

IN FOCUS

Drip and Sprinkler Irrigation under the Per Drop More Crop (PDMC) Scheme: A Sustainable Water Management Model for the Global South

Dr. SS Reddy, Advisor - Agriculture, DAKSHIN, RIS



Introduction

Water scarcity and erratic rainfall patterns continue to challenge agricultural productivity across the Global South. Efficient water management is essential to ensure climate-resilient agriculture and sustainable food security. Recognizing this need, India has successfully implemented the Per Drop More Crop (PDMC) scheme under the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY-Prime Minister's Agricultural Irrigation Scheme) since 2015-16. This initiative promotes micro-irrigation technologies such as drip and sprinkler irrigation, which enhance water-use efficiency, optimize farm productivity, and ensure long-term sustainability in water-scarce regions.

Micro-Irrigation: A Game-Changer in Water Management

Drip and sprinkler irrigation systems have emerged as transformative solutions for efficient on-farm water use. These systems deliver water directly to the root zone, reducing evaporation losses, runoff, and wastage while improving crop yields. The PDMC scheme provides financial assistance of 55% to small and marginal farmers and 45% to other farmers for adopting micro-irrigation, ensuring accessibility and affordability. Since its inception, the scheme has covered 9.7 million hectares under micro-irrigation, with 4.6 million hectares under drip irrigation and 5.1 million

hectares under sprinkler irrigation. The widespread adoption of these systems demonstrates their scalability and potential for replication in other water-stressed regions across the Global South.

Impact of PDMC on Agriculture and Rural Livelihoods

A 2020 evaluation study by NITI Aayog (National Institution for Transforming India) highlighted the effectiveness of the PDMC scheme in:

- Improving on-farm water use efficiency, reducing dependency on groundwater.
- Enhancing crop productivity through precise irrigation and optimized water delivery.
- Reducing input costs, particularly for fertilizers and labor.
- Increasing farmers' incomes by improving yields and reducing production costs.
- Generating employment through the installation and maintenance of micro-irrigation systems.

To strengthen its impact, the Government of India has allocated ₹ INR 57.1 billion for improving irrigation infrastructure in the current financial year, of which **INR 22.3 billion** has been earmarked for the PDMC scheme.

A Scalable Model for the Global South

Many countries across the Global South, particularly those facing water stress, erratic monsoons, and declining groundwater tables, can benefit from India's experience in scaling micro-irrigation. Drip and sprinkler systems not only promote efficient water management but also improve farmers' resilience to climate variability. By integrating these technologies with digital platforms, GIS mapping, and remote sensing, governments can enhance water governance and optimize irrigation planning.

The PDMC scheme under PMKSY offers a replicable model for water-efficient agriculture, ensuring better productivity with minimal water consumption. As climate uncertainties grow, micro-irrigation systems will play a critical role in sustainable farming across the Global South. By adopting India's approach, countries can improve water-use efficiency, ensure food security, and support smallholder farmers in building climate-resilient agricultural systems.