

A Study of Agricultural Development of the Environment

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Abstract - Agriculture and the environment are closely linked; it significantly affects the usage of land, soil, water, biodiversity, and the landscape. The biological equilibrium has been disrupted by intensive agriculture, which has also significantly altered cropping patterns, how agricultural inputs are employed, and how soil fertility is managed. Land cropping intensity, irrigated area, and rice-wheat HYVs has all increased considerably. The area devoted to inland natural fisheries, feed, and pulses, on the other hand, is steadily shrinking. Crop rotation, intercropping, and other traditional cropping techniques are slowly dying out. And the study in which discussed about Agriculture: An Overview of Commencement, Agriculture, Environmental Impact of Agriculture, Agriculture in degradation, Agricultural pollution, Agriculture and Ecology, Concept of Sustainable Development and Issues of Agro Sustainability.

Keyword - Agricultural, environment, Impact

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INTRODUCTION

Agricultural geography is a crucial area of study not just in areas where agriculture is the primary industry but also globally because of the interconnections between many human phenomena. The significance of land-use analysis has increased recently as a consequence of technical improvements and growing demands from the human population on the land. There used to be enough space for everyone, but the present population boom has significantly decreased the quantity of land that is still accessible for human habitation. The need to effectively use all of the land that is available has risen due to the rising need for food, pasture, and raw materials. Since the beginning of recorded civilization, agriculture has been a popular rural vocation that has had a profound influence on human history. Even now, agriculture retains a dominant position in the economy. Agricultural growth will probably soon be slowed down by the scarcity of natural resources, the constraints of terrestrial ecosystems, and the complexity of cultural systems. We should utilize resources more effectively, generate less waste, and be careful not to waste them in light of these limitations. Furthermore, careful spatial planning at many levels, as well as international collaboration, are required due to the complexity of natural and cultural ecosystems, the unequal distribution of their many components, and ecological imbalances. Le Quy Kha (2017) asserts that as people become more

aware of its significance, land resource management is taking on more significance.

The growth of the nation depends heavily on agriculture. It significantly boosts India's national GDP and generates a sizable number of employments there. India's agricultural sector has greatly progressed in recent years. The introduction of the new High Yielding Varieties has resulted in a tremendous change in Indian agricultural technology (HYVs). The introduction of these fertilizer-responsive seedlings has resulted in a remarkable rise in yields per unit area for several crops, providing the nation with a much-needed level of food grain self-sufficiency. The stronghold of traditional agriculture has been broken by improvements in the use of modern inputs, irrigation, and agricultural technology. Green Revolution describes the current state of affairs as a revolution. In order to boost agricultural productivity in nations that had historically struggled to produce enough food grain, the Green Revolution promoted the use of chemical fertilizers, herbicides, improved crop varieties, and irrigation. The success of the new agricultural development plan has given the Indian agricultural industry new optimism.

Agriculture has an effect on the landscape, soil, water, biodiversity, and use of the land. Intensive farming has thrown off the balance of life because it uses agricultural inputs and manages soil

fertility. The land's cultivation intensity, irrigated area, and rice-wheat HYVs have all grown significantly. In contrast, there is a steady decline in the area used for pulses, oilseeds, fodder, and inland natural fisheries. Using conventional cropping techniques like mixed cropping, crop rotation, and intercropping is becoming harder and harder. Mono-cropping has increased in popularity as the use of irrigation, synthetic fertilizers, and pesticides has increased.

Agricultural growth must be a crucial part of the state's overall development plan. People's viewpoints during the state's inception were diverse. The state's agricultural expanded quickly during the Green Revolution, making it self-sufficient in food production. As a result, during the 2010–11 growing season, food grain production jumped by a factor of six, from 2.6 million tonnes (MT) to 16 million tonnes (MT). Due to significant increases in wheat (11-fold) and rice output, the rice-wheat cycle has emerged as a fundamental production strategy (16-fold). However, India is now dealing with two significant issues in regard to agriculture. Meeting the expanding demand for food and agricultural products as well as imbalanced agricultural growth brought on by changing crop patterns are examples of this. Conversely, monoculture systems, excessive exploitation of natural resources, low groundwater quality, growing production costs, and climatic change pose a challenge to the sustainability of the major production systems (rice-wheat, cotton-wheat, pearl millet-wheat/mustard, and wheat-sugarcane).

Agriculture: An Overview of Commencement

The first humans probably ate either wild creatures they had hunted or plants they had learned were edible. After depleting the aforementioned resources in their previous homes, masses of people dispersed to different parts of the globe in quest of sustenance. Through all of these travels, however, man gradually came to see the value in having his necessary flora and wildlife constantly at his disposal, as he continuously found new strategies of surviving and improved his understanding of nature's food abundance (both flora and animals). As a result, in an effort to ensure a more comfortable existence, nomadic cultures eventually gave way to a system that resulted in permanent settlements. On the one hand, man began cultivating and gathering food on a large scale, and on the other, he perfected the domestication of animals, at a time when dogs were the only hunters and cattle was not raised but consumed.

This bountiful harvest caused not just a rise in human population and the development of the first civilizations, but also a shift in where our species initially made its home. Man no longer stayed in caves like other animals, but instead started to productively relocate to more permanent and semi-permanent buildings close to the gathering grounds. Jericho, which was established in 9000 B.C. and is still inhabited today, is a prime example of one of the

first such communities. Along with the aforementioned Jericho town, another early evidence of habitation may be found in Catal Huyak in the Konya Plain in Turkey, with its oldest traces dating back to 6500 BC.

Agricultural prosperity propelled population growth wherever people settled, from the fertile Euphrates Valley to Egypt's paranoid Pharaonic era. Since then, humans have developed the rudimentary skills of cultivation, expanded their understanding of how the natural world functions, and begun taking greater use of it. This is shown by the Egyptians, who had a period of unprecedented agricultural prosperity after learning to forecast the periodic flooding of their land by the Nile. Moreover, this agriculture leading to a proportional growth of settlements equally led in the formation of practices and crafts other than planting and harvesting. All sorts of skills, from copper smiting to rope manufacturing, were first learned in these communities. So, rather than nomadic wanderings that resulted in periodic times of starvation, these settlements ultimately gave place to civilizations, and the world as shown on the canvas of human history started to take form, even while the rest of the globe benefited from agriculture, the same thing was happening in India. Now, let's get down to the nitty-gritty of Indian farming.

Agriculture

Agriculture is the activity of raising crops and animals for food or other purposes. In the emergence of sedentary human civilization, agriculture was crucial, as cultivating domesticated species generated food surpluses that allowed humans to dwell in cities. Agriculture has a long and illustrious history that dates back thousands of years. Neolithic farmers first planted wild grains approximately 11,500 years ago after beginning to collect them around 105,000 years earlier. Over 10,000 years ago, humans tamed pigs, sheep, and cattle. More than a dozen different parts of the world have their unique plant lore. Around 2 billion people were still dependent on small-scale subsistence farming until industrial agriculture, based on large-scale monoculture, took over in the twentieth century.

Technology and modern agronomy have improved agricultural yields by a factor of ten while creating extensive ecological and environmental harm, such as pesticides and fertilizers. Modern techniques in animal husbandry, such as selective breeding, have improved meat production while also raising questions about animal welfare and environmental harm. Antibiotic resistance and growth hormones in commercial meat production are just a few of the environmental problems we face today. Ecological problems like desertification and climate change may all have a negative impact on agricultural outputs since agriculture is a source of these problems as well as their focus. Genetically

modified organisms are illegal in certain countries, while they are widely used in others.

Foods, textiles, energy, and raw materials are among the most important agricultural goods (such as rubber). Cereals (grains), vegetables, fruits, oils, meat, milk, fungus, and eggs are examples of food classes. Only the service sector employs more than a third of all people on the planet, but agriculture has seen a steady decline in recent decades, especially in emerging nations where industrial agriculture and automation are taking the place of smallholdings.

The ratio of agricultural output to input is used to calculate agricultural productivity. Crop yield, which refers to the weight of an individual crop, is commonly used to gauge the entire agricultural production. As a result, the market value of the finished product is commonly used to calculate agricultural productivity. Many other inputs, such as labor or land, can be used to compare this productivity. Partial measurements of productivity are what are known as such comparisons.

Total factor productivity (TFP) can be used to estimate agricultural production. By comparing an index of inputs to outputs, one may calculate agricultural productivity. To address the drawbacks of partial productivity measures, such as the difficulty in determining what variables are responsible for changes, this measure of agricultural productivity was developed to address such issues. TFP shifts are frequently ascribed to advances in technology.

Food security is largely dependent on agricultural production. Deforestation and other environmental degradation and climate change can be slowed by increasing agricultural output and using sustainable techniques to do so.

Environmental Impact of Agriculture

Farming methods have an environmental impact when they alter the ecosystems surrounding them, and such changes may be traced back to the activities themselves. Agriculture's influence on the environment varies greatly depending on the farming methods used by farmers and the size of the activity. To lessen their environmental effect, farming communities must use sustainable agricultural methods. Agriculture's negative effect is a long-standing problem that persists even as scientists devise new ways to decrease devastation while also improving eco-efficiency. Even though some forms of pastoralism are beneficial to the environment, current methods of animal husbandry tend to be more harmful than those that focus on fruits, vegetables, and other renewable sources of biomass. Cattle waste emissions of ammonia continue to cause environmental pollution issues.

A farmer's production techniques are used as a "means-based" indicator for analyzing the

environmental impact, whereas an "effect-based" indicator considers how farming practices affect the agricultural system or how much pollution is emitted into the environment. A good example of a means-based indicator is how much nitrogen is applied to the soil and how it affects the quality of the groundwater. An indicator based on effect would indicate the loss of nitrate to groundwater. Farmers' means-based assessment looks at agricultural methods; effect-based evaluation looks at the entire system. Pesticides and fertilization methods used by farmers might be examined using a means-based approach, whereas an effect-based approach would look at how much CO₂ is emitted or how much nitrogen is in the soil.

Soil, water, air, animal and soil variety, humans, plants and food all have an influence on the ecosystem when agriculture is practiced. In addition to climate change and deforestation, agriculture contributes to other serious environmental concerns, such as biodiversity loss, dead zones, genetic engineering, irrigation challenges, pollution buildup, and waste.

Feeding an ever-increasing global population while decreasing environmental impact and protecting natural resources for future generations is a major problem for agriculture. Agriculture has the potential to have large environmental consequences. Farming has both positive and negative effects on the environment, such as reducing greenhouse gas emissions by trapping them in crops or soils or decreasing flood risk by using certain farming practices. Agriculture's negative impacts include pollution and degradation of land, water, and the air we breathe.

This organization keeps track of the connections between environmental and agricultural policies that help reduce negative environmental impacts while simultaneously enhancing positive ones. It also makes recommendations on how to improve agricultural policy coherence in order to improve environmental performance.

Agriculture in degradation

In addition to climate change and deforestation, agriculture contributes to other major environmental concerns that worsen the environment, such as the disappearance of biodiversity and the creation of dead zones. It also causes irrigation challenges, pollution buildup, and soil deterioration.

In agricultural, industrial, and urban settings, soil degradation is the result of incorrect usage or bad management, which degrades the soil's quality. It's a major issue for the environment.

Soil fertility loss, habitat degradation, soil erosion, and excessive nutrient runoff into lakes are just a

few of the negative consequences. In addition to the negative impacts on the environment, land degradation may also have negative consequences for people's health and well-being.

Agricultural pollution

As a source and sink for water pollution, agriculture plays an important role. Pesticides pollute both the surface water and the groundwater they fall on. Surface water may be reached by runoff from treated soil and plants. Pesticides contaminate waterways widely, and pesticide-related groundwater contamination is a global issue.

There are several causes of agricultural contamination. Greenhouse gas emissions from nitrogen-based fertilizers may be significant and these fertilizers can pollute our rivers. Chemical pesticides with a variety of toxicological effects can contaminate our air and water, or even end up on our food.

Animal feeding operations, overgrazing, washing too frequently or at the wrong time, and incorrect, excessive, or poorly timed use of pesticides, irrigation water, and fertiliser are among agricultural activities that contribute to NPS contamination. Nonpoint Source Pollution: What Is It,

Ammonia (NH₃), a gas emitted by extensively fertilized fields and animal dung, is the primary source of agricultural air pollution. Agricultural emissions in the United States accounted for around half of all emissions created by people.

The word "air pollution" refers to contamination in the environment caused by undesirable items such as solids, liquids, or gases. There are two ways that agricultural fields contribute to pollution in the air:

- Nonagricultural resources give rise to air pollution that may impact agricultural crops directly.
- Air pollution, environmental degradation, and other problems are all caused by agricultural activity.

Agriculture and Ecology

Numerous applications of agroecology may be made, including as a scientific study, as well as a social movement. Agroecology now offers a multidisciplinary framework for studying agriculture's activities. Agriculture and ecology are two intertwined disciplines that cannot be separated. Ecology has a wide range of definitions, each provided by different ecologists. Modern technology has both severe environmental and socio-economic consequences, which is why agroecology focuses on preserving dynamic agriculture that maintains yields and maximizes the use of local resources while reducing

those impacts. As defined by the OECD, agroecology is "the investigation of the relationship between crops and the natural environment." Agro-ecology" is a scientific field of study, agricultural practice, or political or social movement, according to . For environmentalists and others, sustainable agriculture is defined as "a full systems shift toward food, feed, and fiber production that balances environmental reliability, social fairness and economic feasibility among all sectors of the public, as well as global and intergenerational peoples. With this definition, it's clear that sustainability is meant to encompass all living things, including people, not just those on the planet right now. In other words, agroecology examines all of the inputs and outputs of the system as a whole, including cultural and environmental influences as well. Using this information, the food production system may be improved while also meeting the needs of the ecosystem and its inhabitants.

Concept of Sustainable Development and Issues of Agro Sustainability

The term Sustainable Development was first use in 1980 in the World Commission on Environment and Development (WCED). Environmental concerns gained international attention during the Brundtland Commission and a document emerged from Brundtland Commission entitled 'Our Common Future' in 1987 in which sustainable development was defined as assembly the requirements of the community now without misuse of the needs for upcoming generations. The word sustainable development implies a long-term vision of expansion and ecological reliability. It is development, which achieves ecological sustainability as determined to assemble public is other needs, concerning to the subject matter this can be use regarding efficient use of natural resources throughout farming practices.

Sustainable Development of agriculture sector is often at the centre of discussion in today era due to the obvious environmental problems associated with farming activities. Sustained intensification in farming production and output is crucial for overall strength of the economy. Sustainable cultivation is an elusive and complex idea to describe accurately. Commonly, it encompasses objectives of maintaining soil productivity, ecological quality and economic capability. Sustainable agriculture has been describe as "the successful management of resources for agriculture to satisfy changing human needs while maintaining or enhancing the quality of environment and conserving natural resources". According to CGIAR (Consultative Group on International Agricultural Research) "Sustainable agriculture is the successful management of resources to satisfy the changing human needs, while maintaining or enhancing the quality of environment and conserving natural resources.

Definition of FAO (1991), seems suitable in this perspective. "Sustainable rural expansion is the managing and protection of natural resource base and the direction of technological and institutional transform in such a manner as to promise the achievement and sustained pleasure of human requirements for the present and upcoming generations. Sustainable agriculture production not only involves identification and application of enhanced technology but also environmental and socio economic concerns. One of the most important and unquestionable idea behind this concept is maintaining agricultural growth without impairing the resources base. While sustainable agriculture focused on a symbolic relationship between ecology and economics, the development effort pursues exploitation of resources to meet the needs of the society.

The plan of sustainability has extraction of resource managing as the idea of persistent yield, ground water level of withdrawal that could not be sustain without reduction prospect levels. Much of the ecological degradation is related with the green revolution machinery adopted to raise crop production. Even though spectacularly successful in the later objective in the short sprint, it has high ecological costs in the long run, such as diminishing water table due to tube wells, water logging, declining soil fertility with extreme chemical fertilizer use etc. the long term sustainability of the production decreases the production and generate the complex relationship between the resources.

In India, green revolution started in sixties with the introduction of high yielding varieties and input intensive agriculture helped to achieve the goal of targeted food production, which ended up prominent by 1980s. Further, the indiscriminate use of inputs (chemical pesticides and fertilizers) has caused serious environmental problems in well-endowed regions like Madhya Pradesh and Punjab due to the instability and fluctuations in productivity. From that point forward the researchers of our nation are trying endeavors to develop certain technologies in farming, which are minimal effort and naturally safe other than boosting efficiency in long run.

The growth impulsive by new technology has made a major drop the on total supply of food grains, ensuring food security to the rising population. The subsequently phase of agricultural growth still, faces a serious dispute in conditions of sustainability. The principle issue looked by the state has change in rural practice that prompted the second era issues of Green Revolution. Sustainability is one of buzzwords of our times. It has been attach to many numbers of social and economic pursuits. There is need for sustainable agriculture to save the environment and sustainability of natural resources. As a result, here is a vital requirement to deal with the complex issues of natural resource organization for sustainable growth of farming.

CONCLUSION

The study of agricultural development was a modest attempt to look at the management and protection of the environment. The findings of the study show a strong connection between environmental sustainability and access to agricultural growth. These areas of the state that are dominated by agriculture are in grave danger as their resources for land, soil, and water are being depleted and deteriorated at an alarming rate. The aim of the study is to assess the environmental impact of agricultural development, taking into account factors like fertile land, dependable irrigation, high productivity, and a history of early adoption of new technology and modern production techniques.

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