



Central Institute of Post Harvest Engineering & Technology Ludhiana

OUR SLOGAN: PRODUCE, PROCESS AND PROSPER

CIPHET E – Newsletter for August, 2010

Vol. 5 No. 8

Director's Column



Dear All

Production, post harvest technology, mechanization, status policy and constraints pertaining to oilseed vegetables oil crops were discussed during brain storming meeting on 'Strategies for Increasing Production of Oilseeds/ Vegetables Oil' at Hyderabad. The students of International Diploma in Agriculture of G. B. Pant University of Agriculture and Technology, Pantnagar were addressed on post-harvest technology through video conferencing from CIPHET, Ludhiana.

The 18th Institute Research Council meeting was conducted to review the completed, on-going and new proposals. The scientists of the institute presented the salient research achievements and plan of work for the forth coming years. Dr. Jarnail Singh, Prof. and Head, Department of Processing and Food Engineering participated in the discussions as expert.

Dr. Swapan Kumar Datta, DDG (Crop Science), Dr. R.P. Dua, ADG (Food & Fiber), Dr. Jiwan Singh Sidhu, Professor, University of Kuwait, Prof. Sun-Ok Chung and Prof. Dong-II Chang, Department of Biosystems and Machinery, Chungnam, National University. South Korea visited CIPHET during this month. Dr. Datta mentioned that we should focus on providing food and nutrition security which is a global challenge. He also showed keen interest in the institute laboratories. Dr. R. P. Dua agreed that value addition activities have a lot of scope to improve the financial condition of farmers. Dr. Jiwan Singh Sidhu delivered a invited talk on 'Healthy Eating'. The interactions of scientists with the dignitaries were indeed were interesting.

Seventeen participants from Assam, five rural women from SHG of Abohar region, 30 participants from NITCON were imparted hands on training on post harvest technology, seed processing and food processing. Agricultural officers from Orissa visited the institute to obtain information on PHT activities. Green Chilli Powdering and Groundnut/Soy milk *Paneer* / Curd technologies were licensed to entrepreneurs. CIPHET is also extending help to the regional centre of ICAR Research Complex for NEH region located in Basar, Arunachal Pradesh for setting up agro-processing and value addition centre.

Independence Day was celebrated in a grand way. Flag Hoisting and National Anthem were followed by on in-house cultural programme organized by Staff Recreation Club. Children were encouraged to exhibit their talent in sports and extra-curricular activities.

I congratulate Dr. Deepak Raj Rai who has taken over as Head Division of Transfer of Technology and Ms. Monika Sharma, and Dr. Indu Karki who have joined CIPHET as scientists. I personally thank the Project Co-ordinators, Heads of the Divisions, scientists and staff for their support and active role in institute activities

With best regards

R.T. Patil
Director

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Brain Storming Session on “Strategies for Increasing Production of Oilseeds/Vegetable Oils”

Dr. R. T. Patil, Director CIPHET attended brain storming session on “Strategies for Increasing Production of Oilseeds/Vegetable Oils” at the Directorate of Oilseeds Research, Hyderabad on August 7-8, 2010 and present an invited paper on “Post Harvest Management & Value Addition of Oilseeds”. The Brainstorming session was chaired by Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR and Dr. M.V. Rao, former Special DG, ICAR & VC, ANGRAU was Chief Guest. The session was attended by the Dy. Director General (CS), Dy. Director General (Education) and Dy. Director General (Ag. Extn.) of ICAR; Directors of ICAR Institutes concerned with Oilseed crops including Rice, Maize, Cotton, Coconut and Oil Palm, CIAE, Bhopal; Project Coordinators of Sesame & Niger, Linseed and AICRP Dryland Project; and the representative from rice bran industry, SEA, COOIT and seed industry.

In his introductory remarks, Dr. S. Ayyappan, DG, ICAR expressed his anguish and deep concern on continuous increase in import of vegetable oils in recent years and desired to prepare a time bound action plan enlisting all the factors associated with oilseeds production

in the country. Dr. M.V. Rao, Former Special DG, ICAR & VC, ANGRAU, in his remarks reminded the participants about how India became self-sufficient in oilseeds production in Technology Mission on Oilseeds period. Each of the participants during their presentation highlighted the present status, major constraints and outlined the strategies for increasing the production of oilseeds/vegetable oils.

The two days long deliberations has resulted in the identification of major constraints/issues on which the detailed time bound action plan is required to be formulated to increase the production of oilseeds/vegetable oils. The following action points related to Mechanization and Post Harvest Technology:

- Increased awareness about the nutritive value of rice bran oil, cotton seed oil and corn oil and encouragement of their usage.
- Mechanization of oilseeds farming.
- Production of value added products more particularly from rice bran oil and soybean.
- Modernization of oil milling sector in production catchment for high oil recovery and better quality cake.

In addition, many policy changes required for the oilseeds/ vegetable oils sector including oil palm were also discussed.

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Institute Research Council (IRC) Meeting

The 18th Institute Research Council Meeting was organized during August 20-21, 2010 at CIPHET Ludhiana. The completed sub projects, ongoing sub projects and new sub projects were discussed. Dr. Jarnail Singh, Professor-cum-Head, Department of Processing and Food Engineering, PAU, Ludhiana graced the occasion as an Expert. Dr Devinder Dhingra, Senior Scientist, and Member Secretary IRC welcomed Chairman, Director CIPHET, Dr Jarnail Singh, Professor-cum-Head, Department of Processing and Food Engineering, PAU, Ludhiana, scientists and technical staff of both the campuses.

Dr. R. T. Patil, stressed upon the need to adhere to the mandate of the division, institute and the nation, in taking up the projects. He highlighted the use of hurdle technology to increase the shelf-life of the processed products. He also emphasized on post-harvest management, packaging and value-addition to increase the farmer's return. He said that machines were required for value addition and scientist should work in that area. He cited the example of pomegranate aril extractor developed by CIPHET scientists which is an efficient tool in the primary processing of the pomegranate. Dr Patil advised the scientists to provide technologies to the farmer and entrepreneurs as package. He advised the TOT division to



develop Entrepreneurship Development Programmes according to the farmers/ entrepreneurs needs and transfer technologies through mass communication, video production, documentary films etc. He appreciated the work of training given to jail inmates by TOT. Dr Patil cautioned the scientific fraternity against the duplication of the research works. He stressed the need for basic research in the area of storage of food grains in silos. The size of the silo should be small so that the farmers can store his produce at the farm level. The expertise with the scientists should be used to train the local silo manufacturers. He further emphasized that Scientists with engineering disciplines should work in the area of equipment development. In the end Dr Patil, asked the scientists to reorient the sub projects according to the suggestions/ comments and recommendations of brain storming meeting and feedback from the council.

Dr. Jarnail Singh stressed that our aim was to uplift the lives of the farmers. The post- harvest technologies should be utilized to prevent the wastage of the food. In this regard he quoted the advantages of the water-proof packaging of the food grains in the sacks. He suggested that the sack size may be reduced to 20 kg. As it would save a huge quantity of the grain from wastage. Post-Harvest Technologists should work in such a way to make available food to all the people of India. He said proper packaging should be done to avoid contamination. He emphasized the need to develop Ready to Eat (RTE) products which are convenient to the urban people. He exhorted the scientists to go for inter- institutional projects rather than working in isolation.

Dr Devinder Dhingra presented the Action Taken Report of the last IRC, which was followed by division wise presentations. The major projects and their activities to be taken up in the coming years were discussed first and it was followed by the presentation of completed sub projects and on-going sub projects.

Dr. Swapan K Datta, DDG (Crop Science) visits CIPHET

Deputy Director General (Crop Science) of Indian Council of Agricultural Research, Dr. Swapan K. Dutta, visited Central Institute of Post Harvest Engineering Technology (CIPHET) on 28 August, 2010 to get firsthand account of various initiatives taken by the institute in the area of post harvest engineering and technology.

Dr Swapan Kumar Datta is a well known plant biotechnologist and involved in research collaboration on application of genomics and gene technology for crop improvement with public and private organizations.



During his visit, he interacted with scientists of the institute and gathered information about research projects. Lauding role of CIPHET in post harvest, Dr Dutta said that still more than 30 percent of Indian population was affected by malnutrition and providing food security was emerging as big challenge globally. He said that more focus should be given on development of high energy processed food so that people could stay active throughout the day. He also visited research facilities of the institute. A video film on achievements, activities and mandate of CIPHET was screened. Dr R.T Patil, Director CIPHET, informed him about various products and processes developed by the CIPHET. He also requested him to provide guidance in the field of nutrigenomics for the development of designer foods, which is going to become a reality in near future. Dr. S.K Nanda, Project Coordinator (PHT) and scientific fraternity of the institute was also present on the occasion. Dr. Datta had come to Ludhiana to attend 49th All India Wheat and Barley Research Workers Meet at Punjab Agricultural University.

Dr. R. P. Dua, ADG (Food & Fiber) visits CIPHET

Dr R.P Dua, Assistant Director General (Food and Fiber Crops), Indian Council of Agricultural Research, New Delhi visited Central Institute of Post Harvest Engineering and Technology (CIPHET) on 30 August 2010 to get information regarding various research activities initiated by the institute. Dr R.T Patil, Director CIPHET, took him to various laboratories and research facilities of the institute. He also briefed Dr R.P Dua about various products and processes developed by the institute to help farmers increase their income level. Visibly impressed with research carried out at CIPHET, Dr R.P Dua said that lot of work is being done in the institute. He agreed that without value addition situation of farmers could not be improved. A video film showcasing achievements, activities and mandate of CIPHET was also screened for Dr Dua at Director's office.



Invited Talk by Dr. Jiwan Singh Sidhu

Dr Jiwan Singh Sidhu, Prof. and Head, Department of Family Science, Kuwait University delivered a talk on “Healthy Eating- View of Food Technologist” at CIPHET on 13-08-2010. It was an interesting talk which is for the benefit of one and all. It assumes great importance in our country as health care facilities are limited and expensive. If people adopt healthy eating habits they can cut expenditure on medical treatment and contribute more to the society.



Korean Scientists Visit CIPHET

Prof. Sun-Ok Chung & Prof. Dong-II Chang (Former President of Korean Society for Agricultural Machinery), Department of Biosystems & Machinery, Chungnam, National University, South Korea visited CIPHET on 20/08/2010 along with Dr. Manjeet Singh, Research Engineer, Farm Power and Machinery, PAU Ludhiana.



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PC (APA) visits CIFA, Bhubaneswar and MPUAT, Udaipur

Dr P R Bhatnagar along with Dr B.C.Mohapatra and Dr Bikash Sarkar visited the KVK (Khurda) adopted village Kaijanga, Khurda District to see the Breeding of carps in FRP mini carp hatchery, Carp seed packing and transport. He interacted with the participants (women farmers) of the Training Programme on "Hatchery breeding of carps" organized jointly by the APA Centre and DST-WOSB Scheme of Mrs Anusaya Mallick, Women Scientist Fellow. He was shown the newly fabricated automatic fish feeder powered by solar panels and proto-type fish seed transportation containers.



Dr. Bhatnagar also met Dr Ambekar E. Eknath, Director, CIFA, Kausalyaganga for formal discussion of the project with him. He also visited the Post-Harvest Technology laboratory of CIFA and inaugurated the Training programme on “Role of women in fish breeding and carp seed production” organized at KVK of CIFA, Kurda District on 24th August 2010. Dr. P.R. Bhatnagar also visited MPUAT, Udaipur during 26-28 August 2010. The main activities at Udaipur are; Data base creation and information synthesis on use of plastics in different agricultural activities in the region, Plastic based livestock housing and their effect on physiological performance of crossbred calves and Exploring the utility of plastics in handling, packaging and transportation of Custard apple. Dr. P.R. Bhatnagar also visited *Adarsh Vidhya Mandir*, Pindwara, District- Sirohi. Where a group uses plastic crates for collection and transport of custard apple and *Rajasthan Vanvasi Kalyan Parishad*, Kada Panchayat Samity, Kotda, District – Udaipur, a Custard apple collection center. He also visited *Nav Durga Nursery*, Bhatewar District- Udaipur for site selection at farmer’s field to start new project on construction and evaluation of low cost structures for protected cultivation of Capsicum and Tomato and Livestock Farm, RCA, Udaipur for plastic based livestock housing and their effect on physiological performance of crossbred calves.

Training on ‘Post-Harvest Technology for Rural Catchments’

A batch of seventeen participants attended training program on ‘Post-Harvest Technology for Rural Catchments’ at CIPHET, Ludhiana during 12-18 August, 2010. The training programme was sponsored by SIRD, Assam. The programme was inaugurated by Director, CIPHET, Dr. R. T. Patil. Dr. Deepak Raj Rai, Head, Transfer of Technology Division, facilitated the whole programme and it was coordinated by Dr. Sangeeta Chopra. The participants were farmers from the various districts of Assam.



The training was given on processing of grains, pulses, oilseeds, fruits and vegetables including processing of guava practicals. The participants were trained on minimal processing, packaging, storage of vegetables for value addition and preservation for these perishable commodities. They were also imparted with the knowledge of processing technologies for novel food products and their marketing. To provide them industrial exposure on commercial processing, they were taken to Markfed Canneries, Jalandhar, Nijjer Agro Industry Ltd, Amritsar where they saw processing of different commodities including canning process. Participants also visited Tomato Pilot Plant, Chilli Processing Plants and Mobile Agro-Processing Unit at CIPHET, besides getting hands-on experience on some of CIPHET technologies.

Rural Women take up Seed Processing as SHG activity at CIPHET, Abohar

The seed processing facility available at CIPHET Abohar was made available to group of 4-5 rural women of SHG on cutom hire basis. They used this facility for cleaning and grading of about 700 q of wheat and Barley grown by Regional Station of PAU located at Abohar. The cleaning and grading operation was soley carried out by this women group in about 45 days in the month of July and August 2010. This has demonstrated that women are second to none and they can also take up the seed processing as business which was otherwise considered as male domain.



Women workers engaged in various unit operations of cleaning and grading of grains

NITCON Offers EDP on Food Processing in Collaboration with CIPHET

Entrepreneurship Development Programme exclusively in the trade of Food Processing was organized by NITCON, Chandigarh in technical collaboration with CIPHET, Abohar for about 30days. Around 30 young entrepreneurs participated in the programme.



Participants are preparing Jamun Pulp for RTS

Orissa Agriculture Officers on Seven-Day Visit to Institute

A delegation of agricultural officers from Orissa visited the Central Institute of Post Harvest Engineering and Technology (CIPHET), Ludhiana, to get first hand information on the technologies developed by the institute. The delegation is on a seven-day visit to Punjab to find collaborative ways to improve the income level of farmers in Orissa. On their visit, Dr Nilesh Gaikwad, scientist, Transfer of Technology (TOT) Division, apprised the delegates of the various activities initiated by the institute. He spoke on the organisation structure, facilities and recent innovations carried out by the institute. A film on the institute was screened for the delegation, which also visited various research facilities of CIPHET. Elaborating on the purpose of visit, Dr Janaki said they intended to provide exposure to agricultural officers in Orissa about the progress in the area of post-harvest technology, precision farming, extension activities and marketing in Punjab. CIPHET Director, Dr. R. T.

Patil and Dr. Deepak Raj Rai, Head, Transfer of Technology Division, said they regularly conduct a number of Entrepreneurship Development Programme (EDPs) in the area of post-harvest and these could help increase the income of farmers through value addition.

CIPHET Extends Help to BAMETI

Dr Dilip Jain, Senior Scientist had attended as resource person a training program on “Agricultural Mechanization” was organised by Bihar Agricultural Management & Extension Training Institute at Patna on 7 August 2010. He presented the lecture on “Role of postharvest management and value addition in food and nutrition security”, which included various technologies developed at CIPHET Around 100 officers including the state and district level Agricultural Officer, Service Provider and Progressive farmers, participated. As a follow up Dr. Dilip Jain, also attended investors meet on “Post-Harvest Management, Processing and Contract Farming for selected Fruits and Vegetables”organised by Bihar Agricultural Management & Extension Training Institute at Patna on 21 August 2010. The meet was chaired by Dr. A.K. Sinha, Agriculture Production Commissioner, Govt of Bihar. The other dignitaries were Mr. R.K. Khandelwal, Agriculture Secretary, Mr. P.K. Jha, Director, Food Processing, Dr. M. L. Coudhary, Vice-Chancellor RAU, Pusa, Mr. Arvind Singh, Director Horticulture, Govt of Bihar, who shared their views. Around 120 investors and officers of various level and progressive farmers participated in the meet. Dr. Jain presented the various technologies developed under CIPHET and PHTS. Mr. A.K. Sinha, IAS, Agricultural Production Commissioner (APC) expressed that they will be interested that Bihar entrepreneurs may collaborate with CIPHET in establishment of the processing units.



CIPHET Contributes in Road Map Development for National Meat and Poultry Processing Sector

Dr. Suresh K Devatkal attended the workshop on “Road map for development of national meat and poultry processing sector” organized by National Meat and Poultry Processing Board. This workshop was attended by senior managers of export meat plants, governing members of the board, experts from Veterinary Universities, entrepreneurs and representatives from Ministry of Food Processing. Joint Secretary (Sh. Ajit Kumar) was the chairman of the workshop. In the forenoon session Dr. Devatkal delivered a



presentation on “CIPHET’s initiatives in meat and poultry processing” and also highlighted the CIPHET’s technologies. NMPPB expressed willingness to collaborate with CIPHET for establishing a testing and quality control lab for meat and poultry products. In the afternoon brain storming session Dr. Suresh made a presentation on Standards for meat and poultry products and their implementation.

CIPHET Collaborates with ICAR’s Arunachal Pradesh Center at Basar

Dr. Nilesh Gaikwad Scientist visited the research centre of ICAR Research Complex for NEH Region’s at Basar (Arunachal Pradesh) during 24.6.2010 to 4.7.2010. The visit was carried out in connection with consultancy work assigned to CIPHET regarding preparation of feasibility report for proposed Agro Processing Center. During the visits Dr. Gaikwad interacted with local farmers in two districts namely West Siang and Upper Subanseri along with District Agricultural Officer to collect information on local production of fruits and vegetables. The information on local storage and post harvest practices was also gathered. The major crops which need attention through APC are orange, banana, pineapple, ginger and paddy.



CIPHET Licenses Green Chilli Powder Technology

The technology of green chilli powder and puree was licensed to Mr. Suresh Dagadu Navale from Satara and Mr. S. K. Chowdhary from Jalgaon. Chilli, an important dietary component of Indians, would now be available in new avatar of green chilli powder and puree. Mr. Navale said there was a lot of scope for green chilli powder in the country and abroad. “There is no such product available on commercial scale in the market. Many people would like to use green chilli powder instead of red,” he added. Dr. Patil said that green chilli and puree are very unique products developed by the CIPHET. He said that any entrepreneur adopting these technologies was likely to get good returns.



Training and Licensing of Groundnut/Soy milk Paneer and Curd Technology

The scarcity in milk supply in developing countries has led to efforts towards the development of alternative milk like products from groundnut or soybean. Groundnut and soybean are two major raw material used for preparation of dairy analogues. Both have a potential role to play in combating malnutrition, the present low level in their consumption,

especially in the developing countries, should be increased. Preparation of peanut and soybean extract (milk like product) and its utilization in the development of dairy analogues such as flavoured beverage, curd, yoghurt, Lassi and paneer may be one such area of utilization. In the month of August this technology has been licensed to **Mr. Mahinder Singh S/O S.Nirmal Singh Vill. Kauri PO Khanna Dist. Ludhiana** on 21.08.2010

Technology Profile of Dried Onion Flakes and Powder

Onion (*Allium Cepa* L) is a commercially most important semi perishable crop of Asia origin, having short storage life, as compared to all the spice bulb crops. India ranks first in area of over 48000 hectares. Onion which accounts about 21% of the world crop area and country stands second after China with a share of around 14% of world's production. Fresh onion can be stored for 3-5 months at 0°C and 65-70 % RH after proper curing. Estimate post harvest losses of onion are 14-35%.

Drying and dehydration of fresh fruits and vegetables is one of the most energy-intensive processes in the food industry and a promising method of reducing post-harvest losses. The quality of dried product is strongly dependent on the drying process and the processing conditions, quality requirements, raw material characteristics, and economic factors. Dehydrated product can be used in dry soup mixes, canned soups and sauces, frozen entrees, processed meats, baby foods, snack foods and seasoning blends. Dried onion flakes can be sold at Rs 200 per kg and onion powder at Rs 250/kg. Good packaging material will help to store the product up to 9 months safely.

Process: Fresh red/ white onion has about 86% of moisture content and TSS of 12-13°Brix. **Cured Onions** are transported to onion processing industry either in gunny bag or crates. Onion cleaning and trimming is done to remove stalk and roots either manually or mechanically. Peeled onions are washed in water and edible portion of onions are sliced using slicer. Onion slices are pretreated to retain good colour during drying and storage and also to reduce microbial load. Surface moisture of pretreated samples is removed using basket centrifuge prior to spreading in tray dryer or solar dryer for drying at 65°C. A batch of 50Kg sliced onion takes about 8-9 hours drying time in tray drier and 16-18 sunshine hours in greenhouse drying. 100 kg of onion yields about 14-16 kg of dried onion flakes and these can be rehydrated in water for 30 min before consumption to get 5-6 times of rehydrated onions. Onion flakes can be converted into powder for utilization in the different product preparations by using pulverizers/mixer/grinder. The product can be stored for more than 9 months in appropriate packaging material.

Benefit Cost Analysis: To process 100 kg of fresh onion, a small entrepreneur can initiate his business with capital fixed investment for machinery including dryer of Rs 3.00 lakh and working capital of Rs. 1.00 lakh for 3 months with a total capital investment of Rs 4.0 lakhs. This business will generate at least two person job directly and another 2-3 indirectly. Onion powder of about 1875 kg can be produced per annum and it can be sold @ Rs. 225 / kg. Total sale will be of Rs. 4,21,875 and actual annual profit (Total sales-Annual cost) of Rs. 1,40,900 can be obtained. Profit on sale, Return on capital investment and Break Even Point (B.E.P.) will be 33.4 %, 35.10 % and 50.82%, respectively. CIPHET is organizes training program and licenses Onion flakes and Powder Technology at the fee of Rs 11,000/- excluding boarding and lodging charges.

Interested persons may contact Dr. D. M. Kadam Sr. scientist and I/C ITMU (Mob no. 09417596894, 01612313135, email: kadam1k@gmail.com) for further queries.

Promotion & Joining

Dr Deepak Raj Rai joined as Head (Transfer of Technology)



Dr. Deepak Raj Rai did B.Tech. (Agril. Engg.) from PAU, Ludhiana during 1987, did Master's from IIT, Kharagpur in 1989 and doctorate again from PAU, Ludhiana in 2006. Dr. Rai joined ICAR as Scientist in January 1992 and joined CIPHET, Ludhiana in 1993. Dr. Rai has been involved in Research, Extension and Teaching at CIPHET, Ludhiana. He has expertise in food packaging and has worked at National Food Research Institute Japan and School of packaging, Michigan State University, USA in the area of Food packaging. He has a number of publications in International journals of repute and has guided a number of undergraduate and post-graduate students in the area of food packaging. He assumed the charge of Head (Transfer of Technology) on August 25, 2010.



Ms. Monika Sharma has joined CIPHET on 26th August 2010 as Scientist in the division of Food Grains & Oilseeds Processing. Her ARS discipline is Food Science and Technology. She did her bachelor's degree in Food Technology from Delhi University. She has done M.Sc. Food Technology from GB Pant University of Agriculture & Technology. Her M. Sc. thesis title is 'Studies on Preparation of Sev using Unripe Banana'. She had joined NDRI, Karnal in 2008 for pursuing Ph.D. in Dairy Technology.



Dr. Indu Karki has joined CIPHET on 27th August 2010 as Scientist in the division of Transfer of Technology. Her ARS discipline is Family Resource Management. She did her bachelor's degree in Home Science from G.B. Pant University of Agri. & Tech. Pantnagar. She did M.Sc from P.A.U Ludhiana and Ph. D. from G.B. Pant University of Agri. & Tech, Pantnagar. Her Ph.D thesis title was "Application of Hospital Ergonomics in working environment of nurses in Health Care Industry of Uttarakhand State".

Technology of the Month

Development of Ber Candy using Osmo-Air Dehydration techniques

Ber (*Ziziphus mauritiana* L) is one of the important underutilized fruits grown in semi-arid and arid regions of the country. Ber is a nutritious fruit, which is rich in the B group of vitamins (thiamin, riboflavin and niacin), vitamin C and β -carotene, a precursor to vitamin A. It is also rich in the minerals like phosphorus, calcium and iron. In spite of significant export and increased sales in local market, a large surplus during glut gives low returns due to perishable nature of the fruit. Therefore, processed product could be developed which can have more shelf life and marketability. Keeping the potential of processed products in mind, Ber candy has been developed using Osmo-Air drying techniques. Mature Ber fruits were obtained from orchards of CIPHET, Abohar. The sound fruits were washed



Ber Candy

under tap water to remove dirt or foreign particle if any on the skin. The stem of ber fruits was removed manually. The manual peeling was done using sharp stainless steel knife. The hygienic conditions were maintained during all processes to avoid contamination. The edible fruit portion was cut into slices and seed was removed. Blanching of Ber slices with 0.2 % KMS was done to have light and good colored candy. The osmotic agent, i.e. sugar syrup (30, 40, 50 and 60 °B) was prepared by adding the required amount of sugar in water and mixed thoroughly. It was then heated to 100 °C for dissolving sugar. Citric acid (0.2 %) was added to sugar syrup while boiling, for purification of the syrup. The prepared syrup was filtered through a clean muslin cloth and cooled to room temperature. The ber candy was prepared by soaking the blanched and control fruit slices in the osmotic agents in a vessel in the ratio of 1:2 (slices: sugar syrup) for 48 hrs at ambient conditions. After 48 h, the syrup was drained and ber slices were arranged in the trays as individual pieces and dried in a tray drier at 60 °C for 5-6 hrs. The dried fruit slices were cooled before packing. Osmo air dried Ber candy with 60 °B at ambient conditions scored maximum on Hedonic scale for all sensory parameters like color, flavor, taste, texture and overall acceptability. Nutritional composition of Ber candy in terms of moisture content, TSS, ascorbic acid, acidity, total sugars and reducing sugar was found to be as 10.08 %, 48 °B, 95.97 mg/100gm, 0.225 %, 21.65 % and 9.67 % respectively.

The developed Ber candy is a nutritious confection and can be used as an excellent substitute of candies with artificial flavoring and essences. It is a healthy and nutritious nibble for children as well as adults in today's health conscious world.

Walk in Interview

Applications are invited for the posts of Senior Research fellow (SRF) in a sub – project of National Agricultural Innovation Project (NAIP) at Central Institute of Post-Harvest Engineering and Technology, Ludhiana, Punjab. The appointments will be purely temporary under contractual and co-terminus basis, following the prescribed procedure for six months or till the completion date of the project. The appointments may be terminated at any time without notice or assigning any reason thereof.

Name of the sub-project	Development of Nondestructive Systems for Evaluation of Microbial and Physico-chemical Quality Parameters of Mango.
Date of Completion of the project	31/03/2012

i)	Number of Post	One
ii)	Qualification	a) Essential : M. Sc. Microbiology/biochemistry b) Desirable
		Exposure to identification of microbes, development of biosensor, and statistical analysis software packages for chemometrics.
iii)	Remuneration	Rs. 12000/- consolidated + HRA
iv)	Age Limit	35 years for man and 40 years for women (with relaxation in case of SC/ST/OBC as per existing rules)

Date and place of interview : 24/09/2010, 10.00 AM.

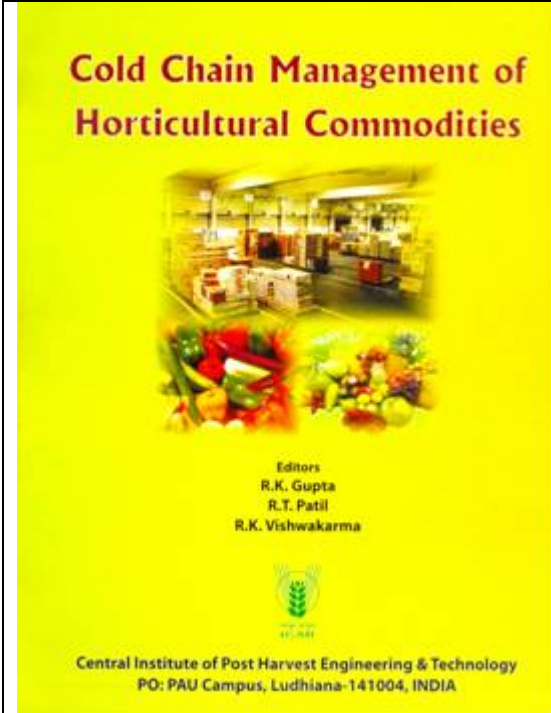

Central Institute of Post-harvest Engineering and Technology, PO: PAU, Ludhiana – 141 004, Punjab.

Terms and Conditions:

- i) The above positions are purely on temporary basis and co-terminus with the project
- ii) No TA / DA will be paid for attending the interview
- iii) The applicants must bring with them original documents and a brief of research work carried out during postgraduation / Ph.D. along with one set of photocopy at the time of interview.
- iv) No objection certificate from the employer in case he / she is employed elsewhere.
- v) Experience certificate in original (if any)
- vi) Canvassing in any form will render the candidate disqualified for the post

Note : The applications with detailed bio-data in the following proforma (1) Name of the candidate (2) Father's Name (3) Date of birth (4) Present address (5) Permanent address (6) Qualifications (7) Experience, if any (9) Publications etc. should be sent through registered post and email (snjha_ciphet@yahoo.co.in, knarsan@yahoo.com) with passport size photograph to Dr. S. N. Jha, Consortium Principal Investigator, (CPI), NAIP & Sub - project, CIPHET, PO : PAU campus, Ludhiana – 141 004, Punjab and attend the walk-in-interview as per above schedule.

Publication of the Month

 <p>Cold Chain Management of Horticultural Commodities</p> <p>Editors R.K. Gupta R.T. Patil R.K. Vishwakarma</p> <p>Central Institute of Post Harvest Engineering & Technology PO: PAU Campus, Ludhiana-141004, INDIA</p>	 <p>Produce Process Proper CIPHET NEWS Vol. 3, No. 2 POST HARVEST ENGINEERING & TECHNOLOGY - UPDATE April to June, 2010</p> <p><i>From The Director's Desk....</i></p> <p>The second quarter of year 2010 was indeed fortunate for us as a brain storming session was held to review the scenario of the post-harvest technology research in India. It was chaired by Dr. S. Aravamudan and attended by many dignitaries from ICAR and other institutes. During the period, the CIPHET attempted many technologies like ethanol production using thermo tolerant yeast, enhancement of shelf life of chappati in packages, flaxseed based emulsion based hair conditioner and development of coriander sprouts. The raising of the jai session continued, in which demonstration was given in processing of ginger, garlic and onion and meat products. The technologies of AICRP on PHT and APA also provided important insights. The RAC meeting was held during this period in which many important recommendations were made by members. Two training programs were held for the farmers from Bihar and Assam. As many as 7 technologies were transferred to the entrepreneurs. The technologies of CIPHET were aired by All India Radio in the program 'Do Duni Chai'. So far 10 radio talks have been broadcasted. Ten numbers of research papers were published and active participation in conferences, exhibitions and other related programmes was taken up. The scientists attended 12 conferences and workshops. A good number of farmers and entrepreneurs visited the institute. During this period, two new faces Dr. Deepika Gooneratne and Dr. Vijay Singh Meena have joined the institute. I welcome them to the family of the institute. The help rendered by all scientific, administrative, technical and supporting staff of CIPHET in institute activities is highly appreciated and acknowledged.</p> <p>IN THIS ISSUE</p> <ul style="list-style-type: none">From the Director's DeskBrain Storming SessionResearch HighlightsAICRP on PHTAICRP on APAProgramme OrganizedET&TPapers Published/ PresentedProgramme ParticipationProceedings <p>(R.T. PATIL)</p> <p>Central Institute of Post Harvest Engineering & Technology, Ludhiana, (Punjab)</p>
<p>Proceedings of the National Seminar Sponsored by NHB</p>	<p>CIPHET News April-June 2010</p>

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