



Central Institute of Post Harvest Engineering & Technology Ludhiana

OUR SLOGAN: PRODUCE, PROCESS AND PROSPER

**CIPHET E - Newsletter for August 2011
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Director's Column



Dear All

The 20th Institute Research Council Meeting was organised to discuss the completed, ongoing and new research project proposals. Emphasis was given to work on post-harvest management, packaging and value-addition of food crops to increase the farmer's return. Scientists were advised to design farmer friendly machines/equipments and hand tools required for post harvest processing, and to propose new projects targeting healthy foods.

CIPHET and PAU jointly hosted Coordination Committee Meeting (CCM) of AICRP on PHT to propose the new research projects with real practical applications and benefits for society.

Dr. M.M. Pandey, DDG (Engg) and Dr. K.K. Singh, ADG (PE) visited CIPHET, Abohar and seen the research facilities, pilot plants, crop production farm and orchards. Important suggestions were given for maintenance of orchards, landscaping and planting *sapota* plants in new orchard area. Great appreciation and encouraging thoughts were expressed by DDG (Engg.) during his visit to CIPHET, Abohar which will certainly motivate the scientists of the station for improving their research performance.

In the CIC meeting of NAIP sub-project on "mango" under component-4, action taken report on the recommendation of the 14th CIC meetings was presented and need of having a network project on integrated approach for development of sorting/grading system for mango in future was discussed after completion of NAIP sub project.

An insulated ventilated container for long distance Railway and Road transportation of important fruits and vegetables designed and developed under the technical guidance of CIPHET, in order to bring down the post harvest losses and minimize the quality degradation during transit was demonstrated on trials run for transporting Banana by NHB.

With best regards

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

In this Issue

[IRC Meeting, 2011](#)

[Coordination Committee Meeting \(CCM\) of AICRP on PHT](#)

[Visit of DDG \(Engg.\) and ADG \(PE.\) to CIPHET, Abohar](#)

[CIC Meeting](#)

[Ventilated Container for NHB](#)

[Technology transferred to entrepreneurs during August 2011](#)

[Technology of the Month](#)

IRC Meeting, 2011

The 20th Institute Research Council Meeting was held during August 05-06, 2011 at CIPHET Ludhiana. The completed, ongoing and new research project proposals were discussed. Dr. K.K. Singh, ADG (PE), ICAR, New Delhi and Dr. A.K. Singh, Professor, Department of Processing and Food Engineering, PAU, Ludhiana graced the occasion as Experts.

Dr. R.K. Gupta, Director CIPHET (Acting) stressed upon the need to adhere to the mandate of the division as well as institute in taking up the projects. He also emphasized the importance of post-harvest management, packaging and value-addition of food crops to increase the farmer's return. He said that appropriate machines/equipment and hand tools are required for post harvest processing and value addition of food crops and scientists should work in that area. Dr. Gupta advised the scientists to provide the technologies to the farmers and entrepreneurs as a package. He also advised all scientists who are proposing new projects to discuss their program in detail in order to have sound technical programme. He sought the cooperation of all scientists and expertise of ADG (PE), Dr. A.K. Singh and PC (PHT) for their critical suggestions & inputs.



Dr. K.K. Singh, ADG (PE) appreciated that new scientists are very energetic and hope that there is a lot of potential in CIPHET for evolving need based post harvest interventions. He informed that PHT is getting more emphasis in ICAR and Planning commission. Mega projects on secondary agriculture and health foods are expected and hence more funds will be available in 12th plan for research in PHT sector. He also urged that minimization of post harvest losses, enhancement of processing and nutritional level of processed products should

be given priority during formulation research projects. He also listed other priorities such as extraction of high value ingredients, food quality & safety, agricultural structures & environmental control for animal comfort, high pressure processing, pulsed electric heating and ohmic heating. He informed that there will be likely two more divisions in CIPHET namely Bio-processing and Livestock product technology in the 12th plan. He also suggested for developing good workshop facilities in order to enable more machine development along with new products & process development. He stressed to lay more emphasis on engineering input in the research projects which will lead to business-process model. Further, he requested the collaboration of all disciplines in a holistic manner to achieve the true spirit of institute/ division mandate. He hoped that more number of pilot plants to come up from the institute projects in future.

Dr. A.K. Singh, Professor, Department of Processing and Food Engineering thanked CIPHET for inviting him to the IRC meeting which is as important body to discuss new and ongoing research proposals. He stressed that there is a need to take up the projects related to engineering interventions in the area of food processing. During the IRC Meeting, 16 RPF-I, 6 RPF-III and 30 RPF-II were presented and discussed. New project proposals in the emerging area of high pressure processing, probiotics, functional foods, extrusion processing, enzyme technology, ohmic heating were presented. The IRC Meeting ended with formal vote of thanks by Dr. Devinder Dhingra, Member-Secretary & OIC PME Cell.

Coordination Committee Meeting (CCM) of AICRP on PHT

The Coordination Committee Meeting (CCM) of AICRP on PHT was jointly hosted by CIPHET and PAU, Ludhiana during 18 – 20 August, 2011. The meeting was graced by Dr. B. S. Dhillon, Hon'ble Vice Chancellor, PAU Ludhiana as the Chief Guest, Dr. Bangali Baboo, National Director (NAIP), Dr. M. M. Pandey, DDG (Engg), Dr. K.K. Singh, ADG (PE), ICAR and representatives of FCI and CWC. Dr. R.K. Gupta, Acting Director, CIPHET, Ludhiana welcomed the dignitaries and participants from different SAUs and ICAR institutes. Dr. S. K. Nanda, PC, PHT briefed about the



Book release by Chief Guest during CCM meeting

CCM meeting and appealed to the RE/PI to present sound research proposals so as to come out with technologies having practical and commercial application for the benefit of the society in general and farming community in particular. Dr. B. S. Dhillon appreciated the efforts of PHT group for considerable post harvest loss reduction but cautioned that we have to go a long way where post harvest technologists have a key role to enhance the income of the farmers while productivity has reached near stagnation. Dr. Bangali Baboo sensitized the group to understand the technological limitations and attainable targets during the formulation of proposals. Dr. K.K. Singh, ADG (PE) briefed about importance of secondary agriculture and also focused on need based R&D and agri-business based proposals. In five technical sessions, Research Engineers/ PI of the 37 cooperating centres have presented the brief progress of ongoing projects and the technical programme of new Research Proposals for the years 2011 and 2012. There were two special technical sessions, viz. ICAR-ICMR project on 'Survey of Existing Practices for Ripening of Fruits' and FCI-sponsored project titled 'Studies on Storage Losses of Food Grains in Organized Sector Warehouse'. The

visionary guidance and suggestions of Dr M.M. Pandey, DDG (Engg) provided insight to improvise the research proposals. All CIPHET scientists also actively participated and contributed towards refining the proposals. Prof. V. K. Sehgal, Senior Research Engineer, PAU Ludhiana was facilitated for his extensive services to AICRP on PHT.

Visit of DDG (Engg.) and ADG (PE.) to CIPHET, Abohar

Dr. M.M. Pandey, DDG (Engg.) and Dr. K.K. Singh, ADG (PE) visited HCP, Division, CIPHET, Abohar on 21-08-2011. They gave important suggestions for orchards maintenance and landscaping. Dr. Pandey and Dr. Singh planted *sapota* plants in new orchard area. After plantation, they visited Agro-Processing Centre, Workshop, Grading and waxing plant and AICRP on APA site. Dr. Pandey visited very interestingly the manufacturing of new machines and all the existing infrastructure of the Institute and motivated the scientists of the division for better research performance. Dr. K. K. Singh, ADG (PE) also appreciated the research progress of the campus.



Sapota plantation by Dr. M.M. Pandey (DDG Eng.)



Sapota plantation by Dr. K.K. Singh (ADG Eng. PE)



Visited APA experimental site



Addressed a staff meeting

CIC Meeting

The 15th CIC meeting of NAIP sub-project on “Development of non-destructive systems for microbial and physico-chemical quality parameters of mango” under component-4 was held under the Chairmanship of Dr. R. K. Gupta, Acting Director, CIPHET, Ludhiana in CIAE, Bhopal on 27.08.2011 at 10.00 a.m. Dr. S. N. Jha, Consortium PI and member secretary welcomed the chairman and other members of the CIC and presented the action taken report on the recommendation of the 14th CIC meetings. The Chairman emphasized the need of having a network project after completion of this project with integrated approach for development of sorting/grading system for mango. Individual CCPI of the respective centre

presented the progress of the project during last three months. They also briefed about future experimental plan and collection of samples in this year. The CIC appreciated the progress made by each centre. This was followed by general discussion on constraints faced by the individual partner.

The CPI at the end informed the chairman that competent authority of NAIP did not agree for conducting the seminar as there is no provision of funds for the same. The chairman CIC however suggested for putting up the matter to CAC for organizing the workshop as proposed in the project document. The meeting ended with the vote of thanks by Dr. Ramesh Kumar, Co-CPI, CIPHET, Ludhiana.

Ventilated Container for NHB

An Insulated Ventilated container for long distance Railway and Road transportation of important fruits and vegetables, in order to bring down the post harvest losses and minimize the quality degradation during transit, was designed and developed under the technical guidance of the team led by Dr. S.N. Jha, Head, AS & EC Division. Other scientists involved in the team were Dr. Devinder Dhingra, Dr. D.M. Kadam, Dr. Manjunatha M. and Dr. Rahul K. Anurag. The container was designed keeping in view of farmer's interest, traders and other stakeholders for maintaining the profit margin, while reducing the quality loss during transportation.

The trial container was manufactured by CONCOR and financed by NHB under technical guidance of CIPHET, Ludhiana. The first trial run was carried out successfully on banana fruits on route of Sholapur to Savda, Indore, Gwalior, Agra to New Delhi. The temperature monitoring was carried out during transit, while trailing from different climatic zones, a 5-8 °C drop inside container was observed from external air temperature. Dr. Rahul Kumar Anurag, Scientist assessed the quality of banana on the first trial at fruit market, Azadpur, New Delhi. Three more successful trials have been carried out with apples from Delhi to Kolkata. Apples retained excellent quality with a weight loss below 3 % during this trial. These trials have been conducted by NHB with the help of farmers, fruit growers and fruit traders union. The farmers, fruit growers from Delhi, Maharashtra and Tamil Nadu region are very much happy as they are getting good price for retaining the fresh quality of their produce. Business community has also showed a great satisfaction with the new container. Mr. Vijay Kumar, MD, National Horticulture Board appreciated the efforts made by CIPHET in designing of the container.



Insulated Ventilated container loaded with banana



Insulated Ventilated trial container mounted on a heavy load truck.

Technology transferred to entrepreneurs during August 2011

Training and knowledge transfer of Ginger Processing was given to Mr. H. Zorempuia S/o Mr. Van Lalliana, A/97, Sihphir Vengthar, Aizawl, Mizoram-796036 on 27-08-2011.



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कर्मचारी मनोरंजन क्लब के तत्वाधान द्वारा संस्थान में 65वें स्वतंत्रता दिवस समारोह का आयोजन किया गया। डा० पी. आर. भटनागर, प्रभारी निदेशक सीफेट, लुधियाना ने ध्वजारोहण किया। राष्ट्रगान के उपरान्त अपने उद्बोधन में प्रभारी निदेशक ने संस्थान की गत वर्ष की उपलब्धियों का विवरण दिया। उन्होंने सीफेट के भविष्य के कार्यक्रमों के बारे में अवगत कराया एवं संस्थान की उन्नति की कामना की।

उसके उपरान्त स्टाफ मनोरंजन क्लब ने सांस्कृतिक कार्यक्रम का आयोजन किया। उसमें क्लब के सदस्यों, उनके परिवारजनों एवं बच्चों ने मनमोहक सांस्कृतिक कार्यक्रम प्रस्तुत किये। इस कार्यक्रम को डा० पी. आर. भटनागर, डा० एस. एन. झा, अध्यक्ष स्टाफ मनोरंजन क्लब, एवं अन्य सदस्यों ने बहुत सराहा। कार्यक्रम का संचालन डा० अनिल कुमार दीक्षित एवं कुमारी दीपिका गोस्वामी द्वारा किया गया।

कार्यक्रम के अन्त में मनोरंजन प्रोग्राम में भाग लेने वाले बच्चों को डा० पी. आर. भटनागर, डा० एस. एन. झा एवं डा० एस. के. नन्दा द्वारा पुरस्कार दिये गए।

Technology of the Month

Processed meat products (Spread and pastry)

Meat is the most valuable livestock product. From the nutritional point of view, meat's importance is derived from its high quality protein, containing all essential amino acids, bioavailable minerals and vitamins. While meat consumption has been relatively static in the developed world, annual per capita consumption of meat has doubled since 1980 in developing countries. Growing population and incomes, along with changing food preferences are increasing the demand for livestock products. The growing meat market provides a significant opportunity for livestock farmers and meat processors in these countries. On the other hand, development, safe processing and marketing of hygienic meat and meat products represent a big challenge. Value-added meat products display specific flavor, taste, color or texture components, which are different from fresh meat. They offer diversity to the meat food sector, providing the combined effect of nutritious food and food with excellent taste.



Chicken spread and pastries

Considering all the above points, two new meat products with good acceptability scores have been developed. Response surface methodology (RSM) was employed for simultaneous analysis of the effects of added meat and other non meat ingredients on the overall acceptability, spreadability and cooking yield of chicken meat spread and overall acceptability and springiness for chicken meat pastries. For chicken spread, the optimized levels of meat, fat, spice mix and binders are 51.45-54.03%, 29.23-29.43%, 4.39-4.44% and 4.19-4.36% respectively. The colour and TBARs values were quite stable up to 20-22 days, while the microbiological shelf life of the developed product was between 22-24 days when stored aerobically at $4 \pm 1^\circ\text{C}$. Developed chicken pastries also showed better overall acceptability and springiness scores. The meat, Na_2CO_3 and sugar contents were 45%, 0.83-0.88% and 14.23-15.06% respectively in developed pastries. The shelf life of pastries was estimated to be 6-7 days at $4 \pm 1^\circ\text{C}$.

Significant features of this technology are; 1) Utilization of non meat ingredients to reduce cost of production, 2) technology was developed using low cost meat processing equipments 3) Improved product quality, sensory attributes and stability, 4) use of natural plant extract to improve product sensory attributes and to reduce extent of lipid oxidation in developed products.

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