

**Dr. Rajendra Prasad Central Agricultural University, Pusa
Samastipur, Bihar**

Krishi Vigyan Kendra, Vaishali

**PROCEEDINGS cum Report OF FIVE-DAY WORKSHOP-CUM-
AWARENESS PROGRAMME**

Title: Banana Production, Processing, Value Addition & Entrepreneurship Opportunities

Date: 07–11 September 2026

Venue: Krishi Vigyan Kendra, Hariharpur, Vaishali, Bihar

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07.09.2026

On 7 September 2026, a five-day Workshop-cum-Awareness Programme on “Banana Production, Processing, Value Addition and Entrepreneurship Opportunities” was inaugurated at Krishi Vigyan Kendra (KVK), Vaishali. The inaugural ceremony commenced with lighting of the ceremonial lamp by the Chief Guest, followed by the ICAR Song and University Song.



The programme was organized under the patronage of Dr. P. S. Pandey, Hon'ble Vice-Chancellor, RPCAU, Pusa, and the guidance of Dr. Ratnesh Kumar Jha, Director Extension Education, RPCAU, Pusa. Er. Kumari Namrata gave a brief introduction to the programme, while Dr. Anil Kumar Singh, Senior Scientist & Head, KVK Vaishali, delivered the welcome address and briefed the guests and participants about the objectives and activities of the programme.

The inaugural session was attended by Dr. S. K. Thakur, Banana Research Centre, Goraul; Sadhvi, NIFTEM Regional Centre, Hajipur; Dr. Pragya Bhadoria, Senior Scientist, ICAR-ATARI, Patna; Dr. Jona Dakho; Dr. Kavita Verma; and Er. Kumari Namrata, KVK Vaishali. Scientists from ICAR-NRCB, Tiruchirappalli; Navsari Agricultural University; and Noor Sarai College of Horticulture also addressed the participants through online/offline mode.

Dr. Ratnesh Kumar Jha, Director Extension Education, RPCAU, Pusa, addressed the participants online as the Chief Guest and motivated them to adopt banana-based processing and value addition. He particularly emphasized the holistic utilization of the banana plant, including the fruit, pseudostem, leaves, flower and other by-products, for developing value-added products and creating entrepreneurship opportunities.



The technical session was delivered by Dr. S. K. Thakur, In-charge, Banana Research Centre, Goraul, who delivered a lecture on Integrated Pest Management (IPM) in Banana, and Ms. Sadhvi, Young Professional, NIFTEM Regional Centre, Hajipur, who provided information on the PMFME Scheme and opportunities for establishing banana-based food processing enterprises.



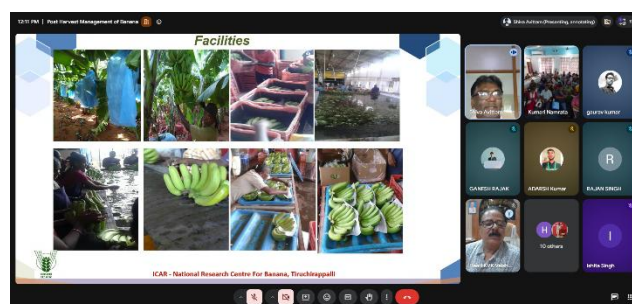
Technical Sessions – 08 September 2026

On 8 September 2026, a series of technical sessions were delivered by experts from ICAR–National Research Centre for Banana (NRC), Tiruchirappalli.

Dr. V. Kumar, Principal Scientist (Horticulture), delivered a session on “Package of Practices for Improved Banana Production”, focusing on scientific crop management and improved production practices.



Dr. K. N. Siva, Principal Scientist (Horticulture), delivered sessions on “Post-Harvest Management of Banana,” “Packaging, Quality Management and Marketing,” and “Entrepreneurship and Business Opportunities in the Banana Sector.” He highlighted the importance of proper post-harvest handling, quality management, effective marketing and entrepreneurship development.



Dr. P. Suresh Kumar, Principal Scientist (Horticulture), delivered a technical session on “Utilization of Banana Waste and By-products,” emphasizing the conversion of banana residues and by-products into useful and value-added products.



Dr. Pramod Shelake, Scientist, Agricultural Structures & Processing Engineering (AS&PE), delivered a session on “Mechanization”, focusing on the role of improved machinery and processing technologies in banana production and post-harvest operations.

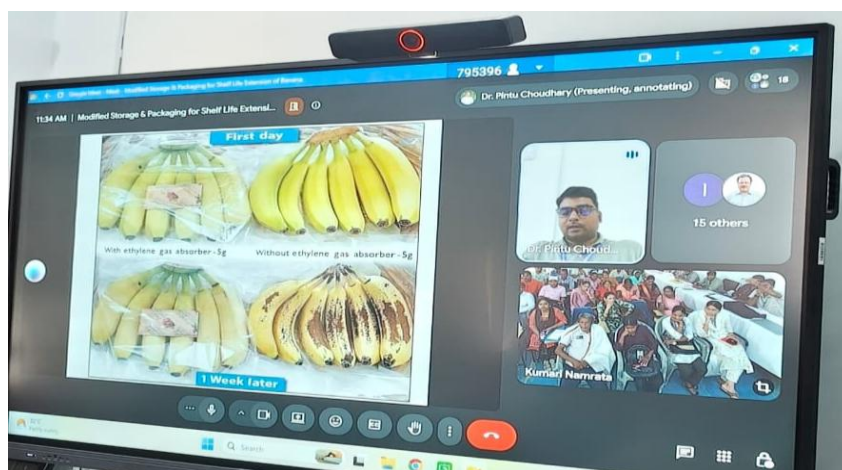


The sessions provided participants with comprehensive knowledge on improved banana production, post-harvest management, packaging, quality management, marketing, waste utilization, mechanization and entrepreneurship, thereby promoting efficient utilization and value addition throughout the banana value chain.

Technical Session – 09 September 2026

On 9 September 2026, technical sessions were delivered by Dr. Mala Kumari, Assistant Professor, NCOH, Noorsarai, on “Genetic Improvement of Banana for Higher Yield and Climate Resilience”; Dr. Ranju Kumari, Associate Professor, NCOH, Noorsarai, on “Development and Evaluation of Superior Banana Varieties for Bihar”; and Dr. Divya Tiwari, NCOH, Noorsarai, on “High-Density Planting in Banana: Prospects and Challenges.”

Dr. Pintu Choudhary, Assistant Professor, Department of Food Technology, RPCAU, Pusa, delivered a session on “Modified Storage & Packaging for Shelf-Life Extension of Banana.”



Er. Kumari Namrata, SMS (Agricultural Engineering), KVK Vaishali, conducted a hands-on training on value addition in banana, providing participants with practical exposure to banana processing and value-added product development.



The sessions focused on improved varieties, climate resilience, high-density planting, post-harvest management, storage, packaging and value addition, with emphasis on enhancing the quality, shelf life and economic value of banana.

Technical Sessions – 10 September 2026

On 10 September 2026, technical sessions focused on innovative processing, value addition, fibre utilization, branding, packaging and mechanization in banana.

Dr. Ankur Nagori, Senior Scientist, AEP Division, ,CIAE Bhopal delivered a technical session on “Solar Drying Technology” highlighting the different types of Solar Dryers.



Dr. Anand Kishore, Assistant Professor, NIFTEM, Kundli, delivered a technical session on “Innovative Processing & Value Addition of Banana and By-products,” highlighting innovative processing techniques and opportunities for developing value-added products.



Dr. Kavita Verma, Scientist (Home Science), KVK Vaishali, conducted a hands-on session on Banana Fibre Extraction and Value Addition, providing participants with practical exposure to fibre extraction and its potential applications.



Dr. D. V. Singh, Principal Scientist, ICAR-ATARI, Patna, delivered a session on “Branding and Packaging of Banana Products,” emphasizing attractive packaging, product presentation and market-oriented value addition.

Dr. P. K. Pranav, Registrar, RPCAU, Pusa, addressed the participants on “Mechanization in Banana,” highlighting the importance of mechanization for improving efficiency and reducing labour requirements in banana production and post-harvest operations.

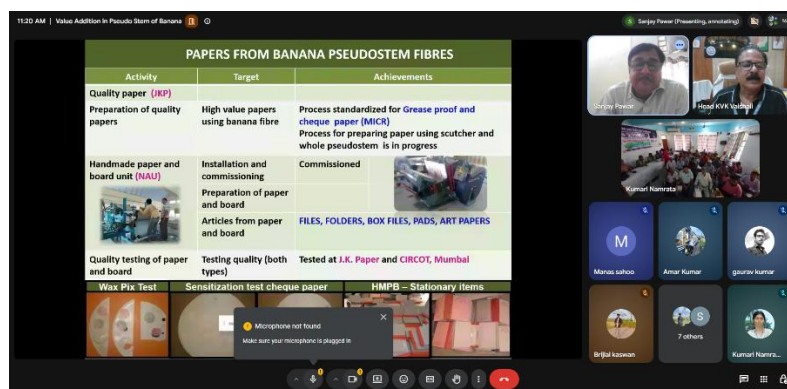


The sessions provided participants with practical and technical knowledge on processing, fibre extraction, value addition, branding, packaging and mechanization, strengthening opportunities for banana-based entrepreneurship.

Technical Sessions and Valedictory Session – 11 September 2026

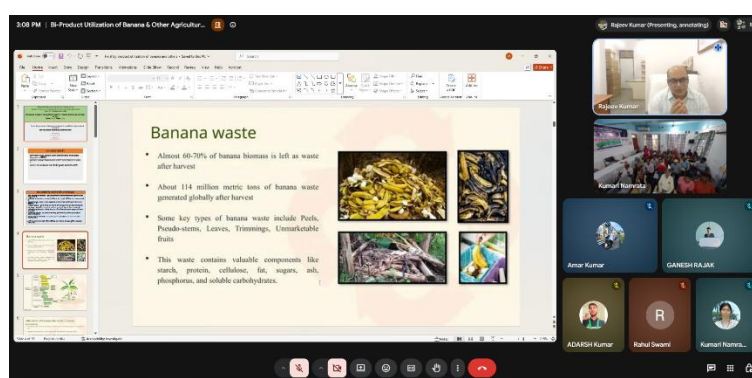
On 11 September 2026, the final day of the workshop featured technical sessions covering banana pseudostem utilization, advanced production technologies, scientific cultivation, by-product utilization, fibre-based enterprises and horticultural schemes.

Dr. S. L. Powar, Associate Research Scientist, Navsari Agricultural University, delivered a session on “Value Addition in Pseudostem of Banana,” highlighting the potential of banana pseudostem for developing value-added products.



Dr. Anil Kumar Singh, Senior Scientist & Head, KVK Vaishali, delivered a technical session on “Advanced Production Technology for Higher Productivity and Quality of Banana.” Dr. Jonah Dakho, SMS (Horticulture), KVK Vaishali, discussed “Scientific Cultivation of Banana,” with emphasis on improved cultivation practices.

Dr. Rajeev Kumar, Scientist (SS), ICAR–IISR, Lucknow, delivered a session on “By-product Utilization of Banana and Other Agricultural Products,” focusing on the productive utilization of agricultural residues and by-products.



Dr. Pragya Bhadoria, Senior Scientist, ICAR–ATARI, Patna, presented case studies on banana fibre, highlighting successful applications and entrepreneurship opportunities.



Dr. Md. Manobrullah delivered a session on “Production Technology of Banana,” providing technical information on improved banana production practices.

Shri Raj Pandey, Deputy Director, National Horticulture Board (NHB), briefed the participants about horticulture schemes and support available to farmers and entrepreneurs.

The programme concluded with farmers' feedback, certificate distribution and the valedictory session. The experts emphasized the importance of integrating scientific production, processing, value addition, by-product utilization and entrepreneurship to enhance the economic potential of banana cultivation. FPO, SHGs, Jeevika, Progressive Farmers, Entrepreneurs, Banana Growers and Sellers actively participated in the programme.



Farmer Feedback and Identified Research Needs

- Farmers reported that Choke Throat in Alpan banana causes no fruting, resulting in an estimated **40 % crop loss**, and sought suitable management measures.
- Farmers reported that **fruit quality deteriorates when banana flowering occurs during summer**, and suggested developing heat-tolerant varieties with better fruit quality under high-temperature conditions.
- **Proximate and microbial analysis:** Farmers suggested conducting proximate analysis of banana and microbial quality assessment of banana value-added products to ensure their nutritional quality, safety, and shelf life.
- **Ripening chambers and cold-storage facilities:** Farmers highlighted the need for establishing scientifically managed banana ripening chambers and cold-storage facilities to extend shelf life, reduce post-harvest losses, and improve marketability.
- **Attractive packaging and branding:** Farmers emphasized the need for attractive, hygienic, and consumer-friendly packaging along with effective branding of banana and its value-added products to improve market acceptance and product value.
- **Development of market and outlet facilities:** Farmers suggested establishing dedicated outlet points and strengthening marketing facilities for fresh banana and banana-based value-added products to facilitate better market access and returns.
- **Export and marketing issues:** Farmers expressed the need to explore export opportunities for banana and address existing marketing constraints, including market linkages, transportation, price fluctuations, quality standards, and post-harvest losses.
- **Promotion of banana tissue culture:** Farmers suggested greater promotion and availability of quality banana tissue-culture plants, particularly the **Alpan variety**, to facilitate healthy and uniform planting material.

- **Leaf retention before harvesting:** Farmers wanted technical guidance on the **optimum number of healthy green leaves that should be retained on banana plants 15–20 days before harvesting** to maintain adequate photosynthetic activity and support proper fruit development and quality.
- **Malbhog variety – ratoon crop performance:** Farmers reported that the **Malbhog variety produces good fruit quality and size during the first crop, whereas fruit size and quality tend to decline in the second (ratoon) crop**. Farmers suggested that research should be undertaken to identify the causes of this decline and to develop suitable **nutrient, irrigation, crop-management, and ratoon-management practices** for maintaining fruit yield and quality in the second crop.
- Farmers suggested that demonstration of Fruit Bagging in Banana to prevent Scary Beetle and other diseases.
- Genetically Improvement of Alpan Banana by incorporating the stronger Pseudostem traits to Barsain variety to enhance lodging resistance.