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प्रशासनिक भवन  
ADMINISTRATIVE BLOCK

# ICAR-CIPHET NEWS



भाकअनुप-सीफेट  
ICAR-CIPHET

ICAR-CENTRAL INSTITUTE OF POST-HARVEST ENGINEERING AND  
TECHNOLOGY

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## From the Director's Desk



Automation and precision are the *Mantra* for modern agriculture. Demand of precision machinery, equipment and instruments for post-harvest processing and value addition including food quality and safety is increasingly being felt. A lot many imported machines and some domestic alternatives are being presented every now and then, yet this area has much more untapped potential. Variety in crops and their cultivars poses a great challenge in development of universally applicable machinery/ technology; but this also presents an opportunity for research and development. A wide array of new technologies such as automated hardware and software, autonomous ground vehicles, drones, GPS guidance, robotics, sensors and telemetric, clean and green energy, sensor-based harvesting, storage, smart packaging, non-destructive evaluation of food safety and quality are being developed with possible applications in post-harvest processing sector. With the improvements in smart technology and digitalization, the future of agri-machinery for food processing is highly promising. Efforts need to be accelerated to reduce the cost of smart farm mechanization technology so that it becomes available and affordable to small farmers. The technology needs to be portable, ready to install, easy to adopt-maintain-repair for having more chances to be successful, sustainable. With dwindling availability of human work force for agriculture, the Artificial Intelligence (AI) offers vast opportunities for advance application. The use of AI with computer vision and robotics is able to build next-generation agricultural equipment, which can identify defects in fruits and vegetables, assess their quality and also ascertain product safety.

The present issue of the newsletter provides a glimpse of activities and achievements in the area of technology development, skilling and knowledge dissemination by the staff of ICAR-CIPHET its constituting AICRPs, CRP and KVK. During the reported period, the scientists came out with technologies such as automatic sorting/grading system for tomatoes/pomegranate, bioactive compounds from kinnow fruit, a NIR spectroscopy-based method of adulterant detection in Chickpea flour (Besan) and a microwave based green gram disinfection technique from the institute which are expected to be a good help for reduction of post-harvest losses, utilization of wastes and public health safety concern. A machine developed under AICRP-PHET for extraction of cocoa butter perhaps will be a very good intervention for fast production of cocoa butter in commercial scale. A micro-climate bin for storage of groundnut pods is another technology for reducing storage loss of groundnuts. Fruit ripening chamber using phase-change material and polyhouse for year-round production of mushroom are technologies developed under AICRP-PEASEM. The institute has got two patents on technologies related to processing and handling of livestock and fishes. In the technology transfer domain, the scientists of the institute showcased different technologies in Kisan Mela and national level exhibitions including TechBharat 2022 at Mysuru and provided trainings to farmers, officials and students. There were happy moments for all of us to see the promotions of as many as sixteen scientists during this period and award of Ph. D to one and Netaji Subhash International Fellowship to one scientist. With participations in many workshops and seminars, scientists also published good number research and popular articles. Nevertheless, we still need more perseverance and determination to invent farmer-friendly technologies and to publish more impactful research articles in coming times. The efforts of editorial team in bringing out this issue of ICAR-CIPHET Newsletter are acknowledged and appreciated.

  
(Dr. Nachiket Kotwaliwale)

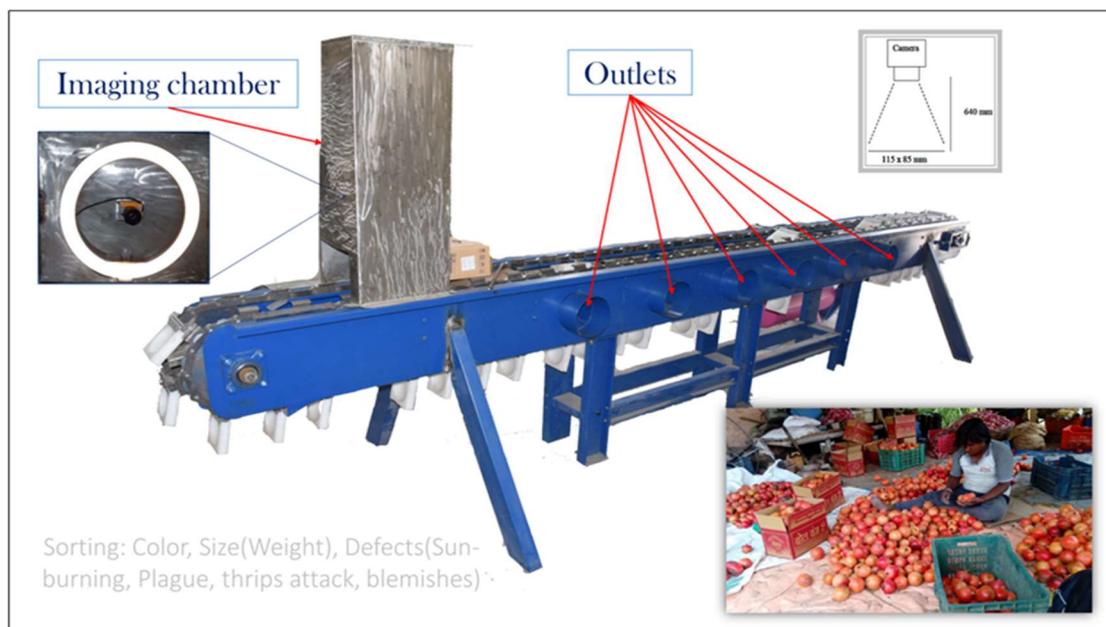
Director

## RESEARCH HIGHLIGHTS

**Automatic sorting/grading system for Tomatoes/Pomegranate**

- Kalnar Yogesh & Sandeep P. Dawange

In our country, great losses incur during handling and processing of fruits and vegetables. Due to the increasing demand of fruits/vegetables of high quality with good appearance, there is a need for the development of accurate, fast and focused quality grading/sorting system for the pomegranate and tomato. These operations are very laborious and there is no objectivity while sorting/grading manually. The automatic vision-based sorting/grading system has been developed comprising of conveyor, diversion system, vision and sorting system.



Cup type chain conveyor has been developed as shown in figure to carry fruits (tomato and pomegranate) in singulation beneath the imaging chamber. The dimensions of conveyor, cup and pitch of chain have been kept in such a way that single fruit will be carried forward and should not drop down in between. The cup type chain conveyor has length and width of 6m and 25 cm, respectively having cup diameter of 10-12 cm and depth of 5 cm with six grading compartments. Cups are hinged on the conveyor at one end and free at the other end for the ease of dropping the fruits/object. Using *Sherlock 7.3* software of *Teledyne Dalsa* program has been used to develop a program to detect the size of fruit along with quality i.e. presence or absence and quantify the level of defect on the surface of the fruits.

After sorting, developed system grades the commodities based on their sizes. At present, machine has the capacity to sort the 45-50 fruits/objects per minute depends on the response time of the diversion/ejection system.

**Extraction of bioactive compounds from immature dropped kinnow fruits using different solvents and extraction methods**

- Mridula D & Deepika Goswami

Kinnow fruits losses are very high as very small fraction of flowers turn to the marketable fruits. Prematurely dropped fruits are rich in healthful bioactive compounds and potentially

used in therapeutic purpose. Therefore, this study was carried out to standardize the efficient extraction of bioactive compounds namely, total phenolic content –TPC (Gallic acid equivalent), total flavonoid content (Quercetin equivalent), antioxidant activity (2,2-diphenyl-1-picryl-hydrazyl-hydrate, DPPH and Ferric Reducing Antioxidant Power, FRAP), total saponins (Diosgenin equivalent) and alkaloids (Atropine equivalent). It was found that, the TPC ranged from 2.63 to 4.59g/GAE 100g and 2.89 to 5.17g/GAE 100g using orbital shaking and ultra-sonication technique, respectively while total flavonoid content was found between 5.35 to 7.60g QE/100g and 5.93 to 8.40g QE/100g, respectively. The antioxidant activity ranged from 154.76 to 224.20mg AAE/100g and 178.89 to 251.41mg AAE/100g, respectively while FRAP activity was found between 3.40 to 5.72g TE/100g and 4.13 to 6.38g TE/100g, respectively. Contrary to these, total saponins were observed more through orbital shaking method (3.05 to 5.68mg DE/100g) than ultra-sonication technique (2.10 to 3.99 mg DE/100g). Similarly alkaloids were also extracted (1.90 to 3.58mg AE/100g). Ethanol at 50% in aqueous mixture following ultra-sonication method may be considered for extraction of important bioactive compounds from immature kinnow droppings.

### Near infrared spectroscopy-based calibration model for detection of metanil yellow up to 0.1% in besan

- Manju Bala & Swati Sethi

In our earlier studies, FT-IR based model for detection of metanil yellow in *besan* was developed. The limit of detection of metanil yellow in *besan* was 1%. In order to improve the model for detection of lower amounts of adulterant, near infrared spectroscopy-based calibration model for detection of metanil yellow (0.05% to 8.0%) in *besan* flour has been developed. Standard normal variate, detrend and 1<sup>st</sup> derivative pre-treatments were used to preprocess the NIR spectral data. MPLS, PLS and PC regression analysis was carried out and statistical parameters viz.  $R^2$ , SEC, SECV and I-VR values were evaluated for all the developed models (MPLS, PLS and PC). Comparative analysis of all the models revealed that MPLSR model showed  $R^2$  as 1.0 with SEC of 0.045, SECV of 0.169. Cross validation resulted in  $R^2$  as 1.0 and SEP of 0.183. The method can detect 0.1% of metanil yellow adulteration in *besan*.

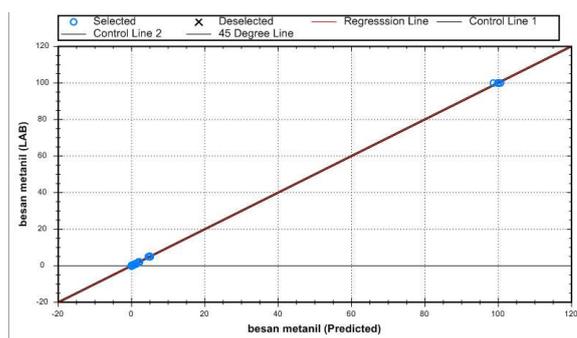


Fig. Cross validation prediction model for quantification of metanil yellow in *besan*

### Microwave based disinfestation of green gram infested with insects

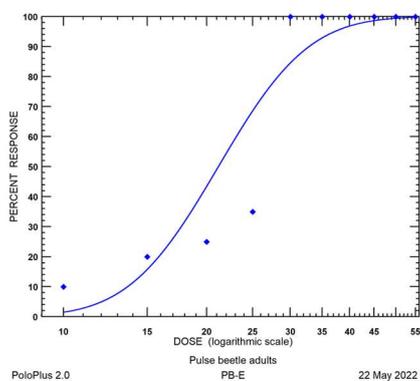
-Guru P.N.

In India, pulses constitute an important part of the daily diet of the vegetarian population as a major source of protein. The country is presently focused on storing these pulses since the

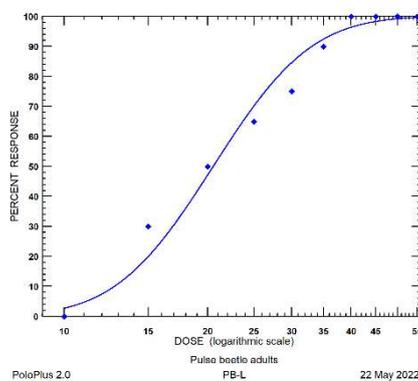
production surpasses the demand. During these storages, the grain loss was observed that was majorly a result of insect damage. Insects like bruchids are major, besides other insects like flour beetle, grain borers, and grain beetles are also found commonly infesting the stored pulses. For the management of these insects, chemical fumigation was commonly used and is the only available option. However, few physical management options, like dielectric heating of the grains using microwaves and radio frequency proved effective in killing the insects residing in the grains, which can be used as a grain disinfection strategy.

A study was carried out to find out the response of the flour beetle (*Tribolium castaneum*), grain borers (*Rhyzopertha dominica*) and grain beetles (*Oryzaephilus surinamensis*) to microwave radiation exposure. The source of microwave used in the study was a convection type domestic microwave oven (IFB 30SC®) with a rotating table having 30 lit capacity and MW Power output – 900-watt (consumption microwave – 1400-Watt, operation frequency – 2450 MHz, Power level as 10). Green gram samples of 1 kg each were exposed to high power microwave (P-HI -900W) at different exposure periods i.e., 10-50 seconds. The surface temperature of green gram sample was measured using an IR thermometer. After microwave exposure, the dead insects were counted and recorded at an interval of 15 min and 4 h. It was found that the insect mortality curves (probit LT50 values) followed polynomial distribution in response to the exposure time. Complete mortality of *R. dominica* was observed at 35 seconds exposure and for *T. castaneum* and *O. surinamensis* it was 25 and 20 seconds, respectively.

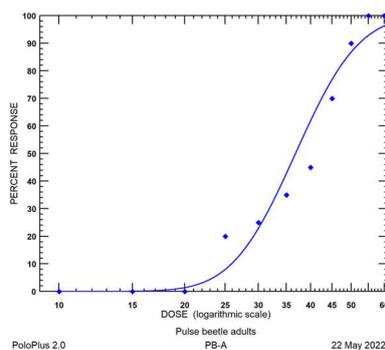
Further, the study continued and sixty adult bruchids (*Callasobruchus maculatus*) per each sample (1 kg each) were artificially infested to green gram and kept for 10-15 days for growth of different stages of bruchids i.e. egg, grub, pupa and adult. This artificially infested green gram samples (1 kg each) were exposed to microwave (P-HI level) as described above. Complete mortality was observed at an exposure of 25 seconds with green gram layer of 1 cm at P-HI level at 9.54% moisture content. However, it took 50 seconds for 100 per cent mortality of bruchids as exposed directly without green gram. The grain quality analyses after microwave treatment found no significant difference in the germination of treated and untreated grains ( $p=0.05$ ). Cooking time was 26.58 min for treated and 26.40 min for untreated green gram. Similarly, no significant difference was observed in water uptake between treated (65.51 %) and untreated seeds (65.03 %). The differential heating during microwave exposure kills the insects without altering the grain quality.



(a) Egg



(b) Grub



(c) Adult

Fig : Probit curves of pulse beetle, *Callasobruchus maculatus* response to microwave exposures

### AICRP on PHET

#### **Cocoa butter extractor, Kerala Agricultural University, Tavanur**

Cocoa (*Theobroma cacao L.*) is the raw material for the production of chocolate, cocoa butter, cocoa powder, cosmetic items, pharmaceuticals etc. The initial process in the production of cocoa butter from cocoa beans comprises grinding of the cocoa nibs (kernel of cocoa bean) into a thick paste which can be further pressed to form cocoa butter. The resultant cake is pulverized and ground to give cocoa powder. The cocoa butter can be extracted using various mechanical systems like hydraulic press and screw press etc. At present, an ideal hydraulic/screw press suitable for homemade chocolate units is not available. A preliminary study was conducted by using a Universal Testing Machine operated cocoa butter extractor and its performance evaluation was conducted in terms of yield of cocoa butter, time of butter extraction, and extraction efficiency. But its efficiency was found to be low, hence an attempt was made to develop a screw press for cocoa butter extraction which is well suited to small and marginal cocoa entrepreneurs. Accordingly, screw press for cocoa butter extraction has been developed. Screw type cocoa butter extractor consists of feeding hopper, cylindrical barrel, screw, choke, heating coil temperature control system, pressure control system, cocoa butter outlet and cocoa powder outlet.

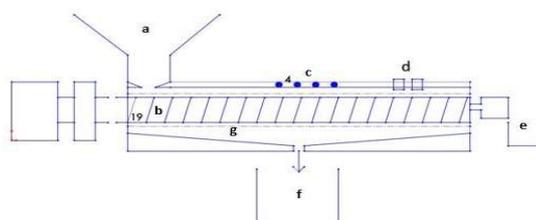


Fig: Cocoa butter extractor schematic diagram & developed machine

The machine is made up of a barrel and screw assembly made up of Stainless steel 304. The screw rotates within the barrel. The working principle of this machine is the combined effect of friction and pressure exerted by the screw and barrel surface. An additional heating coil (2

kW) is provided over the circumference of the barrel to improve the butter extraction efficiency. The machine has a capacity of 25 kg/h with a power consumption of 2.5 kWh.

### Continuous type UV-C treatment unit for disinfection of food pathogens, College of Agricultural, UAS, Raichur

The application of ultraviolet (UV) light in the food industry has held great promise for a long time. UV-C light (200–280 nm) possesses excellent germicidal properties to inactivate a wide range of microbial pathogens (e.g., bacteria, fungi, yeasts, molds, and viruses). UVC technology can be used to effectively prevent foodborne illnesses while increasing the shelf life of food without compromising its quality by reducing the microbial load. Thus, the application of UV-C irradiation is an emerging non-thermal technique for the decontamination of food products and hence a continuous type UV-C treatment unit is developed for disinfection of food pathogens at UAS Raichur. The developed system consists of a box type chamber (3.0×0.5×1.4 m), an end-less wire mesh conveyor/belt, a DC motor (0.25 kW) with variable speed control, UV-C lights (20 No. of each 36 Watt), temperature and conveyor speed indicator and a supporting frame. It facilitates the entry of food samples to be treated from one end and exit at the other. The intensity of UV-C light and the duration of exposure/treatment can be adjusted depending on the type of the crop/commodity to be treated. The commodities namely, chilli, groundnut and fig fruits prone to aflatoxin were exposed to UV-C light (12195 J/m<sup>2</sup>) at a distance of 10 cm for 45 seconds to 15 minutes. The treatment showed very effective against pathogens and safe for the nutrients.

The treatment resulted in 3 log reduction in bacterial and fungal population whereas significant degradation was noticed in aflatoxin content up to below detection level (BDL) with a minimum change in the nutritional composition extending the shelf-life of chilli and groundnut upto 120 days. The UV-C treatment for 45 seconds found suitable for fresh fig fruits extending the shelf life up to 7 days. UV-C exposure showed a significant 4 log reductions against the COVID-19 viral population.



### Micro-climate storage bin for groundnut pods, Dr. NTR College of Agricultural Engineering, ANGRAU, Bapatla

Temperature and moisture are the primary factors that cause seeds to lose their ability to germinate and fluctuations of these speed the process. Excessive seed moisture can contribute to the growth of destructive micro-organisms, attract insect attack, and reduced viability. To check this problem a micro-climate storage bin for groundnut pods has been fabricated by Bapatla centre, having  $1.75 \times 1.75 \times 2.40$  m as outer and  $1.63 \times 1.63 \times 2.22$  m as inner dimensions of the bin. Prefabricated sandwich Polyurethane foam (PUF) panels with cam lock and rubber gaskets on all sides. All panels fit together by cam lock. Both sides are pre-coated GI sheet with 0.45 mm surface thickness and 60 mm PUF of panel thickness. DX Cooling (direct expansion cooling) with split type refrigeration system having a capacity of 500 Kg and temperature maintained to 10-12 °C with Relative Humidity of 65-80%. Cost of the bin is Rs. 3.0 Lakh.



### Dal analogues from Pigeon pea dal brokens, College of Agricultural, UAS Raichur

Dal analogues were developed by the extrusion process using a cold extruder. The process mainly involved the optimization of composite flour comprising of pigeon pea brokens flour and wheat flour. The pigeon pea brokens flour at different levels *viz.*, 90, 85 and 80 per cent were blended with remaining proportion of wheat flour and extruded with three different sizes (4, 5 and 6 mm) of diameter to standardized size of dal. The moisture content being another important extrusion process parameter was achieved by adding water at 20 mL/100g to obtain the final flour moisture content of 25-30 per cent of composite flour. Some pre-treatment or addition of binding agent was imperative. The cost involved in production of dhal analogues was found to be Rs. 35.00 per kg with benefit cost ratio of 2.5.

The fortification of dal analogues was done by considering the optimized treatment (90% Pigeon pea broken flour +10% Wheat flour, 5 mm DD). The nutrient ready mixes *viz.*, Ferric pyrophosphate (Fe), Zinc oxide (Zn), Calcium carbonate (Ca) and Vitamin A Acetate (Vitamin-A) were used as per the recommended daily allowances (RDA). Fortified dal analogue could be stored up to 6 months.

Preparation of ready to cook dal tadaka mix:- All dried optimized ingredients *viz.*, onion cubes, tomato slices, curry leaves, dried garlic, ginger, cumin, mustard, chilli powders were added and mixed with developed dal analogue. Ready-to-cook dal analogue tadaka mix (100 g) was transferred to a pressure cooker and added 4 cups of water (650 ml). Cooked the mixture for 6 minutes (3 whistles) and left for 5-10 min to release the pressure. Now, the ready-to-eat dal tadaka is ready to serve with chapathi, naan or rice. The cost of production of dal analogues tadaka was found to be Rs. 45.00 per serving.



**Pigeon pea Broken flour  
(90%): Wheat flour (10%)**



**Pigeon pea Broken flour  
(85%): Wheat flour (15%)**



**Pigeon pea Broken flour  
(80%): Wheat flour  
(20%)**



**Dal analogue tadaka**



**Ready to cook dal analogue tadaka mix**

## AICRP-PEASEM

### **Phase change material based assembled type fruit ripening chamber, ICAR-CIPHET Abohar**

ICAR-CIPHET, Abohar under AICRP on PEASEM developed phase change material based assembled type fruit ripening chamber.  $\text{Na}_2\text{SO}_4 \cdot \text{NaCl} \cdot 10\text{H}_2\text{O}$  (eutectic salt) PCM was used in the ripening chamber. This PCM is prepared by using sodium sulphate (37%), sodium chloride (16%) and water (47%). A total of 48 kg PCM is used in the chamber. Initial freezing temperature of this PCM is  $19^\circ\text{C}$  whereas final freezing temperature is  $15^\circ\text{C}$ . Cost of the PCM is about Rs. 165 per kg whereas the cost of commercially available PCM (melting temperature  $18\text{-}19^\circ\text{C}$ ) is about Rs. 600 per kg. PCM pouches were prepared using silver laminated polythene film. One pouch contains about 750 g of the PCM. Total number of PCM pouches inserted in walls of ripening chamber is 64. Structural frames of modular type PCM based ripening chamber are made of stainless steel (SS) square pipes and SS sheets. The size of the chamber is  $1\text{ m} \times 1\text{ m} \times 1.5\text{ m}$ . Composite walls are made of 5 different layers, first layer (inner): SS sheet (26 gauge); second layer: PCM pouches; third layer: SS sheet (26 gauge); fourth layer: insulation (1.75 cm thick thermocol); fifth layer: polypropylene sheet; milky white. PCM pouches are embedded in-between two sheets of SS. Provision has been made to

circulate the cool air in-between these two sheets so that PCM can be cooled/charged. A solution of water and ethrel @100 ppm is prepared. Then make solution alkaline NaOH is added. This solution is kept in the chamber to generate ethylene gas for ripening. The ripening chamber is suitable for mango and banana. The capacity of the ripening chamber for mango is 100 kg and cost of the chamber is Rs. 50,000/-

### Chamber Gate



Air Circulating Unit

Cooling Unit



Inside View of Ripening Chamber

### Polyhouse for round the year mushroom production in mid-temperate region, College of Agricultural Engineering and Post-Harvest Technology, Gangtok

Doubling farmers' income is a challenge in the hilly states like Sikkim where farm holdings are small and marginal. Sikkim being a tourist place, mushroom has a big market and can fetch good income to farmers. But there was no design of polyhouse and package of practices available for mushroom cultivation. In order to generate economically viable technologies for mushroom farming, CAEPHT, Gangtok under AICRP on PEASEM developed a polyhouse specially for round the year mushroom production in mid-temperate region. The dimensions of the polyhouse are 9 x 6 x 4.6 m. The floor of the polyhouse is 0.9 m below the ground surface to maintain microclimate in the structure. The cladding material used is black colour LDPE film. Lighting system and humidifier have also been provided in the structure. The solar panel is also installed in the polyhouse to meet the energy requirements. The cost of the polyhouse is Rs. 3.5 lakh. In a year 2.5 to 3.0 tonne mushroom can be produced and net income of Rs. 5 lakhs can be earned.



**PUBLICATIONS****Papers Published:**

- Bala Manju, Sethi Swati, Sharma Sanjula, Mridula D. and Kaur Gurpreet. Maize Flour Adulteration in Chickpea Flour (*Besan*) Using Near Infrared Spectroscopy. *Journal of Food Science and Technology*, DOI: 10.1007/s13197-022-05456-7.
- Choudhary SM, Musmade AM, Datkhile RV, Bodkhe VA and Guru PN (2022). Effect of pruning time on fruit fly infestation in guava (*Psidium guajava* L.). *The Journal of Phytopharmacology*, 11(1):47-50.
- Kalnar, Y.B., Dawange, S.P., Mann, S., Ghodki, B.M.\*, & Devi, T.B. (2022). Development of sensor-based automatic colour sorting system for tomato. *Journal of Agricultural Engineering*, 59(1): 47-60. DOI:10.52151/jae2022591.1764.
- Kumar V, Jeyashakila R, Muzaddadi AU, Jeyasekaran G, Sukumar D and Padmavathy P (2022). ACE-inhibitory peptide from rohu fish waste: Optimisation of ultrasound and microwave assisted enzymatic extraction using response surface methodology. *Indian Journal of Fisheries*, 69(2): 84-92. DOI: 10.21077/ijf.2022.69.2.114166-10.
- Kumar V, Jeyashakila R, Muzaddadi AU, Jeyasekaran G, Sukumar D, Padmavathy P, Kumar Y (2022). Optimization of Enzymatic Extraction of ACE Inhibitory Peptide from Rohu (*Labeo rohita*) Fish Waste using RSM. *Indian Journal of Animal Research*, (56):673-679, DOI: 10.18805/IJAR.B-4542.
- Samota MK, Kaur S, Choudhary M. *et al.*, (2022). How do plants defend themselves against pathogens-Biochemical mechanisms and genetic interventions? *Physiol Mol Biol Plants*, 28: 485–504.

**Training Manual**

- Renu Balakrishnan, D N Yadav, Sandeep Mann, Khwairakpam Bembem and Vikas Kumar (2022). Post-Harvest Technologies for Promoting Agro-Processing (For KVK's in ATARI Zone - I). ICAR-Central Institute of Post-Harvest and Technology, Ludhiana, Punjab pp 1-125

**Book Chapter**

- Shaghaf Kaukab, Nasir A. Mir, Ritika and Deep Narayan Yadav (2022). Interventions in Wheat Processing Quality of End Products. *New Horizons in Wheat and Barley Research*. Springer. pp: 789-808.

**Technical Bulletin**

- Manju B, Swati S and Mridula D. 2022. Rapid Adulteration Detection in Chickpea Flour (*besan*) Using Infrared Spectroscopy and Chemometrics, ICAR-Central Institute of Post-Harvest Engineering and Technology, Ludhiana - 141004, Technical Bulletin No.: ICAR-CIPHET/Pub./2021-22/04, pp.1-31.
- Mann S, Balakrishnan R, Sharma R, Mittal S and Singh M (2022). Technical Bulletin on Agro-Processing Models for India, ICAR-Central Institute of Post-Harvest Engineering and Technology, PAU Campus, Ludhiana-141004. pp. 40, ICAR-CIPHET/Pub./2021-22/06.
- Narsaiah K, Devi TB, Chopra S and Jha SN (2022). Crop residue-based construction bricks. ICAR- Central Institute of Post-Harvest Engineering and Technology, Ludhiana (Punjab). Technical Bulletin No.: ICAR-CIPHET/Pub./2021-22/05.

- Vikas Kumar & Muzaddadi A.U. (2022). “Antihypertensive (ACE-inhibitory) Peptides from Fish Waste”, Technical Bulletin No.: ICAR.CIPHET/PUB/2022-23/01, ICAR-CIPHET, Ludhiana, p. 44.

### **Leaflet**

- Under the farmer FIRST project 30 leaflets related to Honey processing, jaggery production, pulses milling, Turmeric processing and others (in English, Hindi and Punjabi) has been published.

### **Popular articles**

- Deepika Goswami and Manju Bala (2022) Baking technology for gluten free baked products. In: Post-Harvest Technologies for Promoting Agro-Processing. 32-38 (for KVKs in ATARI Zone - I). ICAR-Central Institute of Post-Harvest and Technology, Ludhiana, Punjab. (Renu Balakrishnan, D N Yadav, Sandeep Mann, Khwairakpam Bembem, Vikas Kumar).
- Khwairakpam Bembem, Renu Balakrishna and Th. Bidyalakshmi Devi (2022). Value Addition of Onion-Dried Flakes and Powder.55-57. Training manual on Post-Harvest Technologies for Promoting Agro-Processing (For KVK's in ATARI Zone - I). Editors: Renu Balakrishnan, D N Yadav, Sandeep Mann, Khwairakpam Bembem, Vikas Kumar.
- Khwairakpam Bembem, Th. Bidyalakshmi Devi, Surya Tushir, Ritika (2022) Hawaii-A traditional fermented food of Manipur, North-East India. Kerala Karshakaan e-journal. Pp: 38-42.
- Swati Sethi and Deepika Goswami (2022) Value Added Products from Tomato. In: Post-Harvest Technologies for Promoting Agro-Processing. 65-71 (for KVKs in ATARI Zone - I). ICAR-Central Institute of Post-Harvest and Technology, Ludhiana, Punjab. (Eds. Balakrishnan R. Yadav D.N., Mann S., Bembem K. and Kumar V.).
- Th. Bidyalakshmi Devi, Renu Balakrishna and Khwairakpam Bembem (2022). Processing and Value Addition of Ginger.81-87. Training manual on Post-Harvest Technologies for Promoting Agro-Processing (For KVK's in ATARI Zone - I). Editors: Renu Balakrishnan, D N Yadav, Sandeep Mann, Khwairakpam Bembem, Vikas Kumar.

### **E-publication:**

- Pankaj Kumar (2022). Preservation-of-aroma-and-flavor-of-spices-herbs-through-cryogenic-grinding technology (<https://www.slideshare.net/PANKAJKUMAR113992/preservation-of-aroma-and-flavor-of-spices-herbs-through-cryogenic-grinding-technologypptx>)
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- पंकज कुमार (2022). प्राशीतनी विधि द्वारा फसलों का प्रसंस्करण (प्राशीतनी विधि द्वारा फसलों का प्रसंस्करण.pptx slideshare.net)

## EVENTS/ ACTIVITIES/ VISITS

- The 7<sup>th</sup> online webinar in the ‘National Webinar Series on CIPHET Post-Harvest Technologies’ was organised on Monday, 11 April 2022 to explain and virtually demonstrate the ‘Live Fish Carrier System’ and ‘Fish Cleaning Station’ both developed by the Institute. Dr. Armaan U. Muzaddadi, Principal Scientist and the inventor delivered the lecture and explained the technology in detail. ‘Live Fish carrier system (LFCS)’ is equipped with aeration system, continuous water filters, and ammonia absorption system, which helps in reduction of fish mortality during transportation. The e-rickshaw based LFCS is capable of transporting about 100 kg live fish up to the distance of 40 km with controlled water splash system that gives

The screenshot shows a webpage for a webinar. The main heading is "ICAR-CIPHET organizes Webinar on 'Live Fish Carrier System and Fish Cleaning Station: Promising Technology'". The date is 21<sup>st</sup> April, 2022, Ludhiana. The text describes the webinar organized by the ICAR-Central Institute of Post-Harvest Engineering & Technology, Ludhiana, Punjab, to discuss and demonstrate the 'Live Fish Carrier System and fish cleaning station' developed by the Institute. Dr. Rashmit Kishorewala, Director, ICAR-CIPHET, Ludhiana, briefed about the relevance of the National Webinar Series on ICAR-CIPHET Post-Harvest Technologies and the Institute's other prominent technologies.

Dr. Armaan U. Muzaddadi, Principal Scientist, Transfer of Technology Division, ICAR-CIPHET, Ludhiana & Inventor of the Technologies stressed on the need of safe transport and processing facilities for the highly perishable commodities like fish. The 'Live Fish Carrier System (LFCS)' is equipped with the aeration system, continuous water filters and ammonia absorption system at the bottom. The e-rickshaw based LFCS is capable of transporting about 100 Kgs live fish upto the distance of 40 kms with controlled water splash system that gives stability to the vehicle.

The Institute's 'Fish Cleaning Station' can be effectively used to maintain the utmost hygienic conditions during the dressing of fish in the local markets and fish sale points. The Technology LFCS has been licensed to 3 Entrepreneurs from Punjab, Assam and Kerala for the commercial manufacturing. The webinar organized as a part of the "Bharat Ka Amrit Mahotsav" to commemorate 75 Years of India's Independence registered participation by more than 90 participants. (Source: ICAR-Central Institute of Post-Harvest Engineering & Technology, Ludhiana, Punjab)

stability to the vehicle. ‘Fish Cleaning Station’ can be effectively used to maintain the utmost hygienic conditions during dressing of fish in local markets and fish sale points. The webinar was attended by about 90 registered participants.

- A one-day workshop on ‘Millets based Food Products’ was organized at ICAR-CIPHET, Ludhiana campus for Anganwadi Workers as a part of ‘Annadata Devo Bhava’ campaign under Azadi Ka Amrit Mahotsav. About 49 Anganwadi Workers of Sudhar block of Ludhiana District participated in this workshop. The workshop comprised of hands-on training for preparation of millets based baked, extruded, popped, and weaning foods.

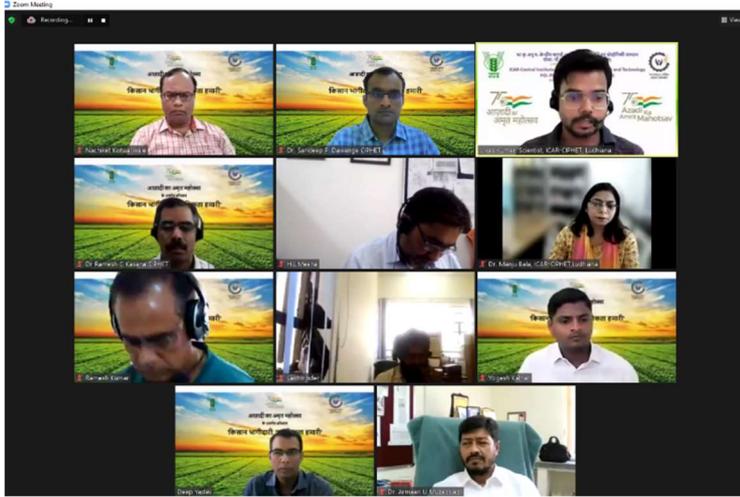


- भाकृअनुप-सीफेट ने 'किसान भागीदारी, प्राथमिकता हमारी' अभियान के अंतर्गत हिंदी में वेबिनार का आयोजन किया

आज़ादी का अमृत महोत्सव के तहत भाकृअनुप- सीफेट, लुधियाना ने 'किसान भागीदारी, प्राथमिकता हमारी' अभियान के तहत 28 अप्रैल 2022 को एक वेबिनार का आयोजन किया। देश की आज़ादी का अमृत महोत्सव की कड़ी में अधिकाधिक जनभागीदारी के लिए संस्थान द्वारा विकसित प्रौद्योगिकी के बारे में हिंदी में प्रस्तुतीकरण का प्रयास किया जा रहा है। राजभाषा हिंदी की तिमाही कार्यशाला (ऑनलाइन) में राजभाषा विभाग द्वारा विकसित 'कंटस्थ', 'बायोफोर्टिफाइड मक्का: भारत की पोषण सुरक्षा की दिशा में एक कदम' और 'ग्लूटेन-मुक्त बेकड उत्पाद' विषयों पर विशेषज्ञों ने चर्चा की।

राजभाषा विभाग द्वारा विकसित अनुवाद टूल, 'कंटस्थ' पर बनी लघु चलचित्र प्रतिभागियों को दिखाया गया। डॉ. रमेश कुमार, प्रधान वैज्ञानिक, भाकृअनुप-भारतीय मक्का अनुसंधान संस्थान, लुधियाना ने मक्का के बायोफोर्टिफिकेशन की आवश्यकता और देश की पोषण सुरक्षा पर इसके प्रभाव पर वैज्ञानिक तथ्य एवं अपने विचार रखे। 'पोषक तत्वों की दृष्टि से बेहतर उपज के साथ देश की खाद्य टोकरी को मजबूत करने के लिए बड़े कदम उठाए जा रहे हैं। मक्के के बायोफोर्टिफिकेशन से यह सुनिश्चित होगा कि समाज के वंचित वर्ग के पास पौष्टिक भोजन का आसान विकल्प है।'

'ग्लूटेन-फ्री बेकड प्रोडक्ट्स' पर अपनी प्रस्तुति में, प्रधान वैज्ञानिक और प्रौद्योगिकी के आविष्कारक डॉ मंजू बाला ने ग्लूटेन-मुक्त खाद्य उत्पादों की आवश्यकता और बाजार में उनकी बढ़ती मांग पर चर्चा की। 'उपभोक्ता स्वीकृति के लिए बेकरी उत्पादों की संवेदी और बनावट संबंधी विशेषताएं महत्वपूर्ण हैं। विकसित प्रौद्योगिकी सभी मुद्दों को उपयुक्त रूप से संबोधित करती है और इसमें उद्यमशीलता की बहोत सम्भावनाये है।'



डॉ. नचिकेत कोतवालीवाले, निदेशक, भाकृअनुप- सीफेट, लुधियाना ने संस्थान की तकनीकी उपलब्धियों के बारे में वेबिनार के प्रतिभागी को अवगत कराया। उन्होंने कहा कि भाकृअनुप- सीफेट नियमित अंतराल पर आयोजित उद्यमिता विकास कार्यक्रम के माध्यम से उद्यमियों को प्रशिक्षण प्रदान करता है।

इसके लिए कैलेंडर संस्थान की वेबसाइट (<https://www.ciphnet.in/trainingedp.php>) पर उपलब्ध है। उन्होंने समाज के समग्र विकास के लिए शिक्षित युवाओं में उद्यमिता को बढ़ावा देने की आवश्यकता पर बल दिया।

देश के विभिन्न हिस्सों से वैज्ञानिकों, शिक्षाविदों, छात्रों, उद्यमियों और किसानों सहित लगभग 100 पंजीकृत प्रतिभागियों ने वेबिनार में उत्साह पूर्वक भाग लिया। वेबिनार का संचालन डॉ. डी. एन. यादव, प्रभागाध्यक्ष, टीओटी प्रभाग, श्री विकास कुमार एवं डॉ. संदीप पी. दवंगे, वैज्ञानिक भाकृअनुप-सीफेट द्वारा किया गया। 'किसानों की आय दोगुनी करने के लिए फलों का प्रसंस्करण और मूल्य संवर्धन' विषय पर अगला वेबिनार 27 मई 2022 को प्रधान वैज्ञानिक डॉ. रमेश कुमार द्वारा दिया जाएगा।

- ICAR-Central Institute of Post-Harvest Engineering and Technology, Ludhiana celebrated 8<sup>th</sup> International Day of Yoga on 21 Jun, 2022 at both campuses (Ludhiana and Abohar). It proved to be a successful event with a great number of participants, around more than 100, including the staff, their family members, students and farmers. This year's programme was themed at “**Yoga for humanity**”. The programme was conducted in the morning and a renowned Yoga Guru from *Bharatiya Yog Sansthaan*, Ludhiana, Mrs. Priyanka Sharma demonstrated different *aasanas* and explained their health benefits as well as the precautions to be taken. The farmers are also made aware about the ‘Skillful and balanced use of fertilizers’, and on ‘Use of nano fertilizers’ under the Farmers awareness Program at Abohar campus. Dr. S. K. Tyagi, Director (I/c), ICAR-CIPHET, Ludhiana delivered his concluding remarks and honored the Yoga expert of the occasion. Dr. Deepika Goswami, Senior Scientist and Nodal officer of the event along with the Organizing team – Dr. Th. Bidyalakshmi Devi, Smt Jasvir Kaur & Shri Vishal Kumar (Ludhiana campus) and Shri Mahesh K Samota, Sh. Devender Kumar & Sh. Mohan Lal (Abohar campus) coordinated the event. Shri Mahesh K Samota, Sh. Prithvi Raj, C.T.O. and Dr. Gurveer Singh, IFFCO Abohar were among the expert speakers.



- Dr. Khwairakpam Bembem acted as a member of the organizing committee and organized workshop on Millet based Food Products for the Campaign ‘Annadata Devo Bhava’ under Azadi ka Amrit Mahotsav for 50 Anganwadi workers from Ludhiana on 20 Apr, 2022.
- Mr. Vikas Kumar and Dr. Khwairakpam Bembem facilitated the educational visit of 67 students and two faculties of Lovely Professional University, Jalandhar to ICAR-CIPHET on 9 May, 2022.



- Dr. Khwairakpam Bembem and Dr. Sandeep P Dawange facilitated the educational visit of 60 students and 4 faculties of College of Agriculture, Ambalavayal, Kerala Agricultural University to ICAR-CIPHET on 13 May, 2022.



- Deputy Director General (Agricultural Engineering) Dr. S. N. Jha visited ICAR-CIPHET, Ludhiana to guide/ motivate the staff of the institute to achieve better heights and to review the performance of the institute during 19-20 April 2022.



- An Institute Joint Staff Council meeting was held on 11 May, 2022 at Abohar campus of ICAR-CIPHET to discuss the ATR of previous IJSC meeting and new agendas of the staff of the Institute.



- Transferred ICAR-CIPHET developed Animal lifter & Animal squeeze to GADVASU for its validation



## HUMAN RESOURCE DEVELOPMENT

- Dr. D. N. Yadav, Dr. Ranjit Singh, Dr. K. Bembem and Dr. Sandeep P. Dawange attended online training on ‘Food Processing: Entrepreneurship Development Programme’ during 9-13 May, 2022.
- Three-day programme on ‘Capacity building of agricultural extension professionals of ATARI Zone-I to promote agro-processing’ at ICAR-CIPHET, Ludhiana during 23-25 May, 2022 wherein 12 participants from 7 KVKs attended the programme.
- Dr. A. P. Deshpande, Principal, MNG Science College, Babhulgaon, Maharashtra delivered a seminar on topic “Synchrotron Radiation: Potential Applications in Agriculture” on 27 June 2022. He deliberated upon various terminologies related to Synchrotron Radiations, various resources available across the world and especially in India and also about possible applications in the post-harvest quality and safety detection.

### Skill Development

- Organized a one-month training programme for 08 B. Tech. (Agricultural Engineering) students from College of Agricultural Engineering & Technology, CCSHAU, Hisar, Haryana during 14 Mar, -13 Apr, 2022.
- Organized a six weeks training programme for 03 M. Tech. (Agricultural Engineering) students from Chandra Shekhar Azad University & Technology, Kanpur-208002 (Uttar Pradesh) during 05 Apr, -13 May, 2022.
- Organized a training of 05 B.Tech. (Biotechnology students from College of Animal Biotechnology Guru Angad Dev Veterinary and Animal Science University, Ludhiana 141004, Punjab is going on in the institute (18 Apr, - 28 May, 2022).

- Organized one-month training programme for B Tech (Agricultural Engineering) students during 1-30 Jun, 2022. Total 54 students from 13 colleges/institutes are participating in on-campus training programme.



## EXTENTION ACTIVITIES

### Kisan Mela

- Organized a Kisan Mela at KVK CIPHET Abohar on 26 April 2022 on theme of kisan bhagidhari prathmikta hamari- Azadi ka Amrit Mahotsav under the guidance of Dr. Ramesh Kumar. On this occasion, live telecast program of Agriculture Minister Shri Narendra Singh Tomar and Hon'ble Prime Minister was shown to the farmers followed by technical session on agricultural technology, fortified variety, improved cultivation of millet, diseases, and management of cotton. Farmers were made aware through lectures on traditional farming methods. Nine exhibitions stall were also put in place for agricultural and processing related machinery on advanced technology. A total of 264 farmers participated in this fair and CIPHET technologies were displayed in the exhibition organized during the fair



- Dr Renu Balakrishnan coordinated the visit of 13 MSc. Agril. Extension students from PAU, Ludhiana on 21 Apr, 2022.



- Dr. Khwairakpam Bembem and Dr. Sandeep Dawange facilitated the educational visit of 84 students and 4 faculties of University of Agricultural Sciences, Shimoga to ICAR-CIPHET on 27 May, 2022.



- Dr. Armaan Ullah Muzaddadi, Principal Scientist along with Dr. Kh. Bembem, Scientist organized an Exposure Visit cum Interaction Programme of four high officials including Sri Sanjib Choudhury, Deputy Director of Fisheries, Dr. Dhrubajyoti Sharma, SDFDO, Nodal Officer APART (Fisheries) World Bank Project, Shri Trailokya Saloi, District Fishery Development Officer (Nalbari) and Shri Bhaskar Jyoti Nath, District Fishery Development Officer (Marigaon) from Department of Fisheries, Govt. of Assam during 10-11 Jun, 2022 with a mission to the adoption of ICAR-CIPHET technologies of fish post-harvest management by the fish farmers and entrepreneurs in Assam.



- Dr. Pankaj Kumar visited the Goyrmet Popcornica, Nuzvid, Vijaywada, A.P., a maize processing company on 5/04 to 06/04/2022. He also visited a Gatta Factory at Roorkee (Dev Bhoomi Board Mill, Village post Mankpur Adampur), that uses paddy straw as a raw material for making Gatta



## EXHIBITIONS:

- Dr. Armaan U. Muzaddadi, Pr. Scientist along with Dr. Sandeep P. Dawange, Scientist installed ICAR-CIPHET exhibition stall and showcased ICAR-CIPHET technologies in Nation Exhibitions held under AgriTech & FoodTech, TechBharat 2022 (Edition-III) at CSIR-CFTRI, Mysore during 19-21 May, 2022.



- Dr. Arman Ullah Muzaddadi, Dr. Khwairakpam Bembem, Bhajan Singh and team displayed ICAR-CIPHET stall at IIMR, Ladhawal on 31 May, 2022 as part of the 'Garib Kalyan Sammelan' programme at ICAR-IIMR, Laddowal, Ludhiana and showcased different technologies of ICAR-CIPHET, Ludhiana.



## ICAR-CIPHET KVK, Fazilka

### Training Organized:

- Organized training on 'Soil and Nutrient in Kharif Crop' on 12 Apr, 2022 at KVK, ICAR-CIPHET, Abohar. About 14 Farmers were participated in this training.
- Organized an on-campus training on fruit drop and disorder management in Kinnow on 13 Apr, 2022. About 09 farmers participated in this program.
- Exhibition in awareness camp on Kharif crops by KVK, ICAR-CIPHET, Abohar in Mela conducted by Krishi Vibagh, Dist Fazilka.
- Conducted off campus training during 9 May, 2022 at Ramsara with 41 participants. In this training give method demonstration on making tomato sauce, puree, jam and tomato powder.



- Conducted three days on campus training on Value addition of grains and pulses for farm women from 11-13 May, 2022 with 30 participants.



- Organized Kisan Mela at ICAR-KVK, CIPHET Abohar on 31 May, 2022 on Garib kalian samelan. During the event, live telecast program of Hon'ble Prime Minister on Garib Kalyan Sammelan was shown to the farmers and two technical sessions were organized for the farmers on Natural farming and honey bee rearing practices. A total of 419 farmers and 10 delegates participated in this program from different villages of Bhahawalbassi, Kera Khera, Vajidpur Kateya vali, Sukhchain, Sito, Rajawali, Ramsara, Sahidwali, Kular, Dharampura, Dhingawali, Dutarawali, Khuban, Khairpur, Sherewala and other surrounding localities. Out of total number of farmers, 30 participants were the beneficiaries of Swachh Bharat Mission (Rural and Urban), 35 were beneficiaries of Jal Jeevan Mission and Amrit, 30 were beneficiaries of PMs Garib Kalyan Anna Yojana and 38 were getting benefits from Ayushman Bharat PM Jan Arogya Yojana.



- A team of scientists from KVK ICAR-CIPHET Abohar Participated in XII Biennial National Conference of KVK 2022 held at YSP Univ. of Forestry and Horticulture, Nauni, Solan during 01-02 June 2022.
- Organized one day training on management of pest and diseases in summer vegetables on 14 Jun, 2022. Eleven farmers participated in this programme and they were trained on importance of pest and disease control for the production of vegetables along with general precaution for prevention of vegetables diseases ‘and their management.



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- Organized one day on campus training on ‘Preparation of vermin-compost’ on 15 Jun, 2022 at KVK, ICAR-CIPHET, Abohar. About 28 farmers participated in this training. Farmers were made aware about the importance vermicomposting in fruit and vegetable production, methods of preparation of vermin compost and their utilization process in crop production.



- Seed of moong variety MH421 was distributed to 5 farmers with 16 kg seed for laying out FLD on 2 acre each.



## PARTICIPATION IN CONFERENCE/SEMINAR/ MEETING

- Dr Mridula D. attended third virtual meeting of FAD 24/Panel III to discuss the draft standard of idli batter, dosa batter, and vada batter on 7 May, 2022 at 3PM organized by Bureau of Indian Standards, New Delhi.
- Dr Sandeep Mann attended virtual meeting of FAD 20 sectional committee meeting to discuss the draft standard of electrical moisture meter on 16 June, 2022 at 10.00 AM organized by Bureau of Indian Standards, New Delhi.

- Dr. Guru P. N. attended a webinar on ‘Managing Soil for Food and Climate Security and Advance SDGs of the UN’ delivered by Prof. Rattan Lal World Food Prize (2020) held on 10 May, 2022, the meeting was chaired by DG, ICAR
- Dr. Guru P. N. attended the one-day National Webinar on “Fumigation and Alternative methods for Safe Storage and Trade of Food Grains: Current and Future Prospects” held on 05 May, 2022, organized by CSIR-CFTRI, Mysuru, Karnataka.
- Dr. Mridula D. attended a National Webinar on “Natural Farming for Sustainable Production, Nutrition and Health” on 23 Apr, 2022 (Saturday) through virtual mode (ZOOM), organized under the campaign “Annadata Devo Bhava” under Azadi ka Amrit Mahotsav, by ICAR-Central Institute for Women in Agriculture (ICAR-CIWA), Bhubaneswar (Speaker Dr N Balasubramani, Director, MANAGE).
- Dr. Sandeep Mann conducted PhD comprehensive viva-voce examination and M.Sc. Thesis Oral Exam at SKUAST, Jammu on 13 Apr, 2022.
- Dr. Sandeep P. Dawange attended Webinar on "Agricultural mechanization in India-challenges and perspective" on 4 Apr, 2022 (Monday) organised by ICAR-CIAE, Bhopal.
- Scientists attended a virtual meeting of FAD 24/Panel III to discuss the draft standard of idli batter, dosa batter, and vada batter on 2 May, 2022, organized by Bureau of Indian Standards, New Delhi.
- Scientists attended Rajbhasha Hindi Karyashala, organized by ICAR-CIPHET, Ludhiana on 28 Apr, 2022 under Azadika Amrit Mahotsav and ‘किसानों की भागीदारी, प्राथमिकता हमारी’ through online mode. Two lectures were delivered during this programme entitled ‘*Jaiv Sanvardhit Makka: bharat kee poshan suraksha ki disha men ek kadam*’ by Dr Ramesh kumar, IIMR, Ludhiana and ‘Gluten free baked *utpaad*’ by Dr Manju Bala, ICAR-CIPHET, Ludhiana.

### Lecture Delivered

- Dr. Armaan Ullah Muzaddadi delivered lecture as invited speaker in a video conferencing on “ICAR-CIPHET Technology Live Fish Carrier System” organized by ICICI Foundation, Tamil Nadu on 5 Apr, 2022.
- Dr. Armaan U. Muzaddadi delivered a lecture on “Live Fish Carrier System and Fish Cleaning Station” in the ICAR-CIPHET Technology lecture series celebration programme as Webinar on 11 Apr, 2022 under Azadi Ka Amrit Mahotsav ICAR-CIPHET technology series.
- Dr. Armaan Ullah Muzaddadi delivered a lecture entitled “Recent Trends in Live Fish Handling, Transportation and Processing for Increasing Fish Farmers' Income” on May 16, 2022 in 21 Days National Refresher Course (NRC 2022) on “Fisheries, Aquaculture and Post-Harvest Technology” during May 10 to 30, 2022 which was organized online by ICAR-Central Institute of Fisheries Technology (ICAR-CIFT), Kochi, Kerala, Faculty of Fisheries, Rangil, Ganderbal (Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir) and National Agriculture Development Cooperative Ltd. Baramulla.
- Pankaj Kumar delivered a lecture on “Traditional and modern technologies for spices grinding - an overview” to B. Tech. (Agricultural Engineering) students training (01-30 June 2022) on 29 Jun, 2022.

## POST HARVEST MACHINERY AND EQUIPMENT TESTING CENTRE (PHMET)

During this quarter PHMET issued report to the 21 applicants and received 17 fresh applications for testing of the equipment as given below

### Fresh applications

Sr. No.	State	Machine Name	No. of Machines
1	Maharashtra	Mini Dal Mill	08
2	Haryana	Destoner	01
3	Haryana	Cleaner cum grader	02
4	Haryana	Pre cleaner	01
5	Punjab	Mini oil Mill	01
6	Punjab	Seed/grain cleaner	02
7	Punjab	Rubber roll sheller cum polisher	01
8	Gujrat	Mini Oil Expeller	01

### No. of reports issued =21

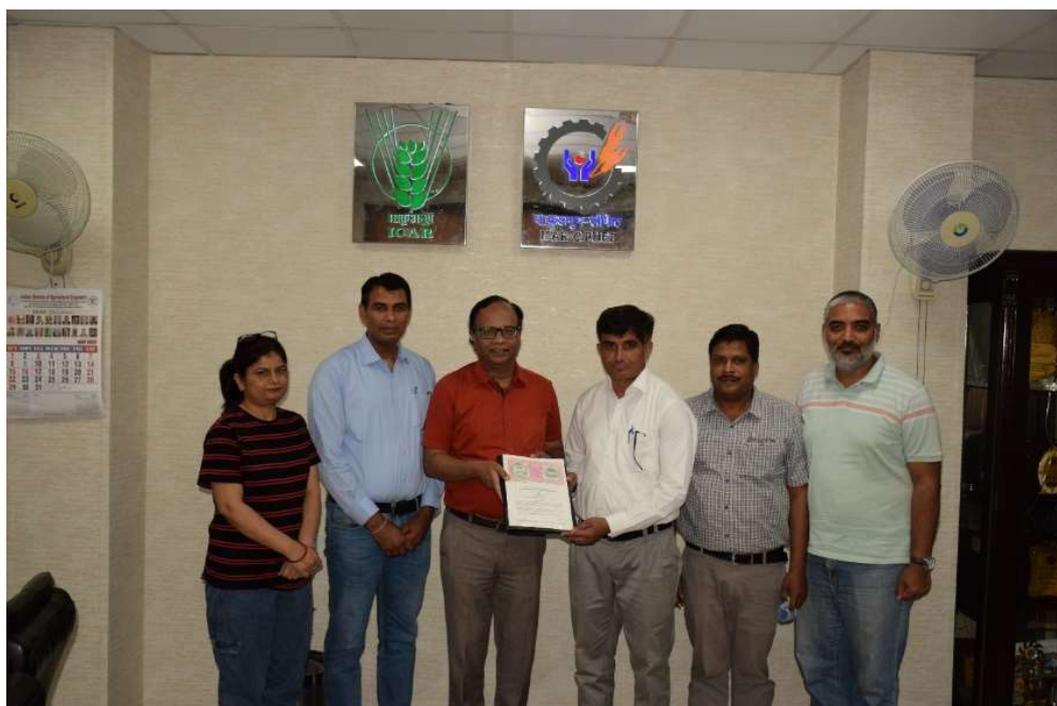
S.No.	Name of machine	Name of Manufacturer
1.	Destoner	M/s Osaw Industrial Products Pvt. Ltd. Ambala (Haryana)
2.	Specific gravity separator	M/s Osaw Industrial Products Pvt. Ltd. Ambala (Haryana)
3.	Specific Gravity Separator	Osaw Agro Industries pvt. Ltd., Ambala Cantt (Haryana)
4.	Seed/ Grain cleaner/ grader	Osaw Agro Industries pvt. Ltd., Ambala Cantt (Haryana)
5.	5 HP Mini Dal Mill	Vishwakarma Engineering Works, Akola (Maharashtra)
6.	Areca nut Dehusker	V-Tech Engineers, Shivamogga (Karnataka)
7.	3 HP Mini Dal Mill	Vishwakarma Engineering Works, Akola (Maharashtra)
8.	Rice Mill	Surjeet Agricultural Industries, Raipur (Chhattisgarh)
9.	3 HP SS Pulverizer 2-in-1 (Double Chamber)	Asom Agro Tech Pvt Ltd, Guwahati (Assam)
10.	Seed/ Grain Cleaner	New Deogan Agri. Works, Barnala (Punjab)
11.	Potato/ Banana chips making machine	B.K. Engineering Workshop, Hojai (Assam)
12.	Oil Expeller with Filter Press	B.K. Engineering Workshop, Hojai (Assam)

13. Mini Oil Mill/ Expeller (5 HP)	B.K. Engineering Workshop, Hojai (Assam)
14. Mini Rice Mill (3 HP)	B.K. Engineering Workshop, Hojai (Assam)
15. Portable Rice Mill (Tractor PTO Operated)	B.K. Engineering Workshop, Hojai (Assam)
16. 2-in-1 Flour Mill cum Pulveriser	E-Agro care Machineries and Equipments Pvt Ltd., Aurangabad (MH)
17. Mini Dal Mill	Pankaj Industries, Akola (Maharashtra)
18. Mini Dal Mill	Welcome Industries, Amravati (Maharashtra)
19. Mini Dal Mill	Tool Tech Solution, Jalna (Maharashtra)
20. Rubber Roll Sheller cum Polisher	MG Industries, Batala (Punjab)
21. Mini Oil Expeller	Dharti Industries, Rajkot (Gujrat)

## AGRI BUSINESS INCUBATION

### MoA signed for incubation for processing of agricultural commodities between ICAR-CIPHET and Mr. Pushpinder Singh, a budding entrepreneur of Ludhiana

Mr. Pushpinder Singh came forward to prepare value added products from dal, spices, oilseeds etc. He signed Memorandum of Agreement (MoA) for seeking incubation facility to process products and selling in market. Dr. Nachiket Kotwaliwale assured him that all possible help will be extended for establishment of agribusiness unit and start-up after successful completion of incubation.



## PATENT GRANTED

S. No	Title	Application No	Inventors	Date of filing	Date of grant	Patent No
1.	Low fat meat emulsion and process for making the same	2351/DEL/2013	Dr. Yogesh Kumar, Dr. K. Narsaiah, Dr. Tanbir Ahmed	06 Aug, 2013	23 Mar, 2022	392629
2	Live fish carrier system and method of transportation of live fish therein	201611032728	Dr. Armaan U. Muzaddadi & Dr. S.K. Nanda	26 Sept, 2016	31 May, 2022	398167

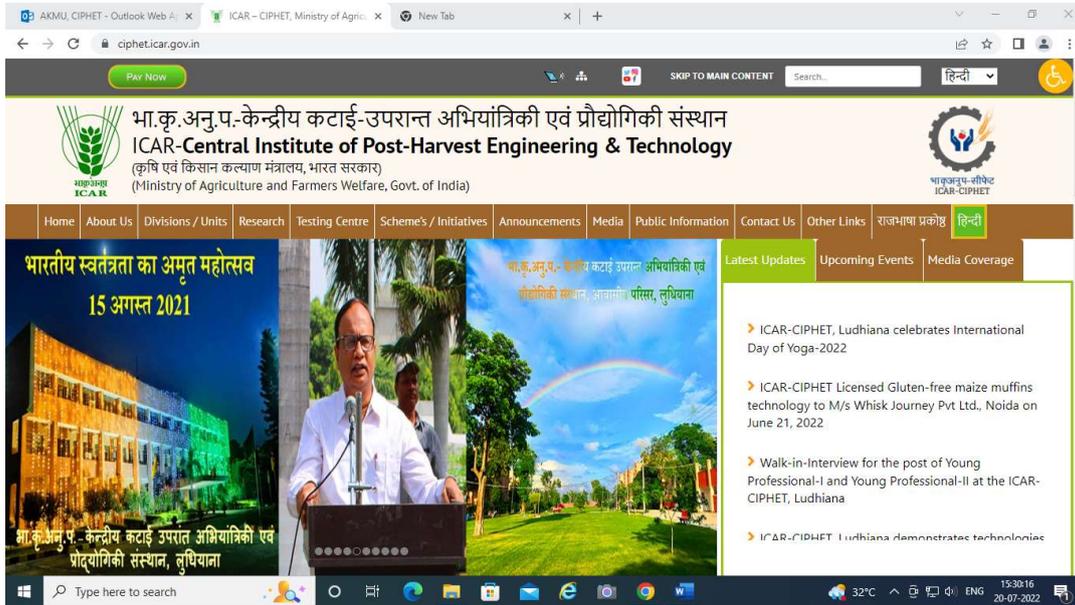
## TRANSFER OF TECHNOLOGY

- Technology entitled “Process for quality protein maize-based gluten free muffins” was licenced to “M/s Whisk Journey Private Limited, Flat No. KM00140803, KOSMOS, Jaypee Greens Wish Town, Sector-134, Noida, Gautam Buddha Nagar, Uttar Pradesh, 201305” on 21 Jun, 2022.



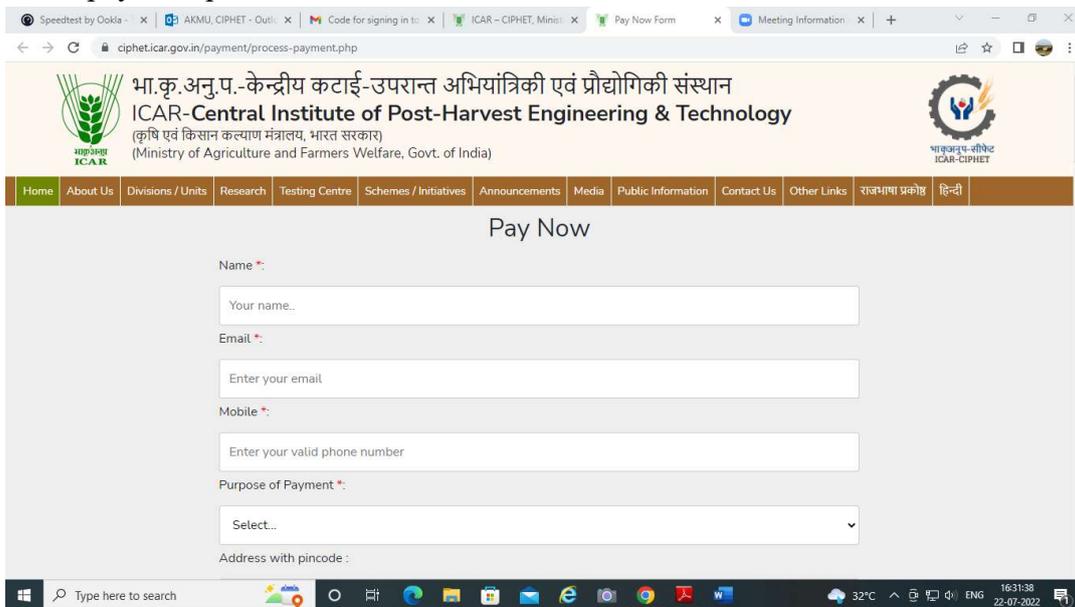
## AGRICULTURAL KNOWLEDGE MANAGEMENT UNIT (AKMU)

- ICAR-CIPHET Bilingual English & Hindi (Dynamic) Website (<https://ciphnet.icar.gov.in/>) was Live and fully operational at ICAR-Data Center on 8 June 2022. The old Website of ICAR-CIPHET (<http://ciphnet.in/>) was permanently closed. The redeveloped website is being maintained by AKMU, ICAR-CIPHET, Ludhiana and hosted at the ICAR data center.



Snapshot of redeveloped ICAR-CIPHET bilingual website (<https://ciphnet.icar.gov.in/>) live at ICAR-Data Centre

The online payment portal was made functional in the CIPHET website.



## AWARDS

Dr. Armaan U. Muzaddadi, Pr. Scientist as the first inventor received the Certificate of Merit for “ICAR-CIPHET Live Fish Carrier System” in a national competition under the category “National Design Challenge on Energy Efficient & Safe transport of Live Fish” virtually organized by Department for Environment Food & Rural Affairs (DEFRA), The World Bank and Confederation of Indian Industry on May 26, 2022.

Er. Yogesh Bhaskar Kalnar awarded **NETAJI SUBHAS - ICAR INTERNATIONAL FELLOWSHIP** for the year 2021-22 to carry out Ph.D. at Department of “Horticultural Engineering”, Leibniz-Institute for Agricultural Engineering and Bioeconomy (ATB), with registration at Technical University Berlin, Germany.



**Sh. Vikas Kumar, Scientist in TOT Division completed his Ph.D from TNJFU**

Vikas Kumar, Scientist (Fish Processing Technology) has completed his Ph.D. (Fish Quality Assurance and Management) from Tamil Nadu Dr. Jeyalalithaa Fisheries University, Nagapattinam on 20 Jun, 2022. Title of thesis was ‘Ultrasound and Microwave Assisted Enzymatic Extraction of ACE inhibitory Peptides from Rohu Fish Waste’.



## PERSONALIA

## Promotions

S.No.	Scientist	Promoted to
1.	Dr. Rahul Kumar Anurag, Scientist SS (Food Science & Technology)	Senior Scientist
2.	Dr. Tanbir Ahmed, Scientist SS (LPT)*	Senior Scientist
3.	Dr. Deepika Goswami, Scientist SS (Food Science & Technology)	Senior Scientist
4.	Dr. Dukare Ajinath Shridhar, Scientist (Agricultural Microbiology) *	Scientist (Senior Scale)
5.	Dr. Pankaj Kumar Kannaujia, Scientist (Vegetable Science) *	Scientist (Senior Scale)
6.	Sh. Akhoon Asrar Bashir, Scientist (AS&PE)	Scientist (Senior Scale)
7.	Sh. Indore Navnath Sakharam, Scientist (AS&PE)	Scientist (Senior Scale)
8.	Dr. Renu Balakrishnan, Scientist (Agricultural Extension)	Scientist (Senior Scale)
9.	Dr. Khwairakpam Bembem, Scientist (Home Science)	Scientist (Senior Scale)
10.	Dr. Pankaj Kumar, Scientist (AS&PE)	Scientist (Senior Scale)
11.	Sh. Kalnar Yogesh, Scientist (AS&PE)	Scientist (Senior Scale)
12.	Sh. Vikas Kumar, Scientist (Fish Processing)	Scientist (Senior Scale)
13.	Dr. Bhupendra M. Ghodki, Scientist (AS&PE)	Scientist (Senior Scale)
14.	Dr. Poonam, Scientist (Plant Biochemistry)	Scientist (Senior Scale)
15.	Dr. Thingujam Bidyalakshmi Devi, Scientist (AS&PE)	Scientist (Senior Scale)
16.	Dr. Sandeep P. Dawange, Scientist (AS&PE)	Scientist (Senior Scale)

\*Presently serving other ICAR institutes

## SECTORAL NEWS

**Fortified rice will carry health warning**

The Union government has said in a statement that rice fortified with three micronutrients — iron, folic acid and vitamin B12, being distributed under state-run food schemes will carry mandatory label warnings for thalassemia patients, as was already being done in a pilot. According to the Food Safety and Standards Authority of India, state-run food agencies and commercial manufacturers of fortified food must carry the “+F” logo along with a health warning on packaging for people with blood disorders such as sickle-cell anaemia and thalassaemia.

Source: 24 May, 2022, Hindustan Times

**Edible tape to keep wrap fillings intact**

A team of students from John Hopkins University has developed an edible tape (Tastee Tape) to seal wraps and Burritos and prevent their fillings from dropping out. It is basically an edible. Tastee Tape is a clear, edible tape that keeps wraps closed when eating. Blue dye has been added to the tape in the image on the right to better illustrate its use. It is comprised of a food-grade fibrous scaffold and an organic adhesive.

Source: <https://hub.jhu.edu/2022/04/29/students-wrap-up-design-day-projects>

**Antimicrobial, plant-based food wrap designed to replace plastic**

Scientists of the Rutgers University develop antimicrobial, plant-based food wrap designed to replace plastic. The new kind of packaging technology use polysaccharide/biopolymer-based fibers. The stringy material can be spun from a heating device that resembles a hair dryer and "shrink-wrapped" over foods of various shapes and sizes, such as an avocado or a sirloin steak. The resulting material that encases food products is sturdy enough to protect bruising and contains antimicrobial agents to fight spoilage and pathogenic microorganisms.

Source: <https://phys.org/news/2022-06-scientists-antimicrobial-plant-based-food-plastic.html>

**New processing technique could make potatoes healthier**

Researchers announced early tests of a new potato processing technique designed to make our bodies digest potato starch more slowly. Laboratory demonstrations show that the approach blocks certain digestive enzymes from reaching the potato starch quickly, leading to a more controlled release of dietary glucose.

Source: <https://phys.org/news/2022-06-technique-potatoes-healthier.html>

**FSSAI comes out with regulations for vegan foods**

In order to curb sale of fake vegan foods, food regulator FSSAI has come out with regulations by defining what constitutes vegan foods and listed out various specifications to be followed for manufacture, sale and import of such food items. Food Safety and Standards Authority of India (FSSAI) has come out with the Food Safety and Standards (Vegan Foods) Regulations, 2022. The regulator had brought the draft regulations in Sept, 2021. After considering objections and suggestions received from the public in respect of the draft regulations, the FSSAI has come out with the new regulations.

Source: <http://www.ecoti.in/t-6gNY20>

## CIPHET IN NEWS

## टमाटर के मूल्य संवर्धन पर असंस्थागत प्रशिक्षण का आयोजन



कृषि विज्ञान केंद्र के अधिकारी प्रशिक्षण देते हुए।

अबोहर (कथूरिया) : कृषि विज्ञान केंद्र व सीफेट अबोहर द्वारा गांव रामसरा में टमाटर के मूल्यवर्धन पर असंस्थागत प्रशिक्षण का आयोजन किया गया। इस कार्यक्रम का संचालन प्रभारी कृषि विज्ञान केंद्र डॉ रमेश कुमार के निदेशन में डॉ रूपेंद्र कौर द्वारा किया गया। इस कार्यक्रम में 41 ग्रामीण महिलाओं एवं लड़कियों ने हिस्सा लिया। इस कार्यक्रम के तहत डॉक्टर रूपेंद्र कौर द्वारा टमाटर के विभिन्न तरह के उत्पाद जैसे प्यूरी सॉस, जैम व टमाटर का पाऊडर बनाने पर महिलाओं के समक्ष विधि प्रदर्शन द्वारा संपूर्ण जानकारी दी तथा डा. रमेश कुमार द्वारा उचित मात्रा में परिक्षक पदार्थ डालकर टमाटर के उत्पादों को लंबे समय तक परीरक्षित रखने और मार्केटिंग करने के विभिन्न तरीकों के बारे में बताया। कृषि विज्ञान केंद्र द्वारा चलाए जाने वाले विभिन्न तरह के कार्यक्रमों के बारे में भी अवगत करवाया गया। इस कार्यक्रम में कुल 41 प्रतिभागियों ने हिस्सा लेकर कार्यक्रम को सफल बनाया।

दैनिक सवेरा

Tue, 10 May 2022

epaper.dainiksaveratimes.org/c/67



दैनिक सवेरा 10 May, 2022

## अनाज-दालों के मूल्य संवर्धन पर संस्थागत प्रशिक्षण का आयोजन



सर्टीफिकेट देते हुए सीफेट के अधिकारी।

अबोहर (धर्मवीर) : कृषि विज्ञान केंद्र/सीफेट अबोहर द्वारा अनाज व दालों के मूल्यवर्धन पर संस्थागत प्रशिक्षण का आयोजन किया गया। इस कार्यक्रम का संचालन प्रभारी कृषि विज्ञान केंद्र डॉ रमेश कुमार के निदेशन में डॉ रूपेंद्र कौर द्वारा किया गया। इस कार्यक्रम में 30 ग्रामीण महिलाओं एवं लड़कियों ने हिस्सा लिया। इस कार्यक्रम के तहत डॉक्टर रूपेंद्र कौर द्वारा विभिन्न तरह के उत्पाद जैसे पापड़, बड़ी, कस्टर्ड पाउडर, मल्टीग्रेन सेवई, पोष्टिक दलिया, सेरेलेक इत्यादि बनाने पर महिलाओं के समक्ष प्रायोगिक प्रदर्शन द्वारा संपूर्ण जानकारी दी। दालों के भंडारण के उचित तरीकों के बारे में भी विस्तार से बताया। डॉ रमेश कुमार द्वारा उत्पाद की गुणवत्ता को बनाए रखने एवं मार्केटिंग करने के विभिन्न तरीकों के बारे में बताया तथा कृषि विज्ञान केंद्र द्वारा चलाए जाने वाले विभिन्न तरह के कार्यक्रमों के बारे में भी अवगत करवाया गया। डॉ विनोद कुमार द्वारा मूल्य संवर्धन के लिए काम आने वाली विभिन्न मशीनरी के बारे में जानकारी दी गई। पुष्पराज द्वारा फोटीफाईड वैरायटी एवं मूल्य संवर्धन के विभिन्न तरीकों के बारे में जानकारी दी गई।

दैनिक सवेरा

Sat, 14 May 2022

epaper.dainiksaveratimes.org/c/67



दैनिक सवेरा 14 May, 2022

icar.org.in/content/icar-cipheth-organizes-webinar-“live-fish-carrier-system-and-fish-cleaning-station-promising

YouTube Maps 900+ Food Backgro... How to Peer Review... Food Processing In... How Promising Is L... Food Processing In... Indian Food Indus... Food Processing in... Food Processing in...

#### ICAR at a Glance

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- ICAR Awards 2021

#### Divisions and Units

- Crop Science
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#### Research Institutes

- Deemed Universities
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#### ICAR-CIPHET organizes Webinar on “Live Fish Carrier System and Fish Cleaning Station: Promising Technology”

11<sup>th</sup> April, 2022, Ludhiana

The ICAR-Central Institute of Post-Harvest Engineering & Technology, Ludhiana, Punjab organized the Webinar to discuss and demonstrate the “Live Fish Carrier System and Fish Cleaning Station” developed by the Institute here today.

Dr. Nachiket Kotwalwale, Director, ICAR-CIPHET, Ludhiana briefed about the rationale of the National Webinar Series on ICAR-CIPHET Post-Harvest Technologies and the Institute’s other prominent technologies.

Dr. Armaan U. Muzaddadi, Principal Scientist, Transfer of Technology Division, ICAR-CIPHET, Ludhiana & Inventor of the Technologies stressed on the need of safe transport and processing facilities for the highly perishable commodities like Fish.

The “Live Fish Carrier System (LFCS)” is equipped with the aeration system, continuous water filters and ammonia absorption system at the bottom. The e-Rickshaw based LFCS is capable of transporting about 100 Kgs Live Fish upto the distance of 40 Kms with controlled water splash system that gives stability to the vehicle.

The Institute’s “Fish Cleaning Station” can be effectively used to maintain the utmost hygienic conditions during the dressing of fish in the local markets and fish sale points.

The Technology of LFCS has been licensed to 3 Entrepreneurs from Punjab, Assam and Kerala for the commercial manufacturing.

The Webinar organized as a part of the “Bharat Ka Amrit Mahotsav” to commemorate 75 Years of India’s Independence registered participation by more than 90 participants.

(Source: ICAR-Central Institute of Post-Harvest Engineering & Technology, Ludhiana, Punjab)

#### News

Annual Conference of Vice-Chancellors of State Agricultural Universities & Directors of ICAR...

Interface Meet on “Characterization and Documentation of Animal Genetic Resources of West Bengal: A...

भारत-अनु-शिकानन्द परीक्ष कृषि अनुष्ठान संचालन, अस्सेहा द्वारा एन जी एनएमएफ कृषि प्रशिक्षण ...

भारत-अनु-शिकानन्द परीक्ष कृषि अनुष्ठान संचालन, अस्सेहा जो संचालन शुरू

#### Knowledge Initiatives

- KVK Portal
- MobileApp
- Agricultural Education Portal
- ICAR e-courses
- CareInfo
- Compendiums
- Consortium for e-Resources in Agriculture (CeRA)
- Foreign Visit Management System of DARE-ICAR
- Human Resource Management System
- KRISHI Portal
- Knowledge Innovation Repository of Agriculture in the North East
- National Innovations on Climate Resilient Agriculture (NICRA)
- Other Knowledge Initiatives
- Agricultural Research Management System

#### Important Links

- Weather Based Agro Advisory
- Reports of Swachhata Pakhwada, 2021
- e-Krishi Manchi
- ICAR Dashboard
- QRT Report
- Authors Invited
- Agricultural Scientists Recruitment Board
- Agrinnovate India Limited
- BIMSTEC
- Capacity Building Programme
- Department of Entomological Research and Education

<https://www.icar.org.in/content/icar-cipheth-organizes-webinar-%E2%80%99Clive-fish-carrier-system-and-fish-cleaning-station-promising>

## केंचुआ खाद बनाने पर प्रशिक्षण कार्यक्रम



प्रशिक्षण कार्यक्रम में शामिल सीफेट-केवीके के अधिकारी व किसान।

**अबोहर (कथूरिया) :** कृषि विज्ञान केंद्र-सीफेट में एक दिवसीय केंचुआ खाद बनाने पर प्रशिक्षण कार्यक्रम का आयोजन किया गया। सीफेट-केवीके के प्रभारी डा. रमेश कुमार ने सभी किसानों का स्वागत किया और जैविक खेती के महत्व के बारे में जानकारी दी। इस मौके पर पृथ्वीराज ने किसानों को वर्मी कंपोस्ट तैयार करने की विधि बताई। डा. रमेश कुमार ने भारतीय प्राकृतिक खेती पद्धति के बारे में विस्तार से जानकारी दी। इस कार्यक्रम में 28 से अधिक किसानों ने हिस्सा लिया। इससे एक दिन पूर्व मंगलवार को सब्जी के रोग और बीमारियों पर एक दिवसीय प्रशिक्षण कार्यक्रम भी आयोजित किया गया जिसमें राजेश कुमार ने किसानों को सब्जियों के बारे में जानकारी दी। पृथ्वीराज ने किसानों को सब्जियों के कीड़ों के बारे में विस्तृत जानकारी प्रदान की। आज किसानों को प्रथम पंक्ति प्रदर्शन हेतु मूंग का बीज भी वितरित किया गया।

## सीफेट में कृषि प्रसंस्करण तकनीकी प्रदर्शन व आदान वितरण कैंप का आयोजन



किसानों को आदान प्रदान करते हुए सीफेट के प्रभारी डा. रमेश कुमार।

**अबोहर, (कथूरिया) :** सीफेट अबोहर में 8 अप्रैल व 11 अप्रैल को फाजिल्का जिले के किसानों के लिए अनुसूचित जाति उप योजना के अंतर्गत कृषि प्रसंस्करण तकनीकी एवं आदान वितरण कैंप का आयोजन डा. रमेश कुमार प्रभारी सीफेट एवं प्रधान वैज्ञानिक सीफेट अबोहर द्वारा किया गया। इस कैंप के दौरान सरकार द्वारा चलाई जाने वाली अनुसूचित जाति उप योजना की संपूर्ण जानकारी किसानों को दी गई। सीफेट अबोहर केंद्र पर उपलब्ध विभिन्न तरह की कृषि प्रसंस्करण से संबंधित मशीनों के बारे में भी किसानों को अवगत कराया गया। केंद्र का भ्रमण भी किसानों को करवाया गया ताकि वे विभिन्न प्रसंस्करण तकनीकों के बारे में जानकारी हासिल कर सकें। इस अवसर पर अनुसूचित जाति के लगभग 100 बीपीएल किसानों को आर्थिक लाभ के तौर पर कुछ आदान जैसे सपे की टंकी, प्लास्टिक क्रेट व यूरिया खाद का भी निशुल्क वितरण किया गया ताकि कृषि पैदावार पर आने वाले खर्च को कम किया जा सके।

दैनिक सवेरा

Tue, 12 April 2022

epaper.dainiksaveratimes.org/c/6



दैनिक सवेरा 12 April, 2022

## फाजिल्का-अबोहर सवेरा

# केवीके सीफेट में सैकड़ों किसानों ने देखा पीएम का वर्चुअल प्रसारण

● किसानों में खुशी की लहर, बोले ऐसा दूरदर्शी प्रधानमंत्री पहले कभी नहीं देखा



कार्यक्रम में मौजूद अतिथिगण व अधिकारी। (दाएं) पीएम का आनलाइन प्रसारण का आनंद लेते हुए दर्शक व अधिकारी।

**अबोहर, 1 जून (कथूरिया) :** केंद्र में नरेंद्र मोदी सरकार के 8 साल पुरा होने के मौके पर हिमाचल प्रदेश की राजधानी शिमला में गरीब कल्याण सम्मलेन का आयोजन किया गया। इस कार्यक्रम में मोदी सरकार ने वर्चुअल माध्यम से सरकारी योजनाओं के लाभार्थियों से बातचीत की। साथ ही उन्होंने प्रधानमंत्री किसान सम्मान निधि योजना की 11वीं वित्तवारी की। इस कार्यक्रम के लाइव प्रसारण के तहत कृषि विज्ञान केंद्र-सीफेट परिसर में मंगलवार को गरीब कल्याण सम्मलेन

का आयोजन किया गया। प्रधानमंत्री के किसानों के बीच कृषि सम्मान निधि की किरत वितरण व किसानों से संवाद का सीधा प्रसारण दिखाया गया। कार्यक्रम में 500 से अधिक लोगों ने शिरकत कर पीएम नरेंद्र मोदी के शिमला से आनलाइन प्रसारण को देखा। इस मौके पर किसानों ने खुशी जाहिर करते हुए कहा कि ऐसा विजयनरी पीएम पहले कभी नहीं देखा। इस मौके पर कृषि विज्ञान केंद्र-सीफेट प्रभारी डा. रमेश कुमार ने प्रधानमंत्री किसान सम्मान निधि योजना की जानकारी देते हुए कहा कि भारत



सरकार से छोटे व सीमित किसानों को आर्थिक सहायता दी जा रही है। प्रत्येक पात्र किसान के बैंक अकाउंट में प्रति वर्ष कुल छह हजार रुपए भेजा जाता है। चार महीनों के अंतराल पर दो हजार रुपए प्रति किरत के हिसाब से बैंक अकाउंट के जरिए सीधे दसगुना किए जाते हैं। इससे खाद, बीज कीटनाशक आदि समय पर खरीदने में किसानों को मदद मिल रही है। इस दौरान पृथ्वीराज ने किसानों की मधुमक्खी पालन और गुलाबी सूई के निबंधन के बारे में सीफेट व केवीके की ओर से चलाए

जा रहे प्रोजेक्टों के बारे में जानकारी दी। वहीं राजेश ठंडई ने नेचुरल फार्मिंग प्रोजेक्ट शुरू किए जाने के बारे में जानकारी प्रदान की। कार्यक्रम का संचालन विनोद सहारण व डा. कल्पिंद कौर ने संयुक्त तौर पर किया। इस प्रसारण को युवते भाजपा नेता धनपत सिंघान, जदना सांगवाल, गौरव टक्कर, विशाला बिश्नोई, रामकिशन गुप्ता, बाबा कुक्कड़, मनोज झींडा, सरपंच रविंद कुक्कण, बुजयोगन केराखेड़ा, महावीर कसनिगा, महिला मोर्चा की ममता जयुजा आदि नेता भी मौजूद रहे।