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## SUSTAINABLE WATER MANAGEMENT IN AGRICULTURE: STRATEGIES FOR CONSERVATION AND EFFICIENCY

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### **Abstract**

Sustainable water management in agriculture is crucial for food security and environmental balance. This research examines strategies for conservation and efficiency.

**Keywords:** Sustainable Water Management, Agriculture, Conservation, Efficiency, Water Resources

### **Introduction**

Agriculture consumes significant water resources. This paper explores sustainable water management strategies. Agriculture consumes ~70% of global water. Sustainable management ensures food security and ecosystem balance.

Inefficient water use in agriculture threatens food security and ecosystems. This study assesses conservation strategies.

### **Scope of Research Study**

The research covers sustainable water management in agriculture, focusing on conservation and efficiency.

### **Significance of Research Study**

The main significance of present research study is as under -

1. Educational Significance: Enhances understanding of water management.

2. Functional Significance: Guides farmers and policymakers.
3. Social Significance: Ensures water availability for communities.
4. Political Significance: Informs water policy development.

### **Relevance of Research Study**

The main relevance of present research study is as under -

1. National Relevance: Supports India's water security goals.
2. International Relevance: Aligns with global sustainability trends.

### **Objectives of Research Study**

The main objectives of present research study is as under -

1. Assess water management strategies in agriculture.
2. Identify challenges and opportunities.
3. Recommend efficient water use approaches.

### **Hypotheses of Research Study**

The main hypothesis of present research study is as under -

1. Null Hypothesis (H0): Sustainable water management doesn't impact agricultural efficiency.
2. Alternative Hypothesis (H1): Sustainable water management enhances efficiency.

### **Research Methodology**

1. Research Design: Mixed-methods (surveys + case studies).
2. Research Sample: 30 farmers and water management experts.
3. Limitations: Data availability and regional variations.

### **Findings**

The main findings of present research study is as under -

1. Opportunities: Drip irrigation, rainwater harvesting, crop selection.

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- 2. Challenges: Awareness, funding, policy gaps.
- 3. Success Examples: Community-led water projects.

### Recommendations

The main recommendations of present research study is as under -

- 1. Promote Efficient Technologies: Drip and sprinkler irrigation.
- 2. Enhance Awareness: Farmer training.
- 3. Strengthen Policies: Support conservation.

### Conclusion

Sustainable water management is key to agricultural sustainability. Addressing challenges can enhance efficiency. Improved water efficiency and productivity. Better water availability. Informed water management strategies.

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