



Central Institute of Post Harvest Engineering & Technology Ludhiana

OUR SLOGAN: PRODUCE, PROCESS AND PROSPER

**CIPHET E – Newsletter for December 2008
Vol. 3 No. 12**

Director's Column



Dear All,

The important event this month was 27th Annual Workshop of All India Coordinated Research Project on Post Harvest Technology based at CIPHET Ludhiana held at University of Agricultural Sciences, Bangalore, during December 17-18, 2008. This AICRP project has developed, commercialized (39), transferred to farmers (18) and ready for commercialization (88) technologies so far. The unique contribution of this project is the concept of Agro Processing Centres in the villages so that raw agricultural produce from villages is processed at village level and valuable by products are retained in the villages. This allows sharing the benefit of value addition by farmers and reduction in post harvest losses. The project has recently completed integrated project on assessment of post harvest losses of crops/commodities, which was long awaited in view of updating the data.

The seed spices constitute an important group of agricultural commodities and play a significant role in our national economy accounting for about 36 percent and 17 percent of the total area and production of spices in the country. The NRCSS had organized the interface meeting in December in collaboration with NCAP, New Delhi and CIPHET, Ludhiana to discuss the research priorities through consultation among all the stakeholders like exporters, processors, researchers and developmental organizations.

This month institute had organized two EDPs one on guava processing and another on modified atmosphere packaging of fresh and minimally processed vegetables. Institute celebrated her 19th foundation day by paying homage to martyrs of 26/11 terrorists attack on Mumbai. The guest lecture by Dr. Mukund V. Karwe, Professor, Rutgers University was organized on this occasion. The ICAR sponsored winter school on designer and functional foods through extrusion cooking technology was also organized in December. CIPHET had participated in two exhibitions one at KVK conference, Pantnagar and another at Rupnagar to promote catchment area processing.

Availability of modern and efficient processing equipment is very important and hence from the next month onwards CIPHET E-newsletter will flash the information on successful manufacturers of processing equipment every month. The post-harvest management infrastructure like cold storages, IQF, refrigerated vans are as important to reduce transportation losses as that of good road for overall development of the country. The efficient cold chain management of fruits & vegetables will reduce post harvest losses and will provide a good quality produce for domestic use and export. To deliberate on this theme by eminent researchers CIPHET will be organizing a National Seminar on ***Cold chain management of horticultural commodities for better quality, increased food supply & exports*** at Abohar during February 27-28, 2009.

Wishing you a very happy Republic Day and Very Happy New Year 2009

With best regards,

**R.T. Patil
Director**

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Director CIPHET visits AICRP (PHT) center on Jaggery at Kolhapur

Jaggery or “Gur” is a natural sweetener having natural goodness of minerals and vitamins inherently present in sugarcane juice. Jaggery contains vitally important mineral salts at about 2.8 grams per 100 grams. The magnesium strengthens the nervous system & potassium is vital to conserve the acid balance in the cells and combats acids and acetone. Jaggery is very rich in iron, which, a composite of hemoglobin prevents anemia. Jaggery is processed the natural way & no chemicals are added at any stage of its processing. The Kolhapur center of AICRP at Kolhapur has developed a pilot plant using modern processing machines like stainless steel crusher, juice clarification system and stainless steel efficient pan for concentration of juice as well as SS molds for jaggery solidification. The liquid jaggery process has also been standardized by this center. The pilot plant is serving a training cum demonstration unit for upcoming entrepreneurs as well as for upgrading existing jaggery production units. Director CIPHET Visited the center on Dec 8, 2008 and seen this facility which was one of the QRT recommendations for this center.



International Soybean Processing & Utilization Conference-V

Soybean is a miracle bean because of its chemical composition and diverse applications for food, feed and non-food uses. Soybean is one of the few plants that provide a high quality protein with minimum saturated fat. Soybeans help people feel better and livelonger with enhanced quality of life. Soybeans contain all the three macronutrients required for good nutrition, as well as fiber, minerals and vitamins. Soybean protein provides all the essential amino acids needed for human health. Soy protein not only has superior quality but also provides a number health benefits especially in combating diet and lifestyle related degenerative diseases.

In 1989, a group of international scientists formed a committee to promote soybean processing. Since then, there have been four International Soybean Processing and Utilization Conferences (ISPUC) held in China, Thailand, Japan, and Brazil. In March 2004, at the ISPUC-IV conference in Brazil, the committee selected India to be the site of the ISPUC-V conference and hence 5th International Soybean Processing & Utilization Conference-V was held at SPUC, CIAE, Bhopal during Dec 10-14, 2008.

Director, CIPHET attended this conference and co-chaired a Technical Session–VIII on “Strategies for Dissemination of Technology (Policy to Enhance Soybean Utilization and Marketing Strategy)”. Dr. R. K. Gupta, Head HCP also attended the conference and presented a paper entitled “Development of soy fortified protein enriched mix fruit leather from sapota” during Poster Session V on Modern processing for value added diversified soya food products (Processing soybean using chemical physical and biological methods).



**Some participants of ISPUC V with Dr. Karl E. Weingartner, USA,
Chairperson, Continuing Committee**

CIPHET Scientists Attend 6th International Food Convention

The 6th International Food Convention held during 15 -16th December 2008 at CFTRI, Mysore was attended by Director, Dr. RT Patil and Scientists Drs. KK Singh, DR Rai, K Narsaiah and SN Jha from CIPHET, Ludhiana. The theme of the convention was “Newer challenges in Food Science and Technology Industrial Perspective”. Many important plenary and guest lectures were arranged during the convention from internationally renowned food scientists on emerging technologies and newer challenges in food processing, quality and safety. The plenary lectures were as follow:

Plenary Lectures

- Recent Research Advances of Computational Fluid Dynamics (CFD) Applications in the Food Industry – Prof. Da-Wen Sun.
- Director; Food Refrigeration & Computerized Food Technology National University of Ireland, Dublin.
- Influence of Trans Fats on Health and Functionality and Alternate Solutions – Prof. Dharma R. Kodali, University of Minnesota, USA.
- Multitude Health Benefits of Fruits and vegetables: Scientific oddity or clinical reality – Dr. Bhimanagouda S. Patil, Director, Vegetable and Fruit Improvement Center, Texas A&M University, Texas, USA.
- Bread Making Technology for the Industry: Challenges and Needs for the Future – Prof. Alain Le-Bail, ENITIAA, Nantes, France.
- Assurance of Microbiological Safety of Read-to-Eat Meat and Poultry Products: Advances in Microbial Modeling – Dr. Vijay K Juneja , Lead Scientist, Microbial Modeling and Bioinformatics, USDA, Wyndmoor, USA.
- On the Route to Technology Development- Dr. K.R. Bhattacharya, Advisor, Rice Research and Development Centre, Tilda RiceLand, Mysore.

The invited lectures were grouped under various technical sessions. Many leading scientists working in Food Science, Engineering & Technology from all over the world attended the IFCON 2008. The Director, CIPHET chaired a session and presented an invited paper on Post harvest management and value addition of selected horticultural crops. Dr. K.Narsaiah, Senior Scientist, AS&EC Division, presented a poster titled “Tenderization of goat meat using mechanical force, pomegranate seed powder and papain”. Dr. S.N. Jha presented a paper on Physico-chemical quality parameters of some commercial varieties of mangoes (*mangifer indica* L.) and Dr. Rai presented a paper on “Assessment of temperature dependence of respiratory behaviour of selected fresh-cut summer vegetables of north India”.

27th Annual Workshop of All India Coordinated Research Project on Post Harvest Technology

The 27th Annual Workshop of All India Coordinated Research Project on Post Harvest Technology based at CIPHET Ludhiana was held at University of Agricultural Sciences, Bangalore, during December 17-18, 2008. Inaugural Session was presided over by Dr. P.G. Chengappa, Vice Chancellor, UAS, Bangalore and Dr. S. M. Ilyas, Director, NAARM was the Chief Guest. The workshop was attended by the research engineers and scientists from all 33 centers. The guests of honours in inaugural session were Dr. Pitam Chandra, ADG (PE), ICAR, New Delhi; Dr. Satish Bal, Professor Emeritus, IIT, Kharagpur and Dr. RT Patil, Director, CIPHET. The convener of this session was Dr. B.V. Patil, Director of Research, UAS, Bangalore and Coordinator was Dr. S.K. Nanada, Project Coordinator (PHT), CIPHET, Ludhiana.

During the inaugural address, Dr. S.M. Ilyas called for introducing public-private partnership to reduce the huge post-harvest losses in the country's farm sector. He said such a partnership was a must as the post-harvest process. The farm sector involved multiple players such as processing units and traders in addition to farmers. He stressed on the need for increasing the effectiveness of post-harvest technologies. At the same time, he said that technology alone would not solve the problems of post-harvest losses and suggested that the country should move towards post-harvest management for better results. He called for paradigm shift in the research activities in PHT by changing the focus to farmer centric activities from the technology centric activities. Dr. Pitam Chandra called upon post harvest experts to develop a package of technologies, which could take care of all the processing requirements of any specific crop instead of the present system of presenting a stand-alone device, which could handle only one of the several requirements. UAS Vice-Chancellor Dr. P.G. Chengappa said that increasing the investment in post harvest technology should become the priority of the Government to reduce the huge losses. Through PHT, it was possible to make agriculture a profitable venture, however, expressed concern over the time taken for transfer of technology from laboratory to land, he called for scaling up of technologies in a huge manner.

Dr. R. T. Patil, Director of Central Institute of Post-Harvest Engineering and Technology said every village should have its own agro processing units. Even a simple processing method would help farmers not only to increase the shelf life of their produce, but also get more value in the market. Dr. S. K. Nanda, PC (PHT) presented the Coordinator's report and briefed about the technologies developed, commercialized (39), transferred to farmers (18) and ready for commercialization (88). He highlighted the results of recently completed integrated project on Assessment of Post Harvest Losses of crops/commodities, which was long awaited for updating the data. The data obtained from this study is very important for policy makers.

The deliberations of workshop were grouped in the following technical sessions spread over four days:

- I- Presentation of Annual Progress Reports and Technical Programme by the Centres
- II-Presentation of Annual Progress Reports and Technical Programme by the Centres – Jaggery and Khandsari
- III-Presentation of Annual Progress Reports and Technical Programme by the Centres – Livestock Products
- IV-Presentation of Agro-progressing Centres (APC) Activities
- V-Commercialization of Technologies/Success Stories
- VI-Business Session
- VII-Presentation of Progress in Assessment of Post Harvest Losses of Crops/ Commodities
- VIII-Progress Report of the A. P. Cess Funded Ad-hoc Projects

The Plenary session (20.12.2008) of the Workshop was chaired by Dr. Nawab Ali, DDG (Engg.), ICAR, New Delhi. Dr. Nawab Ali and Dr. B. Ranganna, Retd. Sr. Research Engineer, UAS Bangalore were felicitated for their services rendered to the AICRP on Post Harvest Technology.



Inaugural Session of 27th workshop of AICRP on PHT

ICAR Regional Committee-V

The Indian Council of Agricultural Research has formed the regional committees to discuss the state-wise problems and research needs and development issues concerning the states falling in that region. The XX meeting of regional committee V covering the states of Haryana, Punjab and Delhi was held during December 19-20, 2008, The inaugural session was addressed by Dr. K.M. Bujarbaruah, Deputy Director General (AS), ICAR and Convenor, Regional Committee-V; and remarks by Dr. A.K. Upadhyay, Add. Secretary, DARE & Secretary, ICAR. The inaugural session was also addressed by Director General, ICAR & Secretary DARE, Dr. Mangal Rai and Dr. Gurbachan Singh, Director, CSSRI & Member Secretary. Dr. R. T. Patil, Director and Dr. P. R. Bhatnagar, Project Coordinator, AICRP on APA from CIPHET attended this meeting.

Seeds Spices Industry/ Exporters and Scientists Interface

The seed spices constitute an important group of agricultural commodities and play a significant role in our national economy. Historically, India has always been recognized as a land of spices. The states, Rajasthan and Gujarat have emerged as “Seed Spices Bowl” and together contribute more than 80 percent of the total seed spices produced in the country. Through India is the largest producer and consumer of spices in the World and the seed spices account for about 36 percent and 17 percent of the total area and production of spices in the country. To identify the researchable issues by discussion among the stakeholders the Seeds Spices Industry/ Exporters and Scientists interface meeting was organized by NRCSS in collaboration with NCAP, New Delhi and CIPHET, Ludhiana at Spices Court, Jaipur during December 20-21, 2008.

The invited lectures were grouped under the two technical sessions and topics discussed were 1) Introduction and status of seed spices production in India 2) Important issues relevant to processing and value addition of seed spices 3) WTO implications and emerging challenges for export of spices and agri-products 4) Emerging technologies on mechanized processing and packaging 5) Food safety issues for processing and value addition of seed spices including Agmark and PFA 6) Seed spices export from India and

export promotional programs from Spices Board 7) Technologies issues and feed back on mechanized processing and packaging for exportable spices 8) Value chain for seed spices production for domestic and export market 9) Export promotional programs for perspective & existing seed spices entrepreneur (micro, small and medium industries) 10) Problems faced by exporters and desired solutions from Governmental agencies

CIPHET was represented by Director, Dr. Patil and Dr. V.K. Bhargav. Director, CIPHET chaired a Technical Session-II on 21st December, 2008 as well as made a presentation on “Technologies issues and feed back on mechanized processing and packaging for exportable spices”. Dr. V.K. Bhargav gave a presentation on “Emerging technologies on mechanized processing and packaging”.



Technical Session in Progress



L to R Dr. Umesh Srivastava, ADG (Hort.), Owner of MDH Masale Mr. Mahashian, Dr. RT Patil Director CIPHET and Dr. MM Anwar, Director, NRCSS

CIPHET Scientist attends International Papaya Symposium

Papaya is valued for its high nutritive and medicinal value. Papaya proteolytic enzyme ‘papain’, has valuable industrial applications. This fruit ranks fifth in global production next to citrus, banana, pineapple and mango and in India also it is gaining popularity as many processed products are being introduced in the market. The International Society for Horticultural Science (ISHS) in collaboration with Tamil Nadu Agricultural University, Coimbatore, India and other scientific organizations organized Second International Symposium on Papaya at Madurai, Tamil Nadu, India during 9-12 December, 2008. The theme of this symposium was ‘Papayas for Nutritional Security’ appropriately

addresses the need for cultivating papaya to alleviate the problem of malnutrition especially Vitamin A deficiency in many developing countries. Dr. Ramesh Kumar, Scientist of HCP Division attended this Symposium and presented the work done at CIPHET on value added products from papaya.

Global Potato Conference 2008

The Global Potato Conference 2008 was held in National Agriculture Science Centre from 9- 12th December, 2008. The post harvest management and value addition of potato is important as potato is one of important vegetables used by all sections of people in all parts of world throughout year. The important presentations in the area of PHT were on regulation of dormancy, sprouting and tuberization, antioxidant capacity of potato food, implication of glycemic index in potato, starch functionality in potato, potato quality, non refrigerated storage of potatoes, potato storage for crisping, recent developments in potato storage etc. The conference was attended by Dr. Dhingra, Sr. Scientist, Dr. DS Uppal, Emeritus Scientist and Satvir Kaur, Research Associate from CIPHET and presented papers entitled 'Utilization of Agro Industries Waste of Potato Industry' and "Potato Peel: A rich source of natural antioxidants" by Dr. D.S Uppal & Satvir Kaur. The paper by Uppal and Satvir Kaur won the first prize in the poster competition.

Farmers Group visit CIPHET, Abohar

About 30-35 progressive farmers participating in farmer's awareness and training programme on Warehousing Schemes and Storage Structures conducted by Central Warehousing Corporation visited CIPHET on 4th December 2008. They were shown the pilot plants and other research facilities by Dr. R.K. Gupta. Mr. T.K. Dey, Asst. General Manager (Technical) of CWC accompanied the visitors.



Discussion with progressive farmers at CIPHET Abohar

EDP on Processing of Guava for Manufacturing of Value Added Products

The guava contains 2-5 times more Vitamin C than orange juice. It is rich source of nutrient and is fair source of minerals like iron, calcium and phosphorus. In the season there is always glut in the market, so juice/pulp can be prepared from this fruit and stored by proper treatment for utilization in lean period for the preparation of various products. In connection with this EDP on Processing of guava for manufacturing of value added products was organized at CIPHET, Abohar during 15-21st December 2008. Seven up-coming entrepreneurs/farmers (Five from Maharashtra and two from Punjab) participated in the training. They were given training on preparation of several products such as guava leather,

jelly squash, nectar, candies, fruit bars, canned pulp and slices. Dr. Ramesh Kumar, Scientist was the Course Coordinator.



Training on “Post Harvest Management and Value Addition of Horticultural Produce”

One week training programme on Post Harvest Management and Value Addition of Horticultural Produce was organized during 22-28 December, 2008 at CIPHET, Abohar. 15 Horticulture Officials from District Almora (Government of Uttarakhand) participated in the training programme. The training comprised of various lectures on post harvest management of fruits and vegetables, role of cold chain in post harvest management of perishables, MAP including minimal processing of fruits and vegetables, palsticultural techniques for better productivity of fruits and vegetables, scope and uses of shrink packaging of fruits and vegetables and development of various value added products of fruits and vegetables. The training also included the practical classes on novel products from aonla, ber, guava, pomegranate etc. including demonstration of waxing plant. The participants were also exposed to different laboratory and field experiments going on at CIPHET Abohar. The participants were also exposed to different field visits particularly multi-fruit juice plant, waxing and packaging unit of Kinnow, hi-tech nursery and scientifically managed farmer’s orchards. The training was conducted by Dr. R. K. Gupta, HOD (HCP) as Course coordinator and Sh. V.K. Saharan, Technical officer as Co-Coordinator.



CIPHET Foundation Day

The 19th foundation day of CIPHET was celebrated on 29 December 2008. Dr. Mukand V. Karve, Professor, Rutgers University kindly graced the occasion as chief guest. A hearty welcome was given to him by Dr. K.K. Singh, Head FG&OP. Director, CIPHET remembered and paid the homage to martyrs of 26/11 attack on Mumbai and presented

significant achievements made by the institute during past one year. Mementos and certificates were presented to the officials and staff who have completed 10 years of service in CIPHET. Dr. Mukund V. Karwe delivered a thought provoking talk on high pressure processing and extrusion technology of foods. At Abohar staff of Punjab Agro Juices limited also joined the celebrations. The research activities were shown to them and further discussion on possible collaboration on fruits juices extraction and packaging on PPP mode was also held.



CIPHET Foundation day celebration at Abohar



Foundation day celebration at Ludhiana



Dr. Mukund V. Karwe, Professor, Rutgers University, USA, Chief Guest for Foundation Day

CIPHET partners in NAIP project on “A Value Chain on Commercial Exploitation of Underutilized Fruits of Tribal Zones of Rajasthan”

A NAIP project on “A Value Chain on Commercial Exploitation of Underutilized Fruits of Tribal Zones of Rajasthan” has been sanctioned to Maharana Pratap University of Agriculture and Technology, Udaipur from December 5, 2008 to June 30, 2012. The MPUA&T, Udaipur will be the Consortium Leader, and Central Institute of Post-Harvest Engineering & Technology (CIPHET), Ludhiana (Abohar Center), Foundation of Integrated Research and Sustainable Technology Sansthan, Udaipur and M/s G. G. Foods, Udaipur will be the Consortium Partners. CIPHET will get 70.72 lakh for operation of the above project. Dr. R.K. Gupta, Head, Horticultural Crop Processing Division will be Co-PI for the above project.

Winter School on Designer and Functional Foods through Extrusion Cooking Technology

The above winter school was organized at CIPHET during Nov 29 to Dec 19, 2008. Dr. S.D. Sawant, Former Chairman CIPHET, RAC inaugurated the winter school on 29 November 2008 and it was concluded on Dec 19, 2008. Dr. Neelam Grewal, Dean, College

of Home Science, PAU, Ludhiana was the Chief Guest for closing ceremony of winter School



Inauguration of Winter School
By Dr. SD Sawant



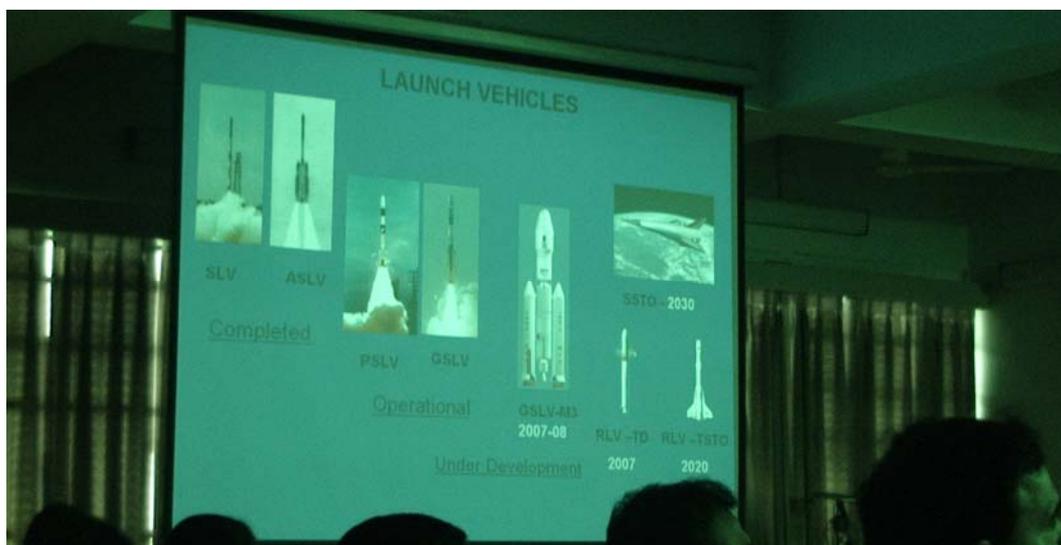
Closing Ceremony by Dr. Neelam Grewal,
Dean, Home Science, PAU, Ludhiana



Winter School participants with CIPHET faculty

Special Lecture by Dr. Vedachalam on India's Moon Mission

Prof. N. Vedachalam, Ex-Director, Liquid Propulsion Systems, ISRO, Thiruvananthapuram delivered a special talk at CIPHET on Remote Sensing and Its application in agriculture/processing on 31.12.2008. He also talked about the stages of development of India's Space Research and Development and also the successful moon mission of India.





CIPHET Exhibits at KVK Conference Pantnagar

The Third National Conference on KVKs (Krishi Vigyan Kendra) was held at G.B. Pant University of Agriculture & Technology, Pantnagar during Dec 27-29. Chief Minister of Uttarakhand, Major General (Retd.) Shri B.C. Khanduri; State Agriculture Minister, Shri T.S. Rawat; Director General, Indian Council of Agricultural Research (ICAR), Dr. Mangla Rai; Deputy Director General (Agriculture Extension), Dr. P. Das; Dr. Nawab Ali



ji DDG Agriculture Engineering and a number of distinguished guests and delegates were present on this occasion. CIPHET had participated in the technology exhibition organized on this occasion. Mr. M. P. Singh Tech. officer, Sh. Pardeep Kumar Tech. Asstt. displayed CIPHET technologies to about 2000 extension workers/ scientists as well as teachers of educational institutions/ universities/ KVKs , NGOs, food processing industries and other organizations.

Agricultural and Farmer Development Workshop–cum-Exhibition at Rupnagar

The agricultural and farmer development workshop–cum-exhibition was held during from 17-20 Dec. 2008 at Rupnagar (Punjab). Minister of Agriculture and Horticulture Punjab Govt. Sardar Suchcha Singh Langha inaugurated the exhibition. Mr. M.P. Singh, Tech-officer & Sh. Jaswinder Singh Tech. Asstt. participated in the exhibition and displayed CIPHET technologies to 2000 farmers, Agriculture Extension officers and entrepreneurs of Navashar, Hoshiarpur, Fatehgarh Sahib, Anandpur Sahib and other districts of Punjab state.



Exhibition at Rupnagar

EDP on Modified Atmosphere Packaging of Fresh and Minimally Processed Vegetables

An entrepreneurship development programme on modified atmosphere packaging (MAP) of fresh and minimally processed vegetables was held at Central Institute of Post Harvest Engineering and Technology, Ludhiana during December 1-7, 2008. The aim of the programme was to familiarize the participants with the modified atmosphere technology and to explain its potential benefits for its dissemination and application. Eighteen participants from Katol, District Nagpur, Maharashtra state attended the programme. The participants were exposed to the MAP technology through lectures on harvesting, pre-cooling, on-farm storage, assessment of respiration rates of fresh and minimally processed vegetables, assessment of gas permeability of packaging films, instrumentation, qualitative analysis, design of MAP, minimal processing, storage under TMS, etc. along with hands-on practical trainings. The participants felt satisfied with the programme and were enthusiastic for its further use and dissemination for post-harvest loss reduction and shelf-life enhancement of fruits and vegetables.



Participants of EDP from Katol, District Nagpur MS with CIPHET faculty

Trainees doing practical exercise

Launching workshop of NAIP sub project on “Value Chain on Novelty Pork Products Under Organized Pig Farming System”

The CIPHET is a partner in NAIP sub project on “Value Chain on Novelty Pork Products Under Organized Pig Farming System”. The lead centre for this project is Assam Agril, University, Guwahati. The launching workshop for this project was organized by Faculty of Veterinary Science Assam Agril, University, Guwahati. On the day before the CIC meeting was held on 19-12-2008 under the chairmanship of VC, AAU Guwahati. It was

attended by all PI's and CO-PI's. The Chief Minister of Assam formally launched workshop on 20-12-2008. Many dignitaries and other faculty members attended the launching workshop. In the evening of 20-12-2008, a meeting with Dr. Mittal, National Coordinator, NAIP-2 was held. He briefed the PIs and CPI's about the purchase rules, man power hiring, and other issues related to implementation of the project. This meeting ended with the address by National Coordinator. Dr. Suresh K Dawatkal, Sr. Scientist (LPT) from attended this workshop.

CIPHET Scientist attends IPSACON-08 at Ahmedabad

A three-day 24th annual conference of the Indian Poultry Science Association (IPSACON) was held at Anand Veterinary University, Anand, Gujarat during Dec 9-11, 2008. Renowned scientists from across the country delivered lectures on various topics related to nutrition, biotechnology etc. IPSACON-08 was inaugurated by DDG (Animal Science). Dr. Suresh K Dawatkal, Sr. Scientist (LPT) presented research paper titled "Effect of refrigerated temperature on instrumental textural characteristics of carrot incorporated chicken nuggets" in the session of Products technology and value addition.

Honors and Awards

Dr. RT Patil- Director CIPHET has been elected as Vice President (North Zone) for Association of Food Scientists and Technologists (India).

Dr. D.S Uppal & Ms. Satvir Kaur won the best paper award in Global Potato Conference for their research paper titled "Potato Peel: A rich source of natural antioxidants"

Announcement of Seminar at CIPHET Abohar

National Seminar on Cold chain management of horticultural commodities for better quality, increased food supply & exports will be held at CIPHET Abohar during 27-28 February 2009. This seminar is Supported by National Horticultural Board, Gurgaon.

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Technology of the month

PROCESSING OF GUAVA RTS BEVERAGE

Fruit beverages continue to receive a considerable amount of attention owing to their growing potential in the market. Guava contains 2-5 times more Vitamin C than orange juice. It is rich source of nutrient and is fair source of minerals like iron, calcium and phosphorus. Also there is glut in the market during peak season, so juice/pulp can be prepared from this fruit and stored by proper treatment for utilization in lean period. Guava can be processed into several products such as jelly squash, nectar, candies, fruit bars, canned pulp and slices. Among these, guava beverages are becoming popular in comparison to synthetic and aerated drinks due to their characteristic flavour and rich nutritional qualities at low cost as compared to other fruit beverages. Since guava is available in abundant during the peak season and its disposal becomes a problem particularly during summer season. Therefore, it is advisable to prepare RTS beverages from guava so as to reduce any post harvest losses of guava.

Process technology:

Beverages constitute the largest group of food products and it can be prepared by mixing fruit pulp and suitable recipe at home. CIPHET has standardized the technology for preparation of guava RTS beverages with and without carbonation. Plain guava beverages were prepared by mixing fruit pulp with water to which desired recipe has already been added. The recipe containing 10-15 % fruit pulp, 10-13 % sugar and 0.28-0.30 % acidity were found to be most ideal for such beverages. Carbonation enhanced the storage stability of both types of beverages but masked the original flavour of guava beverage. Finished guava beverages contained 13-15% total solid and 25-30 mg Vitamin C. CIPHET has also standardized the process technology for manufacturing diversified beverages from guava by supplementing paneer whey so as to exploit the potential for a diversified and nutritious health drink in processing industry. Whey is a by product of dairy and contains about half of the solids of milk. It is a precious source of nutrients like milk protein, lactose, milk salt and water soluble Vitamins. Whey based guava beverages were prepared by using fruit pulp and milk whey in 1:4 ratios with 8 % sugar and 0.4 % acidity. Whey was obtained after preparing paneer from the standard milk, which required complete coagulation of milk protein by adding 2.0g per liter acid to the milk while still boiling. The whey prepared in this whey was kept overnight for obtaining clear whey through staining. Requisite amount of recipes were weighed and mixed together properly for preparation of whey based ready-to-serve beverages of guava. Blending of whey enhanced the colour stability of guava beverages. These beverages were filled in glass bottle and crown corked. This was followed by heat processing of filled glass bottles in boiling water for 20-30 minutes for pasteurization. These bottles were then cooled immediately to avoid flavour loss any further and stored in a cool dry place. Whey based guava beverages had high nutritional quality and increased energy value as compared to its pure whey beverages. On an average, such guava beverage contained 14.18, 11.68, 0.33 and 0.30 % total solid, carbohydrates, proteins and ash, respectively. The beverages can also be stored in PET bottles or plastic pouch for short period. Guava RTS beverages were found to be in acceptable condition upto four months under ambient condition and there was no deleterious effect in beverages stored under low temperature condition even after six months of storage. Thus the development of such beverages could be an alternative avenue for proper utilization of guava and whey for human consumption.



Fruit preparation



Pulp extraction



Crown corking



Pasteurization of RTS beverages



Whey based guava beverages



Plain guava beverages

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