

## Daily Mains Practice Answer 31-08-2026

**Q. Can micro-irrigation alone resolve India's groundwater crisis? Critically examine the limitations of the Per Drop More Crop approach and suggest complementary measures. (250 words, 15 marks)**

**Directions:** Intro ----- Is micro-irrigation alone sufficient? + Limitations of PDMC + Complementary measures-----Conclusion.

### Introduction:

Start by describing India's groundwater crisis (or) micro-irrigation (or) Per Drop More Crop Scheme.

Agriculture accounts for more than 80% of India's available water resources; only around 50% of net sown area has irrigation facilities.

### Main Body

#### Can micro-irrigation alone resolve India's groundwater crisis?

- The Per Drop More Crop (PDMC) approach promotes drip and sprinkler irrigation to improve farm-level water-use efficiency.
- As of July 2026, PDMC has brought 115 lakh hectares, or about 8.11% of India's net sown area, under micro-irrigation.
- However, micro-irrigation can reduce water demand per unit of crop output, but cannot by itself guarantee groundwater sustainability.

#### Why is PDMC important?

- **Higher application efficiency** - Drip delivers water directly to the root zone, while sprinklers reduce conveyance and evaporation losses.
- **Reduced water use** - Particularly valuable for water-intensive crops such as sugarcane, cotton, banana and horticultural crops.
- **Higher productivity** - Precise irrigation and fertigation can increase crop productivity and farm incomes.
- **Climate resilience** - Helps farmers cope with erratic rainfall and prolonged dry spells.
- **Demand-side management** - PDMC explicitly seeks to improve water-use efficiency at the farm level.

#### Limitations of the Per Drop More Crop approach

- **Farm-level efficiency is not equal to aquifer-level sustainability** - PDMC improves the efficiency of water use by farmers, but does not limit or restore the ground water depletion.
- **Crop choice remains critical** - Using drip irrigation to cultivate water-intensive crops - “more crop per drop” must be complemented by “appropriate crop per aquifer.”
- **Electricity-groundwater nexus** - Cheap or free electricity for agricultural pumping encourages excessive groundwater extraction.
- **Groundwater is a common-pool resource** - Individual farmers may adopt efficient irrigation while neighbouring farmers continue excessive pumping, not solving the problem of competitive extraction from a shared aquifer.
- **Uneven adoption and affordability** - Initial investment, maintenance, filtration and technical requirements, small and fragmented land holdings, unreliable electricity, inadequate extension support, etc.
- PDMC provides higher financial assistance to small and marginal farmers.
- **Recharge remains essential** - Declining natural recharge due to groundwater over-extraction, concretisation, deforestation and changing rainfall patterns - usage of efficient irrigation systems cannot compensate for it.

### Complementary measures

- Crop diversification & less water-intensive crops
- Aquifer-based groundwater budgeting and community monitoring
- Rationalise agricultural power subsidies
- Rainwater harvesting and managed aquifer recharge
- Real-time groundwater-level monitoring and aquifer mapping
- Promote technology like drip/sprinkler, soil-moisture sensors, weather-based irrigation scheduling.

### Conclusion:

Give a positive conclusion.

Micro-irrigation is necessary but not sufficient & the goal should not merely be “Per Drop More Crop”, but “Per Drop More Sustainable Value”.