

ICAR-CIPHET NEWS



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FROM DIRECTOR'S DESK



It is a great pleasure to welcome you to the third issue of the ICAR-CIPHET quarterly newsletter of the year 2019. The issue highlights the research outputs of the ongoing researches in the institute. To mention few outputs are extraction of lutein, phenols and other bioactive compounds, handtool for separation of kernel from mango stone, smart solar dryer, standardized method for detection of rhodamine dye in chilli powder. The institute also had an eventful quarter with celebration of Independence Day, Hindi Pakhwara, Sadbhavana Divas, Swachh Bharat mission etc. The institute is also involved in many extension related activities-participating in Kisan melas, organizing trainings and EDPs. Three groups of farmers from Maharashtra were trained on different aspects of Post harvest technology, three numbers of EDPs for entrepreneurs on processing and value addition of mangoes, rose petals and on quick cooking dalia. During this period ICAR-CIPHET technology "High Volume Low Speed (HVLS) Fan" was also licensed to M/s Chana Mechanical Engg.

Feedback from the readers will be much appreciated for improvement of the newsletter.

Dr. RK Singh

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ICAR-Central Institute of Post-Harvest Engineering and Technology

P.O.: PAU, Ludhiana-141004(Punjab), India

www.ciphet.in



RESEARCH HIGHLIGHTS

Extraction of lutein from marigold flowers by solvent extraction and supercritical fluid extraction

The major carotenoid in marigold is lutein, which has been reported to be beneficial due to its potential in nutraceutical and pharmaceutical applications. This has led to various extraction and purification studies to obtain the high purity free lutein suitable for human applications.

The fresh marigold flowers were procured from the local market. The stems of the flowers were separated manually and then the petals were dried in tray drier for 48 h. The petals were grounded to a fine powder (mesh size 1 mm). Extraction from marigold powder was carried out with hexane in rotary evaporator. After drying the concentrate in vacuum oven, the product was further saponified using potassium hydroxide in ethanol solution (0.6 g KOH in 10 ml of ethanol for 1 gram of marigold oleoresin). Saponification reaction was carried out in orbital shaking incubator at 50°C for 4 hours at 160 rpm. The product obtained was further extracted in separatory funnel using disodium sulphate, ethanol and diethyl ether. The final product obtained after this step was free lutein stock solution. In case of supercritical fluid extraction, marigold powder obtained was dried in oven. Then it was sieved in sieve shaker system and subjected to supercritical carbon dioxide for 2 hours. The temperature and pressure maintained were 70 °C and 45 MPa, respectively.

The yield of crude extract of lutein by solvent extraction method was 0.21%. Yield of marigold oleoresin by solvent extraction method was 4% whereas by supercritical fluid extraction method was 15.38%. Thus supercritical fluid extraction method proved to be more efficient for extraction of marigold oleoresin.

A hand tool for separation of kernel from mango stone

A hand tool for separation of kernel from mango stone is designed and fabricated under the project 'Production of bioactive ingredients from mango seed kernels'. It comprises of wooden mango stone holder (22 x 10) cm and a stone opener made of MS material with handles (Fig 1). The refinement of the prototype is in progress.



Fig 1. Hand tool mango stone decorticator

Design and development of smart solar dryer

A thermal storage (Phase change material, PCM chamber) chamber has been fabricated for storage of thermal energy for smart solar dryer. The dimension of PCM chamber is (70x58x6) cm with 9 holes having diameter of 5.5 cm for the hot air to pass and recharge the PCM (Fig 2). It has inlet and outlet for PCM. The PCM used is the paraffin wax having melting point of 55-58°C.



Fig 2. PCM chamber for thermal storage

- Standardized method for detection of rhodamine dye in chilli powder using fluorescent spectroscopy:** Rhodamine is a fluorescent dye, keeping fluorescent nature of dye in view fluorescent spectroscopy based method has been standardized. The dye showed excitation and emission spectra at wavelength of 556 nm and 577 nm, respectively. Scan of pure chilli and spiked samples of chilli with rhodamine dye was performed in the range of 550-700nm range. Pure chilli did not give any peak in this range. Standard graph from 1 ng – 6 ng of rhodamine dye was prepared. Developed method could detect rhodamine in chilli samples upto 1.3ng. Using known concentration, recovery of dye with developed method could be 90 to 91%.
- Thermal analysis of wheat flour samples for development of rapid quality -** Calibration of instrument KD2 Pro Thermal Properties Analyzer was carried out for checking thermal conductivity of wheat samples. Glycerol, distilled water (DW) and tap water were used to calibrate the instrument for thermal conductivity. Thermal conductivity of non-infested and infested samples of wheat grains, whole wheat flour and refined wheat flour was measured. Thermal conductivity of non-infested samples of wheat grains, whole wheat flour and refined wheat flour was 0.190 W/mK, 0.163 W/mK and 0.128W/mK, respectively. However, these values for infested samples of wheat grains, whole wheat flour and refined wheat flour were 0.229 W/mK, 0.164 W/mK and 0.146 W/mK, respectively. The thermal conductivity of infested wheat grains and refined wheat flour was higher than non-infested samples.
- Extraction of bioactive compounds from pigeon pea husk -** The repeat experiment on extraction of bioactive compounds from pigeon pea husk using response surface methodology is carried out. The different experimental combinations comprising variation in solvent concentration from 40-80%, extraction time from 2-4h and extraction temperature in range of 30 to 60°C was designed using box-benken design of experiments. The extract samples are analysed for total phenol content, DPPH Radical

scavenging activity and anthocyanins content. The total phenol content of the extract samples ranged between 88.509 - 418.133 mg/g and the extract had 86.04 to 93.13% of DPPH Radical scavenging activity.

- Extraction of total phenol from makhana seed shells:** The seed shells of *Euryale ferox* is generally discarded after makhana popping. The shells are rich in polyphenols and are an ideal raw material for their extraction and recovery. Phenolic compounds were extracted from roasted makhana seed shells. Roasted makhana seed shells were powdered and then sieved through a mesh size of 250 microns. The seed shell powder was extracted thrice in 80 percent aqueous methanol under shaking for 30 minutes at 30°C. The extract was centrifuged at 2500 rpm for 15 minutes and the filtrate concentrated using rotary vacuum evaporator. The concentrate is then freeze dried to yield is a brown colour extract, about 4g/100g of seed shell.



Fig: Phenol extracted from Makhana seed shells

- Testing of Processing Machineries at PHMETC:** The testing of following machines have been completed and their commercial test reports were issued.
 1. Flour mill
 2. Arecanut Dehusker (V-1)
 3. Arecanut Dehusker (V-6)
 4. Flour mill (14 inch)

PATENTS FILED/GRANTED:

Patent entitled “Method for detection of papaya seed powder adulteration in black pepper seed powder” inventors Dr. Manju Bala, Dr. Swati

Sethi, Dr. Surya Tushir, Dr. Mridula Devi, Dr. R.K. Gupta, Dr. R.K. Singh. has filed with application number: 201911032375 on 09.08.2019.

EVENTS

- **One day water conservation awareness program** was organized at village Lamochadkalan, Block Jalalabad on 26/07/2019 under “Jal Shakti Abhiyan” by KVK, Fazilka. Nearly 90 farmers and officials were present on the occasion
- **73st Independence Day Celebration:** 73th Independence Day was celebrated at ICAR-CIPHET in both the campus with enthusiasm and great patriotism on 15.08.2019. All CIPHET staff, contractual workers and families of the staff took part in this celebration. On this occasion, Dr. RK Singh, Director (Act.) hoisted the National Flag and thereafter addressed the celebration. Cultural and sports events for the staffs and their families followed after the address by the Director.



‘Hindi Pakhwara’

All the staffs of ICAR-CIPHET, Ludhiana and Abohar has participated and attended Hindi Pakhwada programme during 14 to 28 September, 2019.



- **‘Sadbhavana Divas’** was celebrated on 20th August 2019 at ICAR-CIPHET to commemorate the birth anniversary of former Prime Minister Rajiv Gandhi. This day is observed to encourage the national integration, peace, affection and communal harmony among the Indian people of all religions.

SWACHH BHARAT MISSION:

- All the staff of ICAR-CIPHET participated in “Swachh Bharat Abhiyan- Swachhta Hi Sewa” mission and campus/premises cleanliness activities organized from 11 September to 2 October.



Glimpse of the activities



Pledge taking ceremony, ICAR-CIPHET Ludhian



Pledge taking ceremony, ICAR-CIPHET Abohar



Cleaning in office side of campus, ICAR- CIPHET Ludhiana



Cleaning in premises of APC building, ICAR- CIPHET Abohar

EXTENSION ACTIVITIES

Entrepreneurship Development Programme (EDP)

An Entrepreneurship Development Program (EDP) was conducted on “**Processing and Value Addition of Mango**” during 15th – 17th July 2019 for six entrepreneurs from villages of Punjab and Haryana participated in this training program. Dr Perna Nath as Course coordinator completed this training. Dr. S. J. Kale actively took part in organizing the training program and he also guided all the entrepreneurs regarding storage and transportation of fresh and processed fruit and vegetable products.



- Entrepreneurship Development program on “Processing and value addition of rose petals” was organized under the CRP on SA Project - “Establishment of modern agro-processing centers for fruits and vegetables” during August

8-10, 2019 at ICAR-CIPHET, Ludhiana for six farmers from Punjab.

- Entrepreneurship Development Program on ‘Quick cooking wheat Dalia’ was organized at ICAR-CIPHET, Ludhiana during August 01-03, 2019 for a farmer from Sangrur, Punjab.

Farmers Training

- ICAR-CIPHET has organized an ATMA sponsored farmer’s training for 20 farmers from Chalisgaon, Jalgaon Dt., Maharashtra on "Post-Harvest Technology for Agricultural produce" during 5-9 August, 2019.
- ICAR-CIPHET has organized an ATMA sponsored farmer’s training for 20 farmers from Jalgaon Dt., Maharashtra on "Post-Harvest Technology for Agricultural produce” during 19-23rd August 2019.



- ICAR-CIPHET has organized an ATMA sponsored farmer’s training for 20 farmers from Jalgaon Dt., Maharashtra on "Post-Harvest Technology for Agricultural produce" during 26-30 August 2019.



- One day training programme on “Disease management in kharif crops” was organized on 30/07/2019 by KVK, Fazilka.

Students Training:

Sr. No.	Name of College/ University	No. of students	Degree	Duration
	SV College of Agricultural Engineering, and Technology & Research Station, Faculty of Agricultural Engineering, Indira Gandhi Krishi Vishwavidyalaya, Raipur – 492 012 (Chhattisgarh)	10	B. Tech. (Agril. Engg.)	01-31 Aug, 2019.
1.	Acharya N.G. Ranga Agricultural University, Dr. NTR College of Agricultural Engineering, Bapatla-522101, Guntur District, Andhra Pradesh	10	B. Tech. (Agril. Engg.)	01 Jun -15 Sep, 2019
2.	SV College of Agricultural Engineering, and Technology & Research Station, Faculty of Agricultural Engineering, Indira Gandhi Krishi Vishwavidyalaya, Raipur – 492 012 (Chhattisgarh)	3	B. Tech. (Agril. Engg.)	01-30 Sep, 2019

CAPACITY BUILDING:

- Dr. K. Bembem participated in 03 days training programme on “FPOs linkage with extension, inputs, infrastructure, value addition and market” conducted at PAMETI, PAU Campus, Ludhiana during 29-31 July, 2019.
- Dr. Bhupendra M. Godki attended Short Term Course on PLC and Microcontrollers from 26 August–06 September, 2019 at NITTR Chandigarh.
- Three days demonstration cum training on texture analyzer was conducted at Bioengineering properties lab, Food Grains and Oilseeds Processing Division where Scientists of the Institute attended the program.

PARTICIPATION IN CONFERENCE/ SEMINAR/ MEETING

- Mridula D (2019) “Processing of food grains for food security and profitability”, in the ICSSR sponsored National Seminar on ‘Role of Community Science Education in Rural Development’ during August 21-22, 2019, organized by G.B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand.
- Dr. Poonam has attended “Lab Forum In dia 2019” organized by Department of Animal Nutrition, Guru Angad Dev Veterinary University in collaboration with FOSS India on July 03-04, 2019.
- Dr. Vinod Saharan attended Zonal workshop of KVK Zone I (Aug 3-5, 2019) at GBPUAT, Pantnagar (Uttarakhand) and presented annual progress report of KVK Fazilka for the year 2018-19.
- Mr. Vikas Kumar, Scientist has participated in a special poetical symposium on Independence Day. It was broadcasted from AIR FM Gold Ludhiana (100.1 mHz) at 10:15 am on 15th August, 2019.
- Dr Sunil Kumar attended Zonal workshop meeting of KVK Zone I (Aug 3-5, 2019) at GBPUAT, Pantnagar (Uttarakhand) and presented annual progress report of KVK Fazilka for the year 2018-19

- Mr. Vikas Kumar, Scientist has participated in a special poetical symposium on Independence Day which was broadcasted from AIR FM Gold Ludhiana (100.1 mHz) at 10:15 am on 15th August, 2019.
- Dr. Sandeep Mann, Pr. Scientist attended the State Level Review Meeting at CSKHPKV, Palampur on 30.07.2019.
- Dr. Renu Balakrishnan, Scientist delivered an invited lecture to final year students of B.Sc. agriculture (120) on the topic “Formation of Farmer Producer Organization (FPO’s) and their sustainability at Dr. S. K. Dev Examination Hall, College of Agriculture, PAU, Ludhiana on 06.08.2019.
- Dr. Sandeep Mann facilitated the visit of Dr. Manoj Sharma (Associate Director, KVK Langroya, SBS Nagar on 05 July, 2019); Dr. Sunita Kumari (Director, Drgonhorafan, Pune on 11 July, 2019) and Dr. P.S. Tanwar (Associate Director with Anjuly Sharma, Assistant Professor, KVK, Barnala on 16 July, 2019)
- Dr. Sandeep Mann, Principal Scientist & I/c Head TOT delivered invited lecture on “Value addition in agricultural produce: concept, scope, importance and its need in the present scenario” at PAMETI, PAU, Ludhiana on 09.07.2019 to officials of Agricultural Department, Government of Punjab.
- Dr. Sandeep Mann, Principal Scientist & I/c Head TOT is to deliver invited lecture on “Value addition in agricultural and horticultural produce” at PAMETI, PAU, Ludhiana on 18.07.2019.

TRANSFER OF TECHNOLOGY:

- Licensing of technology “High Volume Low Speed (HVLS) Fan” on 09-09-2019 to M/s Chana Mechanical Engg., Sherpura Road, Jagraon-142 026 (Ludhiana).



EXHIBITIONS AND MELAS

- All the staff of ICAR-CIPHET, Abohar participated in the programme “Kisan Mela” under Jal Shakti Abhiyan on 04.09.19 at Ladhuka Mandi (Jalalabad).
- Dr PN Guru attended the Kisan Mela under Jal Shakti Abhiyan, KVK, Abohar organized at Ladhu Ki Mandi, Fazilka as entomology expert.
- Staffs of ICAR-CIPHET, Ludhiana participated in the “Kisan Mela” at PAU, Ludhiana during 21st to 22nd September, 2019.



- Staffs of ICAR-CIPHET, Ludhiana participated in the “Pashu Palan Mela” at GADVASU, Ludhiana during 21st to 22nd September, 2019.



AWARDS AND ACHIEVEMENTS:

- Bidyalakshmi Devi Th, Choudhary P, K Bembem and Balakrishnan R awarded with ‘Innovative article awards’ for the article no. 21742 entitled “Spiny coriander (*Eryngium foetidum* L.): A potential herb for multi-purpose application” from Agriculture and Food E-newsletter.
- Dr. Pankaj Kumar Kannaujia, Dr. Manoj Mahawar, Dr. Kirti Jalgaonkar and Dr. Navnath Indore awarded with ‘Article of the year award’ for the article no. 21561 entitled “Application of plastic mulch in horticultural crops” published in volume 01- issue 07 in Agriculture & Food: e-Newsletter.
- Dr. Bhushan Bibwe and Dr. Kirti Jalgaonkar awarded with ‘Article of the year award’ for the article no. 21584 entitled “Freeze concentration and its applications in food industry” published in volume 01- issue 07 in Agriculture & Food: e-Newsletter.
- Dr P N Guru, received ‘Certificate of Excellence’ for involvement in Green Revolution Global Certification Program with ‘A’ grade.

PAPERS PUBLISHED/ COMPENDIUM/ POPULAR ARTICLES:

1. Bansal S, Mangal M, Tushir S, Oberoi HS, Gupta RK (2019). A rapid and reliable method for the specific detection of aflatoxigenic fungi in groundnut and rice samples. *Journal of Food Processing and Preservation*. <https://onlinelibrary.wiley.com/doi/pdf/10.1111/jfpp.14127>
2. Ghodki BM, Dadlani G., Ghodki DM and Chakraborty S (2019). Functional whole wheat breads: Compelling internal architecture. *LWT-Food Science and Technology*, 108, 301-309.
3. Kannaujia PK, Patel N, Asrey R, Mahawar M, Meena V S, Bibwe B, Jalgaonkar K and Negi N (2019). Variability of bioactive properties and antioxidant activity in commercially grown Cherry tomato (*Solanum lycopersicon* var.

- cerasiforme*) cultivars grown in India. *Acta Alimentaria* (NAAS Rating-6.36; Accepted).
4. Kannaujia PK, Mahawar MK, Jalgaonkar K, Meena VS, Bibwe B (2019). Prospects and opportunities of vegetable processing in India. *Acta Scientific Agriculture*. 3(8): 25-27.
 5. Kannaujia, PK, Asrey R., Singh AK, Varghese, E and Bhatia K (2019). Influence of ozone treatment on postharvest quality of stored summer squash. *Indian Journal of Horticulture*, 76(2): 350-354.
 6. Jalgaonkar K, Mahawar MK, Kale S, Nath P, Bibwe B, Dukare A, Kannaujia PK and Meena VS (2018). Response surface optimization for development of Dragon fruit based ready to serve drink. *Journal of Applied and Natural Science*. 10(1): 272 – 278.
 7. Krishna, Jalgaonkar K, Bibwe B, Mahawar M. (2019). Wax Apple: Cultivation, post harvest processing and value addition. *Agriculture & Food: e-Newsletter*, 1(8):60-65.
 8. Kumar A, Mahawar MK and Jalgaonkar K (2019). Fruits and vegetables processing technologies. *Food Marketing & Technology magazine*. June issue. 40-41.
 9. Kumar A, Mahawar MK, Jalgaonkar K (2019). Fruits and vegetables processing technologies. *Food Marketing & Technology magazine*. June issue. 40-41.
 10. Mahawar MK, Jalgaonkar K, Bhushan B, Bhushan B, Meena VS, Sonkar RK (2019). Post-harvest processing and valorization of Kinnow mandarin (*Citrus reticulata* L.): A Review. *Journal of Food Science and Technology*. <https://doi.org/10.1007/s13197-019-04083-z> (NAAS rating: 7.80)
 11. Kumar P, Choudhary M, Hossain F, Singh NK, Choudhary P, Gupta M, Singh V, Chikappa GK, Kumar R, Kumar B and Jat SL (2019). Nutritional quality improvement in maize (*Zea mays*): Progress and challenges. *Indian journal of agricultural sciences*, 89(6): 895-911.
 12. Nath P, Kale SJ, Kaur C, Chauhan OP (2018). Phytonutrient Composition, Antioxidant Activity and Acceptability of muffins Incorporated with red capsicum pomace powder. *Journal of Food Science and Technology*. 55 (6): 2208-2219
 13. Nath P, Kale SJ and Sharma AK. (2019). Efficacy of ascorbic acid treatments in the production of green raisins. *Current Science*. 116(6):943-951
 14. Jain V, Chawla S, Choudhary P and Jain S (2019). Post-harvest calcium chloride treatments influence fruit firmness, cell wall components and cell wall hydrolyzing enzymes of Ber (*Ziziphus mauritiana* Lamk.) fruits during storage. *Food SciTechnol*. <https://doi.org/10.1007/s13197-019-03934-z>.
- Book/ Book chapter/ Book edited:**
- Book chapters**
1. Nath P, Kale SJ, Bhushan B (2019). Consumer acceptance and future trends of non-thermal processed foods. In *Non-Thermal Processing of Foods* (Ed. Chauhan OP). CRC Press, Taylor and Francis Group, UK, pp. 433-454. ISBN:9781351869782.
 2. Jalgaonkar K, Mahawar MK, Bibwe B, Nath P, Girjal S. (2019). Chapter 17: Nutraceuticals and Functional Foods. *Trends & Prospects in Processing of Horticultural Crops*. Today & Tomorrow's Printers and Publishers, New Delhi - 110 002, India. Pg: 231-250
- Conference paper/abstract:**
1. Nath P, Kale SJ (2019). Development of high value soft-textured aonla (*Emblica officinallis* L.) candies through freezing process. *In: compendium of 13th International conference on "Development of drylands: converting dryland areas from gray into green" held during February 11-14, 2019 at ICAR-CAZRI, Jodhpur (Rajasthan)*, pp: 275
 2. Kale SJ, Kannaujia PK, Indore N, Nath P, Singh RK (2019). Phase change materials based mobile cool chamber for transportation of perishables. *In: compendium of 13th International conference on "Development of drylands: converting dryland areas from gray" into green held during February 11-14, 2019 at ICAR-CAZRI, Jodhpur (Rajasthan)*, pp: 269

Popular article:

1. Bembem K, Th. Bidyalakshmi Devi, Choudhary P and Balakrishnan R (2019) Phenolic compounds and antioxidant activity in cereal grains” authored by in *Agriculture and Food E-Newsletter* 1(9): 199-201.
2. Bibwe B and Jalgaonkar K (2019). Freeze concentration and its applications in food industry. *Agriculture & Food: e-Newsletter*. 1(7): 239-242.
3. Th. Bidyalakshmi Devi, Choudhary P., Bembem K. and Balakrishnan R. (2019). "Spiny coriander (*Eryngium foetidum L.*): A potential herb for multi-purpose application." *Agriculture & Food: E-newsletter*. 1(8): 317-319.
4. Devi B Th, Kalnar YB, and Ghodki BM., (2019). Refrigerated retail van: An important component in cold chain management. *Agriculture and Food: E-Newsletter*, 1(9): 214-216. (ISSN: 2581-8317; Sept 2019).
5. Ghodki BM (2019). Surprising internal structure of whole wheat-green gram functional bread. *Science Trends*. <https://sciencetrends.com/surprising-internal-structure-of-whole-wheat-green-gram-functional-bread/>. (First online 12 Aug 2019; also featured in Google News).
6. Kannaujia PK, Mahawar MK, Jalgaonkar K, Indore N (2019). Application of plastic mulch in horticultural crops. *Agriculture & Food: e-Newsletter*. 1(7): 264-267.
7. Kannaujia PK., Mahawar MK., Jalgaonkar K, Meena VS, Bibwe B., “Prospects and Opportunities of Vegetable Processing in India”. *Acta Scientific Agriculture* 3(8): 25-27.
8. Krishna, Jalgaonkar K, Bibwe B, Manoj Mahawar (2019). Wax Apple: Cultivation, post harvest processing and value addition, *Agriculture & Food: e-Newsletter*, Volume 1 (8): 60-65.
9. Nath P and Kale S J. (2018). Pomegranate: A wonder Fruit. *Processed Food Industry*, 21(6): 12-17.
10. Nath P, Kale SJ and Snehita R. (2018). Raisin- A Nutritious Snack. *Marumegh Kisa-E-Patrika*. 3(1):1-8, ISSN: 2456-2904.
11. Nath P, Kale SJ and Apoorva Sharma. (2019). Microorganism: Promising Source of Natural Colors. *Indian Food Industry*. 38(1) : 9-18
12. Nath P and Kale SJ (2018). Black Carrots: Processing and It’s Value addition. *Beverage and Food World*. 45(5):35-39.
13. Nath P, S. J. Kale and Apoorva Sharma. (2019). Microorganism”: Promising Source of Natural Colors. *Indian Food Industry*. 38(1):9-18
14. पंकज कुमार कनौजिया¹, मनोज कुमार महावर, बिबवे भूगण, किर्ती जलगांवकर, (2019). सब्जियों के प्रसंस्करण की प्रमुख विधियां सब्जियों के प्रसंस्करण की प्रमुख विधियां, श्रनसल पेनमरू 40.45^प
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21. प्रेरणा नाथ, एस.जे. काले एवं मृदुला डी. (2018). कम उपयोगी जामुन फल के चमत्कारी एवं लाभकारी लाभ राजभाषा अलोक. भारतीय कृषि अनुसंधान परिषद्. पृष्ठ संख्या 39-41
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Leaflet

Mridula D., Deepika Goswami, Akhoo Asrar, Navnath Indore and Rajpreet Goraya (2019). Quality requirements for tomatoes, published under CRP on SA Project on 'Establishment of modern agro-processing centers for fruits and vegetables', ICAR-CIPHET, Ludhiana, pp2.

Lectures delivered

- Prerna Nath, Swati Sethi, Apoorva Sharma, S. J. Kale, Ajinath Dukare. (2019). Extraction and Utilization of High Value Compounds from Vegetable Waste. Lecture delivered to participants in ICAR sponsored 21 days Winter School on Cutting-Edge Epitome of Processing, Value Addition and Waste Utilization of Horticultural Crops for Augmenting Farmers

Income" held at ICAR-Central Institute of Post-Harvest Engineering and Technology, Ludhiana-141004, Punjab, India during October 1-21, 2019, Pg: 204-210.

- Prerna Nath, Swati Sethi, and S. J. Kale. (2019). Processing and value addition of underutilized fruits. Practical conducted to participants in ICAR sponsored 21 days Winter School on Cutting-Edge Epitome of Processing, Value Addition and Waste Utilization of Horticultural Crops for Augmenting Farmers Income" held at ICAR-Central Institute of Post-Harvest Engineering and Technology, Ludhiana-141004, Punjab, India during October 1-21, 2019, Pg: 225-226
- Sakharam Kale and Prerna Nath. (2019). Utilization of renewable energy sources for enhancing shelf-life of fruits and vegetables. Lecture delivered to participants in ICAR sponsored 21 days Winter School on Cutting-Edge Epitome of Processing, Value Addition and Waste Utilization of Horticultural Crops for Augmenting Farmers Income" held at ICAR-Central Institute of Post-Harvest Engineering and Technology, Ludhiana-141004, Punjab, India during October 1-21, 2019, Pg: 197-203.
- Ajinath Dukare, Sunil Kumar, Pankaj Kannaujia, Prerna Nath and Guru P.N. (2019). Different methods and techniques for enumeration, detection and identification 246 microorganisms in processed foods. Lecture delivered to participants in ICAR sponsored 21 days Winter School on Cutting-Edge Epitome of Processing, Value Addition and Waste Utilization of Horticultural Crops for Augmenting Farmers Income" held at ICAR-Central Institute of Post-Harvest Engineering and Technology, Ludhiana-141004, Punjab, India during October 1-21, 2019, Pg: 246-251.
- Prerna Nath and Sakharam Kale. (2018). Novel Drying Methods for production of Quality Raisins". Lecture delivered to participants in ICAR sponsored 21 days Winter School on "Recent engineering interventions in food and

byproduct processing for sustainable growth and profitability held at ICAR-Central Institute of Post-Harvest Engineering and Technology, Ludhiana-141004, Punjab, India during October 5-25, 2018, Pg: 183-188.

- Dr. Purna Nath delivered two lectures entitled “Preparation of aonla products” and “Processing of tomato” on 18/1/18 in a training programme organized by the TOT division of ICAR-CIPHET on “Fruits and Vegetable Preservation” for the women farmers from Udhampur, J & K during 17-19 January 2018

PERSONALIA

Transfer

Dr. V. Chandrasekar was relieved from ICAR-CIPHET on 2 September, 2019 (AN).

SECTORIAL NEWS

Licious launches India's first-of-its-kind range of meat-based spreads

India's first and only meat food brand, Licious announced its foray into the packaged food category with the launch of its latest innovation - the first-of-its-kind meat-based-spreads in

August that will transform the way we consume meat in India.

House of Spices (India) recalls salmonella-positive MDH Sambar Masala

House of Spices (India) has issued the recall of different lots of MDH Sambar Masala, 3.5oz (100g) UPC code 6291103750327. The product, which is produced by R-Pure Agro Specialties and distributed by House of Spices (India), was tested by US FDA through a certified laboratory to be positive for salmonella. The recalled MDH Sambar Masala was distributed in northern California retail stores.

Coriander seeds, instant tea bags in list of rejected food consignments

Cloves, coriander seeds and instant tea bags are among the list of rejected food import consignments for the month of July. According to a recently-released report by Food Safety and Standards Authority of India (FSSAI), there were around 25 consignments that were rejected as they did not meet the packaging and labelling criteria and were of a sub-standard quality along with the presence of insecticide residue.

About the publication:

ICAR-CIPHET News is an in-house quarterly publication of ICAR-Central Institute of Post-Harvest Engineering and Technology aimed at brief compilation and highlighting of the activities/ information associated with different research, extension and HRD activities taken up by the scientists of the institute, AICRP (PHET), AICRP (PET) and KVK (ICAR-CIPHET), Abohar and also the information regarding other important activities of the institute.

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Published by: Director, ICAR-Central Institute of Post-Harvest Engineering and Technology
P.O. PAU Ludhiana-141004 (Punjab)

☎ 0161-23131103, 2313116 Fax: 0161-2308670 🌐 www.ciphnet.in
✉ director.ciphnet@icar.gov.in, tot.ciphnet@gmail.com