

## Water Conservation Practices for Enhancing Millet Production



In-situ water conservation practices minimizes loss of valuable top soil, increases water available for plant use, improves soil physical properties and enhances soil fertility.



Bio-engineering: Staggered Basin Tillage  
Basin tillage (BT) (45 cm x 45 cm x 15 cm) in staggered pattern helps in conserving soil moisture.



The practice may be adopted for enhancing water availability in low rainfall areas.  
Bio-engineering: Basin tillage with intercropping

## Drip Fertigation for Enhancing Water, Nutrient and Crop Productivity



- Maize-Wheat-Moongbean Cropping System
- NPK fertigation improved system crop & water productivity by 32-58% compared to no NPK



- Drip irrigation at 0.8 ETC improved system productivity by 10% than 0.6 ETC.
- 20% NPK and 52% water saving in drip fertigation compared to surface irrigation.
- SSDI at 0.8 ETC and Fertigation of 100% NPK100 increased system productivity by 5.4%,

irrigation water productivity by 118% and total water productivity by 45% compared to surface flood irrigation and soil application of fertilizers.

B-14% higher net income under SSDI at 0.8 ETC with NPK80 or NPK100 than the conventional practice.

By implementing effective water conservation techniques, we can enhance water productivity, support sustainable development, and mitigate the impacts of droughts and water shortages. This approach not only secures water for essential needs but also contributes to environmental protection and climate resilience.

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# Water Conservation Techniques for Sustainable Agriculture



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Water is a vital resource for sustaining life, agriculture, industry, and the environment. However, with increasing population growth, climate change, and unsustainable water usage, water scarcity has become a global challenge. To address this issue, water conservation techniques play a crucial role in optimizing water use, reducing wastage, and ensuring its availability for future generations.

Water conservation involves strategies and practices that aim to manage freshwater resources efficiently while maintaining ecological balance. These techniques can be applied in various sectors, including agriculture, domestic use, and industrial processes. Some key water conservation techniques of water technology centre include rainwater harvesting, efficient irrigation systems, mulching, water recycling, and watershed management.

### Rainwater Harvesting



Water harvesting is the process of collecting, storing, and managing rainwater or surface runoff for various uses,

including irrigation, drinking, groundwater recharge, and ecosystem sustainability. It is a crucial practice, especially in water-scarce regions, to enhance water availability and mitigate the effects of drought

### Integrated Drip-cum Mulch Technology for water saving and higher income



#### Major Advantages

- Weed control
- Higher yield in Sorghum and Peral-millet (29-34%)
- Reduction in evaporation
- Higher water use efficiency (38-45%)
- Higher nutrient use efficiency

### IoT based Automated Sub-Surface Drip System



Sub-surface Drip Irrigation (SSDI) System is an efficient method for water and nutrient savings. Automatic SSDI contains drip system, fertigation system, electric water pump, soil moisture sensor (SMS), solenoid valve and cloud server.

#### Advantages:

- Water application efficiency >95%
- Water saving 35-40%
- Nutrient saving 40-50%
- Yield increased: 25%
- B:C ratio: 1.85
- Reduced labour cost

### Solar Powered IoT-based Automatic Basin Irrigation System



#### Major Advantages

- Real time monitoring of soil moisture status
- Remotely operating irrigation event
- Irrigation application efficiency can be achieved more than 85%.
- More than 25 % Water Saving in wheat crop compare to manual control irrigation
- Energy saving
- Low cost soil moisture system

### Digital Scale for Water Management in Rice-Wheat



#### Benefits

- It can save 2-2.5 cm of irrigation water per hectare.
- Reduces problem of water logging due to excess irrigation.
- Irrigation expenses will be reduced. |
- The salinity of the land can be reduced due to optimum irrigation.