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A Study On The Impact Of Water Conservation On Rural Agricultural Productivity And Its Sustainability In Tamil Nadu

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Abstract: The agricultural water conservation mechanisms consisted of sophisticated irrigation scheduling, deficit irrigation, on-farm irrigation system improvements, controlled environment agriculture, conveyance system efficiency improvements, and following of irrigated lands. The options were organized into six agricultural water conservation mechanisms that could produce water savings in the agricultural sector. The demand for water among various sectors is rising due to population growth and economic development, in turn creating competition within sectors. The sternness of this issue will have direct impact on water and food security of the country in future. Due to overexploitation of water resources, it has become scarce in many parts of the country. In this regard, government has undertaken various programs in water conservation and management successfully from the commencement of FYP in the country. In addition, they not only protect and conserve environment but also contribute to livelihood security of rural poor. Therefore, the country still requires continued efforts of the government along with external aids especially in the issues of global climate change and consumer awareness on water conservation. Government should come up with a new water policy prescribing the main role and involvement ofevery individual, community and government for conservation of water.
Keywords: Water conservation in India, Agricultural Productivity, Rural Development.

"Every human should have the idea of taking care of the environment, of nature, of water. So using too much or wasting water should have some kind of feeling or sense of concern. Some sort of responsibility and with that, sense of discipline**"** – ***The Dalai Lama***

1. INTRODUCTION:

The agricultural water conservation mechanisms consisted of sophisticated irrigation scheduling, deficit irrigation, on-farm irrigation system improvements, controlled environment agriculture, conveyance system efficiency improvements, and following of irrigated lands. The options were organized into six agricultural water conservation mechanisms that could produce water savings in the agricultural sector. The demand for water among various sectors is rising due to population growth and economic development, in turn creating competition within sectors. The sternness of this issue will have direct impact on water and food security of the country in future. Due to overexploitation of water resources, it has become scarce in many parts of the country. In this regard, government has undertaken various programs in water conservation and management successfully from the commencement of FYP in the country. In addition, they not only protect and conserve environment but also contribute to livelihood security of rural poor. Therefore, the country still requires continued efforts of the government along with external aids especially in the issues of global climate change and consumer awareness on water conservation. Government should come up with a new water policy prescribing the main role and involvement ofevery individual, community and government for conservation of water.

Water is one of the precious natural resources for every living being to survive. Even though 97 per cent of the earth is surrounded by water, only three per cent is fresh and two thirds of water is frozen, and the remaining unfrozen was found mainly as ground water, and a small fraction per cent above the ground or in the air.

The usage of water across various sectors in India is on the mount. Therefore its sustainable management is indispensable to protect the water environment and to meet the increasing water demand in the future. Irrigation perhaps the most important input in the agriculture production compared to all other inputs like fertilizers.In the past few decades there has been an increase in demand amongst various water using sectors putting enormous stress on the natural resources. Role of government in conservation and management in partnership with central and state governments, the country is able to launch various schemes and programs for conservation and management of water

resources in a transparent, equitable and sustainable manner.

2. OBJECTIVES:

- To study the concept of impact of water conservation on agricultural productivity.
- To analyse the level of water conservation in agricultural productivity.
- To find out the sustainable development in agricultural productivity.

3. METHODOLOGY:

This study is based on secondary data. The information is collected from news papers, books, magazines, reputed journals and research papers.

Sustainable Agriculture: is a type of agriculture that focuses on producing long term crops and livestock with nominal effects on the environment. This type of agriculture tries to find out a good balance between the need for food production and the preservation of the ecological system within the environment.

Many goals associated with sustainable agriculture are like including conserving water, reducing the use of fertilizers and pesticides, and promoting biodiversity in crops grown and the ecosystem. Sustainable agriculture also more focuses on maintaining economic stability of farms and helping many farmers to improve their techniques and improve their standard of living.

4. IMPACT OF WATER CONSERVATION ON AGRICULTURAL PRODUCTIVITY:

Water conservation is the most effective and environment friendly method to fight against global warming. It aims to improve the efficiency of water usage and reduce losses and waste. Water conservation process is a technological action which is designed to reduce water loss or wastage. Water efficiency is a tool of water conservation that results in more efficient water use and which reduces water demand. Water is part of a larger ecological system. Realizing the importance and scarcity attached to the fresh water, it has to be treated as an essential environment for sustaining all life forms. Water conservation is used to reduce the usage of water and recycling of waste water for various purposes like cleaning, manufacturing and agricultural irrigation.

5. THE MAJOR OBJECTIVES OF WATER CONSERVATION IN AGRICULTURE PRODUCTIVITY:

- To sustain the natural water resources to the future generations.
- Water pumping, delivery and waste water treatment facilities consume a significant amount of energy.
- The changing habits of water consumption help to conserve the natural environment for local wildlife and migrating water flow as well as reducing the need to build new dams and other water diversion infrastructure.

Combining water conservation with good agriculture practices can help farmers to make effective use of the soil water reserves and improve the soil health. Adding mulch or manure to break up the intensity of rainfall will reduce the tendency of the soil to form a crust, minimizing runoff. The challenge of meeting global food demand requires an increase in the level of agricultural water productivity and increase in global water use. Soil nutrients will be used efficiently if a crop has sufficient water

and water conservation can increase the volume of water available, bridging seasonal rainfall variability.

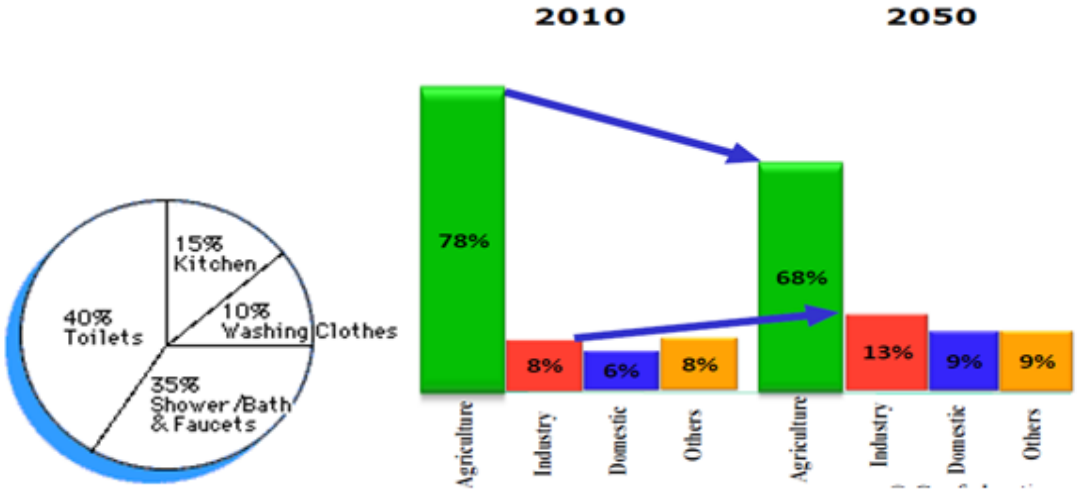
6. FUTURE WORK FOR WATER CONSERVATION:

- Continued efforts of government and other external agencies in water conservation and management.
- Artificial recharge to ground water both in rural and urban areas.
- Evaluation of all watershed projects and programs for understanding the positive and negative impacts to make necessary corrections.
- Incentives given to the farmers for up taking of conservation practices and discouraging water waste in their fields.
- Encouragement of research and development on global climate change.

7. THE LEVEL OF WATER CONSERVING IN RURAL AGRICULTURAL PRODUCTIVITY:

Water resources of a country constitute its vital assets which are conserved in tanks during the monsoon and the same is used for various purposes in dry periods. The main focus of tank rehabitation is to maximize the agricultural productivity per unit area, per unit time and per unit of water. In rural village, tank system rejuvenation helps people to develop source of revenue in an equitable manner. Conserving rain water through irrigation tanks plays a major role on sustainable agricultural productivity.

Percentage of conserving water in agriculture sector (2010-2050)



Conservation of water is a great step to save the environment and to secure the future generations in a great extent. Water is a precious natural resource on the earth. Abundant natural resources will be the greatest asset which gives to our next generation. If each one of us makes efforts to save water today, it will save us later.

8. DIFFERENT METHODS AVAILABLE TO FARMERS IN AGRICULTURE:

Contour harvesting: Ploughing (turning up the earth before seeding) and furrowing (making a rut, groove, or trail in the soil), then planting along the ridges or contours rather than up and down the slope conserves water by reducing surface run-off and encouraging filtration of water into the crop area. Several water-harvesting techniques are based along contours like contour ploughing, contour ridges, stone lines, grass strips, and terraces.

Earth basins: Square or diamond shaped basins with earth ridges on all sides, earth basins can be constructed on any gradient and whilst most suitable for growing trees and also used for other crops.

Planting pits: Easy to construct small pits in which individual or small groups of plants are sown. The pits catch rainwater run-off and concentrate soil moisture around the roots.

Drip irrigation: Drip irrigation carries water to fields through a system of plastic tubes where the water is slowly dripped onto the soil through small perforations in the tube. A small petrol pump can be used to push the water along the tubes for larger areas, but this will add a fuel cost and will need servicing. Therefore, drip irrigation is more likely to

be used on smaller areas of high value crops that require regular watering.

9. THE SUSTAINABLE DEVELOPMENT IN AGRICULTURE PRODUCTIVITY:

The goal of sustainable agriculture is to meet society's food and textile needs in the present without compromising the ability of future generations to meet their own needs by adding main objectives into their work like:

- A healthy environment
- Economic profitability,
- Social and economic equity.

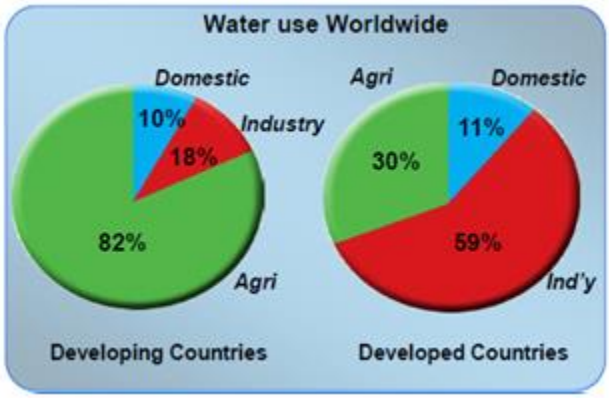
There are many practices used by people working in sustainable agriculture and sustainable food systems. Growers may use methods to promote soil health, minimize water use, and lower pollution levels on the farm.

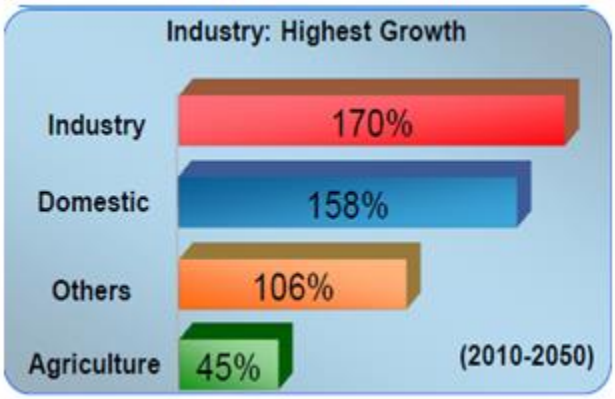
10. CAPITAL FORMATION AND POLICIES FOR SUSTAINABLE AGRICULTURAL DEVELOPMENT:

The necessary additional resources for capital formation can be generated like Phasing out environmentally perverse subsidies such as high subsidies for urea, under pricing of irrigation water and very low and zero pricing of electricity for farm pump sets.

- Reducing leakages, and targeting subsidies in the public distribution system to people below poverty line.
- Rationalization of irrigation charges and agricultural electricity tariffs.
- Introduction of user charges/payment for ecosystem services. The policy reforms involve a package of technological, institutional and incentive based reforms.

To save water or conserve water:





Water conservation is a regular practice and need to be adopted by the people, companies, and governments to reduce water usage.

The goal of water conservation may be to address an ongoing water shortage, or to make lifestyle modifications to be more environmental friendly. In the late 20th century, water is emerged as a major issue due to the decreasing natural resources, where many people lack access to safe drinking water, and the issue of water conservation began to attract a great deal of attention.

11. THE BENEFITS OF WATER CONSERVATION:

- Saving water leads to saving water bills and everybody should follow save water save life.
- Reduction in interior water use cuts waste water flows, especially overflowing of gutters which contaminates the environment.
- Environment benefits include eco system and habitat protection.
- Water conservation helps in improving the quality of your drinking water.
- It also reduces greenhouse effect and absorbs radiation.

12. METHODS TO SAVE WATER OR CONSERVE WATER:

Rainwater Harvesting:

Rainwater harvesting is the process of gathering and collecting the rainwater from the rooftop. It is the most effective and simple way to conserve the water. The harvested rain water can be useful for domestic and agricultural purposes. At present three methods of rain water harvesting are available such as Catchment, Conveyance and storage.

Traditional Water Bodies:

There are many traditional water bodies which have been in disuse for the longer time. These bodies can be reused as the recharging points.

Ponds:

Steps should be taken to avoid dumping of sewage into the village ponds. Efforts need to be made to deepen these ponds with the dragline machines. Garbage and other wastes should not be dumped into the ponds.

Watershed Management Plans:

Watershed management plans through extensive soil conservation, catchment-area treatment, preservation of forests and increasing the forest cover and the construction of check-dams should be promoted. Efforts shall be to conserve the water in the catchment.

13. CONCLUSION:

India's agricultural subsidies are set by the World Trade Organization. Sustainable management of agriculture, forests, fisheries and ecosystem services is necessary for achieving the goals of intra generational equity and inter generational equity. As the dependence of the poor on the natural resource is relatively higher than the non-poor, sustainable management of natural resources helps in poverty eradication. The poor also benefits more from greater access to clean water, non-timber forest products and other eco-system services.

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