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ICAR-CIARI Develops IoT-Based 'Dweep Microclimate Monitor' to Boost Climate-Resilient Farming

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Scientists at the ICAR-Central Island Agricultural Research Institute (ICAR-CIARI), Sri Vijaya Puram, have developed a new IoT-enabled device—the **Dweep Microclimate Monitor**—to help farmers and researchers accurately track micro-level temperature and humidity variations that significantly influence crop performance, livestock comfort, and overall agricultural productivity.

Traditional monitoring tools typically offer only single-point measurements and are often unsuitable for long-term field use. The newly developed device addresses these limitations through **vertical profiling of temperature and humidity, solar-powered off-grid operation, real-time data transmission**, and a **cloud-based dashboard** for remote access and visualization. Its compact and rugged design makes it suitable for open fields, greenhouses, integrated farming systems, and livestock sheds.

Officials noted that the innovation marks a major step toward strengthening climate-resilient agriculture in the islands and beyond. The device supports the creation of long-term microclimate datasets, enables precise climate variability assessments, and enhances modelling studies across agro-climatic zones. By integrating fine-scale microclimate data, the instrument is expected to improve the accuracy of agromet advisories and support timely interventions to manage heat stress, humidity fluctuations, and other weather-related challenges.

The Dweep Microclimate Monitor also facilitates growing degree day and heat unit studies, livestock comfort assessments, validation of satellite-derived weather data, and field-level calibration for agro-meteorological and climatological research. The technology was commercially transferred on **29 September 2025** through a Memorandum of Understanding with **AgriClimSense**, Liwan, Sonipat, Haryana.

The innovation team comprises Dr. Abhilash (Lead Inventor), Dr. I. Jaisankar, Mr. Talaviya Harshangkumar, and Dr. E. B. Chakurkar.