



Water Conservation and Sustainable Agriculture

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Abstract:

Water conservation is essential to Sustainable agriculture because it helps to use water efficiently and reduce environmental impact. Today farmers face increasing challenges like water scarcity and climate change the need to effectively manage and pressure these vital resources has never been more urgent without proper water conservation, water conservation is the practice of using water more efficiently to reduce waste and water resources.

Water can be conserved by fixing leaks using less water, shorter showers, and flow fixtures. Use a low-flow toilet. harvest rainwater and recycle use water. Water conservation is important for conserving water to save energy. Conserving water keeps more water in the ecosystem water conservation helps increase regular agriculture production. This paper focuses on water conservation and sustainable agriculture. This paper discusses on importance of water conservation methods of conservation and the output of water conservation and creating sustainable agriculture.

Keywords: *Water, Conservation, Sustainable, Agriculture.*

Introduction:

Water conservation in sustainable agriculture is the practice of using water efficiently while reducing environmental impact. Water conservation is essential to the sustainability of agriculture and the preservation of vital water resources. Adopting effective conservation strategies can help farmers minimise water use mitigate water scarcity and promote ecological balance.

In today's world with an increasing population and increasing water tress, the agriculture sector must prioritise water conservation. When effective in implementing efficient irrigation methods like drip irrigation, sprinklers that can reduce water means conservation water the term water conservation is used for all activities practices and techniques aimed at consciously and sustainably using the freshwater available on our planet as well as protecting and preserving freshwater sources, like rivers lakes, groundwater and wetlands. Of all the water on the planet, only 3% is freshwater of this amount only 0.5% is potable and available. The main goal of water conservation is to protect the natural ecosystem and ensure the availability of this vital resource in the long term to meet human needs - ferroval resources.

Importance of Water Conservation in Agriculture:

Water conservation in agriculture is vital for preserving limited water sources, mitigating water scarcity and ensuring sustainable food production.

1. **Sustainable agriculture resources management:** Agriculture for a significant portion of global freshwater withdrawals. making it necessary to conserve water and establish other sustainable use practices to ensure the availability of the resources not generation.
2. **Mitigating water scarcity:** Water scarcity is becoming a growing concern in many regions increased population growth climate change and more water demands. Efficient water conservation practices in agriculture help reduce the pressure on limited water supplies and mitigate the impact of water scarcity on both agricultural production and ecosystems.
3. **Enhancing agricultural productivity:** Water is an essential component for growth and livestock production. Adopting water conservation techniques can help farmers optimise water usage and ensure crops receive adequate moisture while reducing wastage.
4. **Different techniques used for water conservation:** Efficient water use in agriculture refers to practices and techniques that aim to maximize the productivity of crops while minimising water conservation.
5. **Drip irrigation on farms:** Drip irrigation is a highly efficient water conservation technique widely used in agriculture. It delivers water directly to the plant roots minimising water loss through evaporation and runoff. Farmers rely on a network of tubes or pipes with small emitters that release water at a steady controlled pace.
6. **Storing water:** farmers can use various methods to capture water or storge water such as constructing ponds, reservations or tanks to store the collected water.
7. **Irrigation scheduling:** Efficient water use in agriculture also involves proper irrigation scheduling which intails determining the optimal timing and frequently of irrigation to meet crop water requirements while minimising water wastage. Compost and mulch are essential tools for water conservation in agriculture helping farmers improve soil health and reduce water loss through evaporation. compost made from decomposed organic matter enhances soil structure, boost its water holding capacity.
8. **Dry farming:** Dry farming is a technique that release on natural rainfall and moisture stored in the soil without irrigation. It is particularly sustainable for regions with limited water resources.
9. **Crop rotation:** Crop rotation is a practice that involves growing different crops in a specific sequence on the same piece of land over time. This technique offers several benefits for optimising crops performance and water use efficiency.
10. **Water-conserving plants crop performance and water efficiency is by planning water-conserving plants:** Crop performance and water efficiency is by planting water conserving plants. incorporating water conserving plants into agriculture practices. optimises water use and offer several other advantages.

Features of water conservation and sustainable agriculture:

Water conservation involves using water efficiently and sustainably to reduce. Unnecessary consumption, rainwater harvesting efficient irrigation and water saving are importance for agriculture and environment.

1. **Efficient water usage:** Reduce waste, repair leakes and install water and saving device and optimise irrigation are important for saving water resources.
2. **Rainwater water harvesting:** Collect rainwater using various methods such as rooftop collection system and store it for use.
3. **Watershed management:** Protect water resources, reduce pollution, improve water quality are watershed management.
4. **Water conservation:** Conduct public awareness compaignens to educate people about the importance of water conservation and promote water saving behaviour.

5. **Innovative water management:** Desalination explore desalination technology to convert seawater into Portable water, water reuse, water to treat and recycle waste water for non portable uses. Intensive afforestation promote afforestation to improve water infiltration and reduce run off.

Objectives:

1. To study water conservation and sustainable agriculture.
2. To study techniques of water conservation.
3. To understand of advantages of water conservation and environmental benefits.
4. To suggest the implementation of water conservation .

Review of Literature:

1. NITI Aayog 2019 - Over the years Industrialists increasing pollution expanding agriculture and high standard of living have increased water demand against the static level of water supply. The cities as the hub of major economic activities are likely to stress water storage with all detergent the quality of life. India portrait a rather alarming picture of the future when it comes to water stress. five of the world 20 largest cities under water stress are in India and the average per capita water availability is expected to reduce further to 1341 M3 by 2025 and 1140m3 by 2050
2. Dr. Ashutosh Kumar 2022, the best way to conserve water is its judicious use for irrigation use, there is an urgent need for proper water management in the irrigation sector. Over irrigation waterlogging overdraft lowering of water tables, Wasteful use of water can be checked by lining them, scientific and advance technology of irrigation can save the water.
3. S Sarvade, V. B. Upadhyay Mohammed Khan (2019) Natural resources of the country are humiliating due to biotic and abiotic pressure. Around 146.8 Mha. land was estimated under the degraded land. of India by the National Bureau of Soil Survey and land use planning. Among different land degradation categories, soil erosion through runoff is the major threat for degradation of soil and water resources .

Research Methodology:

This present paper is based on a government office reports some primary observations resources conducted by the research scholar, review of related literature, website published reports and articles by different states Central governments local bodies and NGOs secondary data collected .

Agricultural techniques for water conservation:

1. Drip irrigation
2. Storing water
3. Irrigation Scheduling
4. Crop resistant to drought
5. Dry farming
6. Compost and mulch
7. Conservation tillage
8. Cover crops
9. Organic farming
10. Natural farming

Conclusions:

Now, India is facing a decrease in available water resources that has implications for India's Agriculture sector. So many regions in the country are experiencing water stress. If water use efficiency does not improve the country could suffer water scarcity in the next one to two decades. It is exceedingly important that the agriculture sector contributes to preventing the situation by making the best use of the available technologies and resources to increase water use efficiency by improvement of policies Strategies and regularity measures to prevent the water misuse should be taken consideration awareness and orientation of water users in the agriculture sector to switch to more efficient production methods can help the country against water scarcity.

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