



Central Institute of Post Harvest Engineering & Technology Ludhiana

OUR SLOGAN: PRODUCE, PROCESS AND PROSPER

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Director's Column



Dear All

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A one-day training programme on post harvest management and value addition of aonla fruit was organized at CIPHET Abohar.

The AICRP on APA workshop was held at CAE&PHT, Gangtok (Sikkim) during 4-6 November, 2011. The Quinquennial Review Team (QRT) visited experimental farm of APA, workshop, laboratories and orchards at CIPHET, Abohar.

The QRT meeting of CIPHET and AICRP (PHT) was also held at CIPHET, Ludhiana on 25th November, 2011.

Dr. S. N. Jha has been elected for NAAS fellowship for the year 2012 for his major contribution of need based research on reducing the post-harvest losses of fruits.

Training programme on soymilk and turmeric processing was held. The programme was aimed at development of entrepreneurship and self employment among youth.

A national seminar on "Post-Harvest Packaging, Cold-Chain Logistics and Instrumentation Techniques for Quality and Safety of Perishables" was organized on 19-20 December, 2011.

With best regards

**R.K. Gupta, FIE
Director (Acting)**

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Brain Storming Meeting on Health Foods and Secondary Agriculture

The Brain Storming meeting on **Health Foods** was held under the chairmanship of Dr. M.M. Pandey DDG (Engg), ICAR at IASRI, New Delhi on 17th November, 2011. Dr. R. P. Kachru, Ex ADG (PE) and Dr. Narpinder Singh, Professor and Dean, GNDU were invited as experts for this brainstorming meeting. Scientists from CIPHET, other ICAR institutes and SAU's participated in this meeting. Dr P. Chandra, Director CIAE, Bhopal highlighted some of naturally occurring health foods and also emphasized the need for characterization of raw material and then processing for converting them into health foods. Dr. R. K. Gupta, Director (Acting) CIPHET presented the Overview on Health Foods Mega Project covering various aspects on the subject which was appreciated by all the delegates. Dr. G. C. Tuteja, DDG, ICMR suggested for collaboration with the other stakeholders in the further meetings, so that a sound discussion on all the aspects of project proposal and technology dissemination can be done. The presentations for fourteen individual concept notes on health foods by participating scientists were also made.

The meeting on **Secondary Agriculture** was held under the chairmanship of Dr M.M. Pandey DDG (Engg), ICAR at IASRI, New Delhi on 18th November, 2011. Scientists from different ICAR institutes and SAUs participated in the meeting. During his opening remarks, Dr M. M. Pandey, DDG (Engg) emphasized on establishing the efficacy of the enterprise by indulging in secondary agriculture. Dr. R. P. Kachru, Ex. ADG (PE) and expert, said that secondary agriculture should be linked with primary agriculture and the impact of this project will be going to revolutionize the present agriculture system and for that he emphasized innovative and integrative approach. In his opening remarks, Dr. Narpinder Singh, Dean, GNDU and Expert invited due attention on relooking the whole gamut of processing activities in view of growing urbanization and population. Dr K.K. Singh, ADG (PE) highlighted the definition, gaps, researchable issues and future thrust areas under secondary agriculture. A total of 31 presentations of the invited proposals were taken up, discussed and suggestions were made for further improvement.

Training Program on Postharvest Management and Value Addition

A one-day training programme on post harvest management and value addition of aonla fruit was organized on 29th November, 2011 at CIPHET Abohar under a Network Project entitled “*Assessment of gender issues and identification and refinement of selected women specific technologies in horticultural crops.*” The training programme was attended by 50 farm- women from the selected villages. Dr. Dilip Jain, Head, HCP Division, Abohar delivered a talk on the CIPHET developed technologies and explained various opportunities for the women participants to adopt these technologies for entrepreneurship development. Dr. Anoop Kumar, Head, KVK, Sangaria attended the programme and focused on adoption of scientifically proven technologies by the rural farm-women. Many demonstrations and lectures on development of various value added products were delivered to the participants.



AICRP on APA Workshop Held at CAE&PHT, Gangtok

The AICRP on APA workshop was held at CAE&PHT, Gangtok (Sikkim) during 4-6 November, 2011. Dr. S. R. Singh, Ex VC, RAU, Pusa, Bihar was the chief guest. Dr. Nawab Ali, Ex-DDG (Engg) and Sh. K. S. Iyengar, Joint Secretary, NCPAH, New Delhi were the guests of honour for this inaugural session. Dr. Rohini Kumar, Director of Research, CAU, Manipur was the Chairman and Dr. K. K. Singh, ADG (PE) and Dr. P. K. Srivastava, Dean, CAE & PHT were the co-chairman for this session. Dr P.K. Srivastava and Dr P R Bhatnagar, PC, APA welcomed the guests, dignitaries and participants. Dr P K Srivastava, Dean, CAE&PHT in his welcome address focused on the problems faced in Sikkim and importance of plasticulture in this area. Dr. P. R. Bhatnagar, PC, APA presented the salient achievements of the each cooperating centre. Dr. K. K. Singh in his remarks told about the need and problem based research for the region which will be useful for farmers and plastic industries. Dr. Nawab Ali stressed upon the important research areas viz. nutritional quality and shelf life of produce cultivated under protected cultivation, design of polyhouse according to microclimate and crops etc. Dr. Rohini Kumar gave emphasis on the need of plastics in hilly agriculture for pond lining, micro irrigation, and covered cultivation. Dr. S. R. Singh talked about the importance of plastics in agriculture and horticulture. He emphasized on design aspects of polyhouse and energy budgeting in polyhouse and suggested that the plant physiological aspects of crops should be studied thoroughly in protected cultivation before designing the structure. Dr. S. R. Singh, Chairman QRT, APA along with members Er. H. S. Lohan, Retd. Director of Agriculture, Haryana, Dr Krishna Manohar, Professor, UAS, Bangalore, Dr. R. Viswanathan, Professor, TNAU, Coimbatore, Dr. T. B. S. Rajput, PD, WTC, IARI, New Delhi, Sh. K. S. Iyengar, Joint Secretary, NCPAH, Dr. K. Yella Reddy, Project Officer, APMIP, Hyderabad, Dr. M. R. Manikantan, Senior Scientist & Secretary, QRT attended the workshop. Principal Investigators of 11 cooperating centres presented the progress of on-going projects and new proposals during the workshop.



Quinquennial Review Team (QRT) Meeting

Dr. S. R. Singh, Chairman, QRT, APA along with members Er. H. S. Lohan, Retd. Director of Agriculture, Haryana, Dr. Krishna Manohar, Professor, UAS, Bangalore, Dr. R. Viswanathan, Professor, TNAU, Coimbatore, Dr. P. R. Bhatnagar, PC, APA and Dr. M. R. Manikantan, Senior Scientist and Secretary, QRT visited the cooperating centre, CIPHET, Abohar on 28.11.11. The QRT visited experimental farm of APA, workshop, laboratories



and orchards at CIPHET, Abohar. All scientists at CIPHET, Abohar attended the meeting. Dr. D. D. Nangare, PI of cooperating centre, CIPHET, Abohar presented the progress report of APA. The QRT appreciated the progress and discussed about the future work plan and outreach activities of the centre.

QRT, Team comprised of Chairman Dr. S. R. Singh and Members Dr. H. S. Lohan, Dr. T.B.S. Rajput, Dr. R. Vishwanathan, Dr. Krishna Manohar and Sh. Krish Iyengar of AICRP on APA visited CSKHPKV, Palampur center during 01-03 December, 2011 along with PC (APA) Dr. P. R. Bhatnagar. QRT team visited the Agricultural Engineering division and met Dr. D. K. Vatas, Head, Division of Agril. Engg. and reviewed the AICRP on APA activities followed by Workshop and APA farm. The team met



Honorable, Vice Chancellor, Dr. S. K. Sharma, CSKHPKV, Palampur Dr. S. P. Sharma, Director (Research) has given a brief overview of the research activities of the university. Then, Dr. R. S. Rana, PI, AICRP on APA gave presentation on center's activities during the last five years. Team also visited the local village for review of outreach activities in farmer's field of Sh. Dharm Singh (village Banain), Sh Shishupal Patial (village Kandibari), and Sh Suresh Chaudhary (village Sagur). These farmers told that they are using polyhouses especially in nursery production and earning more profit due to this. Team also visited the Bee Research Station, Bagwan, Nagrota, Kangra (HP).

The QRT meeting of CIPHET and AICRP (PHT) was also held at CIPHET, Ludhiana on 25th November, 2011. Dr. M. M. Pandey, DDG (Engg.), ICAR, Dr. N. C. Patel, VC, JAU, Junagarh & Chairman QRT, CIPHET; Dr. R. P Kachru, Ex-ADG (PE), ICAR & Chairman QRT, AICRP on PHT; Dr. K. K. Singh, ADG (PE), ICAR, Dr. G. S. Chauhan, Member QRT, CIPHET; Dr. N. J. Thakore, Member QRT, CIPHET; Dr. R. K. Jain, Member QRT, CIPHET; Dr. J. B. Prajapati, Member QRT, CIPHET; Dr. Narpinder Singh, Member QRT, AICRP on PHT; Dr. S. K. Roy, Member QRT, AICRP on PHT; Dr. J. Sahoo, Member QRT, AICRP on PHT; Dr. Rakesh Nigam, Member QRT, AICRP on PHT; Dr. B. Ranganna, Member QRT, AICRP on PHT; Dr. R. K. Gupta, Director, CIPHET; Dr. S. K. Nanda, PC (AICRP on PHT), CIPHET, Ludhiana; Dr. H. S. Oberoi, Secretary QRT, CIPHET; Dr. D. N. Yadav, Secretary QRT, AICRP on PHT were present during the meeting. Dr. M. M. Pandey emphasized that each Institute/ PC unit must concentrate on the thrust areas of the research. He further stated that QRT is a very important body and its major objective is basically to review the progress made in research, utilization of resource, planning and utilization of

budget as well as to suggest thrust areas of research and administrative reforms for the next plan (XII Plan). Dr. N.C. Patel suggested on having more pilot plants, referral laboratories and proper infrastructure for handling the produce. Dr. R. P. Kachru mentioned that the post harvest technology (PHT) is the key area of business today and would play a pivotal role in the country's economy in the years to come. Dr G. S. Chauhan emphasized on the raw material availability and quality before taking up the processing activities. He stated that thorough information about the raw material should be collected for getting a product of good quality. Dr. R.K. Jain stressed on the need of establishing equipment testing laboratory at CIPHET so that the developed prototypes can be tested. He also stated that the validation of developed prototypes must be done through multi location trials using a variety of raw materials. He also stressed upon the need of having regional centres for CIPHET for a better outreach. Dr. N. J. Thakore stated that technology dissemination channels should be streamlined and CIPHET should work closely with PHT and extension wings of SAUs for transfer of technology and also field level and multi-location testing. He also stated that CIPHET should become a training hub for students, entrepreneurs and scientists from other disciplines in post-harvest activities. Dr. Narpinder Singh urged that different PHT centres should concentrate on developing location specific machines and processing protocols. Dr. J. Sahoo stressed on the need of complete product testing in terms of its nutritional, physico-chemical, sensory and shelf life analysis. He also stated that the comprehensive clinical product testing must be done for all developed products. Dr. B. Ranganna was of the opinion that the Institute-Industry interface must occur once in every three years. Dr. K. K. Singh stressed on the need of region specific research and emphasized on the value chain concept. He also mentioned that CIPHET must concentrate on prototype development, which is a key thrust area for the Institute. Dr. H.S. Oberoi proposed formal vote of thanks to the Chairman and members of QRT for their valuable inputs and suggestions.

Transfer of Technology to Entrepreneur

Three-days training programme on soymilk and tofu was held during 3-5 November, 2011. The programme was aimed at development of entrepreneurship and self employment among youth. Dr R. K. Gupta, Director, CIPHET said that soybean milk has lot of potential in the market and health conscious segment of people are now adopting soy based products. Emphasizing on maintenance of quality, Dr D. R.



Rai, Head Transfer of Technology Division said that food safety standards and norms of the government for product development should be followed. Harmful chemicals should not be used; otherwise product would not succeed in long term. Dr. Sangeeta Chopra, Senior Scientist said that nutritional benefits in the soy products are quite high. Dr. Devinder Dhingra, Senior Scientist gave detailed know-how on project profile of processing of soybean for milk, tofu and other dairy analogues and also answered the queries of participants regarding soybean processing and establishment of plant, estimated cost etc. During feedback session, 17-year-old Rajat Bansal, a participant from Fatehabad, Haryana said that training had given him enough confidence to start venture and he will soon launch products under brand name of Mr Growth.

World Bank Team Visited CIPHET to Assess NAIP Projects

To see how the National Agricultural Innovation Project (NAIP) projects are fitting into big picture of achieving overall growth in agriculture, a World Bank team visited the institute during December 8-9, 2011.

Speaking on the occasion, Dr P. S. Sidhu said that they came to monitor the technical/financial achievements of the NAIP projects. He added that all the sub projects running under NAIP had been selected after competitive process and got funding due to their potential. Dr V. K. Taneja, Vice-Chancellor, Guru Angad Dev University of Veterinary Sciences (GADVASU) praised CIPHET for development of technologies especially suitable for small entrepreneurs. Calling research initiative under the NAIP projects well orchestrated, he said that due to rigorous monitoring of these projects, technological output was really appreciable. Dr R. K Goyal, National Coordinator (NAIP) said that their major emphasis is on overall growth of the country and they are more interested on the impact of the technologies developed under the NAIP projects. Dr R. K. Gupta, Director, CIPHET hoped that World Bank team would be getting required information to judge performance of the NAIP projects.



Training Programme on Turmeric Processing

A training programme on turmeric processing for the farmers was organized during 6-7 December, 2011. During the training programme, farmers were given hands-on-experience on turmeric processing so as to equip them for running their own production units at commercial level. Dr. D. R. Rai, Head, Transfer of Technology Division told that farmers can increase their profits by processing the turmeric grown in their own fields. He also stressed the need for proper marketing and packaging. He informed the participants that CIPHET would provide complete help to farmers even after this training. Asking farmers to maintain quality and hygiene in production process, Dr. Sangeeta Chopra said that the institute could also offer exposure in production and marketing to the farmers.

One of the participants, Mr. Manvir Singh from Gurdaspur said that he finds turmeric processing business very lucrative and he will set up his own processing unit. Notably, India is the largest producer of turmeric in the world. Around 79,300 hectares is under this crop and annual production stands around 1,43,900 tons. While major production is located in southern and western states, recently Punjab farmers have also started growing turmeric.

CIPHET Organized National Seminar

The national seminar on “Post-Harvest Packaging, Cold-Chain Logistics and Instrumentation Techniques for Quality and Safety of Perishables” was organized by the Institute on 19-20 December, 2011 with financial support from National Horticulture Board (NHB) and National Bank for Agriculture and Rural development (NABARD). Dr. V. K. Sehgal was the chief guest, Dr. T K Goswami and Dr. P K Srivastava were the guests of honour. The seminar

envisaged the identification of the strategies and solutions which could be implemented in the post-harvest sector in order to reduce losses and shelf-life extension of perishables. The seminar aimed to address the initiatives as well as the new developments such as smart packaging, image processing techniques, non-destructive quality evaluation, biosensors and instrumentation techniques to address the quality, shelf-life and marketing aspects to identify the critical gaps and their possible



corresponding solutions. The seminar had three different sessions which were Post-harvest handling and Pre packaging technologies; Design, optimization and application of packaging and instrumentation techniques and Distribution, storage, transportation, quality assurance and shelf life enhancement of food. The different sessions included 8 invited talks and 24 oral presentations. Poster session was also organized in which total 8 posters were presented. For this seminar, besides local participants of Punjab, participants also came from various distant places like Kharagpur, Bhubaneswar, Gangtok, Navsari, Bangalore, Hisar, Nagpur, New Delhi to make the seminar very informative and a grand success for the institute.

Frontline Demonstration on Minimal Processing Technology

The team of scientist consisting Dr. Nilesh Gaikwad and Dr. Tanbir Ahmad alongwith Technical officer Sh. O.P. Moondan demonstrated the minimal processing technology to the group of 25-30 farmers at the field of progressive farmer Mr. Shamshad Ahmad at Abbaspura, Malerkotla on December 22, 2011. The Malerkotla district and nearby area is the hub of vegetable production in Punjab. The vegetable growing farmers conveyed their major concern of high



perishability in vegetables and accompanied losses involved in transportation to far off market places. The commonly grown vegetables such as spinach, fenugreek, carrot and peas were selected for frontline demonstration. The machines such as basket centrifuge developed by the CIPHET, Band Sealer with gas flushing attachment, hand sealer and packaging materials such as PP and LDPE were carried to the farmer's field. They explained the proper harvesting process, time and importance of field heat removal from highly respiring commodities such as vegetables. The farmers were apprised about the cleaning, washing process and removal of surface moisture by using the basket centrifuge. The farmers were also educated about the types of the polyethylene films and their selection for the packaging. The process of micro perforation for avoiding the anaerobic respiration in vegetable packages was also demonstrated to them. The farmers especially youth showed keen interest in the technology as they were convinced about the potential of the technology in fetching high income because of the better presentation of the product in the market, ready to cook attribute and shelf life enhancement leading to prospectus of sell in far away market places. At the end, farmers' queries were addressed by the team of scientists.

CIPHET Attended National Workshop on Farmer-Led Innovations

A “National Workshop on Farmer-Led Innovations” was held at CCS HAU, Hisar during December 23-24, 2011. It was jointly organized by CCS HAU, Haryana Kisan Ayog, ICAR, TAAS (Trust for Advancement of Agricultural Sciences), PPV & FRA (Protection of Plant Varieties and Farmers’ Rights Authority) and NIF (National Innovation Foundation). The innovative farmers including award winners from different states of the country attended and discussed about their innovations in technical sessions and shared their success stories. The workshop was attended by Director of Zonal Project Directorates, Programme Coordinators and Subject Matter Specialist of KVK and the scientists of various ICAR institutes. The workshop provided a unique opportunity, especially to policy makers, and development officials to listen farmers and got a feel of their valuable achievements. Dr. S. Ayyappan, DG, ICAR and Secretary, DARE was the Guest of Honour. The exhibition on various items was also displayed. Dr. Indu Karki, Scientist from CIPHET attended the programme.

CIPHET celebrates 22nd Foundation Day

Central Institute of Post Harvest Engineering and Technology (CIPHET) celebrated its 22nd foundation day on 29th December, 2011 at Ludhiana campus. Speaking on the occasion, Director CIPHET Dr R.K Gupta said institution has grown by leaps and bounds in a very short period. “With small strength of scientists, we have developed more than 40 technologies in last five years,” he said, adding that institute was also one of the best in research publications among other institutes of Indian Council of Agricultural Research (ICAR).



Recognizing the staff for its contribution in strengthening the institution, he said that CIPHET could only become an institute of national repute due to hard work and dedication of its founders. “They had started the things from scratch, now we have best of research facilities in Ludhiana and Abohar campuses of the institute. We have even expanded in south by opening up agro processing center complex at University of Agriculture Sciences, Bangalore,” he added.

Counting research achievements, Director CIPHET Dr R.K Gupta named pomegranate aril extractor, maize degermer, minimal processing and guava processing among other technologies developed by the institute. He also revealed that soon a food testing laboratory and center of excellence in small millets processing would be established in the institute. Project Coordinator (APA) Dr P.R. Bhatnagar talked about progress made in the All India Coordinated Project (AICRP) on application of plastics, which is headquartered at CIPHET. Head AS&EC Division Dr S.N Jha advised the young scientists to set their goals on daily basis and work for the progress of the institute. Saying that technological progress in food science is happening very fast, CIPHET Abohar Incharge Dr Dilip Jain said that pace of technological development need to be increased in order to match with competition. Senior Scientist Dr Mirdula Devi coordinated the function and Senior Scientist Dr K.Narsaiah presented a vote of thanks. A special session was organized to express views of CIPHET faculty for feedback and future strategies.

Veteran staff members Sh. Sohal Lal and Sh. Yashpal Singh shared their experience about establishment of the institution and Scientist Dr D.D Nangare was specially honoured for his association of more than ten years with CIPHET. A cultural function was also followed to entertain the faculty.

School Students Visited CIPHET

A visit of school children was also held in the institute on December 29, 2011 for creating awareness regarding institution's facilities. Dr. Indu Karki, Scientist from ToT division coordinated the visit. A small exhibition of value added products prepared from aonla and guava developed by CIPHET, Abohar was also displayed to make them aware about the post-harvest aspects of food crops and associated machinery.



CIPHET Scientist Awarded

Dr. S. N. Jha has been elected for NAAS fellowship for the year 2012 for his major contribution of need based research on reducing the post-harvest losses of fruits. His major contributions are development of processing technology for *makhana* to alleviate human drudgery, to evolve non destructive methodologies for predicting maturity and sweetness of mango, freshness index of eggplant, tomato storage technologies for hot and humid atmosphere, development of an improved evaporative cooled storage structure for short term storage of horticultural produce in hot and dry region and giving leadership in conducting researches in upstream area of postharvest technology in the country. He is known as pioneer in India for Post-Harvest Technology of *makhana* and nondestructive methods of quality evaluation of fruits. Dr. Jha has about 165 publications in International and National Journals, books and proceedings of seminars/conferences.



Conferences/ Seminars Attended

Dr. Mridula D., Sr. Scientist attended the XIX Annual Convention and National Symposium on “Emerging management Concepts for Sustainable Livestock and Poultry Production” during 2-4 November, 2011 held at GADVASU, Ludhiana and won the best poster Presentation Award at this event.

Dr. D. D. Nangare, PI, APA and Dr. Jitendra Singh, Sr. Scientist participated in AICRP on APA workshop at CAE & PHT, Gangtok (Sikkim) during 4-6th November, 2011.

Dr. S. N. Jha and Dr. K. Narsaiah attended International Conference on Functional Dairy Foods (ICFDF, 2011) during 16-19 November at NDRI, Karnal.

Transfer/New joining

- Ms. Aruna Sharma, F& AO was transferred from CIPHET, Ludhiana on 16-11-2011 to Zonal Project Directorate Unit, Zone VI, Jodhpur.
- Mr. K. S. Chauhan joined as Administrative Officer at CIPHET, Ludhiana on 16 -12-2011.
- Dr. Bharat Bhushan joined as Scientist (Bio-Chem. Plant Sciences) at CIPHET, Abohar on 17 -12-2011.
- Ms. Leena Kumari, Scientist (Electronics & Instrumentation) transferred from CIRCOT, Mumbai to CIPHET, Ludhiana on 19 -12-2011.

Technology of the month:

Refrigerated Transport Vehicle for Perishable Foods

A refrigerated transport vehicle is developed for lowering the meat temperature after the slaughter and for the transportation of carcass from slaughter house to the market as well retail distribution or selling of meat products. Refrigeration unit mounted on top for cooling the solution of ethylene glycol and salt stored in the jacket of insulated box. This solution is cooled to subzero temperature by running the refrigeration unit by plugging to power source for 8-10 hours



before use. The products are chilled due to heat transfer by convection in still air from products to the interior body of insulated box. The refrigerated transport vehicle has capacity to transport 300 kg of meat and meat products to lower the temperature of meat up to 5 °C. Hooks were provided at top for hanging carcasses and provision was also made for keeping racks. The wattage of compressor is 0.65 kW. Compared to control, the total microbial load was less by 2 log cycles on carcass chilled in the refrigerated vehicle. This vehicle can also be used for other perishable items like fruits, vegetables, milk, fish etc. Thus, it will form an important link in cool chain maintenance for perishable food products.

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