

A Review on Impact of Agriculture on Deforestation

Ramandeep Kaur

RIMT University, Mandi Gobindgarh,
Punjab, India

Email Id- jagandeepsingh@rimt.ac.in

Jagandeep Singh

RIMT University, Mandi Gobindgarh,
Punjab, India

ABSTRACT

Agriculture is a major driver of deforestation and has a significant influence on deforestation. Because of the enormous population, there is a great need for food, and in order to meet this demand, wide-scale deforestation occurs. Food demand is high, which encourages commercial farming and large-scale land purchase. For large-scale cultivation, forests are being converted to cropland. This has a negative impact on the ecosystem, climate, and human health. Natural habitats and biodiversity are also harmed. This review article examined the influence of agriculture on deforestation while emphasizing the significance of environmental conservation and health. This review included a wide range of topics related to agricultural deforestation. Climate change is currently the most pressing issue facing the globe, which is why it is critical to expand the agriculture sector while also implementing forest preservation policies that will assist to secure and safeguard the environment.

Keywords

Agriculture, Commercial Farming, Climate Change, Deforestation, Land.

1. INTRODUCTION

Climate change and global warming are the two most pressing concerns facing the world today [1]. All countries are working hard to safeguard the environment and nature so that future generations will have a better future. Climate change and global warming are mostly caused by deforestation. Destruction of rainforests takes happen on a huge scale, causing the environment's temperature to rise.[2] The world's population continues to grow, resulting in two primary demands from the people: the first is a high need for food, and the second is land for building purposes. Agriculture is expanding at an exponential rate in order to meet the enormous demand for food. Commercial farming is the most important sector of agriculture, as it produces food on a huge scale to meet society's needs [3]. People used to cultivate on their own tiny plots of land in the past (generally known as subsistence farming). The primary goal of subsistence farming is to provide food for their family and those in their immediate vicinity [4]. Because it is done on a small scale, subsistence farming is unable to meet the huge demand for food [5,6].

Forests are a conditional renewable resource that may be regenerated but need a certain amount of time to work sustainably [7]. Forest resources in India have been shown to be decreasing at an alarming rate. Rapid industrialization, urbanization, and overexploitation have resulted in not just a reduction in forest cover, but also a permanent loss at an alarming rate [8]. All of these causes are driven by uncontrolled human population expansion, which results in a huge increase in demand for wood

and forest products [9]. The over-exploitation of forest resources has gone beyond what can be sustained to meet human requirements, resulting in a shift in net forest cover. With the present pace of population growth, the world's population may more than double in the next 30 to 35 years, from 7.6 billion to over 10 billion. Food demand is anticipated to increase by 50% over the next five years, which is cause for significant concern. The most feasible strategies to avert mass forest degradation and large-scale species extinction are rational usage and good management of forest resources [10]. Finding the linkages between rising needs and satisfying those wants in a sustainable way is critical. Future research should concentrate on establishing this relationship by combining forestry, restoration ecology, and natural resource economics approaches [11-13].

Commercial farming is often carried out on a big land farm with heavy machinery and a mix of expert and unskilled workers. Various farming chores are carried out with the use of heavy machinery. Commercial farming is usually capital intensive since it necessitates large investments in land, machinery, fertilizers, and seeds, among other things [14]. Commercial farming is a rapidly growing agricultural sector for a variety of reasons, including high yield, high employment, and low-cost food [15][16]. Apart from the numerous benefits, commercial farming has some disadvantages, such as deforestation, destruction of natural rainforests, a lack of lands available for cultivation, an increase in the rate of lands, wastage of crops such as vegetables and fruits if not consumed within a few days of harvesting, and the promotion of the use of chemicals such as fertilizers, insecticides, and plant growth regulators. Deforestation and loss of natural rainforests are major concerns among the many disadvantages connected with large-scale commercial farming. Commercial farming need vast acreage to begin commercial farming, which necessitates high-level land acquisition. Natural forests are being destroyed and transformed into landforms on a vast scale, resulting in climate change and global warming. The influence of agriculture on deforestation is discussed in this review article. In the following sections, several elements of agricultural deforestation will be explored [17-19].

2. DEFORESTATION AND ITS MAJOR CAUSES

Deforestation, or the removal of natural rainforests, is a significant problem that the world is now dealing with. The loss of natural rainforests across the world is referred to as deforestation. As the quantity of natural forests decreases, numerous concerns such as global warming and climate change become more prevalent. Deforestation caused by many ways and some of the major causes shown in the Figure 1.

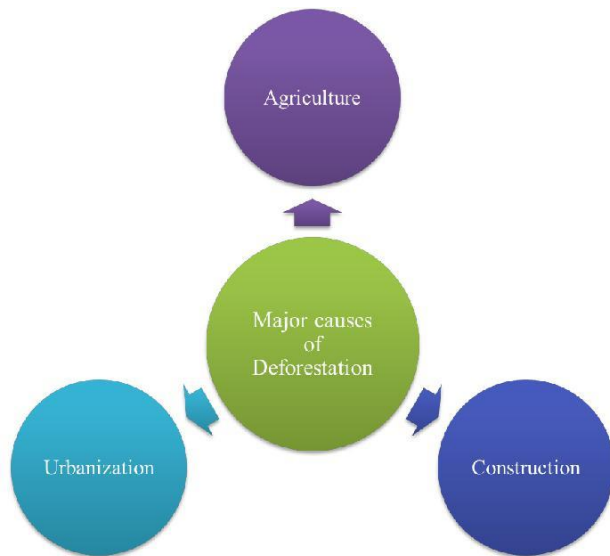


Figure 1: Schematic Representation of Major Causes of Deforestation

2.1. Agriculture

Today, agriculture is the leading source of deforestation. Increased food demand encourages commercial farming, which leads to deforestation. Commercial farming is often done on vast plots of land, and the agricultural sector's continued development has resulted in increased land purchase on a massive scale. Natural rainforests are destroyed at a rapid rate in order to create landforms for agriculture, which raises the temperature of the environment and increases the amount of carbon dioxide (CO₂) in the atmosphere.

2.2. Construction

The second most common cause of deforestation is construction. Deforestation is essential for the development of new infrastructure (such as roads, railways, water, and electricity sources). The modern infrastructure supports human living in a variety of ways, including transportation, transformation, and generation of energy. The ability to move goods or products (such as fruits, minerals, and spices) relies heavily on transportation connections. Because some products, such as coal and natural gas, are collected by hand, extensive extraction and transportation infrastructures are required.

2.3. Urbanization

For the survival, most of the people headed towards cities for the employment. The movement of the peoples from rural areas to urban areas is also a reason of deforestation. From the last few years, the rapid urbanization growth has been noticed. It has been identified that exponential growth of housing and consumption sites takes place. In order to host more people in urban area, deforestation takes place to develop more and more housing colony and industrial sites.

3. EVOLUTION OF AGRICULTURE

Agriculture is the majority of the population's main source of income since it supplies food for everyone. Agriculture is

evolving mostly as a result of population growth. The agricultural industry is revolutionized by the adoption of modern technology due to the high need for food. Previously, mankind relied on woods for sustenance. The woodlands were generally hunted and animals were killed for sustenance. For hunting, they used handcrafted, basic tools. As time goes on, humans gain more knowledge and investigate new things, and as a result, they find fire. They began to cook their hunting food on fire after discovering it, by hanging on top of it. People began to experiment with plants, vegetables, and fruits as food after the initial phase of agriculture. They can readily obtain food because the forest is a primary source of many sorts of plants, vegetables, and fruits [20].

When people first began to live on land, they experimented with various methods for obtaining food. People used to cultivate on tiny plots of land to provide food for their families in the beginning. This was the era when small-scale farming became popular. Small-scale farming is typically done by rural farmers due to a lack of finance. Manpower is used in small-scale farming to execute numerous activities related to land cultivation. Small-scale farming is driven by necessity rather than profit. Small-scale farming has several advantages, including high-quality food, environmental friendliness, greater oversight, increased production, and the ability to make rapid decisions in a variety of weather and climate circumstances. Another benefit of small-scale farming is that it creates jobs since it employs a large number of people rather than machinery. Later on, as the world's population grows, so does the need for food, which small-scale agricultural systems cannot provide [21].

The agriculture industry has been elevated to the level of an industrial sector due to increased food demand. In order to produce food on a big scale, industrial agriculture generally makes use of extensive acreage. The two major goals of industrial agriculture are high yield and capital creation. Diverse sorts of heavy machinery are used to do various jobs. Industrial agriculture provides greater yields, more jobs, low-cost food for everyone, and the development of local infrastructure. On the other hand, there are certain disadvantages connected with industrial agriculture. Due to the use of many types of pesticides in agricultural production for diverse objectives such as soil management and crop protection from pests, these downsides included significant CO₂ emissions, destruction of natural rainforests, soil erosion, and bad quality food. People nowadays are more concerned about their health, which is why they choose high-quality food over low-cost meals. As a result, most people began to grow food on their balconies or gardens using natural processes rather than chemicals. Organic farming is a term used to describe this sort of farming. Bio-fertilizers are commonly used, and crops are grown via a natural method. Organic farming and nutrient-dense food contribute to the high quality of the meal.

3.1. Types of Agricultural System

Agriculture's development has resulted in primarily two sorts of agricultural systems (shown in Figure 2). Both agricultural systems have the same main goal of producing food. Each agricultural system aims to feed a particular number of people. Because both are targeting different numbers of people to feed, the primary distinction is dependent on farm size.

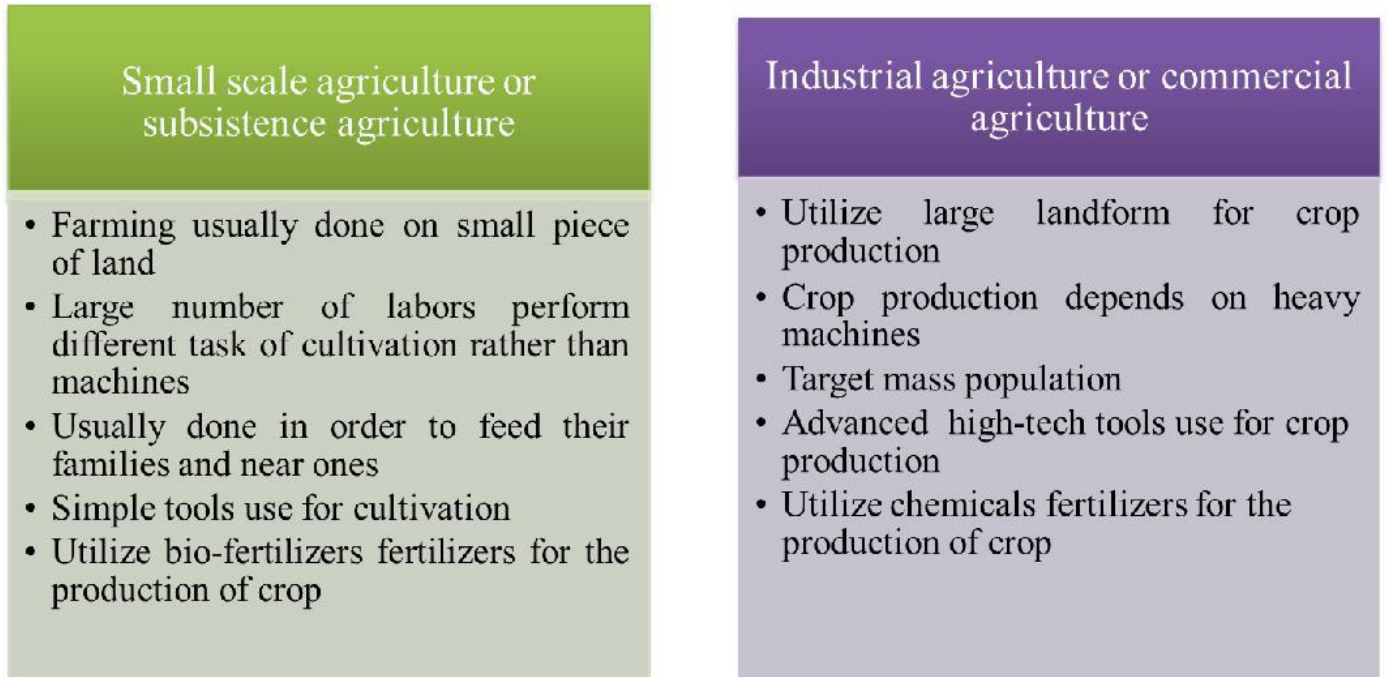


Figure 2: Schematic Illustration of Types of Agricultural Systems and Difference between them

4. ROLE OF INDIAN GOVERNMENT IN FOREST CONSERVATION

Climate change is a worldwide concern, and governments all around the globe are working especially hard to address it. The Indian government, like that of other countries, is always working to expand forest cover in order to protect forests and natural resources[22]. The federal government and state governments collaborate to address this problem. The Indian government creates and implements a variety of policies, guidelines, and legislation to promote forest protection [23]. Some of these laws and rules discuss in Table 3.

Table 3: List of Policies, Rules and Laws Implemented by Indian Government in Order to Conserve Forest

Rule/Law/Policy	Explanation
The Indian Forest Act, 1927	This act was comes into existence in order to differentiate and declaring the area of reserved forest, village forest or protected forest. An amendment has been done in 2012 that declare the restriction of fresh clearance in forests
Forest Conservation Act, 1980	A modification to this statute was made in 1988. The primary goal of this legislation was to protect the country's forests. This act

was enacted by the government in order to protect their natural rain forests. Any form of forest diversion for non-forestry use was required to obtain government clearance under this statute.

National Forest Policy	This is one of the most important actions done by the Indian government to protect the country's forests. This directive establishes the importance of environmental protection, forest preservation, enhancement, exploitation, and restoration.
Wildlife Protection Act, 1972	This act was enacted in order to safeguard the natural ecology and animals. The primary goal of this legislation is to preserve animals, birds, and plants in order to maintain environmental equilibrium. It also safeguards some of the world's most endangered animal and bird species.
The Scheduled Tribes and Other Traditional Forest	The primary goal of this legislation is to acknowledge

Dwellers (Recognition of Forest Rights) Act, 2006

the rights and occupation of forest regions by forest dwelling scheduled tribes and other traditional forest dwellers who have lived in these woods for centuries.

4.1. Challenges of Deforestation

As previously said, deforestation has a variety of negative consequences for the ecosystem, climate, and health. It is wreaking havoc on the natural environment. If deforestation continues, the future will become far worse. It is critical that we take responsibility for protecting our environment so that future generations will have a brighter future. There are various obstacles to overcome in order to address the issue of deforestation.

5. DISCUSSION

The loss of trees and forests throughout the world is referred to as deforestation. Forests are being destroyed on a huge scale as a result of different human activities such as agriculture, urbanisation, and building. Agricultural deforestation is the primary cause of deforestation. As the world's population grows, so does the need for food, causing agricultural operations to shift to an industrial level. Food demand is high, which encourages commercial agriculture to expand. Commercial agriculture is generally carried out on vast plots of land, therefore land acquisition occurs on a big scale. Because there is a scarcity of open space, commercial farming encourages deforestation in order to convert forests into vast farmlands for big-scale food production. As a result of agriculture-related deforestation, the globe faces a number of difficulties.

Climate change, loss of natural ecosystems, climate change, and global warming are only a few of these issues. Individuals must take responsibility for protecting their environment in order to provide a better living environment for future generations in order to overcome such difficulties.

6. CONCLUSION

Climate change is a worldwide concern, and all government agencies are working hard to address it. Agriculture is the primary driver of deforestation, as increased food demand encourages the development of commercial agriculture in order to meet the needs of a growing population. Because commercial farming necessitates a huge amount of land, deforestation occurs at a high rate. It removes vast swaths of natural rainforest and converts them to agriculture, resulting in a slew of issues such as climate change and global warming, biodiversity loss, increased food poverty, and soil erosion. If this does not change, the future will be far worse. It is advised that, in order to minimize deforestation, everyone accept responsibility for protecting their environment, boost planting, and create suitable laws and rules for forest conservation, with government authorities ensuring that the rules and policies are implemented.

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