

# WE'RE ACCREDITED LAB



## ICAR-CIAE NEWSLETTER

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### From the Director's Desk



In the quest for sustainable energy solutions, the focus is increasingly towards green energy. As the world struggles with the urgent need to reduce carbon emissions and mitigate climate change, hydrogen presents itself as a beacon of hope - a versatile and clean energy carrier with the potential to revolutionize various sectors of our economy. In this editorial, we explore the evolution of hydrogen generation and its pivotal role in shaping tomorrow's energy paradigm.

Traditionally, hydrogen production has been dominated by fossil fuel-based methods, such as steam methane reforming (SMR) and coal gasification, which generate significant carbon emissions. However, to combat climate change and reduce greenhouse gas emissions, greener alternatives have been explored. Among these, green hydrogen production - generated via electrolysis powered by renewable energy sources has gained significant traction in recent years. By harnessing the power of sunlight, wind, or hydro-power, green hydrogen production offers a carbon-neutral pathway to unlock hydrogen's potential as a clean energy carrier. With advancements in electrolyser technology and reducing renewable energy costs, green hydrogen is poised to revolutionize multiple sectors, including transportation, industry, and power generation.

Another novel concept in the realm of hydrogen production is turquoise hydrogen which combines the benefits of both green and blue hydrogen methodologies. At its core, turquoise hydrogen production involves the thermal decomposition of methane into hydrogen and solid carbon, a process known as methane pyrolysis. By utilizing renewable electricity or surplus heat from industrial processes, methane pyrolysis can achieve high efficiency and yield hydrogen with minimal carbon footprint. CIAE has started conceptualizing this pathway of hydrogen generation from bio-CNG, converting purified bio-gas to hydrogen. The

work is more focussed on the development of efficient yet low-cost catalysts which can be easily regenerated. This development holds promise as a transitional solution for decarbonizing hydrogen production while leveraging existing infrastructure.

India has set its sight on becoming energy independent by 2047 and achieving Net Zero by 2070. Hydrogen based energy will play a pivotal role in achieving the net zero scenario. Right now the country has set a goal of 5 million tonnes of green hydrogen generation per annum by 2030 with an associated renewable energy capacity addition of about 125 GW. With accumulated effort of us it will be a possibility in near future.

This current issue of the newsletter focuses on research and development of various aspects of farm mechanization like Tractor drawn eight row onion seedlings transplanter, Mechatronically driven planter suitable for inter-cropping, Small tractor operated adjustable sugarcane detrapper, Power operated baby corn grader, Multi-utility E-vehicle, Solar powered cold storage with thermal storage, Instrument for rapid detection of aflatoxin in maize: hyperAfla, Standardization of protocol for minimal processing of fresh cut jackfruit, etc. The issue also covers various activities conducted on-campus and off-campus in the institute.

As the Director of ICAR-CIAE, it is my immense pleasure to share this issue of Newsletter.

### DIGEST

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## RESEARCH &amp; DEVELOPMENT

**Tractor drawn eight row transplanter for onion seedlings**

Manual transplanting of onion seedlings is laborious, time consuming and costlier operation due to its closer spacing as compared to other vegetable crops. Therefore, a tractor drawn eight row automatic transplanter has been developed for transplanting onion seedlings in dry, well prepared and moderately levelled field. The transplanter consists of three point hitch arrangement, eight seedling metering units, soil bed firmer-cum-ground drive roller, gauge wheel-cum-transport wheels, seedling hopper, furrow opener assembly (special ski type), and power transmission system. The transplanter can plant eight rows simultaneously, with row spacing of 150 mm. The seedling metering mechanism of the transplanter continuously singulates the seedlings at an average rate of 60 seedlings per minute per row from the bunch placed in seedling hopper and releases them in upright orientation into the furrow. It can transplant 45-60 days old washed root onion seedlings of relatively uniform neck diameter (4-8 mm), with one labour to intermittently load/top up the individual hoppers as required with bunch of onion seedlings, preferably at headland of the field. The depth of transplanting can be adjusted using gauge wheel-cum-transport wheels, before the start of transplanting operation. The test results showed uniform plant spacing of  $100 \pm 11$  mm with 78% singles, 9% doubles, 12% miss and 0% damages. The transplanter has an overall transplanting efficiency of 75% at an operating speed of  $0.6 \text{ km h}^{-1}$  and covering swath of 2 m ( $1.2 \text{ m} \pm 0.8 \text{ m}$  (spacing between beds)), and effective field capacity of  $0.11 \text{ ha h}^{-1}$ .

**Mechatronically driven planter suitable for inter-cropping**

A five-row unit of the mechatronic driven planter suitable for inter-cropping has been developed at AICRP on FIM (CCSHAU, Hisar) to facilitate intercropping by simultaneous metering and sowing a wide range of crops with seed size ranging from 2 to 16 mm and seed-to-seed spacing from 100 to 600 mm. The selection of the crop combination and the desired seed-to-seed spacing can be achieved through a mobile application. It can sense the forward speed of the planter in real-time and automatically adjust the rotational speed of metering cells to maintain the desired pre-set seed to seed spacing. It is suitable for simultaneous sowing of any three combinations of crops having different seed sizes such as castor with green gram, castor with cow pea, and pigeon pea with green gram etc. as inter-crop.

The field trials were conducted for sowing of castor with green gram, castor with cow pea, and pigeon pea with green gram as inter-crop. The machine was tested at forward speeds of 2, 3, 4, and 5 km/h. The missing, multiple, quality feed, and precision indices of the developed planter were in the range of 1.57- 4.02%, 1.22 - 2.79%, 94.76-96.22%, and 9.38-19.18%, respectively, for sowing of castor-cowpea as intercrop. The corresponding values for sowing of pigeon pea-green gram were 1.57- 4.05%, 1.37 - 2.60%, 94.58 - 95.84%, and 11.32 - 15.47%, respectively. Similarly, for sowing of castor-green gram as inter-crop, the values were observed in the range of 1.53 - 4.03%, 1.27 - 2.69%, 94.70 - 96.21%, and 11.53 - 15.78%, respectively. The performance of the machine was found best at forward speed of 3 km/h for all inter-crop combinations considering the seeding uniformity indices and effective field capacity as performance indicators.





## RESEARCH &amp; DEVELOPMENT

**Small tractor operated adjustable sugarcane detraser**

Detrashing of sugarcane crop is a tedious as well as time consuming operation. Buds are damaged due to the fixed detrashing rollers and trashes frequently get entangled on the roller units due to the uni-directional rotation of rollers. By considering the issues involved in the detrashing operation, a small tractor operated adjustable sugarcane detraser has been developed at AICRP on FIM (TNAU, Coimbatore). The developed prototype consists of detraser roller unit, power transmission unit, hydraulic circuit and main frame. The transmission ratio is 1:3 to energize the hydraulic pump. Bi-directional rotation of roller and adjustable movement have been provided in the developed prototype to reduce the damage during the operation. During field trials, roller speed of 8 m/s and height of 600 mm from ground level were ideal for de-trashing of 1.50 m erected cane. The field capacity of the machine was 0.3-0.4 ha/h with 87% detrashing efficiency. The cost of operation was Rs. 2500/ha which gave 66% cost saving.

**Instrument for rapid detection of aflatoxin in maize: hyperAfla**

Exposure of maize to aspergillus flavus while on and off the fields lead to aflatoxin contamination. This is a very serious food safety concern in food and feed supply. Rapid detection of contamination in the grain on-site, preferably with a hand-held instrument, before it comes into the food chain is necessary and imperative. Hyper-spectral imaging (HSI) is a popular non-invasive technique for detection of fungal contamination in maize kernels. HSI data secures its acceptance for development of tools and gadgets that can be used for rapid detection of fungal contamination. HSI spectral data were obtained using maize samples, (i) inoculated with six different concentrations (25, 40, 70, 200, 300 and 500 ppb) of aflatoxin-B1, and (ii) under natural contamination with aspergillus flavus. Spectral signature



from HSI data was collected in vis-NIR (398–1003 nm) and SWIR (1000-1700 nm) ranges while the germ orientation of the maize kernel were switched with respect to the imaging system. The reflectance spectral data were pre-processed and classified using PLS-DA and k-nearest neighbour for obtaining the characteristic wave length/band representing the aflatoxin content in the maize kernel. PLS model was also developed to predict the concentration of aflatoxin-B1 in naturally contaminated maize kernels. The potential wavelength band was identified based on principal component analysis (PCA) to distinguish between sterile and infected maize kernels. Based on this results, a hand-held device comprising a multi-spectral sensor having 18-channels in the UV, visible and IR ranging from 410 to 940 nm with a built-in aperture, 16-bit ADC operating at 2.7 to 3.6 V, LEDs (white, UV and IR), a micro-controller (Arduino Mega 2560), a power bank (5 V, 2 A, 5000 mAh) and a 10 mm touch TFT display was developed. All the components were fitted in a 3D printed cuboidal housing with an opening right beneath the spectral sensor, which can be closed with half turn self-locking cap/sample holder. The instrument performed with an overall accuracy of more than 83% for classifying infected grains into low (<30 ppb), medium (<100 ppb) and high (>100 ppb) aflatoxin content.

**Jackfruit cutting machine**

Jackfruit cutting for bulbs separation is the toughest unit operation in the processing of jackfruit. A highly skilled person is required to cut and separate the bulbs by tackling its sticky gum. Considering the drudgery involved in cutting of the fruit manually, a power operated Jackfruit cutting machine has been developed to ease the operation.



## RESEARCH &amp; DEVELOPMENT

The developed Jackfruit cutting machine comprises of cutting blade assembly, moving plate assembly, power drive system, collecting tray and the main frame assembly. The blade assembly is made of four blades of high carbon steel fixed radially on a hollow circular ring. At the centre of the circular ring, a hollow pipe of size 80 mm diameter is fixed for removing the centre core of jackfruit. The moving plate assembly consists of a movable plate of poly-carbonate material fixed on 30 mm shaft at the four sides. A screw rod driven by a motor moves the plate up and down. The moving plate aids in pressing the fruit against the blades while cutting. The unit is driven by 0.75 kW electric motor. The fruit is mounted on the circular ring and the screw rod at the side pushes the movable plate down which in turn presses the fruit against the blades. The cut fruit is collected in a tray at the bottom. The developed machine could cut about 40-60 fruits per hour depending on the size of fruits and resulted in saving of about 70% of time as compared to manual method of cutting.

#### Power operated baby corn grader

Baby corn occupies an important place in the food processing industry. Tender and fresh baby corns are exported to UK, UAE and Ireland. The shanks are manually graded based on their size and colour and packed in punnet packaging. Proper grading facilities are required for the effective marketing of baby corn. In order to improve the quality of graded products and to alleviate the labour shortage, a power operated baby corn grader has been developed. It consists of main frame assembly, grading unit, prime mover and collection unit. The grader roller conveyor assembly consists of 80 SS rollers. Two guiding rollers made of nylon are spirally grooved throughout the length in such



a way that the gap between the grading rollers gradually increases while they glide through the grooves. The collection unit consists of cross-conveyor rollers and flat belt conveyor. The machine grades baby corn into five grades viz 10-12 mm, 12-14 mm, 14-16 mm, 16-18 mm and >18 mm. Two gear motors of 0.375 kW are used to operate the grader. The performance of the machine was evaluated in terms of grading efficiency and feeding capacity at four roller speeds of 0.7, 1.1, 1.5 and 1.9 m/min. The grading efficiency and feeding capacity of the grader were determined as 94.1%, 94.5%, 90.8 and 85.7% and 258, 307, 437 and 650 kg/h, respectively at the above mentioned roller speeds.

#### Improved animal housing structure for draught and milch animals

An animal housing structure has been developed by the AICRP on UAE (MPUAT Udaipur) to provide an optimum environment to the animals for achieving the higher growth, improved feed utilization efficiency and optimum milk production with proper living conditions. A low-cost comfort housing system for dairy animals is comprised of various components such as foggers, cement sheet with thatched roof, open area and plantation. The designed housing is the combination of loose, open and conventional housing systems with the provision of all time availability of drinking water and fodder. The average daily milk yield during rainy season was significantly ( $P < 0.05$ ) higher (11.65 l/day) in animals reared in developed housing system and followed by in loose housing system (10.98 l/day), conventional (9.82 l/day) and open housing system (8.70 l/day). The pulse rate and respiration rate are lower in animals during rainy season housed in loose housing system and comfort housing system as compared to conventional





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and open housing systems. During winter, the dry matter intake (kg/day) is higher in animals housed under comfort housing system which is significantly lower in animals housed in open housing. The milk yield (litres/day) during winter is higher in animals under comfort housing system as compared to other housing systems. There was non-significant difference for milk yield in animals under loose housing system and open housing systems. The mean maximum temperature ranges from 36.21 to 40.92 °C during summer and the values of relative humidity ranged from 25.71% to 76.24%. The dry matter intake (kg/day) during summer season is significantly higher in animals under comfort housing system as compared to conventional, open housing and loose housing systems. The animals in all the housing system maintained their physiological parameters but are more comfortable in comfort housing system as compared to others during summer season.

**Multi-utility E-vehicle with arrangement of reaper for harvesting**

A multi-utility E-vehicle powered by LiFePO<sub>4</sub> battery (60V, 100 Ah) and BLDC motor (6 kW,60V) along with controller has been developed and tested with reaper for harvesting of paddy. Battery and motor controller have been placed under the driver's seat and reaper attachment was operated with 1.5 kW BLDC motor and 60 V controller which was attached at the front of e-vehicle near the dash board. A 12 V DC power pack has been used for lifting and lowering the reaper assembly during operation in the field. The actual field capacity was 0.185 ha/h with field efficiency of 80% at forward speed of operation in the range of 2-3 km/h.. Average current and power consumption during harvesting



operation with e-vehicle are 37.53 A and 2.42 kW, respectively. Total energy consumption for harvesting operation was observed to be 6.90 MJ/ha.

**Process Protocol for the edible coating of guava using dipping method**

The perishable fruits and vegetables are undergoing continuous respiration during post-harvest handling and storage. The various physiological and biochemical changes takes place during this respiration process leads to maturation and senescence. Edible coatings, particularly using polysaccharide based carboxyl methyl cellulose (CMC) have demonstrated positive effects on extending the shelf life of fresh guava. This study focuses on developing coatings formulations for fresh guava using CMC, with concentrations (1-4%) and 40% glycerol (based on starch dry weight). The impact of the optimized CMC-based coatings, combined with lemongrass essential oils, on the postharvest shelf life of guavas at room temperature (23±2°C) was investigated. During the storage study conducted for guava fruits, resulted that coatings with 2% CMC and 0.5% lemongrass essential oil, along with 40% glycerol, exhibited the maximum reduction in physiological loss in weight (PLW), total yeast, and mold count. These coatings effectively maintained postharvest characteristics, including reduced water loss, increased firmness, enhanced color attributes, improved visual appearance, and exhibited antimicrobial and antioxidant activity. Guava fruits with the edible coating remained available for up to 9 days, compared to 3 days for control samples.

Effects of edible coating on visual appearance of guava at room temperature

| Days of storage    | 0 | 3 | 6 | 9 | 12 |
|--------------------|---|---|---|---|----|
| Control (Uncoated) |   |   |   |   |    |
| Coated             |   |   |   |   |    |

## RESEARCH &amp; DEVELOPMENT

**Micro Perforated Modified Atmospheric Packaging System for Guava**

A simple packaging protocol was developed for guava sold through retail chain outlets. The packing material used for packaging includes 60 micron (LDPE+LLDPE) plastic film of size 200×200 mm in which the matured guava fruits of medium size were packed. To create the modified atmospheric condition inside the packages, the area of perforation for packages was optimized. After 36 h of storage, it was found that the package with 0.00097% perforation maintained the desired equilibrium concentration of O<sub>2</sub> (2.7%) and CO<sub>2</sub> (5%). Quality analysis after 12 days of storage in these tailored packages at ambient temperature (23° C) indicated 3.12% of physiological loss in weight (PLW), 150 N of firmness and 12.3 °Brix of TSS. These values are comparable to the values at harvesting done at the maturity stage of fruits. This protocol can be employed to avoid glut and distress sale of guava by the farmers.

**Standardization of protocol for minimal processing of fresh cut jackfruit**

The process protocol has been standardized for the minimal processing of tender jackfruit. Total four treatments viz. ozone (1 ppm), ascorbic acid (2.5%), tartaric acid (2.5%) and citric acid (2.5%) were given to the peeled and cut tender jackfruit into slices. Treated samples were packed in two packaging materials viz., low-density polyethylene (LDPE, 100 μ) and polypropylene (PP, 40μ). The samples were stored at ambient and low temperature (4-5° C) conditions. Quality analysis of the stored samples were carried out at an interval of two days for selected dependent variables. The cut tender jackfruit treated with ascorbic acid, stored in PP at low temperature, resulted in the highest storage life (09 days) as compared to other treatments. This

ascorbic acid treated sample was having PLW of 0.31%, firmness of 91.81±10.51 N, cutting force of 121.01±22.77 N, ascorbic acid of 2.740±0.02 mg/100 g, total phenolic content of 23.407±0.21 mg/100 g and TSS 6.4±0.1°B at the end of storage life (09 days). Treatment of ozone resulted in maximum TPC of 76.472±0.07 mg/100g and the highest retention of firmness (105.49±6.30 N) after 9 days of storage. The results revealed that post cut treatment of ozone (1 ppm for 10 min) and ascorbic acid (2.5%) retained the physico-chemical and textural qualities of tender jackfruit.





## RESEARCH &amp; DEVELOPMENT/ SUCCESS STORY

## SUCCESS STORY

**Commercial Production of Bio-degradable Film by M/s Natures Bio Plastic (India) Pvt. Ltd. Hyderabad**

The use of plastic-based films has contributed to severe environmental pollution and ecological harm due to their non-biodegradability and persistence in eco-systems. Recognizing the urgent need to address this issue, the Government of India has launched a nationwide campaign to ban single-use plastics, aiming to mitigate environmental pollution and promote the adoption of sustainable alternatives. With this perspective, the institute has developed three types of biodegradable films using the commercial extrusion blown molding method. The technologies developed under the project are Polylactic Acid (PLA) and corn starch based film, PLA and PBAT based film; PLA and Cassava based film and released during the 256<sup>th</sup> Meeting of the Governing Body of the Indian Council of Agricultural Research on 30 June, 2022. The technology of the developed film was licensed to **Natures Bio Plastic Pvt. Ltd. Hyderabad, Telangana**. Currently the company is manufacturing 240 tonne of bio-degradable film per year and selling at the rate of Rs. 200 per kg that compares favourably with the market prices of plastic films. The company's product line includes carry bags, garbage bags, consumer product pouches, vegetable pouches, and head covers, made from the bio-degradable film.

This biodegradable film stands as a viable replacement for the currently prevalent single-use plastics. The success of this endeavour reflects the potential of bio-polymers to contribute to a sustainable environment, economy (through the high-value generation from agricultural feedstocks), and society (by providing eco-friendly raw materials for a healthier life).

**New External Funded Projects**

| Sl. No. | Project title   | Funding agency   | Fund awarded (Rs in lakhs) |
|---------|---|--|----------------------------|
| 1       | Development of on farm storage structure with hybrid evaporative cooling system for fresh horticultural produce | MP Council of Science and Technology, Bhopal   | 8.50                       |
| 2       | Development of Agripreneurship and Agribusiness models for Grassroots Innovations (GRIs)                        | Rural Technology Action Group (RuTAG) Office of the Principal Scientific Advisor (PSA) to the Government of India, Ministry of Panchayati Raj, New Delhi | 50.00                      |
| 3       | Training Centre for Processing of Cereals, Pulses, RKVY Millets and Oilseeds at ICAR-CIAE, Bhopal               | Rashtriya Krishi Vikas Yojana, Madhya Pradesh  | 148.00                     |

## IPR/ TECHNOLOGY TRANSFER

### Patent Granted

#### Rotating finger with push-type mechanism for automatic vegetable transplanter for plug-type vegetable seedlings (Patent number- 461812)

This invention relates to the development of a "Rotating finger with push-type mechanism for automatic vegetable transplanter for plug-type vegetable seedlings like chilli, tomato, and the like", wherein a pair of rotating fingers are arranged on a rotating axis which is driven by a ground wheel and a stepper motor configured to reciprocate the shaft to and fro to cover half of the pro-tray to deliver the seedling in two rows. The to and fro motion is controlled with a fork attached to the stepper motor shaft with a metering shaft and programmed with microcontroller-based stepper motor actuated by the electronic switch. A dc motor was used to rotate the feed roller by a few degrees every time the electronic switch was pressed and a circular roller mounted over the finger which pushed out the seedling from the pro-tray into the delivery box while rotating. The present invention can be used in an automatic vegetable transplanter for plug-type vegetable seedlings grown in nursery pro-trays with ease.



### Technologies Commercialized

| Sl No. | Name of Technology/ Know-How   | Name of Contracting Party                       | Date of Licensing |
|--------|--|---|-------------------|
| 1      | Side dispensing type FYM applicator for grapes orchards                        | M/s Varadvishwa Green Energy, Baramati          | 06.10.2023        |
| 2      | Tractor operated side trencher for grapes orchards                             | M/s Varadvishwa Green Energy, Baramati          | 06.10.2023        |
| 3      | Tractor operated cotton stalk puller   | M/s Halcyon Agrimech Private Limited, Ahmedabad | 22.11.2023        |
| 4      | Tractor operated raised bed former cum onion bulb planter for multiplier onion | M/s Shri Baba Industries, Coimbatore            | 13.12.2023        |

### MoU Signed

An MoU has been signed with Institute for Excellence in Higher Education, Bhopal on 2 November, 2023 for joint collaboration for various academic development programme.



### Participation in Exhibition

Institute participated in Indian Mobile Congress-2023 and a few CIAE technologies were demonstrated in the congress organized at Pragati Maidan, New Delhi during 27-29 October, 2023.





## TRAINING

### International Training Programme for Officials of Afro-Asian Countries

Afro-Asian Rural Development Organization, HQ located in New Delhi, sponsored a 10 day training programme on "Agricultural Engineering Technologies for Enhancing Productivity and Profitability of Agriculture Sector" during 6-15 December, 2023, attended by eight participants from Afro-Asian countries (Ghana, Lebanon, Jordan, Mauritius, Namibia, Nigeria, Oman and Sri Lanka). The objective of the training was to expose the officials working in the field of Agricultural Engineering with the latest developments in India. Inaugural session of the training was held on 6 December, 2023 and His Excellency Rami Mahmoud Abdel Halim Qtaishat, Assistant Secretary General, AARDO was the Chief Guest. During the training programme, the participants were exposed to latest developments in seedbed preparation to harvesting that includes applications of drones, robotics and precision equipment in agriculture. Hands on experience of these machinery was also arranged during the program. In the area of processing, the primary and secondary processing machinery for cereals and horticultural produces were covered in class room lecture and demonstrated in laboratory. The participants were delivered lecture on efficient utilization of water under deficit as well as under excess conditions. They were also educated with the conversion of biomass into energy and effective application of renewable energy sources. The participants visited industries such as M/s Eicher Tractors and M/s. Bio Nutrient Lab, and Custom Hiring Centres to aware them about the technological advancements in the industry and business model of providing agricultural machinery on hiring basis, respectively. The participants were exposed to Indian



culture by arranging study tours to Museums near Bhopal. The training concluded on 15 December, 2023. The Chief Guest of concluding session was Dr. SN Jha, DDG (Agril. Engg.), ICAR and he emphasised that the knowledge gained by the participants should be translated into actions in their respective countries. Dr. CR Mehta, Director ICAR-CIAE congratulated the participants and conferred certificates.



### Training organized on animal husbandry mechanization

Coordinating Unit of AICRP on Increased Utilization of Animal Energy organised training on "Instrumentation, technologies and application of sensors in animal husbandry mechanization" at ICAR-CIAE during 18-20 December, 2023. The training was attended by 14 participants from the cooperating centres of AICRPs located at IGKV Raipur, GBPUAT Pantnagar, MPUAT Udaipur, ICAR-NRCE Bikaner, ICAR-CIAE Bhopal, UAS Raichur, OUAT Bhubaneswar and VNMAU Parbhani. Dr KH Singh, Director, ICAR-IISR Indore was the chief guest in inauguration programme of the training on 18 Dec., 2023 and Dr. CR Mehta, Director, ICAR-CIAE presided the program. The participants were sensitized on application of sensors and automation in farm mechanization, use of robotics and need of advanced technologies for animal husbandry mechanisation.



## TRAINING

### Hands-on Training and Demonstration of Improved Agricultural Implements and Precision Farming Technology

A Hands-on Training and Demonstration of Improved Agricultural Implements and Precision Farming Technology was organised under the Consortia Research Platform on Farm Mechanization and Precision Farming (CRP on FMPF). Training programme was organized in two batches during 29 November - 1 December, 2023 and 12-14 December, 2023, attended by total 137 farmers. During the program, farmers received hands-on training and demonstrations of improved agricultural technologies, drones, and precision farming tools, gadgets, and implements. Additionally, visits were arranged to the drone laboratory, agro-processing centre, Soybean Processing & Utilization Center, and TTD display hall to expose participants to developed technologies. Covered cultivation techniques for crop production and spraying with drones were also demonstrated.



### Training to farmers under Biotech Kisan Hub project

A training was organized to create awareness about the farm mechanisation and available agriculture machinery among the farmers, under the project "Expansion of activities of biotech kisan hub project in eight aspirational districts of Madhya Pradesh phase - II". This was organized in Lakhnagua and Kumhari village of Chhatarpur district and about 100 farmers participated in the training program. The information about machinery scenario in India, including machinery available for various cultivated crops was shared with the participants. Also, the importance of conservation agriculture machinery and resource conservation technologies for sustainable crop production was highlighted. Farmers were encouraged to use seed-cum-fertilizer drill, Happy seeder, zero till seed drill and other conservation agricul-



ture technologies. Leaflets and brochures of the institute developed technologies and conservation agriculture machinery were distributed to the farmers.

### Entrepreneurship Development for Custom Hiring of agricultural machinery as an enterprise

Entrepreneurship Development programme for custom hiring of agricultural machinery was organized in two batches during 16-20 October, 2023 and 6-10 November, 2023, attended by 44 participants. The information regarding the implements required for seedbed preparation, sowing/ planting/ transplanting, spraying, intercultural operation, harvesting and threshing operations were conveyed to the entrepreneurs. Moreover, conservation agriculture machinery and drone technology for spraying were demonstrated during the training program.



### Refresher Training Program

Refresher Training Program on "Farm Mechanization" under Agri-Clinics and Agri-Business Centres Scheme was organized at ICAR-CIAE, Bhopal during 26-28 December 2023, which was attended by 15 participants. The different aspects of farm mechanisation including exposure to tillage, sowing, plant protection, harvesting



## TRAINING



and threshing machinery were covered during the training program. The technologies for processing of fruits and vegetables as well as post-harvest and value-addition technologies for cereals, oilseeds, legumes and millets were explained during the training program. The machinery package selection using custom hiring software package was also demonstrated to the participants. The training has also provided exposure to drone technology for spraying application.

### Soy-food Training programme

Two entrepreneurship development programs titled "Soy-Food Training Programme for Upcoming Entrepreneurs" were conducted during 9-13 October, 2023 (Batch 202) and 11-15 December, 2023 (Batch 203). Eleven trainees participated from the states of Madhya Pradesh, Maharashtra, Uttar Pradesh, Gujarat, Odisha, and West Bengal. The training encompassed various topics, including different soy-based food products, the preparation of soymilk and tofu, an introduction to soy processing equipment, project planning, storage and packaging, quality standards, and the marketing of soy products. Discussions also covered the health benefits of soybeans and their nutraceutical properties. Additionally, a guest lecture on financial support was organized.



The training module primarily consisted of practical demonstrations and hands-on training supported by theoretical aspects. A visit to a nearby soybean-processing unit was also arranged for the trainees to provide practical insights.

### Training on Entrepreneurship Development in Agro-processing

Two training sessions on "Entrepreneurship Development in Agro-processing" was organized during 16-20 October, 2023 and 20-24 November, 2023, specifically for the SC-BPL beneficiaries under the SCSP scheme. A total of 55 participants from Pura Chindwara, Bhainsakhedi, and Bandikhedi villages of Bhopal districts participated in the training program. The training covered various post-harvest technologies developed by the Institute. These technologies included primary processing machinery for fruits, vegetables, and food-grains, minimal processing, ripening chamber, onion storage, product development, packaging of food, agro-processing center, and other institute facilities. Participants were educated about the significance of these technologies and the potential for enterprise development in food processing centers.



### Capacity building on Agro-Processing, Value addition and Entrepreneurship

A capacity building programme on "Agro-Processing, Value addition and Entrepreneurship" was conducted during 5-6, October 2023 for 25 SC-BPL farm beneficiaries where Dr. Netahaji, Head, KVK Perambalur highlighted importance of secondary agriculture and start-up ventures. Ms. S Kokilavani (SMS- Home science) delivered lecture on Processing and value addition of ground nut, onion for nutritional products and marketing to obtain sustainable revenue. Manually operated battery sprayers, tarpaulin and PPC tools,



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implements were distributed to 25 SC BPL farmers at Melapuliur Panchayat villages, Perambalur district, Tamil Nadu. Field demo of natural crop booster spray for onion, groundnut and turmeric was carried out KVK farm for organic farming awareness and better productivity.

### Demonstration of drone spraying technology

A field day program was organized in Jaitpura village under outreach activities of the Vigilance Awareness Week - 2023 on 1 November, 2023, in which demonstration of drone spraying technology was done. A programme was attended by 27 farmers and 30 school students. The importance of drone spraying technology for pest and insect management in the agricultural field was highlighted during the programme. Through live demonstration of drone, participants were made aware of the advantages of drone, its applications and subsidy available.



### Extension activities

Dr. Nita Khandekar, Principal Scientist ICAR-CIAE visited Rakshika Mahila Kisan Farmer Produce Organization, Bhopal district, supported by Solidaridad on 1 December, 2023. She shared insights into how the only woman FPO could generate more business through soybean processing and contribute to the nutritional security. The visit mainly focused on interacting with the members of Rakshika and guiding them to implement better business strategies. She spoke of developing and enhancing the supply chain, organizing training of trainers and entrepreneurs on various effective methods to process soybeans and make tofu. She suggested the team of Rakshika FPO to diversify to attract the consumer and work on making flavoured Tofu and also suggested that FPO should put up Tofu stalls near stadiums and gyms, where protein diet is recommended and sought.



Dr. Dipika Agrahar Murugkar delivered two podcasts on Millets for good nutrition and health and growing millets in farms with ease for entrepreneurship and health - the Chhatarpur story on 29 September 2023 and 30 September 2023.

Shri MP Singh, ACTO, KVK participated in Live phone in programme of Akashvani Kendra, Bhopal on seed treatment in rabi crops on 8 October, 2023.

### Test reports of commercial machinery released

|                        | No. of Test Reports Released | Revenue Generated, Rs in lakh |
|------------------------|------------------------------|-------------------------------|
| Farm Machinery         | 27                           | 47.37                         |
| Post harvest machinery | 18                           | 23.92                         |
| Total                  | 45                           | 71.29                         |



## KVK NEWS

## Frontline demonstration on soybean

| Crop/ Technology               | Villages       | No. of farmers | Area (ha) | Date of Harvesting | Average Yield (t/ha) |
|--------------------------------|----------------|----------------|-----------|--------------------|----------------------|
| FLD on Soybean variety-JS 9560 | Raipur, Bhopal | 5              | 2.0       | 05.10.2023         | 0.11                 |

## Machine demonstration in farmers' field

| Crop/ Technology   | Villages              | No. of farmers | Area (ha) | Date of Sowing |
|--|-----------------------|----------------|-----------|----------------|
| Herbicide Strip Applicator cum Planter for sowing of wheat | Dobra, Khejda, Bhopal | 01             | 0.5       | 07.11.2023     |
| Two stage fertilizer applicator in wheat crop              | Kalyanpura, Bhopal    | 01             | 0.4       | 07.12.2023     |



## Training programme organized

| Title of the training  | Date                | No of participants |
|--|---------------------|--------------------|
| Orientation training programme for B.Sc. Agriculture (Final) year student from LNCT University Bhopal and SSSUTMS, Sehore. | 20.09.23 - 05.10.23 | 55                 |
| Nursery bed preparation, sowing and management   | 17.10.23            | 38                 |
| Importance of seed treatment in rabi crops   | 30.10.23            | 31                 |

## Scientific visit in farmers' field

| Programme  | Date       | Village                         |
|--|------------|---------------------------------|
| Farmer's field visit and verification of cost of cultivation under protected cultivation | 20.10.2023 | Berkhedi, Ratibadh, Bhopal      |
| Scientific visit in farmers field with RAWE students                                     | 12.12.2023 | Golkhedi and Kalyanpura, Bhopal |

KVK organized the following events during the quarter:

- National unity day on 31 October, 2023 (55 participants)
- World Soil Day programme on 5 December, 2023 (49 participants)
- PM Live webcast programme on Viksit Bharat Sankalp Yatra for awareness of farmers (39 participants)

## AWARDS &amp; RECOGNITIONS

**ISAE Awards** during 57<sup>th</sup> ISAE Annual Convention and International Symposium held at UAS Raichur, Karnataka during November 6 – 8, 2023.

| Name  | Award   |
|---|---|
| Debabandya Mohapatra (Leader), Balaji Murhari Nandede, Dipika Agrahar - Murugkar, Rahul Rajaram Potdar, S. Balasubramanian, Sumedha S Deshpande, Alexa Kudos, Sadvatha RH, Narendra Singh Chandel, Shashi Kumar D Deshpande | ISAE Team award for the year 2023   |
| Dr. Adinath Kate<br>Scientist   | JAEI Best reviewer Award  |
| Dr. A. Khadatkar<br>Scientist   | ISAE Distinguished Service Award 2023   |
| Dr Ravindra Naik<br>Principal Scientist   | Second prize for oral presentation for "Evaluation of Package of Equipment for Mechanized High Capacity Banana Fibre Extraction"      |
| Dr Samlesh Kumari<br>Scientist  | Second prize for oral presentation for "Processing, preservation and value addition in desi buttermilk (a potential domestic waste)". |
| Dr. Syed Imran S, Scientist<br>Dr T Senthilkumar, Principal Scientist   | First prize for oral presentation for "Development and evaluation of remote-controlled system for four-wheel rice transplanter"       |

## Other Awards &amp; Recognitions

| Name & Designation                     | Award  | Occasion  |
|--|--|---|
| Dr. C K Saxena<br>Senior scientist     | First prize in oral presentation entitled "Chronicles of Innovations in Micro-Irrigation in Indian Perspective".                             | National Seminar of Society of Krishi Vigyan during 27-28 October 2023  |
|  | Certificate of Excellence for reviewing the paper of International Journal of Plant & Soil Science   | -   |
| Dr. MK Tripathi<br>Principal scientist | Featured in the List of World's Top 2% Scientists in the Stanford University, USA report published by Elsevier 2023 on Oct-4, 2023.          | -   |
| Dr. Mukesh Kumar<br>Scientist          | Third prize in oral presentation for "Development of automatic self-cleaning filter for micro-irrigation system for sustainable agriculture" | National Seminar of Society of Krishi Vigyan during 27-28 October 2023  |
|  | Young Scientist Award 2023" by the Society for Recent Development in Agriculture (SRDA)  | National Seminar organised by Department of Agricultural Economics, Nagaland University, School of Agricultural Sciences, Medziphema during 1-3 November, 2023. |



## AWARDS &amp; RECOGNITIONS/ HRD

| Name & Designation   | Award   | Occasion   |
|--|---|--|
| Dr. Muzaffar Hasan<br>Scientist  | Guest editor for a special issue on Agri Food Waste Utilization for Sustainable Future: Challenges and Opportunities in Frontiers in Sustainable Food Systems journal | Frontiers in Sustainable Food Systems  |
| Dr. Ramesh Sahni<br>Scientist  | Editor, American Journal of Agriculture and Forestry<br>( <a href="https://www.sciencepg.com/journal/ajaf">https://www.sciencepg.com/journal/ajaf</a> )               | -  |
| Dr Sadvatha<br>Scientist<br>Dr SK Aleksha Kudos<br>Principal Scientist | Best oral presentation award for "Mechanization Package for FCV tobacco Leaves - Stringing and Curing"  | International Conference on "Fronts in Tobacco and Commercial Agriculture Towards Preparedness for Future Farming" (ICFTCA-2023) organized by Indian Society of Tobacco Science (ISTS) and ICAR - Central Tobacco Research Institute (CTRI) during 14-16 December, 2023 at Adikavi Nannaya University, Rajahmundry |

## Human Resource Development

## Trainings attended by Staff

| Name and Designation                      | Course Title   | Duration        | Venue  |
|---|--|-----------------|--|
| Dr. Sweeti Kumari<br>Scientist            | Blended learning techniques for quality higher education | 19-26 Dec, 2023 | ICAR-IASRI, New Delhi (Online mode)  |
| Dr. Harsha Wakudkar<br>Scientist          | Value chain management in natural fibres                 | 20-24 Nov, 2023 | ICAR- NINFET, Kolkata in collaboration with (MANAGE) Hyderabad (Online mode) |
| Dr. T Senthilkumar<br>Principal Scientist | Management Development Program on Leadership Management  | 11-22 Dec, 2023 | ICAR-NAARM, Hyderabad  |

## Foreign deputations

Dr. CR Mehta, Director attended 10<sup>th</sup> Annual Meeting of ANTAM at Iksan and Jeonju, Republic of Korea during 6-8 December, 2023. It was co-organized by the Centre for



Sustainable Agricultural Mechanization (CSAM) of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), the Korean Rural Development Administration (RDA), and the Korea Agriculture Technology Promotion Agency (KOAT). Around 40 participants from 20 UNESCAP member countries attended the meeting. The meeting reviewed and adopted ANTAM documents including the work report for 2023 and the work plan for 2024.

Dr. Sandip Gangil participated in The International Workshop on 'Transitioning Towards Agroecology and Regenerative Agriculture: A Contribution to Food Systems Transformations (TARASA23)', held during 24-27 October 2023 in Siem Reap, Cambodia. The workshop

## HRD/ PUBLICATIONS



was co-organized by the Centre for Sustainable Agricultural Mechanization of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP-CSAM) with the Ministry of Agriculture, Forestry and Fisheries (MAFF) of Cambodia; the Cambodian Conservation Agriculture and Sustainable Intensification Consortium (CASIC); the Food and Agriculture Organization (FAO); the French Agricultural Research Centre for International Development (CIRAD); Swisscontact; as well as the Agroecology and Safe Food Systems Transition (ASSET) and Innovation for Sustainable Agriculture (ISA) initiatives. Advanced technologies for agricultural mechanization were presented by Dr. Sandip Gangil, Principal Scientist including energy-efficient equipment, precision farming technologies, AI-driven data applications, and others.

Dr Sweeti Kumari, Scientist attended 10<sup>th</sup> Regional Forum on Sustainable Agricultural Mechanization in Asia and the Pacific during 28-30 November 2023 in Shanghai, China with the theme "Gender Mainstreaming in Sustainable Agricultural Mechanization". This event was organized by Centre for Sustainable Agricultural Mechanization (CSAM) - United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) in



collaboration with the Nanjing Institute of Agricultural Mechanization (NIAM) of the Ministry of Agriculture and Rural Affairs (MARA) of China.

## Ph.D. Awarded



Er Vijay Kumar, Scientist was awarded Ph.D. on 9 October, 2023 for his thesis entitled 'Prediction of the Soil Properties using Artificial Intelligence' by ICAR-IARI, New Delhi. He did his Ph.D. under the guidance of Dr KP Singh, ADG (Farm Engineering), ICAR.



Er Sweeti Kumari, Scientist was awarded Ph.D. on 11 December, 2023 for her thesis entitled 'Assessment of physiological characteristics and effect of load on farm workers during agricultural tasks under laboratory conditions' by IIT, Kharagpur. She did her Ph.D. under the guidance of Prof. VK Tewari, Director, IIT Kharagpur.

## Publications

## Research Papers

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### Annual Workshop of AICRP on UAE

XXIII Workshop of AICRP on 'Increased Utilization of Animal Energy with Enhanced System Efficiency (UAE)' was organized on 13 December, 2023 in online mode. All PI, Co-PI's, and other technical staffs attended the workshop. PIs of respective centre presented their annual progress. Project Coordinator (UAE) presented the report



of the scheme before DDG (Engg.), ADG (FE), ADG (PE), ADG (AH), Director, CIAE Bhopal and participants. Dr. M. Din, Ex-Project Coordinator (UAE) was an expert for the workshop. Chief Guest (DDG Engg), Guest of Honour (ADG AH), Chairman, Co-chairman and expert provided their keen observations, inputs and suggestions for improvement in research work of the cooperating centres.

### Annual Workshop of CRP on EA

Ninth Annual Review Workshop of Consortia Research Platform on Energy from Agriculture was organized on 17 October, 2023 in online mode. There was one inaugural session and two technical sessions for new research proposals (RPP-I), completed projects (RPP-III), and progress of ongoing projects (RPP-II) of different centres. A plenary session was also held at the end of the technical sessions on 17<sup>th</sup> October, 2023. The workshop was chaired by Dr. SN Jha, DDG (Engg.) and Co-chaired by Dr. KP Singh, ADG (FE) and Dr. CR Mehta, Director, ICAR-CIAE. Dr. KC Pandey, Ex LCPC-CRP on EA, CIAE, Bhopal were the experts to review the progress of the centers. About 35 participants participated in this workshop, those included the senior level scientists from ICAR-CIAE, senior officials and REs/Pis and associated scientists from 06 centers of CRP on EA. About 16 research projects and activities (i.e., 02 completed projects, 09 on-going projects and 05 new proposals) were presented and discussed in the workshop.



### International Day of Rural Women

On 13 October, 2023, Women cell of the Institute organized Awareness Cum Training Programme on "Drudgery Reduction & Nutritional Security from

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Soybean Home-Scale Products” on the occasion of **International Day of Rural Women and Women in Agriculture day**. Total 34 farm women participated in this awareness cum training programme from Solidaridad, Bhopal and institute. The participants were given exposure on production of soybean based products and also demonstrated the gender friendly technologies. The programme was an encouragement for the women farmers to participate in farming activities with more efficiency and quality.



### Plates from banana pseudo-stem as memento to Hon Governor of Tamil Nadu

ICAR-CIAE-RS, Coimbatore along with the its ABI entrepreneur “M/s. Ponmani Agro Services, Coimbatore who had signed MOA with the institute as a part of ABI activity under generation of wealth from banana pseudo-stem waste gifted the plates from banana pseudo-stem waste as memento to Hon governor of Tamil Nadu on the occasion of Agrl. Scientific Tamil Addressees Meet’ at Raj Bhavan on 4 November, 2023.



### NABL Accreditation for Food Testing Laboratory

The Food Testing Laboratory at ICAR-CIAE has received accreditation from the National Accreditation Board for Testing and Calibration Laboratories (NABL) in accordance with ISO/IEC 17025:2017 for chemical testing within the specified scope (Accreditation Certificate No. TC-12647). The establishment and accreditation of the Food Testing Laboratory



(FTL) by NABL serve several fundamental purposes viz enhancing the quality and reliability of testing services provided by laboratories, instilling confidence in the results generated by the accredited laboratories, facilitating both national and international trade by ensuring conformity to global standards in testing services and encouraging continuous improvement within laboratories, promoting adherence to high operational standards. This accreditation stands as a testament to FTL's commitment to maintaining excellence, bolstering trust in the accuracy and reliability of its chemical testing services within the specified domain.

### Vigilance Awareness Week

The Institute celebrated the Vigilance Awareness Week with the theme “Satark Bharat, Samridhd Bharat (Vigilant India-Prosperous India)” during 30 October to 5 November, 2023. To mark this week, posters and banners were placed at various important locations at the institute. As part of outreach activity, a debate competition on “Corruption can be controlled by law alone” was organized on 3 November 2023. The institute had also taken up internal inspection of records of activities related to land and asset management, outsourcing of services, complaints handling mechanism, etc. The concluding programme was organized on 5 November, 2023.



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### ICAR Zonal Sports Meet (Central Zone)

The ICAR Central Zone Sports Meet-2023 was organized by the institute during 18-21 December, 2023 at the TT Nagar Sports Complex, Bhopal. Total 464 competitors including 405 men and 59 women from 12 ICAR institutes located in Central and Northern states of India participated in different sports events in this four-days sports tournament. The sports meet covered a diverse range of sports including athletic events such as 100 m, 200 m, 400 m, 800 m, 4x100 m relay and 1500 m races, javelin and discus throw, shotput, high jump, and long jump. Team events like volleyball, football, basketball, cricket, and kabaddi, as well as indoor games like badminton, chess, carrom, and table tennis, were also a part of the exciting line-up. Mix doubles were introduced for the first time in the ICAR Sports Tournament. ICAR-Indian Veterinary Research Institute, Izatnagar bagged the coveted "Zonal Overall Championship Award" among the participating institutes while the ICAR-Central Institute of Agricultural Engineering, Bhopal became the "Runners-up" team in this sports meet. Dr Amit Kumar Dash from ICAR-Indian Institute of Seed Science, Mau received the "Best Athlete" title in men category while Ms. Pooja of ICAR-Indian Veterinary Research Institute, Izatnagar received the "Best Athlete" title in women category. The ICAR-CIAE Bhopal received first position in Basketball, and bagged second position in team events like Kabbadi, Volleyball Smashing, men's 4x100 relay. In individual category too the ICAR-CIAE, Bhopal contingent won several laurels. Dr. AK Sanyal, Director, ICAR-National Institute of High Security Animal Disease, Bhopal and Dr SP Datta, Director, ICAR-Indian Institute of Soil Science, Bhopal graced the concluding function. Dr. CR Mehta, Director, ICAR-CIAE presided over the closing ceremony. State level players like Shri Narendra Singh Thakur and Ms. Ruby Kaur were present on the occasion as special guests. The dignitaries pre-sent on the occasion awarded trophies and certificates to the winners of various sport events. While addressing the august gathering, Dr SP Datta, Director, ICAR-IISS emphasized the importance of sports in day to day life, which will not only enhance the physical, mental and social well-being, but also strengthen the team spirit, togetherness and integrity. Dr Mehta congratulated all the participating teams for their participation in the sports events and said that such sports events encourage healthy competition among teams that boosts motivation and productivity in the workplace.



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| Event                | Name               | Position |
|----------------------|--------------------|----------|
| Javelin (Men)        | Chetankumar Sawant | I        |
|                      | Ajit Magar         | II       |
| Long Jump (Men)      | Vijay Kumar        | III      |
| Discuss (Men)        | Chetankumar Sawant | III      |
| Javelin (Women)      | Nita Khandekar     | II       |
| Discus Throw (Women) | Nita Khandekar     | II       |
| Badminton Single     | Dipika A Murugkar  | Winner   |
|                      | Jolly John         | Runner   |
| Badminton Double     | Dipika A Murugkar  | Winner   |
|                      | Jolly John         |          |

| Events                     | Name                           | Position |
|----------------------------|--------------------------------|----------|
| Badminton Mixed Doubles    | Dipika A Murugkar              | Winner   |
|                            | Abhijit Khadatkar              |          |
| Table Tennis Single        | Manju Lohani                   | Winner   |
|                            | Premlata Verma                 | Runner   |
| Table Tennis Doubles       | Manju Lohani<br>Premlata Verma | Winner   |
| Table Tennis Mixed Doubles | CR Mehta<br>Manju Lohani       | Winner   |
| Table Tennis Mixed Doubles | RC Malviya<br>Premlata Verma   | Runner   |
| Carrom Mixed Doubles       | RK Hedau<br>Manju Lohani       | Runners  |

## EVENTS/ NEWS FROM PERSONNEL

**Swachhta pakhwada celebration-2023**

Swachhta pakhwada -2023 was organized in ICAR – CIAE Bhopal and its Regional Station, Coimbatore from 16-31 December, 2023. Swachhta pledge was taken under the Chairmanship of the Director, Dr. C.R. Mehta in online platform on 16 December, 2023. Almost all the staff of the institute participated in the event. The digitization of office records/ e-office was reviewed during the month of December 2023 and necessary steps were taken to complete the digitization process of office records such as Service Books, personnel files, roster, purchase files, contract files and other office records etc. Various activities related to cleanliness drive in the office premises, campus and farm were undertaken during the period. The drives taken by the RC-Coimbatore comprised mainly of sanitation and personal hygiene, fruits and vegetable waste recycling, lake cleaning campaign at Poosaripalayam Lake of Coimbatore City. ICAR- CIAE, Bhopal also celebrated Kisan Diwas (Farmers' day) Programme on 23 December. Students from Agriculture college and farmers from the nearby areas participated in this special day programme. Cleaning of sewage and waterlines, awareness recycling of waste water, water harvesting for agriculture/ horticulture application/ kitchen gardens in residential colonies were other activities which were undertaken during the fortnight. The Swachhta pakhwada concluded with the institutes' officials participation online alongside media personnel on 31 December, 2023. Apart from media personnel, the closing ceremony was attended by Dr. R.K. Singh, Chairman, Swachh Bharat Mission (SBM), Dr. Karan Singh, Dr. Ravindra Nayak, Dr. Dushyant Singh, Dr. Manoj Tripathi and others from the institute.

**Staff Promoted**

**Dr RK Sahni**  
Scientist (SS)  
wef 1 January, 2021



**Dr Harsha M Wakudkar**  
Scientist (SS)  
wef 1 January, 2022



**Dr Samlesh Kumari**  
Scientist (SS)  
wef 1 January, 2022



**Dr RR Potdar**  
Senior Scientist (RGP of Rs.9000/-)  
wef 15 December, 2022



**Dr AP Magar**  
Scientist (SS)  
wef 1 January, 2023



**Dr Manoj Kumar**  
Senior Scientist (RGP of Rs.9000/-)  
wef 12 May, 2023



**Shri OC Ramakrishnan**  
Private Secretary  
wef 10 November, 2023



## NEWS FROM PERSONNEL

### Staff Transferred



Ms Swati Singh, AAO was relieved on 22 November, 2023 to join as AAO (on deputation), Directorate of Extension, Department of Agriculture and Farmers Welfare, New Delhi.



Dr Deepak Singh, Head (KVK) was relieved on 26 December, 2023 to join Head, Division of Crop Production, ICAR-Central Institute of Subtropical Horticulture, Lucknow.



Dr Debabandya Mohapatra, Principal Scientist was relieved on 28 December, 2023 to join Head, Automation and Plant Engineering Division, ICAR-National Institute of Secondary Agriculture, Ranchi.



Dr SK Giri, Principal Scientist was relieved on 28 December, 2023 to join Head, Agriculture Structure & Process Engineering Division, ICAR-National Institute of Secondary Agriculture, Ranchi.



Shri AK Malviya, Personal Assistant was relieved on 28 December, 2023 to join Private Secretary at ICAR-National Institute of High Security Animal Disease Laboratory, Bhopal.

### Some Glimpses from Zonal Sports Meet (Central Zone)



## NEWS FROM PERSONNEL

## Staff Superannuated



**Shri SS Bagde**  
Assistant Chief Technical Officer  
31 October, 2023



**Shri RC Imne**  
SSS  
31 October, 2023



**Shri PK Das**  
Assistant Chief Technical Officer  
30 November, 2023



**Shri MS Verma**  
Senior Technician  
30 November, 2023



**Shri GR Potphode**  
Technical Officer  
31 December, 2023



**Shri BS Chandel**  
SSS  
31 December, 2023

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