



STUDY OF UNSUSTAINABLE IRRIGATION IS A PROBLEM IN SUSTAINABLE AGRICULTURE IN INDIA

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ABSTRACT

India is known as an agricultural country. The agriculture in India is currently in the throes of uncertainty and there is no certainty left in Indian agriculture. In the post-independence period, conscious efforts were made to improve the agricultural sector. After 1960, there were radical changes in agriculture, which led to an increase in agricultural production. As a result, India underwent a Green Revolution and the country became self-sufficient in food grains. However, the agriculture industry is currently facing many problems. Agricultural production will increase and commercial crop production will be exported and benefited. Although their economic and social conditions are improving, recent natural changes, farmers' obsession with growing specific crops, and reckless use of available water have threatened the agricultural system. There is a trend of uncertainty, irregularity and decline in agricultural production. There are many reasons responsible for this poor state of agriculture. One of these many reasons is the lack of water available for agriculture, water management and water sustainability. This research paper discusses what can be done to reduce instability in agriculture and move towards a sustainable agricultural system. This research paper presents the problems and solutions in sustainable water management for sustainable agriculture.

INTRODUCTION

Modern agriculture is seen developing in India rather than traditional agriculture. Modern seeds, chemical fertilizers and pesticides are used in every farm at the right time. More and more productive crops are being grown in agriculture. Modern technology is being used. Due to the large-scale use of chemical fertilizers, their side effects are being felt on agricultural land, that is, the fertility of agricultural land is being destroyed. Farmers of the country should be trained in modern agriculture. The government should organize agricultural training camps from time to time. Training should be provided on modern technology, economically viable crops, and information on low-cost and low-water-requiring crops. Educating farmers on the importance of sustainable agriculture or natural farming. Sustainable agriculture leads to economic development and increases production and helps maintain ecological balance. Sustainable agriculture increases production through the use of modern machinery and hybrid seeds. By planning irrigation methods such as drip irrigation, sprinkler irrigation, and water misting to use water at the right time in agriculture, more land can be brought under irrigated and production can be increased. Many countries have focused on sustainable agriculture. Therefore, human life can be sustained forever through environmental conservation, which is why sustainable agriculture is the need of the hour. It is necessary to increase productivity in the agricultural sector and make farmers' produce available at affordable prices. If modern seeds and technology are used in agriculture to improve markets and improve farming, the number of people migrating from rural areas to cities will decrease. The eastern states should be made

granaries by creating awareness about agricultural development and increasing agricultural production and efficiency.

OBJECTIVES OF THE STUDY

- 1) To study the concept of sustainable agriculture.
- 2) To focus on why sustainable agriculture is necessary.
- 3) To know the problems or obstacles in sustainable agriculture.
- 4) To suggest solutions for sustainable water management for sustainable agriculture.

RESEARCH METHODS

The presented research paper is based on secondary source material and has been based on reference books, magazines, newspapers, reports and research articles.

SUSTAINABLE AGRICULTURE

Sustainable agriculture is an agricultural method adopted to avoid harming the environment and maintain the balance of nature, in which efforts are made to improve the texture of agricultural land and continuously increase production. Sustainable agriculture can be achieved by testing the soil for sustainable agriculture, using organic and compost fertilizers as needed, using bacterial fertilizers, and watering the crops as needed. The aim of sustainable agriculture is to meet the needs of the current generation through food and agricultural production by managing natural resources in a balanced manner without wasting them, while also conserving nature and agriculture for future generations.



NEED FOR SUSTAINABLE AGRICULTURAL DEVELOPMENT

The mobile population has made every effort to ensure that they enjoy food. Chemical fertilizers and pesticides are being used extensively to increase agricultural production. However, it is having adverse effects on agricultural land. Land productivity has decreased, land efficiency has decreased, and the food produced is unhealthy, thus endangering human health. To avoid this, sustainable agriculture has become the need of the hour. Therefore, sustainable agriculture should be given priority. The following factors are useful for increasing agricultural production.

1. Proper use of Water

Farmers in our country are still seen practicing traditional farming. It is necessary to bring maximum land under irrigation by using water properly. Water is provided free of cost for agriculture from lakes, rivers, wells and canals. However, water is not provided free of cost to the land. If water is provided to agriculture through drip irrigation, frost irrigation and sprinkling, maximum land will come under irrigation and there will be a huge increase in production. Therefore, many farmers in the country should be taught the importance of water and trained in modern technology. If the entire world wants to develop agriculture, every nation believes that it should be like Israel. It is necessary to grow crops that require less water instead of traditional crops. Along with this, the groundwater level is decreasing due to the large amount of water being pumped. Sustainable agriculture is the minimum requirement to control all of these. By creating irrigation facilities in agriculture and avoiding water wastage, food production can be increased by using abundant water in agriculture. Also, the use of agribusiness technology and organic farming will ensure sustainable agriculture and help increase production.

2. Limited use of Chemical Fertilizers

To increase modern production, every farmer is using various types of fertilizers in large quantities in his fields from sowing to harvesting. This has an adverse effect on agricultural land and destroys soil fertility. To maintain soil fertility and prevent soil erosion, soil productivity can be increased by using organic fertilizers through sustainable agriculture. Food prepared using organic fertilizers is healthy. The use of cow dung, vermicomposting, lake sludge, river sludge, and organic fertilizers, etc.

3. Limited use of Pesticides

We have been using pesticides to increase food production since the beginning. When insect larvae infestations increase on crops, various pesticides are used extensively to protect crops. As a result, beneficial organisms like earthworms and other soil organisms are being destroyed. For this, to maintain the texture of the soil, organic manure, tree leaves, and weeds should be decomposed, stored in water, and converted into organic fertilizer. It is necessary to increase the crop production capacity

of the land by using modern machinery and using bitter gourd juice, neem leaves, etc. instead of chemical pesticides.

4. Agroforestry is Essential

In 1997, J.B. Bene first introduced the concept of agroforestry to develop the agricultural sector and increase production. Planting trees and shrubs along with crops in agricultural land helps in maintaining environmental balance. The concept of 'Green Revolution' has been a boon in Indian development. This increased production but also contributed to the decline in soil fertility. But to avoid this, if there are trees and shrubs around the crops, natural resources are conserved and production capacity increases.

5. Conservation of Agricultural Soil

Soil conservation is essential to increase agricultural production. The amount of rainfall varies in different parts of the country. It is necessary to manage rainfall in those areas. If the concept of "water diversion, water diversion" and soil texture is implemented, the productivity of the land increases. Dams should be built after the division of agriculture. The need to emphasize sustainable agricultural development is not only for economic development but also to maintain ecological and social balance.

6. Use of modern Technology in Agriculture

Even in the 21st century, Indian agriculture is carried out using traditional methods, which is leading to a decline in agricultural production. The reason for this is that due to the fact that crops are not sown and harvested at the right time and many problems arise,

the proper production is not obtained from agriculture. Therefore, modern technology should be used in Indian agriculture to increase production. This will help the troubled agricultural sector get relief from the problem. This will increase agricultural production by using modern technology in the agricultural sector and will provide a large supply of food grains to the growing population.

7. Lack of Capital for Agricultural Development

Since Indian agriculture depends on seasonal rainfall, Indian farmers face many problems. The main problem is that agricultural production is not as high as it should be because of two factors: the erratic nature of seasonal rainfall and the capital required for farming. Therefore, to increase agricultural production, it is extremely important to provide financial assistance to farmers through credit institutions, agricultural banks, and the use of technology.

Obstacles to Sustainable Agriculture

After the negative effects of modern agriculture and environmentally degrading farming practices began to be seen in India, steps are being taken for sustainable agriculture, But the following obstacles are facing the success of sustainable agriculture.

1) Ignorance about soil health among commercial farmers



- 2) Misconception that excessive use of chemical fertilizers and pesticides leads to higher yields.
 - 3) Providing more water to crops than necessary, as well as lack of availability of water where it is needed, and excessive water use, lead to the formation of saline soils.
 - 4) Lack of guaranteed price for agricultural produce.
 - 5) Government's zero agricultural planning policy.
 - 6) The number of livestock and the area under cultivation are reduced to produce organic fertilizer for sustainable agriculture.
 - 7) Changing climate and natural disasters.
- Various such factors are creating obstacles in the development of sustainable agriculture.

Sustainable Agriculture and Water Management

Among the obstacles or constraints that have arisen in the development of sustainable agriculture in India, water supply and water management for agriculture is a key issue. There are two reasons why Indian agriculture is shifting from sustainable agriculture to sustainable agriculture. One is the lack of water availability for dryland agriculture, which relies on nature, and the other is the overuse of water in areas where water is available, which is causing soil erosion and declining yields. In India, 70 to 80 percent of the naturally occurring rainwater is used for agriculture. Rainwater and groundwater are the only sources of water. But due to geographical differences between different regions, rainfall is not uniform across India. In some areas, excessive rainfall causes water to flow into the sea, while in others; very little rainfall causes water scarcity. This creates a water problem for agriculture. Where water is available, it is used more, while on the other hand, there is less rainfall.

Water management solutions for sustainable agriculture

There are many water management solutions for sustainable agriculture. These include the use of drip irrigation and sprinkler irrigation methods to save water, measures to stop soil erosion, proper planning of water conservation, and rainwater harvesting. These are some of the efforts being made for sustainable agriculture in India. Water is an important element in agriculture, which is important not only for improving soil quality but also for maintaining environmental balance and increasing agricultural production. Certain measures need to be implemented for proper planning and management of water. These include,

Water Management Solutions

1. Drip Irrigation and Sprinkler Irrigation

These are modern irrigation methods, which save water. In drip irrigation, water is supplied straight to the roots of the plants that help in avoiding wastage of water.

2. Stopping Soil Erosion

Soil erosion can be come to an end through proper planning as well as measures. This saves water and improves soil quality.

3. Water Conservation

Water conservation means storing rainwater in the ground. This increases the groundwater level and makes water available for irrigation.

4. Rainwater Harvesting

Rainwater harvesting is the process of storing rainwater and using it for irrigation.

5. Water Quality

It is very important to maintain water quality. Contaminated water can damage crops if used for agriculture.

6. Crop Selection:

Choosing crops that require less water is also an important measure.

7. Efficient use of water in agriculture:

Using modern technology for irrigation helps in saving water.

8. Water Management:

Proper planning is essential for water management. This includes considering water availability, water requirements, and irrigation timing.

These measures not only save water but also improve soil quality and yield better crop yields, thereby promoting sustainable agriculture.

CONCLUSION

Water scarcity and water overuse are major problems for sustainable agriculture in India. It has been help to know, how to grow maximum crops with less water through proper planning, rainwater harvesting, and saving available water. In this regard, raising awareness among farmers, adopting modern methods of irrigation for agriculture and creating water literacy will lead to proper planning and management of agricultural water, thereby ensuring sustainable water supply to agriculture. Therefore, continuous efforts are required to make the sustainable agriculture experiment in India a success and increase agricultural production and farmers' income.

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