

**ICAR Sponsored Winter School on  
“AI-Driven Spectroscopic and Vision-Based Approaches for Automation in Pre- and Post-Production Agri-Food Systems”  
(February 10- March 02, 2026)**

ICAR-Central Institute of Agricultural Engineering organized a 21-day ICAR-Sponsored Winter School on “AI-Driven Spectroscopic and Vision-Based Approaches for Automation in Pre- and Post-Production Agri-Food Systems” from February 10 to March 02, 2026. The program aimed to strengthen the competencies of scientists, researchers, and extension specialists in advanced sensing technologies, spectroscopy, and AI-driven tools for agriculture. The course focused on electronic instrumentation, machine learning, deep learning, and algorithm development using MATLAB and Python for spectral and image analysis. Participants were trained in AI applications across pre- and post-production agriculture, including smart irrigation systems, nutrient management, crop stress detection, and automated grading systems. The integration of these cutting-edge technologies is expected to transform traditional farming practices by enhancing efficiency, precision, and sustainability.

A total of 19 participants from 10 states and 12 different universities/institutions attended the Winter School. The program was coordinated by Dr. Subir Kumar Chakraborty, Dr. Narendra Singh Chandel, Dr. Dilip Jat, and Dr. Yogesh Rajwade.

The inaugural session was held on February 10, 2026, in the presence of Dr. A. K. Singh, Former DDG (NRM) and Ex-VC, RVSKVV, Gwalior. In his address, he highlighted the emergence and growing significance of spectroscopy and precision farming in Indian agriculture to ensure accurate and efficient input application. Throughout the Winter School, expert sessions covered spectroscopy, precision agriculture, artificial intelligence, and machine learning. Participants also engaged in hands-on training involving sensor integration with microcontrollers and programming using MATLAB and Python. An institutional visit to the Central Farm Machinery Training and Testing Institute, Budni, was organized to provide practical exposure.

The valedictory function was held on March 02, 2026, and was chaired by Dr. Monoranjan Mohanty, Director, IISS, Bhopal. Dr. C. R. Mehta, ICAR-Central Institute of Agricultural Engineering, highlighted the importance of spectroscopy and precision agriculture in both production and post-production systems to ensure precise input management using advanced tools and technologies. Dr. Mohanty emphasized that spectroscopy- and vision-based precision technologies are highly relevant to Indian farming systems. He encouraged participants to apply the knowledge gained during the training to further develop their expertise in precision agriculture and contribute toward reducing cultivation costs for Indian farmers. The participants shared positive feedback about the training program, following which certificates were distributed during the valedictory session.

