



Central Institute of Post Harvest Engineering and Technology, Ludhiana

Our Slogan: Produce, Process and Prosper

CIPHET E – Newsletter for November, 2008
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Director's Column



Dear All,

In the month of November, the CIPHET received a special invitation to attend the World Pomegranate fair in Kabul because of the development of pomegranate aril extractor. The programme was organized by United States Agency for International Development (USAID)/Accelerating Sustainable Agriculture Programme (ASAP) in Afghanistan. During the event CIPHET team presented the papers on the work done on post harvest technology of pomegranate. A live demonstration of operation of Hand tool for easy separation of arils was also given before the delegates & participants from farming and trade side. The farmers and international scientific and trade community highly appreciated the unique design of pomegranate aril extractor which was found to be very simple to use to extract arils from both regular and Bedana pomegranates.

Another important event was a National Guava Symposium held at Shirdi. An important suggestion emerged during the national symposium was distribution of Guava bar type of product developed by CIPHET as a substitute to *lados* for *prasad* from the Shri Saibaba Sansthan Trust (Shirdi). The buy back guarantee to the processed product from the trust in such large quantity can become a driving force from establishment of many-registered small scale processing units.

In the series of EDP organized by CIPHET a new addition was for Entrepreneurship Development Programme on "Processing of aonla for value added products" during 17-22 November 2008 at HCP Division, CIPHET, Abohar. There are many high value processed products being introduced in the market based on aonla due to their medicinal benefits. Hence it is a great opportunity for setting up aonla processing enterprise in aonla growing areas. In this one week training, trainees were given information about different processed products from aonla and their process technology with the help of lectures and practical.

The participation of CIPHET in the agro exhibitions is attracting many entrepreneurs to come in for training to CIPHET for establishing agro processing industries. In the month of November CIPHET team participated in three such exhibitions and even bagged a special prize in one of them.

This month we have flashed a unique invention of our institute that is **MOTORISED POMEGRANATE ARIL EXTRACTOR**. It has a unique design so that pomegranate of all sizes and shapes can be handled and arils could be extracted without cutting the fruit and with minimum damage to the arils. The capacity of 500 kg/h makes it suitable for even large scale commercial operation of quick freezing of arils for domestic use and export. We are proud to say that our design is a novel and no such machine exists in the world. The CIPHET has filed the patent and design is now available for large scale production. The approx cost of the machine will be about Rs. 75000/- which is much lower compared to international machines costing crores and even then requiring cutting of fruit.

WISHING YOU ALL A VERY HAPPY NEW YEAR 2009

With best regards

R.T. Patil,
Director

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Indian Horticulture Congress, Bhubaneswar

The 3rd Indian Horticulture Congress 2008 was held at Orrisa University of Agriculture and Technology, Bhubaneswar, Orrisa during November 6-9, 2008. The theme of the 3rd Indian Horticulture Congress 2008 was “New R&D Initiatives in Horticulture for Accelerated Growth and Prosperity”.

The horticulture sector contributes around 28% of the GDP from about 13.08% of the area and 37% of the total exports of agricultural commodities. During the previous three Plan periods, focused attention was given to horticultural research and development which made India as the second largest producer of fruits and vegetables, largest producer and consumer of cashew nut, tea, spices, third largest producer of coconut, fourth largest producer and consumer of rubber and sixth largest producer of coffee in the world.

The Asian Vegetable Research and Development Centre (AVRDC), Regional Center for South Asia (RCSA), and National Agricultural Research Systems (NARS) have also identified Post Harvest Marketing and Value Addition as one of the important area of Horticultural Research and gave following recommendations.

- Determination of maturity indices and establishment of post-harvest standards.
- Capacity building for post-harvest technology.

- Standardization and exploration of appropriate packaging system and materials for increased shelf life of vegetable crops.
- Development of appropriate storage technologies for different environments.
- Management of post-harvest pests and diseases and monitoring of pesticide residue level.
- Standardization of technologies for processing and for maximizing quality and market value.
- Developing system for market intelligence and promotion.
- Value chain analysis.

Dr. RT Patil, Director, CIPHET delivered invited lectures titled “New R&D innovations in post-harvest and processing of horticultural commodities” and “Horticultural Waste: Utilization and its Impact on Environment” and also co-chaired the session on Post Harvest Management and Value Addition along with Chairman Hon. Dr. D.P. Ray, Vice Chancellor, OUAT, Bhubaneswar

The important recommendations emerged from this session were:-

- Technique of using colour and maturity index chart developed by Central Institute of Post Harvest Engineering and Technology (CIPHET), Ludhiana to determine maturity of mango is useful for timely harvest, for maintaining quality and fetch better price in the market.
- Use of implements like tomato grader, pomegranate aril extractor and banana comb cutter replacing sickle are advantageous to save labour and time.
- Mechanical pomegranate aril extractor can be used for loosing arils and for easy separation. The machine is reported to have high aril extraction capacity of 5.0 quintals/hour with minimum mechanical damage to arils (1-2%) and will be of great help in value added processing of pomegranate.
- Hydro cooler-cum-washer for fruits and vegetables developed by CIPHET, Ludhiana costing Rs. 50,000/- with a capacity of 1.8 tonne/hour is recommended for efficient removal of adhering soil, microbial pesticides and field heat due to rapid pre-cooling.
- Use of Hurdle technology (fruit and vegetable products using two or more factors inhibiting microbial spoilage) is advantageous for both consumers and producers in terms of freshness, storage, microbial stability, easy adoptability with less energy and capital investment.
- There is need of policy regulations and promotional measures for wine industry as well as need for identification of wine grape varieties to get better quality and higher recovery.
- The Self-Help Group based preparation of food products like beverages (fresh and fermented), canned products, pulp products, confectionaries and culinary preparations from cashew apple be promoted to provide gainful employment and increase profitability to farmers.
- Use of waste/ rejects from fruit and vegetable units can be utilized for extraction of essential oils, pectin, edible colour concentrate, starch, animal feed, etc.

- Production catchment processing of fruits and vegetables be promoted using the equipment developed by CIPHET and AICRP on PHT through SHG approach to increase the profitability and reduce the post harvest losses.
- The State Agricultural Universities and institutes should use recently developed handling, storage and processing equipments on their farms for large scale testing, promotion and demonstration of these technologies.
- The research on using emerging technologies like High Pressure Processing, microwave drying, irradiation and ohmic heating for value added products from horticultural crops be expedited.

CIPHET receives global attention: Delegation visited Kabul, Afghanistan

Dr. R. T. Patil, Director and Dr. A. K. Thakur, Sr. Scientist visited Kabul, Islamic Republic of Afghanistan and participated in the World Pomegranate Fair during 19-20 November, 2008. The programme was organized by Ministry of Agriculture, Irrigation and Livestock, Afghanistan in partnership with United States Agency for International Development (USAID)/Accelerating Sustainable Agriculture Programme (ASAP), Afghanistan International chamber of commerce (AICC), the Afghanistan Investment Support Agency (AISA) and the Export Promotion Agency of Afghanistan (EPAA). Our recent innovation and development of Hand tool and mechanized version of Pomegranate Aril Extractor has been recognized by USAID and other agency; they invited us to participate and present/demonstrate the developed tool and machine before the international participants of World Pomegranate Fair. The Afghanistan Pomegranate is prized for its excellent quality and health benefits. Afghanistan was historically the leading producer of pomegranates and is host of numerous varieties. Pomegranates originating in Afghanistan territory have been brought and sold within the region for all of recorded time, but have always faced technological and logistical limitations. During the event on the Knowledge centre of the Pomegranate World Fair, CIPHET team presented two papers namely 'Post harvest management and value addition of fruits and vegetables with special reference to Pomegranate' and 'Mechanical systems for clean & safe separation of arils from the whole Pomegranate'. A live demonstration of operation of Hand tool for easy separation of arils was also given before the delegates & participants from farming and trade side. Lots of inquiries were received from the participating countries on the availability of tool and machine from CIPHET, achievements of the institute and also on the national/international training programmes offered by CIPHET.



Dr. Patil, Director CIPHET and Dr. Thakur, Sr. Scientist at World pomegranate Fair in Kabul, Afghanistan, Nov 19-20, 2008



Dr. Thakur showing the demonstration of CIPHET aril extracting hand tool during presentation



Dr. William Phillimore, Executive Vice President, POM Wonderful and father pomegranate cultivation in USA seeing the innovation



Dr. Patil with Afghan farmer entrepreneurs in World Pomegranate Fair, Kabul, Afghanistan. Seen in the picture are regular (R) and Bedana (L) pomegranate

Guava Symposium at Shirdi, Maharashtra

A National Guava Symposium was held at Shirdi during November 24-26, 2008. The symposium was inaugurated by Hon'ble Agricultural Minister, Sh. Sharadchandraji Pawar Saheb. In his address Hon'ble Minister expressed the need for Post Harvest Management and Value Addition of Guava for export as well as domestic market. An important suggestion emerged during the national symposium was distribution of Guava bar type of product developed by CIPHET as a substitute to *laddos* for *prasad* from the Shri Saibaba Sansthan Trust (Shirdi). I had discussion with many willing entrepreneurs and progressive farmers as well as the trustees of Shri Saibaba Sansthan Trust (Shirdi) about the feasibility of this proposal. I had also carried with me the samples of the product, which were found to be highly acceptable by everybody. To give sustainability to the manufacturing units of Guava bar, the trust management showed willingness to provide pulping and cold storage facility so that raw material could be available to these units through out the year. The buy back guarantee to the processed product

from the trust in such large quantity can become a driving force from establishment of many-registered small scale processing units.

Dr. R. T. Patil Director CIPHET chaired the Technical Session-V on “Post Harvest Management, Product Diversification & Nutritional Value, Marketing & Export”, in which following papers were presented.

1. Post Harvest Management & Value Addition of Guava - Dr. R.T.Patil
2. Enhancing availability of guava through Post Harvest Management and Value Addition. – Dr. D.K. Tandon, CISH, Lucknow.
3. Marketing of guava. – Sh. Santosh Patil, Deputy General Manager, Marketing Board, Pune.
4. Marketing of guava in India. – Safal representative.
5. Processing in guava - Sh. G.R. Chaudhary, Jain Food Division, Jalgaon.

During this meeting Dr. Patil suggested that to achieve the goal of providing guava products especially burfi as prasadam in the Sri Saibaba Temple, the registered units may be asked to sign an agreement so that they maintain good quality hygienically produced guava products. The conditions could be 1) the training of entrepreneur at CIPHET in value addition technology; 2) The utmost sanitary and hygienic conditions to be maintained in the plant including use of quality water and 3) Use of standard equipment for production of guava bar. There was great response from the entrepreneurs and they are willing to come CIPHET, Ludhiana for EDP training.



Director CIPHET handing over the value added products of Guava developed at CIPHET to Mr. Vinayak Dandwate, President, Guava Growers Association, MS (Photo:Agrowon)

CIPHET gets Indo US AKI project on extrusion cooking technology

The Indian Council of Agricultural Research, New Delhi has sanctioned a project on Technology for plant and dairy ingredients based formulated and functional foods using extrusion cooking under Indo-US Agriculture Knowledge Initiative for a period of two years with a budget of Rs. 131.00 lakh. The US Collaborators in this project are Dr. Sajid Alvi, Asstt. Prof. Deptt of Grain Science and Technology, Kansas State University and Dr. Syed Rizvi, Prof, Institute of Food Science, Cornell University, Ithaca. The Indian Partners are CIAE, Bhopal (Lead Centre), CIPHET, Ludhiana, NDRI, Karnal, IHR, Bangalore, CTCRI, Thiruvananthapuram and IARI, New Delhi.

The objectives of the project are 1) Development of cost effective extruded products from combinations of cereals, soybean, fruits, vegetables and dairy ingredients, 2) Testing of the extruded products for nutritional safety, quality and consumer acceptability attributes. 3) Dissemination of the technology through trainings and entrepreneurial development leading to the commercialization. Dr. R.K.Goyal, Principal scientist and I/c Head AS&EC Division are the Cooperating Centre PI and Dr. Mridula, D. CC-Co-PI for CIPHET centre.

CIPHET contributed to UNCTAD supported Floriculture Website and Flower Quality workshop for Sikkim Flower Growers

A day long workshop on flower quality and standards was held at Gangtok on Nov 3, 2008. To compete in the market, domestic as well as export quality of flowers is of utmost importance. Dr.Desh Beer Singh, Sr. Scientist from Central Institute of Post Harvest Engineering & Technology made detailed presentation on flower quality management. This initiative was part of an activity titled 'Capacity Building initiative for Augmenting Floriculture Export from Sikkim' being implemented under UNCTAD-DFID-Min of Commerce, supported project "Strategies and Preparedness for Trade and Globalization in India. Under the guidance of CITA (Center for International Trade in Agriculture and Agro Based Industries), the activity is being implemented by FARMER (Fellowship for Agri Resource Management and Entrepreneurship Research) – a professional NGO with active support from Sikkim Apex Grower Association (SAGA), Sikkim University, Sikkim Chamber of Commerce (SCC) and Department of Horticulture and Cash Crop development department, Government of Sikkim.



Dr. D. B.Singh, Sr. Scientist (Hort.) CIPHET in the workshop at Gangtok, Sikkim

In this meeting more than seventy farmers, especially flower growers participated. Amongst the other dignitaries present were Dr.B.K.Banerjee Dy.Director & Head Floriculture Division, National Botanical Research Institute (NBRI), Loknow, Mr. Deb Kumar Bhandari, Joint Director, Mr. Padam Kumar Subba Dy. Director of Horticulture and Cash Crop development department. Mr.S.K.Sarda President of Sikkim Chamber of Commerce, Mr.S.Sarkar, Registrar, Sikkim University, Mr.Pradip Patil of CITA, Dr.M.I.Barbaruah and Dr.Monjul Islam of FARMER.

CIPHET organizes International Training on Pre-cooling of fruits & vegetables

The AS&EC Division of CIPHET organized an International Training on Pre-cooling of fruits & Vegetables for Egyptian Scientist during November 02-16, 2008 at CIPHET, Ludhiana. Dr. R.T.Patil, Director while welcoming the participants highlighted the importance of pre-cooling of fruits and vegetables and said the technologies developed at the institute are useful in reduction of post harvest losses and extending shelf life of the fruits and vegetable. Dr. Mohamed Abdullfattah Abdul Khalek and Dr. Ashraf Mahfouz Mashraky, Scientist from ARC, Cairo underwent this two weeks training. The training covered the following topics:

- i) Status of fruits and vegetables and infra structure for their post-harvest management.
- ii) Minimal processing & packaging of fruits & vegetables under a pre-cooling room
- iii) Modified atmospheric packaging under pre cooler
- iv) Post-harvest operations to reduce losses of farm fresh tomatoes
- v) Principle of evaporative cooling
- vi) Cryogenic freezing of fruits and vegetables
- vii) Mobile pre-cooler principle, theory and design aspect
- viii) Vacuum pre-cooling principles and working
- ix) Application of plastics in high tech horticulture
- x) Microbiological aspects of fresh & stored fruits & vegetables
- xi) Non-destructive techniques for determination of quality of fruits and vegetables
- xii) Principle & working of hydro-cooling of fruits and vegetables

Besides, practicals/field visits were organized on the following aspects:

Principle of evaporative cooling

Practical on 5 tonne capacity evaporative cooling structure

Visit to CIPHET laboratories and facilities

Practical on vacuum pre-cooling system

Visit to pre- cooling /storage facility of near by food processing Industry and IQF. (Amritsar/Jalandhar)

Practical on mobile ice-box pre cooler

Practical /demonstration of hydro pre-cooling of potatoes

Visit to Field Fresh facility at Laddowal

Demonstration of NIR and colorimeter for quality evaluation

Dr. R. K. Goyal, Principal Scientist and I/c Head AS&EC Division was the Course Coordinator and Dr. S. N. Jha the Course Co-coordinator. Dr. Patil in concluding remarks said the ARC Cairo

and CIPHET should work together and develop joint collaborative programmes on research and transfer of technology which will be useful for both the countries.



Winter School at CIPHET on Designer and functional foods through extrusion cooking technology

Winter School on Designer and functional foods through extrusion cooking technology began with welcome address of Dr. R.K. Goyal, Principal Scientist and Course Director. He also gave background of the course and briefed about profile of the participants who came from all over the country. Dr. S. D. Sawant, Former Chairman CIPHET, RAC inaugurated the winter school on 29 November 2008 and delivered an inaugural lecture on importance of extrusion cooking technology for developing ready to eat, convenient value added products.

This winter school is for 21 days and concluded on December 19 2008. The course content in brief was as follows:

1. Extrusion processing – An overview
2. Emerging trends in applications of extrusion cooking technology for food and feed.
3. Function properties of raw materials.
4. Textural attributes studies for expanded extrudates .
5. Textural attributes studies for porridge from extrudates.
6. Colour measurements of extrudates.
7. Extrusion Technology.
 - Ingredient Functionality
 - Preconditioning of Foodstuffs.
8. Drying Theory
 - Hands-on session on Pilot-Scale Extruders

9. Extrusion Applications – Food & Feed
 - Extrusion Applications – Feed and Pet food
 - Toasting and coating of Snacks and Cereals
 - Extrusion control systems
10. Extrusion of technology for fruit based extruded products.
11. Role of rheology in extrusion
12. Single screw extruders vs twin screw extruders.

Dr. R.K.Goyal and Er. R.K.Vishwakarma, were the Course Director and Course Co-Director respectively.



CIPHET gets NAIP Sub-Project on Cryogenic Grinding of Indian Spices

India produces about 4 million tones of spices annually (2006-07). The main processed product of spices is ground powder. The aim of spice grinding is to obtain smaller particle size with good product quality in terms of flavour or colour. Due to high fat content in spices, in the normal grinding process, heat is generated when energy is used to fracture a particle into a smaller size. This generated heat causes temperature rise in the grinder to the extent of 95°C which is responsible for a loss of volatile oil in the tune of about 30% and also produces dark color powder. Generally, a continuous operation of grinder is not possible in normal grinding process due to melting of fat and sticking of powder on the grinding surfaces. The normal grinding produces poor quality of powder that does not conform to the international quality standards, as a result either fetches lower price or not accepted by the importer countries. The temperature rise of the product can be minimized to some extent by circulating cold air or water around the grinder. But this technique is not sufficient to significantly reduce temperature rise of the product. The loss of volatile can be significantly reduced by cryogenic grinding technique using liquid nitrogen or liquid carbon dioxide that provides the refrigeration needed to pre-cool the spices and maintain the desired low temperature by absorbing the heat generated during the grinding operation. The extremely low temperature in the grinder solidifies oils so that the spices become brittle, they crumble easily permitting grinding to a finer and more consistent size. The high quality ground product would have domestic as well as international market. Though India is one of the leading producers of the spices in the world but it depends upon traditional grinding technique available in the country. Only few developed countries like Germany and Japan are having cryogenic grinding technology. Also, limited research

information is available on cryogenic grinding of spices. The availability of indigenous cryogenic grinding technology would ensure processing of our produce within the country and export the processed products to different countries. The foreign earnings could also be enhanced by exporting the cryogenic grinding technology to other neighbouring spice producing countries.

Keeping, this in view, an NAIP was proposed by making a consortium of different Institutes, like CIPHET, Ludhiana as a lead centre, and IIT, Kharagpur, Indian Institute of Spices Research, Calicut and NRC on Seed Spices, Ajmer as Co-operating centres. The broad objectives of the project are:

1. Characterization of selected spices based on physico-chemical, mechanical, thermal properties and quality attributes
2. Studies on grinding kinetics, particle size distribution, energy requirement and quality attributes in available cryogenic and ambient grinding systems
3. Modeling of heat and mass transfer in cryogenic grinding of spices
4. Development of experimental cryogenic grinding system for spices by modification of a pin and a hammer mill.
5. Optimization of grinding conditions in different systems and comparative performance evaluation for appropriateness of grinding system using different spices.

The project has been approved with the total cost of about Rs. 4 crores. **Dr. K. K. Singh**, Head, Food Grains & Oilseeds Processing (FG&OP) Division is Consortium Principal Investigator (CPI) and **Dr. D.M. Kadam** and **Dr. P. Barawal**, Scientists of the FG&OP Division are Co-PIs.

CIPHET Scientist attended International Drying Symposium 2008

Dr. A. K. Thakur, Sr. Scientist (AS & PE) attended the International Drying Symposium (IDS2008) held at Ramoji Film City, Hyderabad, India during 9-12 November, 2008 and made an oral presentation of his paper “Effect of convection drying on physico-chemical and micro-structural changes of apples”. IDS2008 is the 16th biennial conference in the series initiated exactly three decades ago and this time it is jointly organized by ‘World forum of Crystallization, Filtration and Drying (WFCFD)’ and ‘Institute of Chemical Technology, Mumbai’. The eminent speakers from all over the world participated in this mega event and presented their research work specifically in the field of drying technology. Prof. A. S. Mujumdar, Founding Programme Chair, IDS Series presented a historical perspective from the start up to the current status of the biennial International Drying Symposium series, especially for the benefit of the newcomers to this global event. A capsule of summery is provided by him of the performance of the series over the three decades, the role it played in developing the science, engineering and technology of industrial drying and its impact on drying in several industrial sectors. The national and international industries those involved in manufacturing of drying equipments are also participated and presented their products in stall exhibition. In agricultural food processing, drying is one of the interesting and challenging unit operation that has to be dealt in micro-technology level by the agricultural process engineers.

Entrepreneurship Development Programme on “Processing of aonla for value added products”

The Entrepreneurship Development Programme on Aonla processing for manufacturing of value added products was held during 17-22 November 2008 at HCP Division, CIPHET, Abohar. The EDP Coordinator Dr. R.K. Goyal and Co-Coordinator Dr. R.K. Gupta conducted the training.

Mr. Jaswant Singh Tiwana (Tiwana Bee Farms, Dohra, Ludhiana) and Ajit Jain (Nissan Foods, Abohar) were from Punjab and Mrs. Pranita E. Karkare, SMS (Food and Nutrition) form K.V.K., Amarawati, Maharashtra were the participants. In one week training, trainees were given information about different processed products from aonla and their process technology with the help of lectures and practical. The participants of EDP have developed different type of aonla products such as aonla preserve, candy, beverage, jelly, jam, leather etc. The participants also visited M/s Punjab Agro-Juices Ltd. and M/s Nisan Foods located at Abohar during the training.



Inaugural function of the EDP



Valedictory function of EDP

Participation of CIPHET in various exhibitions

A team consisting of Sh. M.P. Singh Tech. Officer (T-6) and Sh. Hardeep Singh Tech. Asstt. (T-2) Participated in Agro-Industrial Exhibition held at G.B. Pant University of Agriculture & Technology Pantnager from Oct. 3-6, 2008, their out stall was adjudged special among Government group.



The CIPHET team consisting of Sh. M.P. Singh Tech. Officer (T-6), Sh. Pradeep Kumar Tech. Asstt. (T-1), Sh. Jaswinder Singh Tech. Asstt. (T-2) and Sh. Hardeep Singh Tech. Asstt. (T-2) also participated in India International trad fair 2008 from 16-27 November 2008 at Pragati Maidan New Delhi to demonstrate CIPHET Technologies.



Sh. M.P. Singh Tech. Officer (T-6) and Sh. Pradeep Kumar Tech. Asstt. (T-1) also participated in Agro-Tech- 2008 fair at Chandigarh from 28 November to 1st December 2008 to demonstrate CIPHET Technologies.



संस्थान में हिन्दी मासिक कार्यशाला एवं संगोष्ठी का आयोजन

संस्थान में हिन्दी की मासिक कार्यशाला एवं संगोष्ठी के अन्तर्गत दिनांक 25/11/2008 को संस्थान के समा कक्ष में डॉ.(श्रीमती) मृदुला देवी, वरिष्ठ वैज्ञानिक द्वारा "विपश्यना साधना-संक्षिप्त परिचय" विषय पर प्रस्तुतीकरण किया गया, जिसमें संस्थान के निदेशक, परियोजना समन्वयक, प्रभागाध्यक्ष, प्रमारी अनुभाग, प्रशासनिक तकनीकी एवं सहायक अधिकारी व कर्मचारी सभी उपस्थित थे।

Honours and Awards

Dr. KK Singh, Head, FG&OP has been nominated as Director (Agricultural Process, Food & Dairy Engg.) of the Indian Society of Agricultural Engineers for the period 2008-10

The CIPHET delegation consisting of Dr. RT Patil and Dr. AK Thakur visited Kabul, Afghanistan on a special invitation from USAID-ASAP Kabul and attended World Pomegranate Fair during Nov 19-20, 2008

Visitors

The Chairman, Coconut Development Board, Mrs. Minnie Mathew and Director, Dr. Murlidharan visited CIPHET on 14.11.2008 to look into the various research activities undertaken by CIPHET and explore possibilities of collaboration with Coconut Development Board to develop suitable equipment for climbing as well as harvesting.



Joining and Relieving

Joining



Dr. Suresh K. Devatkal, joined CIPHET, Ludhiana on 05.11.2008 as Sr. Scientist (Livestock Process Technology). He has obtained his B.V.Sc & A.H. from UAS Dharwad and M.V.Sc and Ph.D (LPT) from IVRI, Izzatnagar in year 2000 and 2003, respectively. Before joining he was working as Assistant Professor in College of Veterinary Science, GADVAU, Ludhiana. He has specialized in different areas of meat processing and technology. He has developed low salt restructured pork rolls using alginate calcium gels. He has also developed a process for commercial utilization of buffalo liver, which is being under consideration for granting on Indian patent.



Dr. Jitendra Singh, joined CIPHET, Abohar on 22.11.2008 as Senior Scientist (Agril. Entomology). He has obtained his B.Sc. (Zoology, Botany & Chemistry) and M.Sc. (Zoology Spl. Entomology) degrees from Kanpur University, Kanpur and Ph.D. from University of Delhi in year 2002. During Ph.D. he has worked on impact of insecticides usage on plant available nutrients, soil microbes and enzyme activities in groundnut field. He has also experience in integrated pest management and development of modules for various crops. Besides this he has worked on microbial biotechnology, such as “identification, characterization and manipulation of bacterial gene(s) for degradation insecticide(s)”.

Relieving

1. Dr. Rajbir Singh, Sr. Scientist (Agronomy) at CIPHET, Abohar has been relieved on 7.11.2008. He joined as Principal Scientist at WTC for Eastern Region, Bhubaneswar.
2. Dr. D.B. Singh, Sr. Scientist (Horticulture) at CIPHET, Abohar has been relieved on 7.11.2008. He joined as Principal Scientist at NBPGR, Regional Station, Srinagar, J&K.

Technology of the month

CIPHET- POMEGRANATE ARIL EXTRACTOR

Pomegranate (*Punica granatum* L.) is one of the most important commercial fruit grown in Mediterranean countries like India, Iran, Turkey, Afghanistan and some extent in United States, China, Japan and Russia. In India, commercial cultivation of Pomegranate is prevailing in the states of Maharashtra, Karnataka, Gujarat, Andhra Pradesh, Tamil Nadu and Uttar Pradesh. The area under Pomegranate fruit is expanding day by day and its cultivation is now gaining high importance because this has been regarded as medicinal fruit of great importance. The pomegranate cultivation has ushered the farmers to a new socio-economic life style. Himachal Pradesh, Punjab and Rajasthan are also turning towards large production of pomegranate. All parts of the tree, the roots, the reddish brown bark, leaves, flowers, rind and seeds have featured in medicine for thousands of years. Pomegranates are not only used for eating but they are also used as medicines. Sugar contents of Pomegranate juice are about 12 to 16 %. This sugar is light for digestion. Pomegranate peels are used for medicines and for coloring cloths. Peels of Pomegranate is used to prepare toothpastes / toothpowders. Pomegranate juice has iron, phosphorus, calcium, magnesium etc which helps in growth of blood in the body. Many processed food products such as juice, cold drinks, carbonated drinks, Anardana (dried arils/seeds), wine, syrup etc are prepared from Pomegranate fruits. The juice extracted from the whole fruit or cut pieces with peels contributes high amount of tannins and other undesirable biochemical and has to be further clarified by various chemical methods.

The hard peel of Pomegranate fruits makes it difficult to release the arils, thus limiting its consumption as fresh fruit. At present, there is no mechanical method or machine which is commercially available in India for safe separation of arils from the whole Pomegranate. Since a Pomegranate contains several hundreds of arils completely held within the fruit, manual processing of pomegranates consisting of cutting the fruit by knife into pieces and then separation of arils by hand tends to be very inefficient and highly labour intensive, causing loss of arils, time consuming and irritating. Arils are so firmly attached to each other and; with rind and peel that it makes difficult to separate manually for industrial processing in large quantity.

The **CIPHET-Pomegranate Aril Extractor** relates to a mechanical and continuous system for processing of whole Pomegranate of any size, shape and variety; and for recovery of clean, whole and undamaged arils. The main components of the unit are Pomegranate Fruit Breaking unit, Drive unit, Collection Trays where separated arils and extraneous matters are received, Vibrating Sieve unit; and the clean arils and extraneous matter Collection Troughs. The fruit breaking unit consists of a pair of innovative cone frustums with knives arrangement to continuously break the fruit in such a way that the major portion (85-90%) of arils is safely separated out. During operation, the knives in the cone frustums act over only peel surface of the Pomegranate. The rest of the arils that is about 10-15% remains attached with the broken peels are further getting separated over the vibrating screen. The machine is capable to process the whole pomegranate at a rate of 500 kg per hour, approximately with extraction capacity of 90-94% and with little damage of arils that is about 1-2%. The cost of the machine will be approximately Rs. 75000.00. The invented machine is called “CIPHET-Pomegranate Aril Extractor” is an original and unique with the working principle which is entirely novel.

The advantages of this novel machine “**CIPHET-Pomegranate Aril Extractor**” is:

- The Pomegranate breaking and arils separation mechanism is highly efficient with little damage and waste
- Continuous operation for rapid processing of large quantities in any shape, size and variety of the Pomegranate
- Peels and other extraneous matter are separated out and yielding a clean arils that can be used for further processing or for fresh eating

The technical specifications of the “**CIPHET-Pomegranate Aril Extractor**” are:

- Higher aril extraction capacity that is around 500 kg per hour (approximately 35-40 fruit per minute)
- Aril extraction/separation efficiency is in the range of 90-94% depending on variety and Pomegranate characteristics
- Mechanical damage received by arils is only 1-2%
- Man power required for safe and smooth running of “CIPHET-Pomegranate Aril Extractor” is 2-3 persons
- Electrical power required- 0.75 kW (1.0 hp)
- Over all dimension of machine is Length-1480mm, Width-660 mm, Height-1710mm
- Weight of the CIPHET-Pomegranate Aril Extractor is 250 kg

The CIPHET has filed a patent for this machine and is now available for licensing for manufacture on commercial scale



Mechanized version of CIPHET-Pomegranate Aril Extractor and the separated arils from the machine

Publication of the month



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