Indian Economy · GS - III

How and to what extent would micro-irrigation help in solving India's water crisis?

EXAM YEAR	PAPER	SUBJECT
2021	GS - III	Indian Economy

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Drip irrigation, sprinkler irrigation, water-use efficiency, evaporation losses, fertiliser efficiency, crop diversification, groundwater depletion, Per Drop More Crop, small farmers, initial investment, maintenance, limits of micro-irrigation

Model Answer

Introduction

India faces increasing water stress due to irregular rainfall, groundwater over-extraction, water-intensive agriculture and competing demands from cities and industries. Micro-irrigation can reduce agricultural water wastage.

How Micro-Irrigation Helps

- **Drip irrigation:** Delivers water near plant roots, reducing evaporation and surface runoff.
- **Sprinkler irrigation:** Distributes water more uniformly, particularly in uneven terrain and suitable field crops.
- **Higher productivity:** Precise water application can improve yields and water productivity.
- **Efficient fertiliser use:** Fertigation supplies nutrients alongside irrigation water, reducing losses.
- **Groundwater conservation:** Lower irrigation demand can reduce pressure on aquifers if water savings translate into lower extraction.
- **Climate resilience:** Efficient irrigation helps farmers manage rainfall variability and dry spells.

- **Policy support:** The Pradhan Mantri Krishi Sinchayee Yojana promotes micro-irrigation under the principle of “Per Drop More Crop.”

Extent and Limitations

Micro-irrigation cannot independently resolve India's water crisis. High installation costs, clogging, maintenance needs, fragmented holdings and limited technical awareness constrain adoption. Water savings may also encourage farmers to expand irrigated acreage or grow water-intensive crops, offsetting conservation gains.

Conclusion

Micro-irrigation should be combined with groundwater regulation, watershed development, rainwater harvesting, suitable crop choices and community-based water budgeting to deliver sustainable water security.

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