event that the farmer lacks the finances to acquire the extra land, this is the only option available to him to get the best possible combination of resources. Stated differently, we might argue that in situations where large-scale production economies exist, tenancy may play a role in enabling the community to benefit from these economies.

The operator could be able to retain greater holdings thanks to tenancy. It is easy to conclude from the reasoning above that it is false to claim that tenant horticulture is always inferior than owner cultivation. Certain circumstances make tenancy preferable than owner cultivation.

According to Martin and other economists, it is difficult to draw broad conclusions regarding the proportional benefits of owner-cultivation vs tenant cultivation. She notes in her book Economics and Agriculture how very inadequate the share tenancy system in Egypt was before to 1952. However, this could produce the most cotton per acre. Recall that 50% of the land in Holland is leased, whereas just 5% of the land in Denmark is farmed by renters. Nonetheless, both are leaders in the field of agriculture.

Schweng, a different economist, discovered that renters in various Middle Eastern nations were more productive than owners. In addition, Chakravarty and Rudra (1973) discovered that there was no discernible difference in the management of tenanted farms and owner-cultivated farms. David Flath came to a similar conclusion on Japanese agriculture.Through a research of some European nations, Capstic confirms the lack of association between the yield and the type of tenurial arrangements. According to a recent research by Sharma and colleagues, the farm's tenurial structures had no impact on production or resource allocation.Because of the above explanation, we can thus wholeheartedly agree with Henry George when he states that "the security of improvements rather than private ownership is necessary for the improvement of land." Saying to a guy, "This land is yours," is not essential to persuade him to cultivate or enhance it. Saying "whatever your labor or capital produces on this land, shall be yours" is all that is required.Holding sizes are often reduced as a consequence of land reforms. Very tiny holdings have been established under certain regulations. Naturally, this brings up the topic of the relative benefits of big versus small farms. This kind of conversation will assist us in developing an informed viewpoint of the economic rationale behind land reforms that impose holdings limits. There is disagreement on the definition of a small farm, despite the fact that small farms represent a distinctive aspect of agriculture in the majority of countries. Various writers have attempted to quantify a farm's size using various standards.

For instance, Cohen proposes using the amount of gross product generated or the number of employees as a metric to divide farms into different size categories. We have never attempted to classify small and big farms in India based on the number of employees or the amount of gross production produced. Based on the farms' areas, Indian economists have classified them into several groups. In actuality, the difference between the metrics used to categorize farms as small or big reflects the relative scarcity of different variables involved in agricultural production. In the US, the categorization of farms into big and small farms may easily be based on the labor required, which is a scarce resource. In India, where labor is not a limited resource, this criterion could not be used. The most limited resource in Indian agriculture is land. The area of the holdings has therefore been used to evaluate how big or small a farm is. For instance, in accordance with this standard, the Small Farmers Development Agency (SFDA) in several states

has classified farms with a size between one and two hectares as small farms. Large farms might benefit from specialized equipment, structures, roads, ditches, fences, etc. As the farm grows in size, the average cost expended on these capital assets will decrease. The land area allocated to the buildings, roads, etc., decreases proportionately with the size of the farm, in addition to the average financial cost expended on these assets.

Therefore, a proportionately bigger land area becomes accessible for direct productive use on larger farms. Large farms will thus bear the burden of the production overhead cost per unit of output. Another technological benefit that big farms have is crop rotation. Large farms will contribute to lowering the machinery's operating costs per acre by making full use of it. A big farm's vast resources and willingness to take on risk enable it to experiment with the development of novel crops, albeit ones with unpredictable yields. Large farms are also required to maximize the utilization of specialized labor and limited management. Furthermore, as Bachman and Christensen point out, if farms are vast in size and therefore few in number, it will be easy to manage product quality and appropriately adapt farm production to market outlets. The financial economy is another one that a sizable farm might benefit from. Compared to small farmers, big farmers have easier access to loans from outside sources and may do so 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 postpone selling his product in order to satisfy his urgent financial demands if easy financing is available. He will thereafter be able to sell his harvests at the best rates thanks to this storage option. These are the in reality, however, there aren't many benefits that big farms have over smaller ones.

The following are the causes: Let's start with the economics as it relates to using machines. Division of labor is required in order to operate machines. A manufacturing process should be broken down into a number of smaller operations such that each one (a) includes the same kind of movement and (b) is repetitive. It is easy to utilize equipment for a subprocess that has a consistent and repeatable action.

CONCLUSION

For fair development and social justice, it is critical to address problems of land inequality, landlessness, and rural poverty. This is highlighted by the examination of the process of land holding patterns and land reforms. Due to variations in land ownership and access brought about by historical, social, and economic considerations, land holding patterns can give rise to socioeconomic inequality and instability in rural areas.

By implementing policies like land consolidation, tenancy reform, land titling, and redistribution, land reforms seek to solve these disparities. Land reforms aim to promote fair land distribution, increase agricultural production, and improve rural lives by transferring land to landless farmers, defending tenant rights, and formalizing land tenure arrangements. But land reform initiatives often face difficult obstacles including political opposition, ineffective bureaucracy, and a lack of funding. Furthermore, depending on elements like local circumstances, land tenure systems, and implementation techniques, the socioeconomic effects of land reforms might differ greatly. Land holding patterns and land reforms are fundamental to rural transformation, social equity, and agricultural development. Land inequality and landlessness are problems that countries may solve to improve the well-being of rural communities, encourage inclusive development, and

lower poverty. Effective collaboration among policymakers, stakeholders, and communities is crucial in designing and executing land reform projects that are fair, sustainable, and sensitive to the needs and aspirations of local people.

REFERENCES:

[1] M. Lipton and Y. Saghai, "Food security, farmland access ethics, and land reform," *Global Food Security*. 2017. doi: 10.1016/j.gfs.2016.03.004.

[2] A. J. Netshipale, S. J. Oosting, E. N. Raidimi, M. L. Mashiloane, and I. J. M. de Boer, "Land reform in South Africa: Beneficiary participation and impact on land use in the Waterberg District," *NJAS - Wageningen J. Life Sci.*, 2017, doi: 10.1016/j.njas.2017.07.003.

[3] G. Goodwin, "The Quest to Bring Land under Social and Political Control: Land Reform Struggles of the Past and Present in Ecuador," *J. Agrar. Chang.*, 2017, doi: 10.1111/joac.12181.

[4] T. Falk, M. Kirk, D. Lohmann, B. Kruger, C. Hüttich, and R. Kamukuenjandje, "The profits of excludability and transferability in redistributive land reform in central Namibia," *Dev. South. Afr.*, 2017, doi: 10.1080/0376835X.2016.1269633.

[5] C. D. Deere, "Women's land rights, rural social movements, and the state in the 21st-century Latin American agrarian reforms," *J. Agrar. Chang.*, 2017, doi: 10.1111/joac.12208.

[6] A. Żukowski, "Land Reform in the Republic of South Africa: Social Justice or Populism?," *Werkwinkel*, 2017, doi: 10.1515/werk-2017-0005.

[7] D. A. Anandita and K. Z. Patria, "Agriculture Challenges: Decline of Farmers and Farmland (Study from Indonesian Family Life Survey)," *J. Ilmu Ekon. dan Pembang.*, 2017, doi: 10.20961/jiep.v16i1.2314.

[8] J. J. Del Valle Coello, "Decentralization from Above, Dispossession by Recognition: Contradictions in Tanzania's New Wave Land Reforms," *IU J. Undergrad. Res.*, 2017, doi: 10.14434/iujur.v3i1.23365.

[9] H. Wittman, J. Dennis, and H. Pritchard, "Beyond the market? New agrarianism and cooperative farmland access in North America," *J. Rural Stud.*, 2017, doi: 10.1016/j.jrurstud.2017.03.007.

[10] Claudia Irigoyen, "Fast Track Land Reform in Zimbabwe - Centre for Public Impact (CPI)," *AfricaInfrastructureEconomics And Finance*. 2017.

CHAPTER 7

DETERMINATION OF LAND REFORMS AND STATUS OF AGRICULTURE

Dr. Vijay Srivastava, Associate Professor,
School of Science & Humanities, Maharishi University of Information Technology, Uttar Pradesh, India.
Email Id-vijay.srivastava@muit.in

ABSTRACT:

This essay seeks to ascertain how land reforms have affected the state of agriculture by analyzing the connection between land reform programs and the growth of the agricultural industry. Land reforms are important policy initiatives that have the potential to have a major impact on rural lives, agricultural output, and socioeconomic development. They are intended to address problems of land inequality, landlessness, and rural poverty. This article examines the implementation and results of land reform projects in many settings, including empirical research, case studies, and policy analysis. It investigates the effects of land changes on agricultural output, land use patterns, and rural development, including land redistribution, tenancy reform, and land titling. It also looks at the potential and problems related to land reforms and how they affect the state of agriculture. This study aims to provide a deeper understanding of the intricate relationship between land reforms and the agriculture industry via a thorough analysis.

KEYWORDS:

Agriculture, Land Reform, Policy, Rural Development, Socio-economic Impact.

INTRODUCTION

The Ministry of Agriculture's Department of Agriculture and Cooperation is the nodal agency in charge of the agricultural sector's growth. It is in charge of creating and carrying out national policies and plans that maximize the use of the nation's plant, water, and land resources in order to achieve fast agricultural development.Rashtriya Krishi Vikas Yojana, National Policy for Farmers, Expansion of Institutional Credit to Farmers, National Food Security Mission, Integrated Food Law, Legislative Framework for Warehousing Development and Regulation, Protection of Plant Varieties and Farmers' Rights Act (2001), and National Bamboo Mission are a few of the noteworthy initiatives the government has implemented recently. In accordance with the Land Use Statistics 2014–15 and the Department of Agriculture, Cooperation, and Farmer's Welfare's Annual Report 2019–20, the nation's total land area is 328.7 million hectares, of which 140.1 million hectares are reported as net sown area and 198.4 million hectares are gross cropped area with a cropping intensity of 142%[1], [2].

The net area planted amounts to forty-three percent of the total land area. There are 68.4 million hectares of net irrigated land. It was introduced by the Indian government in 2007–08 to encourage the states to include a larger portion of agriculture-related investment in their state plans. It was intended to provide a comprehensive development of agriculture and related sectors in order to achieve 4% annual growth in the agricultural sector throughout the Eleventh Five Year Plan. It is a State Plan Scheme, and eligibility for assistance falls on the amount allocated to

agriculture and related sectors in state budgets over and above the baseline proportion of expenditures for these sectors. The federal government is expected to provide the states 100% of the funds allocated under the RKVY[3], [4]. This policy's main emphasis is on the "farmer," understood in a comprehensive sense that goes beyond agriculture. It is thus much more extensive than an agriculture policy. One of the goals is to increase farmers' net income significantly in order to increase farming's economic sustainability. It goes without saying that, in addition to the supply of an adequate pricing policy, risk mitigation measures, and other things, there is focus on enhanced productivity, profitability, institutional support, and improvement of land, water, and support services. T Even though Indian agriculture has advanced significantly, many issues still need to be resolved for the country's nutritional and national 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 population growth and income growth[5], [6].

In order to be sustainable, Indian agriculture has to increase at a faster rate four percent annually. To attain this growth rate, the Department of Agriculture and Cooperation is developing methods. New programs like NFSM and RKVY have improved the agriculture industry. Although state investment in agriculture has not kept up with industry demands, the sector has benefited greatly from food and fertilizer subsidies. Since the middle of the 1960s, scientific advancements in Indian agriculture have resulted in a dramatic rise in agricultural output. It's interesting to note that the pace of expansion of food grain production, especially for rice and wheat, was much faster than the rate of population growth. Up until the 1980s, India had severe food shortages; yet, now, not only is it self-sufficient, but it is also a net exporter of food grains. The creation of high-yielding crop types, the use of chemical fertilizers more often, the construction of irrigation systems, plant protection strategies, and successful price support programs for agricultural goods might all contribute to this[7], [8].

A notable increase in agricultural production has been facilitated by farm mechanization, the practice of deploying agricultural technology to mechanize the job of agriculture. The promptness attained by agricultural mechanization aided in getting the best yields possible from various crops. In Punjab, for example, wheat must be sown within the first two weeks of November. A one-week delay, at most, causes the yield to drop by around 1.50 quintals per acre.This is also true for other crops and farm tasks including planting, watering, harvesting, threshing, and selling, all of which must be completed on schedule to avoid negative effects on production and farm revenue. The quality and accuracy of tasks including leveling the soil, irrigation, planting and sowing, applying fertilizer, protecting plants, harvesting, and threshing were all enhanced by farm mechanization. The expansion of rural connection has been facilitated by the Pradhan Mantri Gram Sadak Yojana (PMGSY). Many individuals think that using technology causes unemployment.

An extensive investigation reveals that this is untrue, nevertheless. Many farmers claim that although tractors may eliminate labor during planting, the increased output brought about by their usage would increase the need for labor during harvesting and other agricultural tasks. The requirement for multiple crops, irrigation systems, and the usage of herbicides and fertilizers rises with the use of technology[9], [10]. Over the last several years, all of these factors have contributed to the expansion of job prospects in rural regions. Due of agriculture's many distinct characteristics, a specialized area of economics has emerged to study the issues that arise from it. A lot of "micro-economics," also known as "price theory," is used by agricultural economists in this context. This theory develops assumptions about the behavior of individual producers and

consumers to make claims about how markets work in terms of exchange, production, and consumption. The main idea is that there aren't enough resources, such as land, labor, money, and time, to meet everyone's needs, and that decisions must be made as a result of this scarcity. We will examine "constrained choice" issues, which deal with how finite resources are distributed among various production purposes and how finite incomes are distributed among the variety of goods that customers may purchase.

DISCUSSION

Method of approaching the topic is essentially conventional, orthodox, or neoclassical. This school of thinking is unique in that it emphasizes pricing and market forces as indicators of the proper distribution of resources. This strategy is very relevant as a large portion of the recent development literature has focused on two topics: the function of markets in developing nations' agriculture and the (potentially negative) effects of government policy on the utilization of agricultural resources. We would want to be clear that we are not advocating that government involvement is always bad or that all markets operate smoothly, instantly and completely adapting to new conditions. we will go into great detail about situations where it is reasonable to anticipate inertia and delays in adjustment on the part of agricultural product producers and consumers, and we will lay out a framework for the analysis of activities (like subsistence farming, homemade crafts, and fuel gathering) for which there is no market. Furthermore, it is clear that private sector markets are not and cannot be set up to adequately provide "human capital" infrastructure, such as agricultural research and extension services, as well as physical infrastructure, such as roads and other communication channels, electricity supply, irrigation, etc. It is also to be anticipated that there will be instances when the market functions well, but at the expense of a certain group and where the result is deemed unacceptable by society. The significance of these factors is not diminished in any way by the use of a neoclassical methodology.

Due to their very nature, the main agricultural activities cannot be broken down into smaller, repetitive subprocesses. If there is to be any labor division in agriculture, it must only be in the form of a wide division of labor into large assignments such as planting, pulling weeds, watering, harvesting, etc. Consequently, as previously said, large-scale profitable use of equipment in agriculture is not possible. We may clarify it further by pointing them that agriculture deals with living things. Throughout their development as a cohesive unit, these must be addressed. These should not be seen as being made up of many parts that may be manufactured individually by machines and then put together at the end, as is done in a factory. Agriculture does not use assembly lines as we do in factories. Only agricultural processes that deal with pre-sowing (or sowing) activities, harvesting, or post-harvest operations are primarily suitable for the use of machinery.

We may now discuss a few more technological efficiencies where the production scale is quite neutral. There are three ways that agricultural technology may advance: mechanically, biologically, and chemically. Regarding the latter two innovations, small farms may implement them as well. The size of the farm has little born on the use of pesticides, fertilizers, or improved seeds, among other things. Thus, the only benefit that the huge forms may have is in terms of using equipment, and as we just said, there isn't much machinery used in agriculture. But this shouldn't mean that enormous farms don't have any economies at all.

Other economies, such as financial or commercial economies Expansion of the farm requires both short-term and long-term financing. The farmer may not have access to this funding. He could thus need to rely on an outside source of funding. Nevertheless, the farm's limited size will deter any possible lenders from giving him any money to buy further property. Because there is comparatively more uncertainty in agriculture, even if he is able to obtain some loans for the purpose, the interest rate he would have to pay on such loans will be very high. Small farms were established for a variety of historical causes in various economies. Extremely small farms can be attributed to a number of factors, such as the pressure from an expanding population, inheritance laws that require equal distribution of landed property among all inheritors (including daughters), the dissolution of the joint family system, the sale of a portion of the farm to a moneylender as a final payment for debt, the decline in handicrafts, etc. Furthermore, agriculture is not just a job in the majority of countries; it is a way of life. So, for many people, owning and cultivating land has become a societal necessity. In many communities, having land is also seen as a prestige symbol. Numerous nations in this region of the globe have experienced the presence of these variables. Due to the aforementioned challenges, it is more difficult for farms to grow if their size decreases.

The majority of the book is devoted to evaluating the benefits of various economic scenarios. 'Welfare economies', defined by Arrow and Scitovsky (1969) as 'the theory of how and by what criteria economists and policy-makers make or ought to make their choice between alternative policies and between good and bad institutions', are the analytical tools for such an assessment that are supplied in Chapter 10. How to fairly distribute the gains from global trade in basic goods is a key policy concern for developing nations Several of the economic ideas covered in previous parts are used in the last chapter to assess domestic food and agriculture policies. The agricultural economist may contribute significantly to policy discussions by carefully examining these intricate problems, allowing policymakers to make more informed decisions.

Since agricultural economics' microeconomic concepts are universal, it is believed that a broad readership would find this work appealing. It is mainly intended for postgraduate students studying agricultural development, who, although not being experts in economics, are making economics a core subject in their studies. Additionally, it is meant to be appropriate for students studying agriculture and economics who are interested in the issues facing developing nations. The management of a farm involves a number of business-related facets that impact the farm's financial performance. In determining what to produce, how much to create, how to produce, and when to purchase and sell, it aims to assist farmers. It also addresses management and organizational issues pertaining to these choices. Farm planning, budgeting, linear programming, and production function are among the several instruments used in farm management.

Since it serves as the foundation for all other management tasks, farm planning is essential to the management process. There are several farm management analysis techniques that may be used to maximize profits or minimize costs in farming. Two such techniques that help a farmer accomplish these goals are budgeting and linear programming. Understanding the nature of the production function is essentially necessary to get optimal resource use. An empirical analysis requires the employment of a production function that is statistically fit.

Around the globe, there are many distinct kinds of agricultural organizations, including shared tenancy, capitalist, and peasant farming groups. In this unit, each of them is covered in great depth. The terms "farm" and "management" make into the phrase "farm management." Any kind

of land used for agricultural purposes that is worked by an individual, either by hand or with the help of family members or hired workers, is referred to as a farm. Contrarily, management refers to the practice of managing. Therefore, the process of controlling agricultural operations to achieve the intended goals might be characterized as farm management.Farm management has been described by many writers as the skill of organizing and running a farm using business and scientific ideas.

Farm management is essentially the art of managing a farm, according to H.C. Taylor, the first head of the Bureau of Agricultural Economics in the US Department of Agriculture and the first professor of agricultural economics at Wisconsin University (US). According to L.C. Gray, farm management is the skill of effectively running a farm as determined by the profitability test. "A science dealing with the combination and operation of production factors, including land, labor, capital, and selection of the kind and quantity of crops and livestock" is another definition of farm management. The farm unit will get maximum and ongoing returns as a result. Farm management is the science of organizing and running agricultural businesses with the goal of maintaining the highest possible profit margin, according to G.F. Warren. Farm management, according to L.A. Moorhouse, is the study of farming's commercial aspect. Farm management, in the words of C.L. Holmes, is the study of the ideas that guide a farmer's operations as a company owner. It has been said time and time again that using one or more production functions is necessary for the best possible resource allocation. But this is theoretical in nature. In practical terms, we are unable to determine the moment at which the best use of available resources will occur unless we are aware of the characteristics of the production function. We are aware that the general prerequisite for a factor's optimal usage is the quality of its marginal value productivity given its price.

The primary inquiry is to ascertaining the methods for calculating the marginal value productivities of diverse elements or the trajectory of these marginal value productivities under varying conditions. 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. Static fit is required for the production function that is fitted and used in subsequent empirical analysis. This statement then raises another issue. We need to be aware of the several manufacturing forms that the provided data might be suited to. We observe many significant production functions that have been used, or may be applied, to the analysis of resource-related issues in agriculture. It has long since been abandoned that the output and limitational factor have a linear connection according to the law of the soil. As a result of recent study, it is now accepted that, when applied to a given amount of land, the productivity of single components would drop rather than remain constant. Numerous studies on soil fertility have shown that increasing homogenous fertilizer applications lead to declining results. "According to a commonly accepted theory, the production function of a single component, such as phosphate, seed, irrigation water, or nitrogen fertilizer, may be represented as a declining geometric series, with each marginal product representing a constant proportion of the one before it.

Assuming that the first 20 pounds of fertilizer or the initial inch of irrigation water provide 10 bushels to the overall output, the subsequent additions will add 9 bushels and the third 8.1 bushels, respectively, with each increment being equal to 90% of the preceding one. Since planning is the starting point from which all other management activities originate, it is essential to the management process. It suggests a deep comprehension of the objectives of a certain farm. It demands mental work, introspection, forethought, and creativity. Planning outlines the best

courses of action to take as well as how and when to do so. Nowadays, farming is a complicated industry that has to be carefully planned for to run well. A single new practice adopted might transform the whole company. Redesigning the livestock program in response to an enhanced cropping system can need rearranging buildings, machinery, or labor-intensive Farming System programs. The process of choosing which crops to cultivate, in what amount, and in what sequence; how many animals of different classes to retain and how to manage them; what construction equipment, labor, and power would be necessary, and so forth, is known as farm planning, according to Foreman.

A decision-making process, which includes purposefully deciding on a course of action and basing choices on information, estimates, and facts, is another definition of farm planning. Based on these definitions, it can be inferred that farm planning is a fundamental and preliminary activity that includes estimating resource needs based on preset production objectives, sizing up available resources, and allocating them. For a farmer, farm planning is equivalent to a construction contractor's blueprint or architect's specs.

The farmer makes a conscious and intentional effort to plan ahead for agricultural programs and adapt them to changes in the economy, physical environment, pricing structures, and technology advancements. Planning a farm involves observing, evaluating, and analyzing ideas, comparing and contrasting their benefits, and ultimately selecting which to implement going forward.Equipped with this knowledge, the farm manager analyzes his main issues and creates a list of potential fixes.

As a result, his suggested actions are estimated for the near future based on the information now accessible. Identifying and resolving issues; investigating and figuring out the best, simplest, and fastest methods to achieve the set goals; and creating enough staff, materials, resources, and facilities are all included in farm planning. There are several farm business analysis techniques that may be used to maximize profit or minimize costs in farming. Two techniques that a farmer may use to accomplish his goal are budgeting and linear programming.

These techniques, like other economic principles, are predicated on a number of assumptions. Working within these assumptions, budgeting and linear programming help farmers choose a production plan that will provide the greatest return on investment. Farming now takes a more methodical approach to be operated successfully since it is no longer a straightforward business as it was in the past.

The whole spectrum of farm activities may need to be quickly modified and re-tuned due to evolving agricultural technology. The term "farm budget" describes a well-organized schedule of agricultural practices and strategies that a farmer must follow in order to accomplish his goal. Adjustments to inputs, pricing, and processes can result in significant modifications to agricultural operations. A farmer may consider a number of different farm designs before deciding on the most effective one. Therefore, a farm budget is a way to create several alternative plans and provide them to the people who make decisions on the farm. Each plan includes a schedule of all the activities that the farm will do in the future. Remember that a farm budget is just the financial representation of a plan that breaks down into revenues, costs, and net income. As an alternative, a farm budget may be seen of as a method for projecting an enterprise's expenses, returns, and profits. Planning and budgeting are intertwined processes. Although budgeting helps in choosing the optimal strategy, a plan without one is meaningless.

CONCLUSION

The assessment of land reforms' effects on the state of agriculture highlights how important they are for advancing socioeconomic justice, fair agricultural development, and rural transformation. A key factor in changing land ownership patterns, expanding access to land, and raising agricultural output is land reform, which includes policies like land redistribution, tenancy reform, and land titling. Research indicates that effective land reform programs may boost rural livelihoods, increase agricultural productivity, and improve land use efficiency. Land reforms have the potential to provide a more equal allocation of land resources and support sustainable agricultural growth by redistributing land to landless farmers, safeguarding tenant rights, and formalizing land tenure arrangements.

But there are other obstacles that land reforms must overcome, such political opposition, ineffective bureaucracy, and insufficient funding, which may compromise their efficacy and long-term viability. Furthermore, local circumstances, land tenure systems, and implementation tactics may all have an influence on the socioeconomic effects of land reforms. To put it briefly, land reforms can have a big impact on how agriculture, rural development, and socioeconomic well-being are all going. Policymakers, stakeholders, and communities may work together to create more resilient, inclusive, and affluent rural communities and agricultural systems by tackling challenges of land inequality and landlessness. Ensuring that land reform efforts are fair, durable, and aligned with the goals and requirements of all parties involved is crucial.

REFERENCES:

[1] Y. A. Zereyesus, V. Amanor-Boadu, K. L. Ross, and A. Shanoyan, “Does Women’s Empowerment in Agriculture Matter for Children’s Health Status? Insights from Northern Ghana,” ***Soc. Indic. Res.***, 2017, doi: 10.1007/s11205-016-1328-z.

[2] A. Jezierska-Thöle, M. Gwiaździńska-Goraj, and L. Wiśniewski, “Current status and prospects for organic agriculture in Poland,” ***Quaest. Geogr.***, 2017, doi: 10.1515/quageo-2017-0012.

[3] M. Su, R. Jiang, and R. Li, “Investigating low-carbon agriculture: Case study of China’s Henan Province,” ***Sustain.***, 2017, doi: 10.3390/su9122295.

[4] T. Gill, V. Ricciardi, R. Bates, and D. James, “Capacity Development in Agricultural Education and training in Cambodia: A SWOT Analysis,” ***J. Int. Agric. Ext. Educ.***, 2017, doi: 10.5191/jiaee.2017.24105.

[5] R. K. Banjara and M. Poudel, “Sustainable Model of Organic Agriculture: A Case study of Nepalese Farmers,” ***J. Adv. Acad. Res.***, 2017, doi: 10.3126/jaar.v3i1.16624.

[6] K. Le Cocq, S. J. Gurr, P. R. Hirsch, and T. H. Mauchline, “Exploitation of endophytes for sustainable agricultural intensification,” ***Molecular Plant Pathology***. 2017. doi: 10.1111/mpp.12483.

[7] A. Raimi, R. Adeleke, and A. Roopnarain, “Soil fertility challenges and Biofertiliser as a viable alternative for increasing smallholder farmer crop productivity in sub-Saharan Africa,” ***Cogent Food Agric.***, 2017, doi: 10.1080/23311932.2017.1400933.

[8] K. Mustin *et al.*, "Biodiversity, threats and conservation challenges in the Cerrado of Amapá, an Amazonian savanna," *Nat. Conserv.*, 2017, doi: 10.3897/natureconservation.22.13823.

[9] T. Řezník *et al.*, "Disaster risk reduction in agriculture through geospatial (Big) data processing," *ISPRS Int. J. Geo-Information*, 2017, doi: 10.3390/ijgi6080238.

[10] B. Arheimer and B. C. Pers, "Lessons learned? Effects of nutrient reductions from constructing wetlands in 1996–2006 across Sweden," *Ecol. Eng.*, 2017, doi: 10.1016/j.ecoleng.2016.01.088.

CHAPTER 8

ANALYSIS OF THE CONCEPT OF FARM ORGANIZATIONS

Dr. Ashish Kumar Awasthi, Assistant Professor,
Department of Science, Maharishi University of Information Technology, Uttar Pradesh, India.
Email Id-ashish.awasthi@muit.in

ABSTRACT:

In order to understand the function, structure, and importance of farm organizations in agricultural systems, this study analyzes the notion of farm organizations. Farm organizations also referred to as agricultural associations or cooperatives are essential for advocating for farmers' interests, encouraging teamwork, and advancing collective action in the agricultural industry. This study examines the roles and dynamics of farm organizations in advocacy, marketing, input supply, and information sharing, drawing on agricultural theories, case studies, and empirical data. It looks at the many types of farm organizations and how they affect agricultural growth, rural lives, and food security. These range from big agricultural associations to small-scale farmer cooperatives. This research attempts to provide a deeper understanding of the notion of farm organizations and its implications for rural development and sustainable agricultural practices via a thorough examination.

KEYWORDS:

Agriculture, Farm Organizations, Rural Development, Sustainability, Collective Action.

INTRODUCTION

Another name for this is family farming. This agricultural structure is comparable to individual industrial entrepreneurship. The farm is under the direct authority of its owner, who also works there and makes choices about its cultivation. Instead of hiring outside laborers to develop the land, he makes use of the family's labor for a variety of agricultural tasks. Occasionally, the peasant may not be the landowner but rather a tenant who oversees the land's cultivation and employs his family's labor for that reason[1], [2].Large farms with sophisticated technology and labor contracted for cultivation are the hallmarks of capitalistic farming. If a farmer in this kind of farming is an individual, he or a manager that he appoints will be in charge of running the farm. "Estate farming" is another name for this kind of farming. Such a farm is sometimes even held by a joint stock corporation. In such a scenario, the farm's management and operations will be overseen by the directors and managers that the corporation has nominated. "Corporate farming" refers to capitalistic farming carried out by a joint stock corporation[3], [4].

In corporate farming, the market is the primary focus of almost all agriculture.Typically, the crop pattern is designed to maximize earnings for the business. In the United States, Australia, and England, this kind of farming is quite prevalent.Rubber, tea, and coffee plantations in India are instances of capitalistic agriculture. Large-scale production provides all the benefits of capitalist farming. It may provide a range of financial, commercial, and technological economies. Research projects pertaining to different agricultural operations are also possible. But there are disadvantages to this kind of agricultural structure as well. The employment that results from this kind of farming's excessive use of machines is the most unsettling side effect[5], [6].This

particular aspect weakens workers' negotiating strength and increases the likelihood of their exploitation. Social inequality and the unequal distribution of money are caused by this system. There will need to be a lot of supervisors involved since the farm is huge. Supervisors often provide subpar oversight because they lack an ownership interest. The Farming System state appoints representatives and managers who make up the management. Similar to corporate farming, cultivation is carried out using advanced technology and labor contracted from outside the company. The farm is sizable, and the crop pattern may be designed to satisfy certain societal demands. Crop planning and pricing strategy, in contrast to corporate farming, need not be driven by the desire to maximize profits. There are state farms in India as well, despite the fact that state farming was formerly a significant aspect of the Russian economy[7], [8].

The benefits of state agriculture are essentially the same as those associated with capitalist agriculture. State farming offers all the benefits of large-scale production. In actuality, the state's intentional policy may mitigate some of the worst effects of corporate farming, such as labor exploitation and decreased job prospects. Any cultivation-related gains go to the state rather than to individual investors. Therefore, it may not, in part, result in an unequal distribution of wealth. Land, cattle, and other capital assets are owned by the community as a whole under this kind of agricultural organization. Individual ownership does not exist. It is also required of the community members who own the farm to labor on it. They are regarded as a part of the farm's overall community. They choose a Board of Management to oversee and manage the farm's many enterprises[9], [10].

The government may also propose a few candidates for the management body. This board organizes the sale of crops, prepares the crop pattern, buys different agricultural inputs, and communicates with the government over various production-related regulations. Additionally, it makes arrangements for the collective farm's members to receive a variety of social services, including entertainment, healthcare, and education. A cooperative farm is an independent group of landowners who get together voluntarily to cultivate their property together. If he so chooses, a cooperative farm member may resign from the organization and continue cultivating his own property on an independent basis. A cooperative farm is governed by an elected board. The cooperative agricultural society's members elect the governing body. Additionally, they make plans for the market sale of output and the acquisition of inputs. The whole land that the members have pooled together is regarded as a single form for crop planning purposes. The land's size allows for the cultivation of it using both better agricultural practices and contemporary technology. Cooperative farms have the option of hiring outside labor.

The cost of production is a crucial component of profit maximization, and every sane farmer seeking to maximize profits takes this into account. A farmer often considers cost-cutting measures as a means of boosting profitability. On the surface, it seems that the farmer's first priority is to reduce costs. Nevertheless, careful examination raises a number of equally significant agricultural management-related problems. The accountant and economist have different conceptions of cost. It differs because the general public's understanding of costs often resembles the accounting profession's understanding of expenses. An accountant's main concerns are paid-out expenses, such salaries, seed bills, and feed purchases. The costs associated with the farmer's labor, feed for livestock raised on the property, etc., which are not covered by any financial transaction but nevertheless involve the use of actual resources that could have been used to create something else, are what the economist is interested in imputed costs. The easiest way to quantify these expenses is to figure out how much it would have cost to buy or employ

the relevant variables. The word "cost" has many distinct meanings. To distinguish between various meanings and know which to use when, it is crucial to have a clear understanding of terminology. Instead of waiting to acquire the necessary capital, Alfred Marshall defines the actual costs of products as the exertions of various forms of labor, whether or not they are directly or indirectly engaged in completing it. However, this phrase is seldom used by current economists; instead, they accept cost in monetary terms. For the farmer, the total amount of money he spends on all the many things that go into producing a farm commodity is the money cost of the output.

DISCUSSION

The idea of true cost is relevant, but not very significant when analyzing pricing from a social perspective. Therefore, the labor and sacrifices made by the farmer to produce a commodity would represent the true cost of that item. The fundamental problem with this idea, however, is that because the sacrifices and efforts are a subjective phenomenon, the Farming System cannot be accurately measured. Social costs, also known as opportunity costs, are another cost notion that has gained popularity recently. Commodity Y will be sacrificed in order to produce commodity X on the farm utilizing a bundle of resources. This will be the social cost of cultivating commodity X. The quantity of maize that is sacrificed when a farmer grows paddy instead of maize is the social cost of rice farming. Alternative or opportunity cost of production is another name for it.The term "private cost of production" refers to the costs borne directly by the individual farmer and includes both the monetary estimates of implicit costs and real costs. The monetary worth of inputs that the farmer supplies on his own is known as the implicit cost. The money worth of the farmer's administrative skills, interest on his invested capital, and rent on his own land are all possible inclusions in the implicit cost.

Certain inputs or components may be easily modified in response to changes in the output level. Thus, if a farmer needs to increase the yield of a certain crop, he may quickly hire additional workers, more chemicals, or more seeds. Variable factors are those inputs or factors that are easily changed in reaction to an output change. However, certain input factors like land, buildings, equipment, etc. cannot be changed at an early stage in the near term. Economists distinguish between variable and fixed costs, the sum of which equals the overall cost, in accordance with the division established between variable and fixed elements.Fixed costs are expenses that remain constant despite variations in production. These are fixed costs that a farm business must pay in the near term, regardless of how much is produced. They are also independent of production. Their incidence will continue to decrease when output is extended beyond the zero level, and they will reach their maximum level when output is zero. However, with time, all costs become variable as more chances arise to organize all production factors, including machines and plants.

For instance, a land tax would be considered a fixed cost of manufacturing. Whether a farmer keeps his land fallow or grows 150 quintals of rice, he must pay the same property tax. Unpaid agricultural labor, taxes, depreciation, insurance, and interest on borrowed funds are among the fixed expenses. Variable costs are those associated with farming that depend on agricultural production. If a farmer chooses to do nothing with his property for a year, there won't be any variable expenses. As a result, these expenses vary according on output volume. These expenditures include things like paying hired laborers' salary, buying seeds, fertilizer, and pesticides, paying for gasoline and electricity, paying for transportation, and other related costs.

Total variable costs rise as farm production level increases since variable costs are a function of output. Variable expenses are significant since they aid in the farmer's decision about the quantity or need of production.

The variable cost must be lower than the selling price if the farmer is to continue producing that specific crop. Changing expenses on a typical Indian farm At the time when marginal revenue equals marginal cost (MR = MC), the farmer will make the most money. The explanation is clear: marginal cost and revenue represent increments to overall expenses and revenue, respectively. Therefore, as long as the marginal cost is lower than the marginal income, it benefits the farmer to produce one more unit of output. By doing this, he is increasing overall expenses while decreasing total income. Since more is contributed to total expenses than is added to total income, producing one additional unit is always unprofitable if marginal cost is higher than marginal revenue.

The primary goal of a farmer on a farm is to continuously maximize the use of limited resources by valuing gross production, profits, farm business revenue, and operational surplus—of course, taking certain utilitarian considerations into account. The resources that are employed include labor, money, and land. Many times, one would want to know how much these resources are used to assist achieve the desired goal. Since the farm produces a variety of goods, it might sometimes be helpful to understand how the resources required to produce various products (crops) are compensated. In addition, the farmer may occasionally engage in activities related to appropriate crop production. For instance, raising chickens, dairy products, pigs, etc. The competitive returns from these activities in relation to crop output and to one another can be important to know. Therefore, efficiency measures in agriculture are crucial tools for farm management. They can be used to compare the efficiency of one farm to that of another, determine whether there is room for improvement in a particular farm operation or in the overall use of farm resources. A ratio between certain measurements of returns and certain measures of efforts is used to indicate efficiency.

In light of the previously provided definition of efficiency, a significant collection of agricultural efficiency metrics is predicated on the idea of ratio. "The aggregate measures" are an additional set of efficiency metrics. They are used in the measurement of specific returns on the farm as a whole.A farm may plant a number of crops in a given year, some of which will produce more than the average yield in the area and some of which will yield less. This makes the crop yield index vital. The base (=100) for calculating the yield relative for the crops grown on a certain farm is the average yield of a crop in the area, which is used to create the crop yield index.

For instance, if the region's average rice yield per hectare is 40 quintals, and the specific farm's output per hectare is 50 quintals, then the yield relative for paddy on that farm will be $50/40 \times 100 = 125$. For every crop planted on the farm in question, such yield relatives will be identified. Following the computation of the yield relatives, weights will be assigned to each yield relative. A given crop's weight is determined by calculating its area under cultivation as a proportion of the whole cultivated area on the farm being studied. The crop yield index for that specific farm may then be obtained by taking a weighted average of the yield relatives. If this score is higher than 100, it means that, in terms of agricultural output, the specific farm is more productive than farms in the area as a whole. However, this conclusion won't be trustworthy until the farm's cropping pattern closely resembles the cropping pattern of the whole area. When a farm's crop yield is compared to the area as a whole, its efficiency is determined using the crop yield index.

In this case, it is assumed that the farm's crop pattern is quite comparable to the regional trend. When this presumption is followed logically to its logical ends, it implicitly suggests that the crop yield index will be most accurate when the percentage distribution of cultivated area under different crops on the farm is quite close to the regional average.Conversely, the system index makes the assumption that a farm's cropped area distribution under various crops is not representative of the region as a whole. On a farm, however, the net revenue generated per hectare of a crop is precisely the same as it is for the whole area. The purpose of the index is to determine the difference between a farm's revenue and that of an average farm if, given its own percentage distribution of cropped land under different crops, the farm's per hectare net income for each crop were the same as for the region as a whole. In order to create this index, we first determine the relatives for each crop's area under cultivation as a percentage of the whole cropped area on a farm, using the base of the total area under this crop in the region as a percentage of the total area under different crops in the region. Next, weights are assigned to these relations based on the net revenue generated by each crop in the area per hectare.

This metric displays the amount and size of the agricultural industry as well as the portion that is suitable for household use throughout the same time frame. It also comprises the closing crop stock after the final subtraction of the starting crop stock value at the start of the accounting period: This metric shows how much money a farmer has available to him to use for different types of agricultural improvements. Cash income is calculated by subtracting the cash paid out for different agricultural activities from the overall cash sale earnings and the revenue from renting out farm resources. This is computed by taking the gross revenue as stated in gross income and subtracting different operational expenditures that were spent for production during the accounting period. According to convention, all of the following are included in operating expenses: the value of hired labor; the cost of maintaining owned farm machinery (including tube wells) and the charges for hired labor; payment for hired machinery; the cost of seed, fertilizer, manure, and insecticides; the charges associated with canal irrigation; taxes (not including land revenue); depreciation on working assets; and the cost of renting a tent on leased land. It is possible to compare farming as a company with other vocations using the aggregate measurements. Thus, the comparison aids the farmer in making a decision on his or her future in agriculture. Similar to this, a farmer may determine what adjustments to make in the way they employ different inputs by doing inter-farm comparisons. Naturally, care with respect to "comparability" will be required when comparing farms or occupations.

It is noted that progressive agriculture has the potential to be a potent development engine. Providing food and fiber from agriculture to the non-agricultural sector is one significant way that agriculture fosters the growth of the latter. If the physical production in the non-agricultural sector is to increase smoothly, there should be a sufficient supply of food and fiber crops flowing to it. Numerous actions may be performed in developing nations to boost agricultural output and promote the flow of produced crops into the market. One of these strategies has been the suggestion of corrective price level changes for certain agricultural products. It is anticipated that appropriate adjustments to crop pricing would result in a rise in agricultural output and the amount of crops provided to the market. These nations need a thorough analysis of this recommendation in Farming System. Such an examination is required for the following reasons: developing nations; there is a serious controversy raging in academic circles regarding the impact of price changes on agricultural crop production and flow to the market; it will be difficult to reach any reasonable conclusion in this regard without delving into this controversy.

Three opposing points of view about how price fluctuations affect the supply of agricultural goods have given rise to the dispute. According to this perspective, farmers would boost crop output if they get greater prices for their products so they can take advantage of the new chances.

Farmers will, however, decrease crop output if the prices they are given drop. T.W. Schultz, who highlighted in his seminal book Transforming Traditional Agriculture that traditional farmers are efficient despite their poverty, is among the most serious proponents of this viewpoint. By "efficient," he meant that the farmers exploited their resources so effectively that the marginal returns and costs of the different inputs required to produce the different crops were equal. If farmers hadn't reacted to price fluctuations by growing more of the crops whose prices had increased and less of the crops whose prices had decreased, such an effective allocation of resources would not have been achievable. He also underlined that in traditional agriculture, farmers would only embrace a new production element and cultivate a crop using it if it proved to be more lucrative than the ones that were already in place. This claim once again illustrates Schultz's strong belief that traditional agricultural producers react appropriately to changes in prices as well as other incentives.

There are several explanations for the negative link between pricing and the quantity of crops sold. The first explanation offered for this negative connection is based on the same reasoning as the explanation for the positive association between prices and the quantity of crops sold offered by certain economists. It has been noted that if there is a decline in overall agricultural production as a result of rising agricultural prices, there will inevitably be a corresponding decrease in the quantity of crops sold as a result of rising agricultural prices.

The second theory, which posits that farmers in backward agriculture have fixed or nearly fixed financial obligations and sell only as much of their produce as is necessary to obtain the desired money income, explains the inverse relationship between prices and the amount of agricultural crop/crops.

The practically set necessity for manufactured items that these farmers buy, together with somewhat stable costs for loan servicing, rent, and other expenses, account for the nearly restricted desire for money. Due to its limited availability, the amount of produce that does not need to be sold in order to satisfy the desire for cash has a high marginal value for subsistence farmers. This reasoning is used to support the claim that any price rise would result in a decrease in the marketable surplus as farmers will now be able to satisfy their financial commitments with fewer crops. The excess that farmers sell is referred to as "distress marketed surplus," and it will decrease as agricultural product prices increase.

Supporters of this viewpoint contend that a backward economy has several institutional and social barriers that shield a crop's market sale and production from the effects of price fluctuations. They believe that farmers' conservatism, their belief in traditional crop production, the fact that crops are mostly grown for home use, their lack of education, their inflexible preferences, and their restricted demands all prevent crops from changing patterns when prices fluctuate. The average farm size in many developing countries is too small, and farmers often have nothing to offer on the market, which contributes to the same outcome.

Moreover, poor transportation infrastructure, an ineffective agricultural marketing system, and market flaws like oligopoly, which leads to farmer exploitation, deter farmers from depending too much on the market. Changes in price also have less of an effect on the supply of agricultural

goods to that degree. The availability of agricultural crops is seen by those who support price fluctuations as a factor influencing a crop's ability to produce or sell as a variable. However, there are several severe barriers to production, or the quantity of crop(s) sold against price fluctuations, in a backward economy. Because of this, a shift in the price of one crop won't always have an effect on the production or sale of that crop. According to Mellor, there are situations in which crop patterns may not alter in response to changes in the pricing of certain crops, even in the case of sophisticated agriculture. (not as a result of cultural or social influences). This is due to the fact that particular capital may exist in contemporary agriculture. The expense of replacing equipment might be prohibitive, which would severely restrict how some crops' supplies react to price changes.

CONCLUSION

The notion of farm groups is analyzed to show how important a role they play in empowering farmers, advancing rural development, and supporting sustainable agricultural methods. Within the agricultural industry, farm groups play a crucial role in advocating farmers' interests, promoting cooperation, and enabling group action. Farm groups improve agricultural output, expand market access, and strengthen the resilience of farming communities via marketing, advocacy, input supply, and information exchange. Through resource pooling, risk sharing, and technology and information access, farmers may lower production costs, increase their negotiating power, and enhance their standard of living.Additionally, farm groups are essential in advancing sustainable farming methods including conservation agriculture, agroecology, and organic farming. Farm organisations play a crucial role in preventing environmental deterioration and enhancing the resilience of agricultural systems by encouraging ecologically friendly practises, minimising chemical inputs, and preserving natural resources.other difficulties that farm groups must deal with include a lack of funding, capacity limitations, and governance problems, all of which may compromise their long-term viability. Farm groups must work with other stakeholders, exercise strategic planning, and exercise strong leadership in order to overcome these obstacles. To put it simply, farm groups are vital forces behind food security, rural change, and agricultural growth. Farm groups may help create more resilient, inclusive, and profitable agricultural systems and rural communities by empowering farmers, encouraging group action, and promoting sustainability.

REFERENCES:

[1] M. Elliott and H. S. James, “Nature of the Farm: Revisited,” *Agricultural and Resource Economics Review*. 2017. doi: 10.1017/age.2016.32.

[2] G. O. Onogwu, I. A. Audu, and F. O. Igbodor, “Factors Influencing Agricultural Productivity of Smallholder Farmers in Taraba State, Nigeria,” *Int. J. Agric. Innov. Res.*, 2017.

[3] S. Joosse and A. Grubbström, “Continuity in farming - Not just family business,” *J. Rural Stud.*, 2017, doi: 10.1016/j.jrurstud.2016.11.018.

[4] H. C. Simpson and R. C. de Loë, “The agricultural community as a social network in a collaborative, multi-stakeholder problem-solving process,” *Water (Switzerland)*, 2017, doi: 10.3390/w9100750.

[5] C. Eastwood, L. Klerkx, and R. Nettle, "Dynamics and distribution of public and private research and extension roles for technological innovation and diffusion: Case studies of the implementation and adaptation of precision farming technologies," *J. Rural Stud.*, 2017, doi: 10.1016/j.jrurstud.2016.11.008.

[6] J. Sbicca and J. S. Myers, "Food justice racial projects: fighting racial neoliberalism from the Bay to the Big Apple," *Environ. Sociol.*, 2017, doi: 10.1080/23251042.2016.1227229.

[7] J. E. Emurotu and P. C. Onianwa, "Bioaccumulation of heavy metals in soil and selected food crops cultivated in Kogi State, north central Nigeria," *Environ. Syst. Res.*, 2017, doi: 10.1186/s40068-017-0098-1.

[8] J. M. Mazur and S. Westneat, "A socio-cognitive strategy to address farmers' tolerance of high risk work: Disrupting the effects of apprenticeship of observation," *J. Safety Res.*, 2017, doi: 10.1016/j.jsr.2016.12.006.

[9] C. Bain, T. Selfa, T. Dandachi, and S. Velardi, "'Superweeds' or 'survivors'? Framing the problem of glyphosate resistant weeds and genetically engineered crops," *J. Rural Stud.*, 2017, doi: 10.1016/j.jrurstud.2017.03.003.

[10] C. Dubois, M. Cawley, and S. Schmitz, "The tourist on the farm: A 'muddled' image," *Tour. Manag.*, 2017, doi: 10.1016/j.tourman.2016.08.016.

CHAPTER 9

EXPLORATION OF FARM SIZE AND PROFITABILITY

Dr. Ashish Kumar Awasthi, Assistant Professor,
Department of Science, Maharishi University of Information Technology, Uttar Pradesh, India.
Email Id-ashish.awasthi@muit.in

ABSTRACT:

In order to better understand the link between farm size and profitability, this article looks at the variables that affect the financial sustainability of various farm sizes in agricultural production systems. Farm size has an impact on market access, resource allocation, and technology adoption. It is a critical factor in determining agricultural production, efficiency, and profitability. Utilizing theories, empirical research, and case studies related to agricultural economics, this study explores the dynamics of farm size and profitability by taking into account variables including market integration, labor efficiency, economies of scale, and input consumption. It examines the obstacles and chances that both large- and small-scale farms must overcome in order to maximize profits and maintain livelihoods. This research attempts to increase knowledge of the intricacies of farm size and profitability and their consequences for rural life, agricultural growth, and food security via an extensive investigation.

KEYWORDS:

Agriculture, Farm Size, Profitability, Rural Livelihoods, Sustainability.

INTRODUCTION

The efficiency of small-sized holdings is a crucial topic to consider.Small farms are often considered to be less profitable than larger farms, which makes them inefficient. Amartya Sen started this discussion because he thinks that family labor in agriculture is given an imputed value based on the prevailing pay rate, making Indian agriculture seem to be unprofitable. Amartya Sen asserts that the profitability of agriculture rises with the amount of holding profitability, which is determined by the excess of production over expenses, including labor's imputed value. Saini, however, disagrees with Sen. Upon scrutinizing the agricultural management statistics for the states of Uttar Pradesh and Punjab, he ascertained that the labor's marginal value product was not only positive but also exceeded the labor expenses[1], [2].

From the perspective of economic policy, the debate concerning the inverse connection between farm size and land productivity is not only of academic interest. It is crucial. The decision between huge capitalist farms using hired labor, large family farms based on labor, and large farms with cooperative types of organizations are significant issues in this respect. Whether we interpret the inverse connection as a sign of small farms' increased efficiency or as a reflection of their stressful circumstances would have different policy consequences[3], [4]. If we were to accept the former viewpoint, we would advocate for actions to facilitate the transfer of land from large to small and medium-sized farms through sales and commercial trends (Hanumantha Rao) or make the same argument as Dandekar, according to which the capitalist form of wage-labor organization in the Indian farming system will result in inefficient aggregate output and that the peasant family system implied by individual peasant proprietorship would be superior.It is

generally acknowledged that economically small farms are more efficient than huge ones. They also foster social cohesion in rural areas. Encouraging big farms would make small farms less able to compete with them, which may upset the larger farms and perhaps result in the sale of distressed small holdings. This would add to the nation's already sizable army of laborers without land. In essence, the size-productivity connection is a relationship between output and a single input, in this case land. Several economists attempted to deduce conclusions about the nature of returns to scale in Indian agriculture from this connection. Put another way, some economists suggested that India's agricultural returns to scale were declining prior to the Green Revolution. This is incorrect, however, as the returns to scale are shown by the total of returns rather than the returns to a single input, like land[5], [6]. Several economists attempted to calculate returns on all inputs combined using farm management data. They came to the legitimate and mutually consistent results that returns to a single variable input (let's say land) dropped and that (b) returns to scale in Indian agriculture were determined to be constant. These two findings have been reached by Khusro and Saini. Therefore, regardless of the status of agricultural technology, we may infer 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 differing views.

The agricultural pricing policy is one of the most significant national level policies in any country. It is an essential tool for determining the nation's agricultural commodity pricing. In order to safeguard the interests of both farmers and consumers, this policy considers a number of variables and circumstances related to the agriculture sector, the market, and the economy. A nation's economy would suffer greatly in the absence of a strong agricultural pricing policy, which would have an immediate impact on farmers and producers. A number of measures are also included in the policy choices to prevent negative circumstances, such as a poor crop year, drought, and other unforeseen circumstances[7], [8].

You will discover the nature and goals of agricultural pricing policy in this unit. After that, you will study the key components of agricultural pricing policy and evaluate India's agricultural price policy. The cost of agricultural products is a crucial concern for consumers, producers, and the government. Due to the seasonality of farm output and the poor income elasticity of the market for farm goods, it is significant for farmers. It matters to homes since agricultural goods are often necessary for survival. Food costs that are too high cause financial strain on households, with marginal families bearing the brunt of this. It is significant to the government because a spike in agricultural prices sets off inflation, which jeopardizes the nation's economic stability. But of the three, the agricultural community is most vulnerable to changes in the market price of the products they produce[9], [10].

The extremely variable pricing of agricultural goods are caused by seasonal differences in output, which implies that farmers' revenue is always changing. Farmers' income and output volatility reduces their motivation to make investments. The nation may face a food grain crisis as a result of low agricultural productivity. Food grain stocks might collapse to dangerously low levels, prices could soar, and the actual incomes of the poorest segments of society could decline to the point of utter poverty, suffering, and famine. Therefore, it is essential to keep an eye on farm output and stable agricultural prices.

In addition to guaranteeing farmers' income, stable agricultural prices would make food supplies more accessible to a wider swath of the population. Additionally, the economy would be

generally stable as a result. As a result, an appropriate government policy is required to lessen price swings and stabilize agricultural earnings. India's agricultural markets are structured in a way that complies with the fundamentals of perfect competition. There are often tiny producers in the agricultural markets. These marketplaces provide relatively uniform product and knowledgeable consumers and sellers. A change in the price of agricultural goods does not immediately affect supply and demand.

DISCUSSION

Due to the cyclical nature of farming, farm supply cannot increase instantly in agricultural markets, even in cases when prices rise. In a similar vein, since there is little demand elasticity for agricultural goods, consumer demand does not increase as prices decline. However, agricultural supplies and their pricing are very unpredictable due to the seasonal nature of agriculture and their heavy dependency on climate. When combined, these traits have a significant effect on the pricing of the agricultural product covered by the Agricultural Price Policy. Prices move in the other way when there is a change in the supply of agricultural produce. Prices drop with a good harvest; they rise with a bad one.

The kind of demand determines how much prices fluctuate. When demand is elastic, price fluctuation will be modest, and when demand is inelastic, it will be significant. Due to the generally inelastic demand for agricultural goods, price fluctuations resulting from variations in supply are sometimes very significant. Demand for agricultural goods has a price elasticity of less than unity or is comparatively inelastic. When demand's price elasticity is less than unity, there is very little demand expansion in the face of a significant price decrease and very little demand contraction in the face of a significant price increase. This may be attributed to the need of agricultural goods. There are very few substitutes for these fundamental needs in life.

They are essentially ingested in set amounts. When comparing the supply of agricultural goods to that of non-farm items, it is more elastic. When there is a significant price increase, there is very little supply extension, and when there is a significant price decrease, there is very little supply contraction. This is known as relatively inelastic supply.A change in agricultural output has to wait until the next growing season.

The amount of time needed for the natural manufacturing processes cannot be changed. Furthermore, cultivating the same area repeatedly in a year to increase the yield of a certain crop is not permitted. This is not the case with the supply of industrial output, which can be modified by using the same plant at varying intensities throughout time.

Supplementary expenses, often known as fixed costs, are quite high in the agricultural industry. This serves as a built-in safeguard against changes in agricultural supplies. Changes in the cost of agricultural goods may have detrimental effects on farmers and purchasers, including consumers, businesses, and exporters.

The cost of life is increased first and principally by increases in the prices of agricultural goods in general and foodgrains in particular. This prevents the less fortunate members of society from having access to food grains. As a result, there is a tendency for hunger and famine to increase. Second, an increase in the price of agricultural goods indicates an increase in the cost of industrial production since farm products are employed as industrial inputs. This will undoubtedly impede the expansion of industrial output. Third, there is inflationary pressure when

living expenses increase as a result of the upward trend in foodgrain prices. An rise in factor pricing is implied by rising prices because they drive up the cost of increasing salaries and other factor compensations. This is an additional inherent constraint on the growth of the manufacturing sector within the economy.

Farmers' revenue increases as agricultural commodity prices rise. However, the debate remains as to whether increasing agricultural commodity prices benefit all farmers. Since many small and marginal farmers seldom ever bring their goods to the controlled markets, the answer is unquestionably negative. In order to pay back the money lenders for all of their loans, they often pledge their product (at a discounted price). Conversely, low-income farmers are forced to pay exorbitant rates for the market's inputs (as farm output prices increase, so do farm input costs). Even while farmers often benefit in certain ways from growing farm output prices, the losses caused by growing farm input costs may exceed these advantages. Thus, even in cases when the price of agricultural produce tends to rise, it is not always the case that farmers end up winning. It is undeniable, nonetheless, that wealthy farmers and landlords make their fortunes during periods of rising prices. This is a result of these farmers' great storage capacity. Produce is built away from market oversupply; it is sold when prices peak, resulting in a significant profit margin.

A decrease in the cost of agricultural goods is always appreciated by consumers. However, it is nothing less than a nightmare for the farmers. Farmers have disincentives to produce more when the prices of agricultural goods decrease too much. As a result, there is often a decline in agricultural output supply and production. As a consequence, buying power and income levels tend to decline, which might lead to a decline in demand for the economy's industrial and service sectors. If the decline in demand and prices doesn't stop, a widespread recession can start.The unanticipated change in agricultural product supply is the reason for the unstable pricing of agricultural goods. This increases the susceptibility of farmers and consumers alike. Both industrial producers and consumers are negatively impacted by rising costs. Both the cost of production for industrial companies and the cost of living for families are increased by them. Such circumstances lead to deflationary pressures and a trembling of the economy's total demand.

Conversely, declining prices provide farmers with disincentives. As a result, output and investment levels decline, and a feeling of unease and worry about the supply of foodgrains permeates the economy. The agricultural pricing policy is composed of many components. We will examine some of the key components in this area, including the setting of product prices, the pricing strategy for agricultural inputs, consumer protection, and auxiliary regulations. In general, it is conceivable for pricing that benefit agricultural product producers to act against the interests of the non-agricultural sector, and vice versa. As their economies have developed, this has really been one of the main factors driving the agricultural pricing policies of many different nations.

Occasionally, the industrial sector has benefited primarily or exclusively from the manipulation of agricultural input and product prices, as well as the development of supplementary fiscal and administrative policies. Other times, the agricultural sector has benefited from the pricing policy at the expense of non-agricultural industries. "Negative" and "positive" pricing policies are the terms used to describe the two categories of price policies. Many nations have adopted a "negative" agricultural pricing strategy early in their history in an attempt to accelerate economic

growth. The primary aim of this strategy was to maintain food and raw material costs at a relatively low level in relation to industrial product prices. This was done to encourage the expansion of the industrial and tertiary sectors by means of higher profits and savings for these sectors. Stated differently, the agricultural sector was intentionally excluded from the favorable terms of trade. This was mostly accomplished in two ways.

One approach is forcing a part of the agricultural production to be sold or delivered to the state at a significantly reduced cost relative to the open market. There have also been cases when a percentage of agricultural production was subject to zero-price taxes. These actions led to a significant decrease in the producer's average price realized per unit of total production. The second way to accomplish the same goal has been to let the costs of industrial items, which farmers often buy, to grow. The products included equipment, fertilizers, insecticides, pesticides, and agricultural inputs like textiles. Conversely, the costs of agricultural goods remained constant. This gave the industrial sector a comparative edge once again. Various nations, including Argentina, the Soviet Union, and the United Kingdom, have adopted one or a combination of these techniques to varied degrees.

As an alternative to the "negative" policy, some developing nations now adhere to what is known as the "positive" pricing policy, which guarantees farmers a fair price for their goods. The understanding that achieving the broad goals of economic growth and development would be impossible without the agriculture sector reaching a certain crucial minimum rate of growth is what makes such a program important. for the agricultural products throughout the early phases of industrial growth. Under such a strategy, no precise standards were established for setting the pricing of agricultural goods. It became crucial to make sure that agricultural prices were set in a way that would adequately incentivize farmers to achieve the highest level of agricultural output once the negative agricultural price policy gave way to the positive price policy. The term "minimum support prices" refers to these incentive pricing.

If the market price of a certain crop drops below the minimum support price, the government agrees to buy it. As a result, several guidelines for setting the price of agricultural goods developed. An The amount of minimum support prices may be established using the average cost or bulk line cost of production, which is computed using cost accounting techniques. The budgeting methodology is an additional variation of the cost accounting method. The cost per unit of production is estimated using this method by factoring in the typical yields and costs of suggested agricultural inputs. To some degree, the cost of production concept of setting administered prices is preferable as it shields the main producer from any losses brought on by an unanticipated drop in price.

However, when determining the cost of production of a certain crop, there are issues with allocating suitable values to family labor, other inputs provided from domestic sources, and managerial input. As per Rath, assessing the land's services is a significant challenge in figuring out the production cost. Allocating shared expenses across several crops leads to still another issue. Moreover, given the broad variability in agroclimatic conditions and agricultural practices, the notion of an average cost per unit of output which is often employed as the foundation for price fixing under this principle is ambiguous. Put another way, there is a significant amount of cost variation between farms. This further suggests that not all farms will be able to afford the production costs associated with using this method of setting support prices for agricultural goods. Furthermore, unlike in the past, a pricing strategy specifically designed to boost output

cannot be based on the average cost of production. It is a well-known fact that the usage of non-conventional inputs has increased recently, contributing significantly to the rise in agricultural productivity. As previously said, the pace at which farmers adopt these extra inputs depends on the financial rewards.

The farmer in such a case should be more focused on marginal costs and marginal returns than on the traditional cost of production estimates. When the marginal return (discounted for risk) matches the marginal cost, he should increase the utilization of inputs. Therefore, the manufacturing cost in the context of bookkeeping is unrelated to the issue at hand.Furthermore, the cost of production criteria overlooks the role that demand plays in setting pricing, taking into account just the supply side.Rath actually holds the opinion that "the actual cost of production" should not be used as a criterion for setting agricultural crop prices because the price of a given crop is set before the sowing season, but the actual cost of production cannot be determined until the crop has been harvested. Therefore, stated costs are determined by the expected cost of manufacturing rather than the actual cost of production, which may sometimes even rise over the stated pricing. Therefore, it is thought that the cost of production approach is not particularly good for making policy judgments.

According to this theory, the price must be based on a moving average of recent market values. The benefit of this strategy is that it incorporates demand patterns into price fixing, while the cost criteria completely ignore this factor. As a result, the key to this criterion's significance is its ability to align supply and demand growth throughout the relevant time periods. However, the moving average could not accurately represent market patterns in an environment where prices have historically been maintained low on purpose. Even in the event that things were different, current pricing often fall short of offering the essential incentives for a sustained rise in output.The price that buys as much of the other goods and services as the seller of a unit of an item can with the same unit over a certain base time is known as the parity price. Put another way, "parity" refers to the same connection between the prices that farmers pay for non-agricultural goods and the administered farm prices for a particular year as it did for the base year. Therefore, the prices of agricultural and non-agricultural goods may be stabilized by using the parity pricing approach. In addition, this idea may be used to guarantee price parity for other agricultural goods.

It is necessary to adhere to the pricing policy for agricultural goods. Some interpret this to mean that pricing for agricultural and non-agricultural goods should remain equal as well as that they should keep getting closer to being more favorable to the agricultural industry. Stated differently, the goal of pricing policy ought to be to modify the conditions of trade so as to benefit agriculture. To accomplish this goal, the following process is used. First, an appropriate base year (or base period) is used to produce price index number series for industrial and agricultural items. Next, the ratio for the base year between the index numbers of industrial and agricultural goods is determined. The ratio between the price levels of the two sets of these commodities will always equal one because the index number of prices for both sets of commodities in the base year is equal to 100. Nonetheless, a value of 100 is often attributed to this ratio. We refer to this as the "Parity Price Ratio.

CONCLUSION

Understanding the economic dynamics of agricultural production systems and its consequences for rural lives and food security is crucial, as shown by the study of farm size and profitability.

The profitability and economic sustainability of agricultural activities are largely determined by the size of the farm, with big and small farms having different possibilities and constraints. Economies of scale are advantageous to large-scale farms because they enable them to distribute fixed costs across a broader production base and increase profitability and productivity. Large-scale farms may, however, also have to contend with difficulties that might harm their sustainability and profitability, such as complicated management, high input costs, and unstable markets.

However, small-scale farmers could have limitations such restricted access to finance, land, and technology, which might have an effect on their profitability and productivity. Nonetheless, small-scale farms often offer benefits including increased labor efficiency, flexibility, and resistance to market swings, which may support their sustainability and profitability. Furthermore, a number of variables, including market accessibility, technology adoption, input usage efficiency, and governmental support, affect the link between farm size and profitability. Small-scale agricultural operations may become more profitable and sustainable via policies that support small-scale farmers' access to technology, land, and financing as well as by actions that increase market accessibility and value addition. All things considered, attaining sustainability and profitability in agriculture requires a sophisticated comprehension of the interplay of market dynamics, farm size, and production techniques. Policymakers, academics, and stakeholders may work toward building inclusive, resilient, and profitable agricultural systems that benefit all parties engaged by acknowledging the unique requirements and problems encountered by different kinds of farms.

REFERENCES:

[1] P. Ymeri, F. Sahiti, A. Musliu, F. Shaqiri, and M. Pllana, “The effect of farm size on profitability of laying poultry farms in Kosovo,” ***Bulg. J. Agric. Sci.***, 2017.

[2] I. Saidi, B. Johnston, and P. C. Southgate, “Potential profitability of pearl culture in coastal communities in Tanzania,” ***Aquac. Reports***, 2017, doi: 10.1016/j.aqrep.2016.11.003.

[3] J. M. Bewley, L. M. Robertson, and E. A. Eckelkamp, “A 100-Year Review: Lactating dairy cattle housing management,” ***J. Dairy Sci.***, 2017, doi: 10.3168/jds.2017-13251.

[4] O. T. Olukunle, “Profitability Analysis of Small Scale Fishery Enterprise in Nigeria,” ***J. Agric. Sci.***, 2017, doi: 10.5539/jas.v9n3p107.

[5] C. B. Dodson and B. L. Ahrendsen, “Farm and lender structural change: implications for federal credit,” ***Agric. Financ. Rev.***, 2017, doi: 10.1108/AFR-05-2016-0046.

[6] A. Kumar, S. Saroj, G. Thapa, P. K. Joshi, and D. Roy, “Compliance with famong smallholder dairy farmers in Bihar, India: drivers and impact.,” ***IFPRI - Discuss. Pap. 1689***, 2017.

[7] A. Kumar, G. Thapa, D. Roy, and P. K. Joshi, “Adoption of food safety measures on milk production in Nepal: Impact on smallholders’ farm-gate prices and profitability,” ***Food Policy***, 2017, doi: 10.1016/j.foodpol.2017.05.002.

[8] C. D. Chima and S. Rahman, "Socio-economic determinants of modern technology adoption and the influence of farm size on productivity and profitability in cassava production: A case study from south-eastern Nigeria," in *Handbook on Cassava: Production, Potential Uses and Recent Advances*, 2017.

[9] C. K. Njuguna, L. WKabuage, and E. KBett, "Economic analysis of indigenous chicken production: The case of smallholder farmers in Makueni and Kakamega Counties," *Int. J. Agric. Ext. Rural Dev.*, 2017.

[10] G. N. Ben-Chendo, N. Lawal, and M. N. Osuji, "Cost and Returns of Paddy Rice Production in Kaduna State," *Eur. J. Agric. For. Res.*, 2017.

CHAPTER 10

OVERVIEW ON AGRICULTURAL TAXATION SCOPE AND IMPORTANCE

Dr. Ashish Kumar Awasthi, Assistant Professor,
Department of Science, Maharishi University of Information Technology, Uttar Pradesh, India.
Email Id-ashish.awasthi@muit.in

ABSTRACT:

An overview of agricultural taxes is given in this study, along with an analysis of its use, significance, and reach within agricultural economies. In order to raise money for government spending and encourage the fair distribution of resources, taxes are levied on agricultural operations, land holdings, and agricultural output. This practice is known as agricultural taxation. This article investigates the range of agricultural taxation, including the kinds of taxes levied on agricultural operations and the techniques of tax collection, drawing on economic theory, policy analysis, and case studies.

It looks at how important agricultural taxes are for supporting sustainable agricultural growth, funding public goods and services, and redistributing income. This study attempts to provide a deeper knowledge of the function of agricultural taxes in agricultural economies and its consequences for rural lives, food security, and economic growth by providing a thorough analysis.

KEYWORDS:

Agriculture, Economic Development, Fiscal Policy, Rural Livelihoods, Taxation.

INTRODUCTION

For most Indians, agriculture is their main source of income. The majority of families in the nation solely have this source of income. People rely on agriculture to provide them with food and other necessities for daily life. Additionally, the government has been developing several programs to support and foster expansion in the agricultural industry. Agricultural operations are the actions taken to prepare the land for crop growth.

The term "agricultural income" refers to revenue from agricultural activities, which includes the work done to prepare a product for market. Only when agricultural activities are carried out on the land are rent or revenue from the agricultural land and money received by the farmer or recipient from the sale of goods free from taxation [1], [2].

Land must have undergone some level of cultivation in order to be considered used for agriculture. All land production, including grains, fruits, tea, coffee, spices, plantations, groves, and grasslands, is included in the definition of agriculture. Livestock breeding, aquaculture, dairy farming, and poultry farming on agricultural land, however, are not considered agricultural activities. To be eligible for tax-free income in the case of rent or revenue, the assessee must have an interest in the land (as an owner or a mortgagee). In contrast, the cultivator in an agricultural enterprise does not always have to be the landowner[3], [4]. He can be a subleasee or a tenant. Stated differently, all land tillers are farmers and are thus free from paying taxes. In

certain instances, additional procedures could be required to turn agricultural output into a commodity that can be sold. Since the producer's ultimate goal is to sell his goods, the sales earnings in these situations are regarded as agricultural revenue.

In India, income from agriculture is excluded under Income Tax Act Section 10(1). Nonetheless, a lot of individuals think that because agriculture generates a lot of money for society, its income ought to be taxed. Moreover, these individuals cite Punjab and Maharashtra as examples of regions where sugarcane, a commodity with a large yield, is the primary crop yet no tax is collected on it. However, the federal government has not yet completed any such changes to the income tax regulations, and it is not even inclined to do so anytime soon. Indian agriculture had a remarkable rise in output throughout the 1960s, particularly in the production of wheat and rice crops. It was mostly due to an improvement in these crops' production per hectare. The abrupt and noticeable boost in agricultural yield led some economists to refer to the new development as the "Green Revolution." The general growth of the economy is contingent upon the advancement of agriculture[5], [6]. A developed agricultural sector is a significant driver of economic development. By supplying the required labor, capital, raw materials, wage products, and foreign currency, it aids in the beginning and maintenance of the growth of other economic sectors. Given this, it was not unexpected in the slightest that the Indian government had placed such a strong focus on the growth of agriculture from the outset of the planning period.

In light of this, a new agricultural plan was implemented in 1966–1967 with the goal of producing food grains at a quick and remarkable pace. Even though the nation was already implementing a new agricultural development strategy that included I.A.D.P. and I.A.A.P., the new strategy's main departure was the introduction of intensive cultivation using new, high-yielding seed varieties supported by sufficient water supply, more and better plant nutrients, and effective plant protection. A three-pronged approach to agricultural growth was implemented under the new agricultural strategy, which included a program aimed at producing high-yielding varieties, the use of machinery, contemporary chemical technologies, and a price support policy for foodgrains. This unit's last portion also discusses the Indian economy's food processing sectors[7], [8].Prior to gaining independence, Indian agriculture was archaic, unchanging, and essentially non-vibrant. As the proprietors of the soil, the zamindars acted more like absentee landlords, seeking to extract as much income from the soil-tillers as possible. There was no incentive for the cultivators to invest, and productivity was poor. Serious harm was also inflicted by the country's partition, since Pakistan gained most of the productive regions. Politicians and farmers came to the realization that agriculture needed to undergo a significant change after independence.

Agriculture was thus given top attention in the Five Year Plans. The First Five Year strategy was, in actuality, mostly an agricultural strategy. However, not much progress was accomplished in the early planning years. Our ability to produce enough foodgrains on our own remained a pipe dream, and we were forced to rely on imports to meet our needs. India made a significant technical advancement in agriculture in the 1960s, which allowed us to develop the New Agricultural Strategy. The use of High Yielding Variety (HYV) seeds was essential to the new tactic. It resulted in the Green Revolution, or significant increases in foodgrain production. India thus became a net exporter of food grains as a result of the Green Revolution[9], [10].

The Ford Foundation Team visited India in 1959 and made suggestions that led to the government of India implementing the New Agricultural Strategy, a new strategy for the growth

of agriculture. The term "Green Revolution" or "New Agricultural Strategy" refers to the use of modern agricultural technology in the 1960s to increase agricultural production. It aimed to raise productivity levels in order to boost agricultural output. In addition to bettering the marketing system, it included institutional reforms in agriculture, the use of HYV seeds, chemical manures, irrigation, and plant protection measures.

The New Agricultural Policy addressed marketing in addition to production. It emphasized how important it is for farmers to get a fair price for their goods. The Agricultural Price Commission was to be established in this situation. In a nutshell, the New Agricultural Policy created a thorough plan for agricultural advancement. It placed equal emphasis on removing current barriers to agricultural growth as it did on introducing novel production methods and input packages. Additionally, the integrated rural development program, which envisioned the comprehensive development of rural regions at the village or district level, attempted to enhance agriculture as a component. The Ford Foundation Team's proposals led to the establishment of the Intensive Agricultural District Program in 1960–1961 years. This initiative called for the establishment of development plans specifically focused on agriculture in a few chosen regions, as opposed to the whole rural sector. The program's goal was to accelerate development by the prudent use of labor, capital, and inputs in a few chosen areas.

DISCUSSION

It did not, however, suggest that the development initiatives should stop in any other areas of the rural economy outside of the chosen districts. The concept merely suggested that a concentrated effort be made to improve a few chosen districts in order to accomplish some outstanding breakthrough that might serve as a model for rural regions' growth and development. This is the rationale for the name "Intensive Agricultural District Program" for this program. The program was also known as the "Package Programme" because it included a "package" of enhanced farming techniques to achieve a breakthrough in agricultural output and productivity.

The New Agricultural Policy has had a substantial impact on the perspective of farmers. No instance of resistance to new technology was found in any of the IADP areas. Rich farmers responded to this new farming method by putting in tube wells to provide a steady supply of irrigation water while also using HYV seeds and other supplemental inputs. It was discovered that even impoverished farmers were eager to use the new technology.The government determined that an intense agricultural program should be started in all regions with the potential for scientific agriculture based on the experience of the intense Agricultural District Program and the midterm review of the Third Plan. The IAAP might be implemented across 20–30% of the land that is farmed, according to the Agricultural Production Board's suggestion. The country's 117 districts saw the implementation of the Intensive Agricultural Area Program in 1964–1965 in response to the Board's recommendations. The program's main goal was to increase agricultural production by cultivating a few key crops in the nation intensively.

To promote the use of chemical fertilizers, the government has implemented a number of initiatives. The selling of chemical fertilizers is no longer restricted. Credit is granted to small and marginal farmers that buy chemical fertilizers. Farmers may get free advice and instruction on how to utilize chemical fertilizers correctly. The quantity of chemical fertilizer retail locations has significantly increased. Nonetheless, research is also being done to learn more about the conventional sources of manures, such as gobar, compost, and green manure.

This is to make sure that the demand for chemical fertilizers, the majority of which are imported from across the globe and so place a significant financial strain on the exchequer, is not excessively increased. But instead of trying to limit the use of chemical fertilizers, traditional sources of manure are being investigated in an effort to increase the amount of manures and fertilizers available nationwide. In actuality, the government provides farmers with a subsidy when they buy fertilizer. An essential part of the new technique are HYV seeds. In Indian agriculture, HYV seeds have been utilized more often from 1964–1965. Both state governments and authorized seed manufacturers produce these seeds.

The Indian Council of Agricultural Research (ICAR) and other agricultural colleges have done a great lot of research on the development of high-yielding seed types. The National Seeds Corporation certifies high-quality seeds. The most successful wheat seeds for addressing India's food scarcity are HYV seeds. For a number of crops, including cotton, rice, and bajra, comparable seeds have been created. The total area planted with HYV seeds climbed to 380 lakh hectares at the start of the Fourth Plan. In order to encourage the use of HYV seeds, State Seed Corporations were founded under the Sixth Plan. These companies provide the state-level need for seeds. The companies are working on specialized research projects to create HYV seeds for feed, cotton, pulses, oilseeds, and other crops. The import of HYV seeds for vegetables, flowers, legumes, coarse grains, and oil seeds has been promoted by the central government. 150 lakh hectares were planted using HYV seeds overall in 1970–71. It grew to 780 lakh hectares in 2000–01. In India, pests and insects cause roughly 10% of the yield to be lost annually. Plant protection is the process of shielding crops from insects and other pests. Among the methods used to safeguard plants include seed treatment, pesticide spraying, rodent elimination, etc.

Plant protection is thus implemented both before to and after seed sowing. To increase their resistance to disease, seeds are chemically treated before being sown. Crops need to be protected from insects and pests after seeding. There are two primary obstacles to launching a plant conservation program in India: First, the farmers' use of herbicides and insecticides is not technically efficient. Furthermore, farmers sometimes hesitate to purchase pesticides and insecticides due to their exorbitant market pricing. In an effort to control pesticide and insecticide pricing, the government has made the following two significant moves: (i) The excise tax on raw materials used to make pesticides has been waived, and (ii) the import of pesticides has been liberalized. The Pest Warning Scheme was introduced during the Fourth Plan to alert farmers about pests and plant diseases. The Fifth Plan included the expansion of official plant protection facilities, the addition of training facilities, and the introduction of an agricultural air service for pesticide aerial spraying. Pesticide use reached eighty-two thousand tons in 1991.

An Integrated Pest Control Strategy was implemented in the Seventh Plan. It sought to implement environmentally beneficial plant protection procedures. In India, soil erosion affects 14 crore hectares of land, or around 43% of the country's total land area. This makes the land unsuitable for farming. However, by using soil restoration techniques, nearly 4 crore hectares of this land may be recovered. Therefore, improving the soil has the potential to increase agricultural output. All of these actions aimed at enhancing the soil are included in soil improvement. These techniques include terracing, bunding, leveling the ground, and farming the land in accordance with contour lines, among others. e: The main tool used by policymakers to prevent soil erosion was the soil conservation program. When the top (fertile) layer of soil is either blown away by high winds or washed away by severe rains or floods, soil erosion occurs. It becomes difficult to farm the land as a consequence. The goal of the soil conservation program

was to prevent soil erosion via terracing, plugging up drains, contour bunding, and other techniques. To carry out the soil conservation program, the Central Soil Conservation Board was founded in 1953. Due to the absence of a thorough national soil survey for the nation, the program's initial development was very sluggish. Nonetheless, soil investigations have been carried out regularly since 1960. The effectiveness of the soil conservation program has increased since then. In 2000–01, 33.5 lakh hectares of land were the subject of soil (and water) conservation programs, assuming that the water-shed served as the operational unit. Additionally, soils that are saline or alkaline become unusable for farming. Alkalinity and salinity impact over 70 lakh hectares of land in Punjab, Haryana, and Uttar Pradesh. The Seventh strategy established a central strategy to recover this territory. During the Eighth Plan, comparable plans were introduced in Gujarat, Rajasthan, and Madhya Pradesh. They spend two or three years growing it. They leave one weed-infested patch of land and clear another by burning the surrounding bush. This strategy turns land into culturable waste, which slows down the expansion of agriculture.

In the northeastern states of Assam, Meghalaya, Nagaland, Tripura, Andhra Pradesh, etc., shifting agriculture is the norm. The Watershed Development Project was started by the government to stop and oppose shifting farming. As part of this initiative, jhume lands are permanently farmed by jhumia families after being improved on a watershed basis. It was expected that 80,000 hectares of land will be covered by the Watershed Development Project by 2000–01.

The government then uses the price index statistics for the two sets of commodities for that year to determine the real price ratio in an effort to maintain parity between the prices for agricultural and industrial goods. This ratio may have a value of less than 100, equal to 100, or more than 100, assuming that the base year price ratio has been given a value of 100. In order to restore the base year's level of parity between the prices of industrial and agricultural goods, the government must make sure that this ratio's value equals 100. It will raise or lower agricultural prices to the necessary amount for this reason. The modified agricultural prices for that specific year's agricultural commodities will be referred to as the "Parity Prices."

In order to achieve projected production objectives for certain crops, the price ratio idea may be used to change the crop mix. Price ratios for crops whose output has to be increased should be made favorable. It is clear that the parity method separates the administered pricing from the production cost. This sometimes results in disincentives for the producers. Furthermore, owing to variations in the industrial sector's pricing structure across different parts of the same nation for a variety of reasons, the parity price criteria may require fixing different prices for the same crop in those locations. Administratively, this position may not be simple. In addition, a lot of issues arise while creating the index values that are needed to determine the current price ratios.

As was already said, there are disadvantages to each of the aforementioned criteria as a result, more than one criterion is used by the price fixing authority to make choices. When setting the pricing, they would want to take into account a wide range of additional elements in addition to the recommendations made by the previous techniques. Farmers use a wide range of inputs to cultivate crops. These inputs for agriculture include labor from people, labor from farm animals, labor from machines, fertilizers (manure, chemical, and pesticide), seeds, irrigation, and energy. The total cost of agricultural output is determined by adding together all of these input expenses. For this reason, the pricing strategy for inputs used in agriculture is crucial. The adoption of a

new agricultural strategy during the Green Revolution led to the introduction of high yield variety seeds, irrigation systems, and extensive fertilizer usage. This is when modern equipment and fertilizers were first used. The majority of fertilizers and expensive modern inputs were imported, which imposed a financial strain on farmers.

This is the reason the government began to implement input subsidies: to enable farmers to take advantage of the cheaper input prices and pass along the savings to consumers, so stabilizing total food prices and containing food inflation. Maintaining high productivity is one of the input subsidies' other goals. The government now offers subsidies for power, fertilizers, seeds, and irrigation. In some sectors, such as fertilizers, the government pays the corporations that make the fertilizers directly; in other sectors, such as irrigation and power, the subsidy is given to the farmers in the form of reduced costs. The government has put up a number of policies to determine how much these agricultural inputs would cost. These include the establishment of the National Seeds Corporation, the Nutrient Based Subsidy, the establishment of companies such as IFFCO, the division of power feeders via the aid of programs such as the Pandit Deen Dayal Upadhayay Gram Jyoti Yojana, the creation of canal links, etc. Nowadays, subsidies account for a significant portion of government spending; they may make up as much as 40–70% of fertilizer subsidies and 75–90% of irrigation and energy subsidies.

However, political considerations now dominate India's subsidy programs, which go beyond making farming profitable and productive. Subsidies are currently given out too often to please the vote bank or in response to political pressure from various factions, and the results may be disastrous.In addition to eating up the majority of yearly budgets, these subsidies not only make the government's financial burden worse, but they are also contributing to the trend of overusing inputs in production. The ecosystem has suffered as a result of the quick deterioration of the soil, the depletion of groundwater supplies, and the imbalance in the nutrients of the soil. All of this at the expense of little to no increase in agricultural productivity; take the example of India's fertilizer subsidies. Furthermore, it is said that the ultimate market cost of agricultural products does not accurately represent the subsidies received for inputs, and that farmers themselves are unable to interpret market signals, which results in the haphazard and distorted allocation of resources.

Agribusiness input pricing policies should take into account the target base, as well as any applicable laws, rules, and limitations pertaining to the input's usage, distribution, and duration. The subsidies won't be effective and beneficial to the economy until then. One way to look at the problem is as a means of balancing the interests of the metropolis and the hamlet. Although we have spoken about how important it is to increase the price of agricultural output in order to encourage agricultural development, we also need to acknowledge that low-income people acquire the majority of their items from agriculture. If food costs are permitted to rise, those with lower incomes would be severely impacted. Additionally, an increase in the cost of living brought on by rising food prices increases demand for higher salaries, which has a negative impact on capital creation and industrial profitability. This suggests that a policy limiting price rises for food, particularly for urban consumers, must go hand in hand with a policy offering price incentives to agricultural producers.

CONCLUSION

The review of agricultural taxes emphasizes the importance of this sector to rural development, agricultural economies, and fiscal policy. In order to support agricultural production and rural

lives, public goods and services like extension services, rural infrastructure, and agricultural research must be funded in large part by agricultural taxes. Moreover, by taxing land holdings, agricultural revenue, and agricultural transactions, agricultural taxes may support equality and help redistribute wealth. Governments may raise money to assist social welfare programs and neglected rural populations by taxing people who profit from agricultural activity. Agricultural taxes may also be used as a tool to encourage ecologically acceptable practices and deter overexploitation and land speculation, therefore contributing to sustainable agricultural growth. Taxes on the use of water, land, and pollution may be used to incentivize farmers to adopt sustainable methods and to help internalize the externalities related to agricultural production. But there are other issues with agricultural taxes as well, such political opposition, ineffective administrative processes, and tax evasion, which may compromise its efficacy and equity. Furthermore, high taxes or badly crafted tax laws may have a detrimental effect on investment, competitiveness, and agricultural production, which can have a severe impact on rural lives and food security. Agricultural taxes is a complicated and diverse topic that has to have its effects on the economy, society, and environment carefully considered. The potential of agricultural taxes may be used by governments to foster inclusive growth, rural prosperity, and environmental sustainability via the establishment and implementation of tax policies that are efficient, egalitarian, and supportive of sustainable development.

REFERENCES:

[1] V. Skrodzka, "Tax neutrality at leasing or rural farms," *Ekon. i Prawo*, 2017, doi: 10.12775/eip.2017.024.

[2] C. Sayin, R. F. Ceylan, M. N. M. Yelboga, M. Ozalp, E. Ilbasmis, and O. Sav, "Impact of Taxation on Price Formation in Agricultural Markets: Example from Antalya Greenhouse Production," *J. Agric. Sci.*, 2017, doi: 10.5539/jas.v9n6p120.

[3] A. Devaux, M. Torero, J. Donovan, and D. Horton, "Agricultural innovation and inclusive value-chain development: a review," *Journal of Agribusiness in Developing and Emerging Economies*. 2018. doi: 10.1108/JADEE-06-2017-0065.

[4] Y. Huang, Z. xin Chen, T. Yu, X. Zhi Huang, And X. Fa Gu, "Agricultural remote sensing big data: Management and applications," *Journal of Integrative Agriculture*. 2018. doi: 10.1016/S2095-3119(17)61859-8.

[5] Q. Zhou, X. Chen, and S. Li, "Innovative financial approach for agricultural sustainability: A case study of Alibaba," *Sustain.*, 2018, doi: 10.3390/su10030891.

[6] M. Emami, M. Almassi, H. Bakhoda, and I. kalantari, "Agricultural mechanization, a key to food security in developing countries: Strategy formulating for Iran," *Agric. Food Secur.*, 2018, doi: 10.1186/s40066-018-0176-2.

[7] Z. lu SUN and X. de LI, "The trade margins of Chinese agricultural exports to ASEAN and their determinants," *J. Integr. Agric.*, 2018, doi: 10.1016/S2095-3119(18)62084-2.

[8] M. Su, Y. Sun, Q. Min, and W. Jiao, "A Community livelihood approach to agricultural heritage system conservation and tourism development: Xuanhua Grape Garden Urban Agricultural Heritage Site, Hebei Province of China," *Sustain.*, 2018, doi: 10.3390/su10020361.

[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] S. Fallah-Alipour, H. M. Boshrabadi, M. R. Z. Mehrjerdi, and D. Hayati, “A framework for empirical assessment of agricultural sustainability: The case of Iran,” ***Sustain.***, 2018, doi: 10.3390/su10124823.

CHAPTER 11

INVESTIGATION OF FARM MECHANIZATION AND LABOR PRODUCTIVITY

Dr. Vijay Srivastava, Associate Professor,
School of Science & Humanities, Maharishi University of Information Technology, Uttar Pradesh, India.
Email Id-vijay.srivastava@muit.in

ABSTRACT:

In order to better understand the link between the adoption of automated farming methods and the effectiveness of labor usage in agricultural output, this article investigates farm mechanization and labor productivity. Farm mechanization is the process of completing agricultural activities with the use of technology and automation to decrease the need for human labor and increase production efficiency. This study investigates the extent and effects of farm mechanization on labor productivity, taking into account variables including the kinds of equipment utilized, investments made in agricultural technology, and the skill level of farm workers. It does this by drawing on theories of agricultural economics, empirical research, and case studies. It looks at how agricultural mechanization affects employment in rural areas, sources of revenue, and socioeconomic growth. This research attempts to increase knowledge of the intricacies of labor productivity and farm mechanization and their consequences for rural lives and agricultural growth via an extensive examination.

KEYWORDS:

Agriculture, Farm Mechanization, Labor Productivity, Rural Development, Technology.

INTRODUCTION

The specific circumstances will determine which method is used to achieve this goal. Urban rationing could be the only option in an extremely scarce environment to control pricing. However, under less dire circumstances, a "stock and release" approach is probably appropriate. In accordance with this strategy, the government either imports grains or buys them from domestic farmers[1], [2]. The purchases made may be at the minimum guaranteed pricing or higher. The government sets the maximum retail price for the public stocks that are bought, and they are made available for distribution in metropolitan areas. It's possible that the government-fixed selling price will be less than what it costs to get the grains to the metropolitan distribution centers. It is possible that these rates are less than those on the open market. Because of this, the government-fixed retail price is often referred to as a "fair" price. This kind of price alleviation may be extended to all urban consumer groups or only to those with low incomes[3], [4].

Everyone agrees that total mechanization is neither desired nor feasible. Only those places with access to better seeds, manure, irrigation, and plant protection are practicing mechanization. The Planning Commission asserts that excessive agricultural automation is not advantageous to the nation. In his book Choice of method, Prof. A.K. Sen presents the opinion that, when choosing a method for the agricultural sector, a nation such as India must differentiate between two categories of capital equipment: (i) labor-saving capital equipment, such as tractors, etc. cii) Equipment that conserves land, such as manures[5], [6]. He believes that the second kind of capital equipment would be more beneficial to Indian farmers. Increasing agricultural production

is largely dependent on the use of scientific farm management techniques. Scientific thought must be used to the selection of crops, land preparation, crop rotation, seed selection, application of manure, use of irrigation water, and similar issues. The thumb rule should not be used to calculate these elements based on common knowledge. It must also be understood that various places need different cultivation techniques, such as elevated areas, irrigated areas, semi-irrigated areas, dry areas, etc[7], [8].

In India, agricultural research aims to investigate scientific farming practices for various regions. The Indian Council of Agricultural Research (ICAR) and other agricultural universities are actively involved in research, and the findings of their studies have significantly advanced the field of scientific farming. In fact, scientific agricultural practices are gaining traction throughout the nation. The Eighth Five-Year In the Green Revolution, the terms "green" and "revolution" allude to "crops" and "spurt," respectively, suggesting a spike in crop output. In India, it first occurred in 1967–1968. The output of food grains rose by about 25% in 1967–1968 alone. In a nation that used to import foodgrains but is now self-sufficient, a year-over-year rise in foodgrain output suggested a revolutionary shift. In addition to reviving Indian agriculture, the Green Revolution altered Indian agricultural culture itself.

The traditional knowledge that played a major role in agricultural decision-making in India began to lose its relevance. Rather, contemporary technology, improved agricultural management techniques, and a focus on the market became the fundamental elements of crop farming in India's rural economy. Amazing increases in agricultural production per unit of inputs were made possible by new agricultural strategies. The yield of one kilogram of high-yielding variety seeds was much higher than that of one kilogram of traditional seeds. Similarly, a kilogram of chemical fertilizers produced a much higher yield than a kilogram of traditional manures. A higher increase in foodgrain production than non-foodgrain production was shown by the change in the production potential curve. This resulted from the new agricultural strategy's increased emphasis on food crops as opposed to non-food crops.

Raising the nation's productivity and output of food, fodder, and fiber depends heavily on the agricultural equipment and tools used for field tasks such as tilling soil. Indian farmers have been using traditional methods of producing from the beginning of time. He still uses tools that are pulled by animals and controlled by hand in this day of technological advancement. According to statistics from the All-India Livestock Census, ancient tools—especially the wooden plough—remain prevalent in use even today. In contrast to India, the developed world has embraced the most cutting-edge tools, including as tractors, threshers, harvesters on combines, pump sets, etc., which mostly depend on mechanical energy sources[9], [10].

There is no doubting that the employment of these sophisticated mechanical equipment has greatly enhanced agricultural productivity and output. Large farmers in various regions of India have shown interest in mechanizing agriculture, influenced by Western experiences there as well. The use of agricultural mechanization is yielding benefits in every region of the nation. The extent to which India has adopted mechanization is a topic of much dispute. India is a developing nation of small-scale farmers with inexpensive labor that is in plentiful supply. The argument put up by some opposed to automation of Indian agriculture is that, while it saves labor, it will eliminate the need for large-scale labor in the agricultural sector and negate the value of animal power. An economy already beset by a severe unemployment crisis cannot afford to add agricultural mechanization of this kind, which exacerbates the issue. The use of mechanical

power in agricultural activities is referred to as farm mechanization. It may be described as the process of carrying out certain agricultural tasks, which are often completed by people, animals, or both with the aid of appropriate machinery. In addition to using machinery for tillage operations, harvesting, and threshing farm product, it also involves the use of power lifts for irrigation, vehicles for farm produce transportation, and processing equipment. dairy equipment for processing rice, cotton ginning, oil pressing, cream separation, and butter production, among other uses.

DISCUSSION

In a nutshell, mechanization is the use of mechanical power in conjunction with related machinery. Dr. Bhattacharjee states that the term "mechanization" refers to the use of machinery to carry out tasks on land that are typically completed by human labor or by draught animals such as horses and bullocks. Depending on the situation, mechanization in agriculture may either be complimentary or a competitor with human labor. Mechanization may be intended to compete with human labor in a nation where labor is scarce, but in a nation like India where labor is relatively plentiful, mechanization may have a complementing role.

Additionally, mechanization might be partial or total. When just a portion of the agricultural labor is done by machines, it is referred to be partial. However, the phrase "complete mechanization" refers to farming practices when all machinery is used. Agriculture in the Western world has been largely mechanized, mostly as a result of labor shortages. However, automation of agricultural activities has been used on a limited scale in nations such as China, India, the larger portion of Asia, Africa, and South America. The primary reasons for the limited adoption of mechanization in these nations are the large supply of labor and animal power on the one hand, tiny and marginal holdings that are further separated and fragmented on the other, lack of fuel power, and mass poverty on the other. Mechanization in Indian agriculture requires two distinct viewpoints. It must first be considered in the context of potential issues that may come from fully automated agriculture. Issues like labor displacement and the use of animal power need to be carefully considered. Mechanization boosts agricultural output per worker and improves labor efficiency in the sector. Machines have significantly decreased the amount of labor needed to create a unit of output. In the West, increasing automation has contributed to miracles. For example, in the United States of America, the number of labor hours needed to produce one hundred bushels of wheat decreased from 320 hours in 1830 to 108 hours in 1900 by 1940.

The amount of labor needed has been lowered to 47 hours thanks to a recent set of advancements. Similar to this, automation has significantly reduced the need for labor in Russia. Russian specialists claim that in the 1960s, labor productivity on farms was three times higher than it was in the days before the revolution. Mechanization not only lowers the amount of labor needed, but it also shortens the hours that those who remain to operate the machines must work, sparing them from drudgery and giving them free time to unwind and refuel. Because mechanization boosts labor and land productivity, it lowers the cost of manufacturing. Furthermore, economics of large-scale production and better yield per hectare aid in cost reduction since automation and large-scale farming go hand in hand. Numerous industrialized nations have shown that as economies grow, the cost of using human and animal labor rises relative to that of using machinery.

C.H. Hanumantha Rao asserts that advancements in technology and industrial growth generally help to lower the cost of fuel and machinery and facilitate the substitution of capital for labor. Conversely, when the economy grows and per capita income rises, the need for labor in the non-agricultural sector rises, driving up the cost of biological energy sources. Despite the widespread belief that labor costs are lower in India, research by C.H. Hanumantha Rao reveals that the reason for the rising usage of tractors and other machinery in Punjab and Haryana is that these devices are comparatively less expensive inputs. Due to its seasonal nature, farming has a peak labor need during certain farm husbandry tasks. For example, there is a higher need for labor when the crop is ready to be harvested in order to harvest the whole crop on schedule.

There are instances when a harvest may fail due to a lack of labor. Mechanization might be useful in getting beyond this obstacle. For instance, in certain areas of Punjab where there is a labor shortage during harvest, harvester combines have been forced into service.Agriculture becomes more commercialized as a result of mechanization. Agriculture tends to more commercialization and accelerates the pace of prosperity in the countryside if, at the same time that it becomes more mechanized, the nation's industrial base expands, creating an increase in off-farm employment. A measure of how things are evolving in an agrarian economy is the ratio of labor force to agricultural output. Increased wealth within the farming community contributes to the diversification of rural economic activity, which opens up new job opportunities and slows urban migration, which has already begun to pose a significant threat to less developed nations. In a mature agricultural system, producers and investors base their choices on price movements. Traditional agriculture is labor-intensive and arduous. Farmers are helped to escape this drudgery and are able to work in more comfortable circumstances and with more leisure time thanks to mechanization. Prof. Hanumantha Rao suggests that it may even increase the participation rate among individuals who could afford to forego laborious physical labor. "The advent of farm mechanization changes the farmer's entire perspective."

Power and equipment enable more efficient and timely farming activities, which raise yields. The new high producing cultivars need accurate fertilizer application, consistent and timely delivery of water and pesticides, optimum seed-bed preparation, and appropriate sowing dates to achieve their best yields. Mechanization can give improved services for all of them. The potential for repeated cropping emphasizes the need for prompt harvesting and soil preparation in order to plant the next crop.

Peak season labor shortages result from this, when there is a greater demand than there is supply of labor. Mechanization boosts productivity by supplying labor during busy times, allowing for the quicker planting of the next crop. The use of draught animals, which are expensive and have little output, is reduced by mechanization. These animals also need fodder, which makes use of land that might be used to raise food for human use. Mechanization reduces production costs by enabling the more effective use of labor, land, irrigation, and other inputs. This is significant for the economy's general development since it makes it possible to save money for investments. For those nations looking to cut expenses in order to sell to international markets, it is also crucial.

There is relatively little room for mechanization in these nations where unemployment is a severe issue. Labor is constantly saved by machines. Many of the current agricultural population would lose their jobs in any effort to streamline agricultural output by introducing labor-saving equipment. The World Bank started research in Punjab to investigate the effects of automation on employment. The results indicated that family labor was used on automated farms less often than on non-mechanized farms, with a decrease of 82.92-man hours per cultivated hectare. In a

similar vein, G.R. Soltani investigated the issue of labor use in three agricultural areas in the South-Central Iranian province of Fars. "Full mechanization of wheat production results in the displacement of nearly 131 hours of labor per hectare," he concluded.

C. R. Hanumantha Rao calculates that tractorization replaces 20–30% of the total human labor days per cultivated acre due to tillage and transportation, based on research done in the Ferozepur area. Labor is replaced by a mechanical thresher by about 15%, and harvest combines by about 25% more labor than the mechanical thresher replaces. It is important to acknowledge that the majority of mechanization-related issues, including labor displacement, are brought about by the advent of heavy machinery like forty- or fifty-horsepower tractors. In order to refute the arguments against automation, emerging nations need tractors that can be used effectively on both small and large farms, first replacing animals rather than humans, at a price that is affordable for small farmers. This implies that smaller, more affordable tractors are needed for small and medium-sized farms, while larger tractors are needed for larger farms.

Right now, only big tractors are built and imported into Pakistan. These work well on farms larger than 100 acres, or even 50 acres with rigorous cultivation and double cropping. Still, since ninety-eight percent of all farms are smaller than fifty acres, they are obviously not sustainable (Government of Pakistan, 1960). It is clear that a little tractor is needed.It should be mentioned that industrial employment is greatly increased by agricultural mechanization. As a result, it broadens the industrial base by encouraging the expansion of businesses that produce equipment and agricultural implements. In addition to the jobs generated for the manufacturers, there are additional jobs available in the maintenance and servicing of agricultural equipment. Due to a shortage of skilled labor to operate these equipment, most developing nations would also have limited access to mechanized farming practices. It would be very difficult for a poor, uneducated farmer in a backward area in India to accept large-scale automation. Additionally, there is a shortage of skilled technicians who can provide these equipment' repair services. Electricity or mineral fuels must be available for mechanization to occur. The majority of developing nations have relatively limited supplies of mineral fuels, making it prohibitively expensive to run tractors or other machinery on gasoline or diesel. Automation is impossible until affordable hydroelectricity is made accessible on the farm.

Acquiring the right agricultural equipment. Farm operations are intricate, and one equipment cannot be customized to do every duty.Diverse crops need for various specialized machinery throughout production. Encouragement should be given to agricultural mechanization if the right equipment is available. A appropriate climate, cropping pattern, and acreage are necessary for a productive farm mechanization scenario. Enough money for farmers to purchase agricultural equipment, which needs hefty initial costs in addition to operating funds. Capital restrictions may effectively prohibit farmers in poor countries operating small farms from investing in machinery purchases. Small farms may effectively be automated if all five of these requirements are satisfied. The establishment of certain farmer organizations, such as group farming or custom farming, is necessary to boost the productive use of farm machinery. An organization like this offers the chance to utilize machines more often, which lowers the cost of mechanical operations per unit While some of the power tillers, water pumps, power sprayers, and dryers that are in use are made in the country, more sophisticated equipment like tractors, repair kits, and combines are imported and aren't entirely appropriate for the environment where they are used. Although there are machines for the majority of rice production processes, this is not the case for many other crops.

CONCLUSION

The examination of worker productivity and farm automation underscores the revolutionary influence of agricultural technology on rural economies and agricultural production systems. By decreasing the time and work needed for agricultural chores, farm mechanization—the use of machines and technology—has greatly enhanced labor productivity. A greater amount of land can be farmed, crop yields can be increased, and overall production efficiency is increased because to the use of mechanical farming methods including tractors, harvesters, and irrigation systems. Additionally, the adoption of more specialized and intense production techniques as well as the diversification of agricultural operations brought about by farm automation have increased worker productivity and farm profitability. Farm mechanization does, however, come with drawbacks, including the loss of natural resources, the consolidation of land ownership, and the displacement of rural labor. In order to solve these issues, governments, farmers, and other stakeholders must implement strategies including skill development programs, rural development initiatives, and sustainable farming methods. All things considered, farm mechanization has enormous potential to improve rural lives, agricultural output, and socioeconomic development. Societies may take use of farm mechanization to build more resilient, inclusive, and sustainable agricultural systems and rural communities by encouraging the adoption of suitable technology, making investments in rural infrastructure, and providing assistance to smallholder farmers.

REFERENCES:

[1] Rehman-Ud-din and N. U. R. Khattak, “Impacts of farm mechanisation on wheat and maize crops’ productivity in Peshawar valley,” ***Sarhad J. Agric.***, 2018, doi: 10.17582/journal.sja/2018/34.3.516.525.

[2] H. G. Malanon and R. S. Dela Cruz, “On-Farm Mechanization of Paddy in the Philippines,” ***Asian J. Postharvest Mech.***, 2018.

[3] A. Namdeo, “A Case Study on Status of Farm Mechanization Under Animal Farming in Chhattisgarh A Case Study on Status of Farm Mechanization Under Animal Farming in,” ***Bioscience Trends***. 2018.

[4] B. Janssen, “Small Farms, Big Plans: Mechanization and Specialization as Measures of ‘The Middle,’” ***Cult. Agric. Food Environ.***, 2018, doi: 10.1111/cuag.12221.

[5] H. Shoba, N. Rajeshwari, and H. Yogeeshappa, “A Study on Farm Mechanization Level of Farmers in North Karnataka, India,” ***Int. J. Curr. Microbiol. Appl. Sci.***, 2018, doi: 10.20546/ijcmas.2018.702.080.

[6] E. Samadpour, I. Zahmatkesh, M. H. Nemati, and M. H. Shahir, “Determining the contribution of ventilation and insulation of broiler breeding houses in production performance using analytic hierarchy process (AHP),” ***Rev. Bras. Cienc. Avic. / Brazilian J. Poult. Sci.***, 2018, doi: 10.1590/1806-9061-2017-0593.

[7] K. A. Oktovianto, I. Irham, and S. Hardyastuti, “The Impact of Mechanization Under UPJA Program on Rice Farming Income in Prambanan Sub-District Sleman District,” ***Agro Ekon.***, 2018, doi: 10.22146/ae.34835.

[8] V. Ullegaddi and B. Chetan, “Design and Analysis of Cutting Mechanism for Crop Harvester,” ***J. Recent Trends Mech.***, 2018.

[9] Salini R Chandran, "Impact of Agro Machinery Service Centres on Labour Cost in Paddy Cultivation," *IMPACT Int. J. Res. Humanit. Arts Lit. (IMPACT IJRHAL)*, 2018.

[10] D. Shah, "A Region-Wise Analysis of Impact of Farm Mechanisation on Draught Animal Power Availability in Maharashtra," *Artha Vijnana J. Gokhale Inst. Polit. Econ.*, 2018, doi: 10.21648/arthavij/2018/v60/i2/175088.

CHAPTER 12

EXPLORATION OF THE PROGRESS OF SMALL FARMERS AND AGRICULTURAL LABOR

Dr. Ashish Kumar Awasthi, Assistant Professor,
Department of Science, Maharishi University of Information Technology, Uttar Pradesh, India.
Email Id-ashish.awasthi@muit.in

ABSTRACT:

The paper explores the progress of small farmers and agricultural labor, Obstacles, chances, and effects on rural development and sustainable agriculture. Although they contribute significantly to the world's wood supply, small farmers and agricultural workers often confront a variety of obstacles, such as restricted access to resources, markets, and land. Using case studies, empirical data, and theories of agricultural economics, this study examines the development of agricultural workers and small farmers while taking market dynamics, regulatory interventions, and technology improvements into account. It looks at ways to improve the well-being, income, and productivity of agricultural workers and small farmers, as well as the difficulties they have adjusting to changing agricultural environments. This research endeavors to enhance comprehension of the intricacies of agricultural labor and small-scale agriculture, as well as their consequences for food security and rural lives, by means of an extensive investigation.

KEYWORDS:

Agricultural Labor, Agriculture, Progress, Rural Development, Small Farmers.

INTRODUCTION

An increasingly concerning aspect of India's Rural Economy has been the rise in the number of agricultural laborers and cultivators involved in crop production. The everyday lives of agricultural laborers concurrently exhibit the characteristics of underemployment, underdevelopment, and excess population. Their pay is abnormally low, their working circumstances place undue strain on them, and their employment is wildly erratic[1], [2]. The kind of unemployment that exists in industrialized nations differs greatly from that of India. It is often recognized that rural India is where unemployment is most acute. Seasonal unemployment and disguised unemployment are the two basic categories into which rural unemployment may be divided. Working in agriculture is a seasonal profession; throughout the planting, weeding, and harvesting seasons, there is a constant high need for labor, while during the slow season, there is a noticeable decrease in demand. The duration of seasonal unemployment in India varies by state and is influenced by agricultural practices, soil type, and the potential for repeated cropping. India's agricultural labor market is still suitable for four to six months out of the year[3], [4].

However, marginal and small farmers in rural India are often victims of disguised unemployment. Their land resources are insufficient to provide every member of their family full-time work for the whole year. The government has taken a number of significant actions to improve the situation for agricultural laborers. You will study the idea of agricultural labor in this unit, as well as its several forms and the state's policies toward it. Exactly defining the word

"agricultural labor" is a challenging task. Referring to a few of the efforts made by specialists in this regard would be helpful, nevertheless. This was described as "those people who are engaged in raising crops on payment of wages" by the first Agricultural Labour Enquiry Committee (1950–51). The concept of agricultural labor was expanded by the second Agricultural Labour Enquiry Committee (1956–1957) to include those working in horticulture, dairy farming, poultry farming, beekeeping, and other agricultural pursuits[5], [6].

"An agricultural laborer is one who is basically unskilled and unorganized and has little for its livelihood other than personal labor," according to the National Commission on Labour. People who rely on wage work as their primary source of income are therefore included in this group. laborers without land and ii. extremely tiny farmers whose wages are mostly from wage work since they have small, sub-marginal holdings. Landless labor may be further divided into two main groups: (a) casual labor and (b) permanent labor associated with a family engaged in agriculture. Once again, there are three subgroups into the second ground: cultivators, sharecroppers, and lease holders.

Workers who are permanent or attached often have contracts that require them to work on a yearly or seasonal basis. Custom or tradition determines their salary portion. Conversely, temporary or casual laborers are only hired when there is a work break. They are paid market rate for their temporary work. They had no affiliation with any landlord. The heavy demand for labor occurs mostly during the planting and harvesting seasons. As a result, the workers locate work throughout certain seasons in order to provide money for their families' annual sustenance. The style of life of the laborers in Indian agriculture is characterized by a combination of survival instinct and conflict.

Independent laborers without land are free to relocate between farms and negotiate pay rates that reflect the state of supply and demand in the labor market. Landless laborers who are bonded are obligated to their employer and are not allowed to change employers. They rely on their masters for both their social and economic stability, making them a lot like slaves. Even though bonded labor is illegal in India, there are still a lot of instances of it in the countryside[7], [8].

Small and marginal farmers inhabit India. Farming is dependent on the farming families' necessities for sustenance. But the majority of marginal and small investors don't make enough money from their little holdings. They often labor on other people's property to augment their income. Therefore, small and marginal holders also work as agricultural laborers, and small and marginal farmers also work as agricultural laborers. In India, between 25% and 30% of the populace works in rural regions and experiences hidden unemployment. A condition known as "disguised unemployment" occurs when there are much more individuals working on a project than are really needed to complete it. Even if a portion of them leave that position, the overall output will not decrease. For instance, if five people work on a one-hectare farm but only two people are needed to cultivate it, then three people are jobless in secret[9], [10].

They are unnecessary and superfluous. Due to India's joint family structure, small holding sizes, and lack of other work opportunities, the farmer's family keeps all of its members busy tending to the family farm. Therefore, it seems as if every member is working, even when in reality they are not adding anything to the overall output. In the event that any family farm members leave, the farm's overall output won't decrease. They are known as the "disguisedly unemployed" for this reason. The issue of concealed unemployment is a real one in India. Seasonal unemployment is another kind of unemployment in rural areas. It happens only as a result of agriculture being a

seasonal industry. Crops are cultivated in accordance with the seasons in which they occur. In the off-season, agricultural laborers are often left idle. Their tasks are unfulfilled. The amount of seasonal unemployment varies depending on the farming practices and circumstances used in each state. A farmer who plants one crop a year is thought to lose their job for five to seven months on average.

DISCUSSION

Aside from agriculture, there are a variety of other seasonal jobs in rural regions, such as brick kilns and sugarcane crushing. Employees involved in these tasks work there for a few months out of the year. They don't get a job for the remainder of the time. The main reason for India's sharp increase in the number of agricultural laborers is the country's fast population expansion. Since 1921, when India's population experienced the "great divide," the country's population has tended to grow at an exponential pace. On the other hand, the pace of economic expansion was insufficient to provide enough jobs in the secondary and tertiary sectors. As a result, more laborers are now required to work in the agricultural industry. The Indian rural economy was greatly bolstered by the cottage industry in the pre-British era. It lessened the strain of population growth on the land. On the other hand, cottage industry began to decline throughout the British era. It also eliminated job possibilities.

As a result, the majority of the labor force was forced to rely on agriculture for employment. The class of agricultural laborers grew as a result of increased reliance on agriculture. Following independence, the amindari system a regressive land tax system was eliminated. Additionally, a holdings limit was imposed, and excess land was divided between laborers who were landless and small and marginal proprietors. However, the administration mostly failed to keep the changes in place. After the first mortgage, it was just a matter of time before agricultural laborers and small and marginal proprietors lost their land. There was never a substantial support structure to go along with their property. A mere piece of land is insufficient for production. It should be bolstered by additional resources like as tools, implements, and seed, water, and fertilizer inputs. In the lack of any organized support structure, a mortgage at first and ultimately a desperate sale of their property was almost certain to occur.

In India, the pay rate for agricultural labor is quite low. With a few exceptions (Punjab, Kerala, etc.), the typical pay rate for agricultural labor is almost at the lowest in the majority of states in the union. Workers are still employed at subsistence wages in spite of the 1948 Minimum Wages Act. This indicates a conspicuous lack of adherence to the law. It is necessary to pin this laxity The payment of wages to farm laborers in compliance with the Minimum Wages Act need to be guaranteed by the state government. Provisions should also be created for the periodic adjustment of the pay structure to reflect changes in the pricing structure. Raising production requirements in the agricultural sector and developing technologies for the widespread use of multi-cropping systems are critical steps toward resolving the issues facing agricultural laborers. This will result in profitable job prospects. Agricultural laborers will have jobs and be paid fairly for their work.

The government has to concentrate on creating jobs outside of agriculture. Workers moving from agriculture to non-agricultural sectors of the economy will be made easier by this. As a result, the burden of an excessive labor force on the land would decrease, and the rate of pay in rural areas would increase to match that of metropolitan areas.

Infrastructure improvements in remote villages and the growth of rural industry, especially the agro-processing sector, have the potential to provide alternative jobs. The establishment of peasant unions should strengthen the negotiating power of agricultural laborers.

Through their unions, agricultural workers may negotiate for better pay and more flexible work schedules. The government and non-governmental groups have to take the lead in forming these kinds of unions. Land and other permanent assets should be given to agricultural laborers so they may start their own businesses and make enough money to live on. If the land ceiling rule is properly enforced by the government, then this is feasible. The laborers without land should get a portion of the excess that results from this law's execution. Seeds, fertilizers, and other inputs may be supplied via government-sponsored programs and non-governmental groups. Despite the fact that the elimination of bonded labor system Act, 1976 outlawed the phrase in India, bonded labor is still practiced in certain regions of the nation. If one were to examine the rural regions and find individuals who are bound to their masters in return for their economic stability (at that subsistence level), the number of examples of bonded labor would rise from hundreds to centuries.

The passage of legislation to abolish the system of bonded labor lagged far behind the enforcement of the law.The government must immediately enforce the legislation and provide harsh penalties for anyone who break it. Priority should be given to addressing other kinds of agricultural labor exploitation, such as excessive working hours and poor pay in kind.In we may say that India's agricultural laborers are a class that endures a terrible lot in life. Their numbers are growing, and they are becoming more and more impoverished and deprived. This poses a severe threat to society, especially considering that we are the world's tenth-largest industrialized economy. The government has taken a number of actions to address the issue, demonstrating its grave worries about it. However, the government succeeds as usual in creating plans and programs but fails to carry them out. The government has improved the situation of agricultural laborers by implementing a number of corrective measures. A few of them are the National Commission on Rural Labor, the Minimum Wage Act, rural employment initiatives, and the elimination of bonded labor.

The agricultural laborers, especially the landless ones, come from underdeveloped areas, have social impairments, and are vulnerable to financial abuse. Their standard of life is poor, and they often make just enough money to live on the edge of poverty. Thus, the First Plan noted that "development in sectors of the economy other than agriculture has been retarded and agricultural labor population is mostly concentrated in areas where population presses heavily on the land. “It should be feasible to significantly address the issue of rehabilitating agricultural laborers by designating some regions for special programs, such as C.D.P., as accelerating development is the most practical solution to the problems of unemployment and underemployment.

The majority of India's rural labor force is made up of landless agricultural laborers and small farmers. The issues faced by small farmers and agricultural laborers differ from place to place, but some common issues include small and fragmented holdings, unstable tenure, insufficient and delayed supplies of agricultural inputs, a lack of sufficient finance facilities, and inadequate marketing resources. All of these have posed significant obstacles to the good growth of agriculture and have prevented these people's social and economic circumstances from improving. Consequently, during the Fourth Plan period, a number of well-defined programs were introduced with the goal of enabling the weaker segments of the rural population to benefit

from economic growth in the rural areas through the spread of new technology. These programs were primarily designed to increase employment opportunities and the productive potential of the economically weak farmers and landless agricultural laborers. Upon examining the issue of small holdings, the All-India Rural Credit Review Committee (1969) determined that the challenges faced by "potentially viable farmers" might be successfully addressed by suitable institutional adjustments and governmental assistance. These farmers were small-scale producers who might become profitable if they received assistance with irrigation, fair pricing for goods and services, etc. Therefore, in order to boost small farmers' economies to a surplus level, it advised institutional establishment in the shape of the Small Farmers Development Agency and offered actions for increasing the flow of institutional credit and other governmental aid to the farmers.

As a result, the Planning Commission approved two pilot project-type designs for the Central Sector of the Plan during the Fourth Five-Year Plan. There were two schemes: one for Marginal Farmers and Agricultural Laborers (MFAL) and the other for Small Farmers' Development Agencies (SFDA). Because the focus of the programs in the two projects was different, the SFDA and MFAL initiatives were to be kept apart. However, it was acknowledged that in certain circumstances, their operational domains may overlap. As a result, the possibility of using the SFDA as the tool to carry out the MFAL plan was considered. The initiative was launched in 1971–1972, and it was later combined with the Integrated Rural Development initiative (IRDP) and other programs to become the Swanajayanti Gram Swarozgar Yojana. 2011 saw the SGSY go by the moniker National Rural Livelihood Mission before merging into the Deen Dayal Upadhayaya Antyodaya Yojana.

A small farmer is defined for the purposes of these programs as one who owns 2.5 to 5 acres of land, while a marginal farmer is one who owns less than 2.5 acres of dry land. When it comes to irrigated property, the maximum amount of land that may be held is typically 50% of the above-mentioned amounts. A person who does not own any land but maintains a permanent homestead and earns more than half of his income from agricultural activities is classified as a landless agricultural laborer. The agencies' responsibilities include participant identification in accordance with the guidelines established by the Indian government, developing appropriate programs for enhanced agriculture and related fields, securing credit from institutional sources, and coordinating program implementation with the project area's current development and extension organizations.

Crop husbandry is the agencies' primary focus in the project region. Programs for related careers are also pursued in accordance with the adequacy of marketing infrastructure. Land development, soil conservation, minor irrigation, horticulture, demonstrations, the introduction of new and better varieties, the adoption of diverse cropping patterns, and other activities are all part of the enhanced agriculture program. Adoption of dry land agricultural methods and water harvesting strategies in rainfed regions is heavily emphasized. Fisheries, poultry, piggery, sheep and goat farming, and the production of milk animals are examples of auxiliary industries.

Subsidies up to 25 percent are granted to designated small farmers, and up to 33.3% are granted to marginal farmers and agricultural laborers toward the cost of program investments. For such a subsidy from the project funds to a single participant for the duration of the project, a cap of 3,000 has been set. Up to 50% of project funds may be used as a subsidy for collective community initiatives, such as community irrigation projects. While the program was meant to

be restricted to marginal farmers exclusively, another research carried out in MFAL regions has shown that six of the 48 participant homes chosen for the study possessed lands ranging from twenty-eight to four hectares. These characteristics are unsettling. To really alleviate poverty among small and marginal farmers, the program must be selective and watchful, ensuring that the most deserving recipients of public support get it. It is not acceptable to enable leaks to dilute the program. The Planning Commission created and carried out an integrated land allocation program for the third and later plans. By dispersing the land that becomes available via acquisition and reclamation as surplus land over the maximum amount of land that may be held, the goal has been to eliminate the constraints faced by small farmers and the poverty of the landless agricultural labor force. The program aimed to "improve the absorptive capacities and productive capabilities of millions of small farmers" by changing the rural development approach. It was intended that under such a land distribution scheme, the greatest and smallest family holdings would have per capita land ownership differences of more than five times. In addition, the percentage of the population living in poverty would drop from two-fifths to around one-third.

Regulations have been established in almost every state to prioritize landless laborers, especially those who are members of Scheduled Castes and Scheduled Tribes, when it comes to the distribution of government and fallow lands. All rural households that fall below the federal poverty level are eligible for help under the IRDP. SC/ST households are eligible for up to 50% of the total amount of assistance. During the Seventh Plan, it was projected that 20 million households would get assistance under the IRDP. All of the nation's community development blocks now offer the IRDP. In addition, from the land that became excess due to the application of ceiling regulations, lakhs of hectares were allocated to landless laborers. The IRDP was combined to create the Swarnajayanti Swarozgar Yojana in 1999. In 2011, it was renamed the National Rural Livelihood Mission, and on October 2, 1993, it was started as the Deen Dayal Upadhayaya-Antyodaya Yojana Employment Assurance Scheme. The program's goal was to guarantee employment to everyone living below the poverty line in rural regions who is looking for work but can't seem to find it. 3206 community development blocks are implementing the program, and a decision has been made to make it universal. By 1998–1999, every community development block will be covered by the plan. In 1995–96, about 347 million man-days of employment were created, compared to 274 million man-days in 1994–95. The program's purview has also been expanded to include horticultural operations on marginal farmers' particular plots of land. In order to create the Sampoorna Grameen Rozgar Yojana, the Jawahar Gram Samridhi Yojana (JGSY) and the Employment Assurance Scheme (EAS) were combined in 2001. Under the MGNREGA, they were combined to create the National Rural Employment Guarantee Scheme in 2005–2008.

CONCLUSION

The study of the development of agricultural labor and small farmers emphasizes how crucial it is to empower and assist these important players in agricultural production systems. Small farmers and agricultural workers are vital to rural development, global food security, and the fight against poverty, yet they often encounter enormous obstacles when trying to get access to markets, resources, and land. The promotion of sustainable agricultural practices and rural development programs, together with better access to land, financing, technology, and markets, are all important components of any effort to advance the status of small farmers and agricultural workers. Policymakers and stakeholders may assist small farmers and agricultural workers in

increasing their productivity, income, and resilience to external shocks by making investments in rural infrastructure, extension services, and market links.Comprehensive measures that support inclusive development, social protection, and gender equality are needed to address the social and economic vulnerabilities of small farmers and agricultural workers. Achieving sustainable agricultural growth and rural prosperity requires policies that give priority to the needs and goals of small-scale farmers and agricultural workers. Examples of these policies include labor rights, land reform, and access to social services. To put it simply, the advancement of small farmers and agricultural workers is inextricably tied to larger initiatives that support rural development, food security, and the eradication of poverty. Society may strive toward creating more resilient, inclusive, and sustainable rural communities and agricultural systems by acknowledging the contributions and difficulties of small-scale agriculture and agricultural labor.

REFERENCES:

[1] G. McElwee and A. Wood, "Wetland entrepreneurs: diversity in diversification in Zambian farming," *J. Small Bus. Enterp. Dev.*, 2018, doi: 10.1108/JSBED-03-2017-0089.

[2] E. van Marle-Köster and C. Visser, "Genetic improvement in South African livestock: Can genomics bridge the gap between the developed and developing sectors?," *Frontiers in Genetics*. 2018. doi: 10.3389/fgene.2018.00331.

[3] D. R. Bista, S. Dhungel, and S. Adhikari, "Status of fertilizer and seed subsidy in Nepal: review and recommendation," *J. Agric. Environ.*, 2018, doi: 10.3126/aej.v17i0.19854.

[4] Z. Huang and Q. Liang, "Agricultural organizations and the role of farmer cooperatives in China since 1978: Past and future," *China Agricultural Economic Review*. 2018. doi: 10.1108/CAER-10-2017-0189.

[5] C. Visser and E. van Marle□Köster, "The Development and Genetic Improvement of South African Goats," in *Goat Science*, 2018. doi: 10.5772/intechopen.70065.

[6] T. W. Farmer, M.-C. Leung, J. Banks, V. Schaefer, B. Andrews, and R. A. Murray, "Adequate Yearly Progress in Small Rural Schools and Rural Low-Income Schools," *Rural Educ.*, 2018, doi: 10.35608/ruraled.v27i3.488.

[7] R. Continenza, I. Trizio, and A. Tanfoni, "The conques masia restoration project," *Lect. Notes Civ. Eng.*, 2018, doi: 10.1007/978-3-319-57937-5_121.

[8] K. Hamamura, "Development of herbicides for paddy rice in Japan," *Weed Biology and Management*. 2018. doi: 10.1111/wbm.12147.

[9] P. Namugga, J. Sibiya, R. Melis, and A. Barekye, "Yield Response of Potato (Solanum tuberosum L.) Genotypes to Late Blight Caused by Phytophthora infestans in Uganda," *Am. J. Potato Res.*, 2018, doi: 10.1007/s12230-018-9642-4.

[10] R. Auerbach, "Organic research and government support improve organic policy and progress in Danish, Swiss, American and African case studies," *Econ. Agro-Alimentare*, 2018, doi: 10.3280/ECAG2018-003005.

CHAPTER 13

EXPLORATION OF ABOLITION OF BONDED LABOR AND AGRICULTURAL MARKETING

Dr. Ashish Kumar Awasthi, Assistant Professor,
Department of Science, Maharishi University of Information Technology, Uttar Pradesh, India.
Email Id-ashish.awasthi@muit.in

ABSTRACT:

This essay investigates the link between labor rights, market dynamics, and rural development as it relates to the abolition of bonded labor and its effects on agricultural marketing. Agriculture has long been a major industry for bond labor, a kind of modern slavery in which vulnerable laborers are caught in vicious cycles of financial bondage and exploitation, especially in developing nations. This study investigates the procedure and effects of outlawing bonded labor on agricultural marketing practices, taking into account elements like market accessibility, rural livelihoods, and labor rights enforcement. It does this by drawing on social justice theories, empirical research, and case analyses. It looks on the ways that ending bonded labor advances equitable labor standards, improves market transparency, and creates inclusive agricultural markets. This research attempts to expand awareness of the nuances of abolition of bonded labor and its consequences for rural development and agricultural marketing via a thorough investigation.

KEYWORDS:

Abolition, Agricultural Marketing, Bonded Labor, Rural Development, Social Justice.

INTRODUCTION

"Traffic in human beings and beggars and other similar forms of forced labor are prohibited; any violation of this provision shall be punished in accordance with law." India is a party to Convention 29 of the International Labour Organization (ILO), which states that "forced or compulsory labor" is not acceptable. Any kind of forced labor is illegal according to Indian Penal Code Section 374. The Commissioner for Scheduled Castes and Scheduled Tribes had often called attention to the Dhebar Commission's 1961 emphasis that specific laws be created to end bonded labor.On October 25, 1975, the Union Government officially ended the practice by issuing a statement stating that "No person shall make any advance under the system or compel any person or render any bonded labor or other form of forced labor." Any custom, practice, or agreement made by a family member or dependent on such person that requires them to do labor or provide services as bonded labor is null and invalid. No one who has been released and discharged in accordance with this rule may be forced to leave a homestead or other residential property that they have been residing in[1], [2].

Any property held by a bonded laborer under a mortgage, charge, lien, or other encumbrance related to a bonded obligation is released and returned to the worker's ownership. Such laborer is entitled to collect from the mortgagee, charge, or encumbrance, as may be established by the civil court, if any delay is made in recovering any property. According to the ordinance, there is no longer any need to repay bonded debt. Any and all obligations of a bonded laborer to pay

back any bond debt or the portion of a bond debt that is not paid back right away will be considered discharged. No lawsuit for the collection of bonded debt, or any portion thereof, may be filed in any civil court or before any other body. Independence, a common Indian farmer was weak and destitute; he attempted to sell his goods as soon as the crop was harvested, regardless of the market's going rates at the time. Prices were often low just after harvest since there were an abundance of surplus supply on the market at that time[3], [4]. The majority of farmers essentially knew nothing about the local marketplace (mandis). They were unaware of the pricing that prevailed in various mandis as there was no commercial information system. They were thus forced to accept the rates that were put up to them. Owing to a complete absence of institutional credit options, the farmers were entirely dependent on moneylenders, whose only goal was to take advantage of them. Therefore, our nation's policy leaders made the decision to create an effective agricultural marketing system in our nation when we gained our independence[5], [6].

The Indian economy has relied heavily on the agricultural output industry ever since independence. The growing tendency in agricultural output has resulted in further difficulties in finding a market for the excess produced. In the context of the liberalized trade policy, it is also necessary to address the opportunities and problems presented by the global markets. In order for the farming community to take advantage of the increased chances for access to the global market, the nation's domestic agricultural marketing system has to be expanded and integrated. The Indian government is working hard to get the country's agricultural markets and marketing environment ready so that farmers may profit as much as possible and compete on the world stage. Reorienting agriculture and agricultural marketing are necessary to meet consumer tastes and market demands. To accomplish the aforementioned goal, marketing infrastructure development and agricultural marketing reform have been started.

The structure of agricultural marketing, various marketing agency sources, strategies for increasing marketing effectiveness, kinds of Cooperative Marketing Societies operating in India, and the operations and financial aspects of agricultural marketing are all covered in this subject.
One important factor in the context of agricultural expansion is agricultural marketing. Farmers are encouraged to work hard in all facets of farming when their goods are sold promptly and profitably. A logical farmer really maintains one eye on the market and one on the plow. Unfortunately, there are some significant problems with agricultural marketing in India. Farmers often don't get a fair price for their goods. They often fall prey to the "Paradox of Plenty," which states that more output results in lower income because of the tendency of pricing to plummet due to large market sales.

As a result, farming in India is less of a reliable source of income and more of a risk on the future. One may argue that marketing poses a major danger to the enticement to invest in the context of Indian agriculture. Agriculture's relatively restricted supply-price response has prevented farming from becoming a profitable industry. The majority of Indian farmers still see farming as a means of livelihood alone. Because of the persistence of an antiquated marketing framework, farming's exposure to the forces of supply and demand in the market is still severely restricted. According to the Royal Commission Report, "improving agricultural marketing is necessary before the issue of agricultural growth can be fully resolved." Selling agricultural products is just one aspect of agricultural marketing. It is a fairly broad phrase that includes all of these connected operations to the buying, sorting, shipping, and selling of agricultural products. "Agricultural marketing comprises all operations involved in the movement of farm produce

from the producer to the ultimate consumer," according to Faruque. Aside from selling agricultural products, agricultural marketing often include the following activities[7], [8]. Even if the marketing method is ineffective, it may nevertheless be successful. As an example, Indonesia is a nation made up of hundreds of islands, not all of which are inhabited. 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 Logistics—Bulog name). Prior to Indonesia achieving the ability to provide its own basic foods, Bulog's success or failure was solely determined on how well it delivered rice to various locations. The price of executing such a delivery was incidental as long as Bulog could stay within the allocated budget[9], [10].

DISCUSSION

Farmers, merchants, processors, wholesalers, retailers, consumers, and society at large all benefit from increased efficiency. The amount and/or expenses of inputs required to produce a particular level and/or quality of output are used to calculate a marketing system's efficiency. These inputs often take the shape of resources like land, money, labor, time, and materials. Supplying a set degree of service to target market groups, moving a certain volume of product to markets at predetermined distances, and supplying goods at a target price are examples of typical outputs. Thus, the expenses that make up the marketing efficiency ratio are called resources, while the gains are called utilities. Optimizing the ratio of input to output is the goal of efficient marketing. Where marketing expenses are decreased but outputs are either maintained or increased, there is a clear improvement in operational efficiency. Gains in operational efficiency may include, for instance, the development of a less costly grain storage technique or a creative milk container that uses less energy after the product is delivered to stores.

Innovations in technology are not the sole path to increased operational effectiveness. Operating efficiency is likely to rise in an organization that enhances its raw material procurement procedures, such as by centralizing purchases, purchasing in greater quantities, or using unit freight rates. Similarly, a company may increase operational efficiency by reorganizing sales areas and allocating fewer but bigger loads to each delivery location. Another facet of operational efficiency is the physical losses incurred by commodities, produce, or goods as they transit through the channels of distribution. The degree of operational efficiency decreases as losses increase. In reality, variations in marketing expenses have an impact on customer happiness, and marketing expenses are often impacted by initiatives to improve customer utility. An innovative marketing strategy that lowers expenses while simultaneously lowering customer happiness might lower the efficiency ratio.

For example, Millers may increase productivity by removing 5 kg food bags from the market and requiring customers to purchase 10 kilogram bags in minimum amounts. The decline in customer satisfaction may outweigh the cost savings for Miller if a significant portion of customers choose to purchase the 5 kilogram bag. Improving marketing efficiency is challenging, which may be explained by the trade-off that must be made between client happiness and operational efficiency. Reducing the number of pack/bag sizes, doing away with packaging, or cutting back on the number of retail locations may not be difficult ways to cut marketing expenses, but the reduction in marketing expenses and retail prices may not make up for a larger loss in customer satisfaction. Cost-cutting measures as well as client utility must be taken into account when assessing any marketing improvement meant to increase marketing efficiency.Because they operate in a competitive market, marketing companies have a strong incentive to improve their

operational efficiency. While increased profits may be their ultimate aim, better operations often translate into cheaper pricing for consumers. Competition restrains the rate of profit growth and restrains any downward trend in customer satisfaction and service.

The second kind of marketing efficiency is pricing efficiency, which is predicated on the idea that markets with competition are efficient. It is focused on the marketing system's capacity to distribute resources and manage the whole agricultural/food production and marketing process in accordance with customer preferences. Maximum economic production and effective resource allocation are signs of price efficiency.

The price that consumers are willing to pay for the particular commodity, product, or produce in the marketplace may be the finest indicator of the marketing system's satisfaction-output. It may be deduced that juicing adds three cents of form utility to fresh oranges if customers are prepared to spend three cents more per orange for orange juice as opposed to fresh oranges. In this case, the pricing mechanism has an immediate impact on output since it suggests that part of the oranges that are available should be processed instead of being sold as fruit. According to theory, the prices of a particular good should be connected across time, geography, and forms if markets are functioning well.

The only factor that should cause prices to vary across geographic regions of a nation is the cost of transportation. In a similar vein, the cost of storing items should never be more than the cost of the commodity at any given moment in time. Once again, the cost of processing should not be more than the price of the unprocessed counterpart for a processed product. Pricing efficiency proponents contend that prices that do not adequately account for marketing expenses are indicators of functional flaws, the most significant of which is monopolistic power. Pricing efficiency is significantly influenced by competition. Market-driven businesses fight for customers by cutting marketing expenses, optimizing operations wherever they can, and simultaneously enhancing product usefulness to increase market share.

Whether commodities are transported by farmers, middlemen, cooperatives, marketing boards, wholesalers, retailers, or exporters, marketing expenses are spent along the commodity's journey from the farm to the end market. Growing urbanization and industrialization tend to drive up marketing expenses in comparison to the farmer's farm gate price; that is, the product travels further, passes through more hubs, and is packaged with more sophistication. Marketing expenses may also serve as an indicator of a nation's level of development, as rising living standards lead to a decrease in the amount of money spent on agricultural goods and an increase in the amount spent on new and better marketing services. Among other factors, increasing the value-added implies that more individuals in industrialized nations are engaged in the selling of agricultural goods than in their production.

Labor, shipping, packing, containers, rent, utilities (energy and water), advertising, selling costs, depreciation allowances, and interest are all included in marketing costs. Marketing expenses vary from product to product and from commodity to commodity. These variations may be explained, either alone or together, by a number of reasons. T: There is no collective bargaining for Indian farmers.

Millions of marginal and tiny producers seldom ever come together to create a cohesive front. They are often lone rivals on the market when it comes to their product. Its cheap pricing and revenue loss are the evident results. "As long as the farmer does not learn the system of

marketing himself or in co-operation with others, he can never bargain better with the buyers of his produce who are often very shrewd and well-informed," the Royal Commission on Agriculture said. Another very major flaw in the Indian marketing system is the multiplicity of middlemen. Between the farmer and the ultimate consumer, there is a lengthy network of middlemen that take the majority of the profit that would have gone to the farmers. The farmer is said to get just 55 paise for every rupee that is sold in rice, and only 50 paise for every rupee that is sold in wheat. Only 60% of the ultimate consumer's payment is typically sent to the farmer; the other 40% is split between the middlemen and the farmer.

In general, there aren't many quick and affordable ways to go from rural to metropolitan locations. A common method for moving crops is using bullock carts. This kind of transportation is weather-dependent and very sluggish. The net effect of high transit costs, which accounts for over 20% of production value, is high. In order to control farmers' income, the government provides price assistance. The government offers to purchase products in any quantity at the listed price. The Commission on Agricultural Costs and pricing sets the pricing. The purpose of the yearly assessment of the support price is to protect farmers from market fluctuations. In 1958, the government instituted the metric system of weights and measures to guarantee consistent weights and measurements across the nation.

The traditional weights and measurements were totally eliminated in 1966. The usage of metric weights was supervised by weight inspectors. This has undoubtedly lessened the farmers' market exploitation to some degree. During the previous three Five Year Plans, there has been a substantial development in transportation means. Currently, the Hyderabad plan, which spans 20 years, is being used to improve roadways. This plan states that no hamlet in India should be further than 4 kilometers from the metalized roadways. To improve agricultural product grading, the Agricultural product, Grading and Marketing Act of 1937 was enacted. 1986 saw an amendment to it. AGMARK centers have been established to standardize agricultural goods. The Planning Commission recommended in 1952 that agricultural output be classified (for exporting), and that proposal was made. For the purpose of standardizing agricultural products, sixteen regional laboratories and the Central Quality Control Laboratory have been formed.

Building godowns like this has been given top priority by the government in an effort to provide farmers with better storage facilities. Three corporations were founded: Central Warehousing Corporation on March 18, 1962; National Cooperative Development Corporation in 1963; and National Cooperative Development Warehousing Corporation in 1956. This company builds godowns that are used by Food Corporation of India. Across the nation, sixteen state-level warehousing corporations have been established. The whole storage capacity of Food Corporation of India is 235 lakh tons. The State Corporation's godowns can hold 114 lakh tons in total. In Hapur, the Indian Grain Storage Institute has been founded. A wide range of scientific material on grain saving is available from this institute. In the rural regions, 3,354 godowns have been created by Rural Development Corporation. The National Co-operative Development Corporation has built 247 cold storage facilities with a combined 7.4 lakh tons of capacity. India has 3,546 cold storage facilities in 2003. India has a total storage capacity of 429 lakh tons. India has invested 424 crore on increasing its storage capacity during the Eighth Plan.

CONCLUSION

It is important to address worker exploitation and promote fair labor standards in agricultural supply chains, as shown by the investigation of the elimination of bonded labor and its

consequences for agricultural marketing. Since vulnerable laborers are often subjected to exploitation and abuse during the production of agricultural commodities, bonded labor, a kind of modern slavery, has important ramifications for agricultural marketing. Promoting social justice, human rights, and sustainable development in rural areas requires the eradication of bonded labor. Governments, corporations, and civil society groups may establish a more transparent and fair agricultural marketing system that respects the rights and dignity of all workers by doing away with bonded labor practices. In addition, the elimination of bonded labor advances fair trade principles, increases market transparency, and raises the caliber and security of agricultural output. Customers' growing demands for products made responsibly and with ethical materials are creating market incentives for companies to make sure that labor laws are followed across their supply chains.However, there are obstacles to the elimination of bonded labor, including gaps in enforcement, economic weaknesses, and social stigma, all of which may reduce the efficacy of anti-slavery initiatives. To properly address these issues and guarantee the long-term abolition of bonded labor in agriculture, legislators, corporations, and stakeholders must work together.To put it simply, eliminating bonded labor is a vital first step in creating agricultural markets that are more ethical, sustainable, and inclusive. Societies should strive toward establishing a more just and equitable agricultural sector that benefits all parties involved by defending labor rights, encouraging fair trade practices, and empowering disadvantaged people.

REFERENCES:

[1] E. Consterdine and S. Samuk, “Temporary Migration Programmes: the Cause or Antidote of Migrant Worker Exploitation in UK Agriculture,” *J. Int. Migr. Integr.*, 2018, doi: 10.1007/s12134-018-0577-x.

[2] M. P. Hoffmann, “From bonded to industrial labour: Precarity, Maoism, and ethnicity in a modern industrial factory in western Nepal,” *Modern Asian Studies*. 2018. doi: 10.1017/S0026749X17000415.

[3] K. Boehme, P. Mitchell, and A. Lester, “Reforming everywhere and all at once: Transitioning to free labor across the British Empire, 1837-1838,” *Comparative Studies in Society and History*. 2018. doi: 10.1017/S0010417518000233.

[4] ILAB, “2018 Findings On The Worst Forms Of Child Labor,” *US Dep. Labour*, 2018.

[5] A. K. Basu And N. H. Chau, “An Exploration of the Worst Forms of Child Labor:,” in *Buying Freedom*, 2018. doi: 10.2307/j.ctv39x8qk.7.

[6] G. Campbell, “Introduction: Bondage and the Environment in the Indian Ocean World,” in *Palgrave Series in Indian Ocean World Studies*, 2018. doi: 10.1007/978-3-319-70028-1_1.

[7] C. M. O’Brien and O. Martin-Ortega, “Public procurement and human rights: towards legal and policy coherence in pursuit of sustainable market economies,” in *Public Procurement and Human Rights*, 2019. doi: 10.4337/9781788116312.00025.

[8] H. P. H. Kumara and G. K. K. A. De Silva, “Mechanization and Performance Analysis of Vertical Slip Form Wall Construction Technology,” *Eng. J. Inst. Eng. Sri Lanka*, 2019, doi: 10.4038/engineer.v52i2.7353.

[9] A. U. Rehman, M. Iqbal Shah, K. Khan, and I. Ullah Khan, "Socio-economic impact of bonded child labour in Pakistan," ***E-Journal Int. Comp. Labour Stud.***, 2019.

[10] A. C. Parks, S. Zhang, K. Vincent, and A. G. Rusk, "The Prevalence of Bonded Labor in Three Districts of Karnataka State, India: Using a Unique Application of Mark-Recapture for Estimation," ***J. Hum. Traffick.***, 2019, doi: 10.1080/23322705.2018.1471576.