



Central Institute of Post Harvest Engineering & Technology Ludhiana

Our Slogan: Produce, Process and Prosper

**CIPHET E - Newsletter for April 2011
Vol. 6 No. 4**

Director's Column



Dear All

This month the unique initiative by Agrowon Daily to organize "Sarpanch Mahaparishad" provided an opportunity to us to reach out to 1200 of the most progressive village heads of Maharashtra. These people were dynamic and young decision makers with the power to influence an entire society. These progressive village heads can make possible the agro processing in production catchment successful through their leadership and entrepreneurship qualities.

The Punjab Government Chief Secretary along with other higher official visited CIPHET Campus Abohar. During the visit, Chief Secretary appreciated the research work being carried out at CIPHET and felt that CIPHET can play an important role in the development of small scale food processing activities in the State.

To get the first hand information regarding progress of NAIP Projects, National Director of National Agricultural Innovation Project (NAIP), Dr Bangali Baboo, visited the institute. Both National Director and National Coordinator appreciated the progress of the projects going on at CIPHET and showed keen interest in the laboratories developed with the support of NAIP funds.

The institute got overall third position among the 16 institutes participated in the ICAR Sports Tournament, North Zone, held at Central Soil and Water Conservation Research Training Institute (CSWCRTI), Dehradun. Ms. Deepika Goswami, Scientist at the institute has made the institute proud by clinching overall best women athlete trophy.

Various trainings and workshops were organized at the institute during the month. Technology of "Groundnut milk" and "Chilli Powder and Puree" was transferred to many entrepreneurs.

With best regards

**R.T. Patil
Director**

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TECHNOLOGY OF THE MONTH

Sarpanch Mahapanchayat in Maharashtra



The meeting of young, energetic Sarpanch (Village Heads) from all districts of Maharashtra was organized by Agrowon Daily at Aurangabad. About 1200 Sarpanch attended this meet and were exposed to scope

of improving their villages through modern agriculture. This meet was inaugurated by Hon'ble Sh. Shard Pawar Ji, Minister of Agriculture, Govt. of India and others ministers from Maharashtra on April 10, 2011. Dr. RT Patil, Director, CIPHET attended this meet on April 11 and delivered key note address on "Opportunities in Food Processing Industries". The information on Agro processing opportunity in the rural areas and in production catchments presented by me was well receive and based on that we are getting many upcoming entrepreneurs from Maharashtra for licensing of our technology.

The initiative by Agrowon was for the progressive Sarpanches of Maharashtra to help them establish an effective role of Gram Panchayat in agriculture and allied businesses through innovation and entrepreneurship. The invitees were all well educated and below 45 years of age from all the districts of Maharashtra. The conference covered the topics like: Group Farming; Renewable Energy; Agri Entrepreneurship; Water Conservation; Processing; Eco Village; Opportunities in Agri & Govt Policies etc.

Meeting of High Level ICAR officials with Hon. Chief Minister of Punjab

Hon'ble Director General, ICAR had a meeting with Chief Minister, Govt. of Punjab along with higher officials of ICAR on April 125, 2011. This meeting was also attended by Chief Secretary, Govt. of Punjab; Financial Commissioner Development, Mr. N.S. Kang; Financial Commissioner (Diary), Mr. Sandhu; Director of Agriculture, Govt. of Punjab; Dr. G. S. Kalkat, Chairman Punjab State Farmers Commission. From ICAR side others members were Dr. A.K. Singh, DDG (NRM); Dr. KML Pathak, DDG (AS); Dr. H.S. Gupta, Director, IARI; Dr. M.C. Sharma, IVRI; Dr. AK Srivastava, Director, NDRI; Dr. Pitam Chandra, Director, CIAE; Dr. VN Sharda, Director, CSWCRTI. The need for agriculture development of Punjab was discussed.

Chief Minister of Punjab, Sri Parkash Singh Badal urged the Indian Council of Agricultural Research (ICAR) to boost the agricultural, dairy and fisheries sectors in the state by adopting result oriented approach and establishing specific commodity oriented research stations. Chief Minister urged Council to establish research stations in the state for enhancing production of pulses and kinnow through research support. Sri Badal also insisted on opening an ICAR center in south-western Punjab where ample scope for fisheries exists in saline water unfit for agriculture. Sri Badal further added that productivity of current varieties of wheat and rice had reached a plateau and research to develop higher yielding varieties both of wheat and short duration rice is essential that could be tolerant to pests and diseases besides adaptable to climate change. He also showed his deep concern over the present status of depletion of soil fertility and decline of ground water levels in the state.

Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR assured the Chief Minister to provide all out research support to farm diversification and new initiatives on animal husbandry and fisheries. He assured that with farmer's access to better technology the wheat-paddy cycle can be broken to pave way for farm diversification. Dr. Ayyappan made an elaborative presentation on 'Fisheries in Saline and Water Logged Areas'. The DDGs and Directors of ICAR institutes attending the meeting also made their respective presentations to high light the technologies available for benefit of Punjab Farmers.

Chief Secretary of Punjab Government Visited CIPHET, Abohar

The Punjab Government Chief Secretary Mr. S.C. along with other higher official visited CIPHET Campus Abohar on 15th April, 2011. Mr. S.C. Aggarwal accompanied by Managing Director, Punjab Agro, Commissioner of Ferozpur, Mr. Raminder Singh and Deputy Commissioner of Ferozpur Mr. K.K.Yadav and other senior officers of Punjab Government. Dr. R.T.Patil, Director, CIPHET presented the showcase of CIPHET



technologies to the visitors and answered the queries related to Food Processing sector. Further, Chief Secretary and his team visited laboratories, pilot plants, fabrication of research prototypes and covered crops cultivation experiments. During the visit, Chief Secretary appreciated the research work being carried out at CIPHET and felt that CIPHET can play an important role in the development of small scale food processing activities in the State.

National Director NAIP visited CIPHET

National Director of National Agricultural Innovation Project (NAIP), Dr Bangali Baboo, visited the institute on April 11, 2011 to get the first hand information regarding progress of NAIP Projects going in the institute. Stressing on the need to develop competitive technologies, Dr Bangali Baboo, said that scientists should closely work on economics and viability aspect with development of technology. He hoped that these projects would help in strengthening agricultural economy of the country. Dr R.T Patil, CIPHET Director, said that NAIP Projects had helped them in providing funding for research and also an opportunity to work with other premier research institutes of the country. He hoped that expertise developed with help of NAIP projects would have long lasting results. Total of eight projects were reviewed on the occasion. National Coordinator NAIP Dr A.P Shirvastva suggested various measures for making the outcome of the projects more productive. Both National Director and National Coordinator appreciated the progress of the projects going on at CIPHET and showed keen interest in the laboratories developed with the support of NAIP funds. A film on Potato enriched cattle feed was also shown on the occasion.



Maharashtra Farmers Visited the Institute



A delegation of farmers visited the institute on April 27, 2011 to explore possibilities of setting up food processing industry in the Jalgaon district, a Banana growing belt of Maharashtra. They were especially interested in banana jam, the technology of which is being advocated by the CIPHET Director Dr R.T Patil.

G.K Patil, who is an advocate by profession, said that he grows banana and papaya in his 180 acres of Land. They are more interested in food processing than in legal profession.

“We are especially interested in banana jam, powdering technology of onion and garlic and green chilli powder technology,” he added. Govind Ramesh Patil said that he was planning to set up some processing unit in his place. Jalgaon supplies bananas to whole of the country, but there is no processing technology available so far.” Dr Nilesh Gaikwad, Scientist, said that there is lot of potential of food processing industry in Jalgaon. “If few farmers take initiative other will start replicating their success models,” he hoped.

PC (APA) Visited BAU, Ranchi

Dr. Bhatnagar visited BAU. Ranchi and met Dr. Pramod Rai, I/c PI, AICRP on APA during 18-21 April, 2011. He visited with Dr. Rai to farmer’s field at Village: Hochar, Block Kanke, Ranchi. The farmers shared their view about the demonstrated the technology on net house on small area and the other problems they are facing in cultivation of vegetables. The large tract of capsicum crop was heavily infested by viral disease and the crop was totally damaged. He suggested the PI to train and demonstrate the farmers for growing healthy nursery of vegetables using small shade net/poly house along with soil solarisation technique, low tunnel for growing coriander during rainy season. Dr. Bhatnagar also visited to Village: Jalun, Block, Angar, Ranchi to observe and interact with the farmers. 25 farmers

has installed the gravity fed drip irrigation system for 0.1 has each and they are growing musk melon, bitter gourd, capsicum, etc. Earlier they have taken tomato and cucumber using the system along with plastic mulch (double layer). The fund is supported to farmers by Jharkand State Livelihood Society, Department of Rural Development, Govt. of Jharkand and UNDP. The farmers are now happy with the return they are getting in comparison to earlier cultivation of only paddy crop.

CIPHET Scientist Visited University of Guelph, Ontario, Canada

Dr. H. S. Oberoi, Senior Scientist visited University of Guelph, Ontario, Canada during April 10-19, 2011. He was hosted by Dr. Hung Lee, Professor, School of Environmental Sciences, University of Guelph, Ontario. He interacted with a group of Microbiologists and Biochemists at the University of Guelph on enhancing the capability of pentose sugar fermenting yeasts in production of ethanol and xylitol from the hard wood and soft wood hydrolysates. Dr. Oberoi interacted with Professors Hung Lee, Jack Trevors, Mark Habbash and Peter Kevins and discussed about the strain improvement methods using genome shuffling and expression analysis for different genes through DNA microarray. He also performed small experiments on screening of auxotrophic mutants of *Pichia stipitis* through the use of gradient plates containing hard wood hydrolysate. Dr. Oberoi also studied the expression of phenanthrene dioxygenase gene in the DNA of *Arthrobacter* at different incubation intervals using RT-PCR. Dr. Oberoi also got an opportunity to meet Dr. Anthony Clarke, Assistant VP (Academics), University of Guelph. Dr. Clarke showed keen interest in working with CIPHET and ICAR on collaborative projects jointly funded by NRC, ISTP, Canada and ICAR, DBT, India.

Advisory Committee Meeting of NBSFARA Project

To chalk out future roadmap, first meeting of advisory committee of the NBSFARA Project entitled 'Microencapsulation of bacteriocins for their controlled release' was held at the institute. The project which could eventually prove useful for developing functional foods and preserving foods for longer time without quality deterioration is funded by the 'National Fund for Basic, Strategic and, Frontier Application Research in Agriculture,' (NBSFARA), an initiative of Indian Council of Agricultural Research (ICAR). Speaking on the occasion, Dr A. Bandyopadhyay said that concept notes were invited from collaborative and multi-institutional research teams based on innovative ideas for solving advanced scientific and technological problems in agriculture through open competitive mode and CIPHET was selected because of its competence. He said that they would be very specific about deliverables of the project and eventual benefit to the agriculture. Director, CIPHET, Dr R.T. Patil said that CIPHET is a unique institute in the country engaged in multi-commodity and multi-disciplinary research in post harvest sector. Saying that institute has state of art infrastructure and research facilities, he said that this project would further help the institute to enhance its research capacity and meeting the expectation of the country. Dr S.N. Jha, Head, AS&EC Division gave the details of genesis and formulation of the project proposal. Dr K. Narsaiah, Principal Investigator of the Project, gave detailed presentation on objectives and outcomes of the project. Dr. P.A. Shankar, member of the Advisory committee, gave suggestions on isolation of novel probiotic strains and their evaluation. Dr. G.P. Aggarwal, Chairman of the Advisory committee, made his remarks based on observation of presentation and suggested measures for making the project more useful.

Two Days Workshop on Extrusion in collaboration with Assocham and PAU



A two-day “Workshop on Extrusion Processing- Towards Food Security and the Second Green Revolution”, was organized by Punjab Agricultural University (PAU) in association with Kansas State University (KSU), Manhattan, Kansas, USA and Central Institute of Post Harvest Engineering and Technology (CIPHET) under the aegis of ASSOCOM – INDIA during April 7-8, 2011. The workshop was attended by the scientists, teachers, and professors from various disciplines be it food science, nutrition, human ecology, home science or engineering and the industry (small, medium and large-scale businesses).

Inaugurating the workshop, the chief guest Dr Manjit Singh Kang, Vice-Chancellor, PAU, shed light on “International partnerships for addressing food security in India.” Considering the rising population and increasing demand for food grains, he called upon the agriculturists and scientists to bring about ‘Second Green Revolution’ for the agriculture is the mainstay of Indian economy. Referring to Dr M.S. Swaminathan’s “evergreen revolution,” Dr Kang stressed that the stability of the three pillars– availability (production, distribution and exchange), access (allocation and affordability) and utilization (nutritional value and food safety) determines the strength of food security.

The guest of honour, Dr R.T Patil, Director, Central Institute of Post Harvest Engineering Technologies (CIPHET), presented the status and prospects of food processing in India. The country ranks second in the country as it produces about 230 million tons (mt) of food grains and 53.1 and 91.6 mt of fruits and vegetables, said he, revealing that the food processing is employment intensive, creates 1.8 jobs directly and 6.4 indirectly for every US\$ 25,000 investment. Stating that the extrusion machine can do wonders, Dr Patil laid emphasis on the formulation of national agro-processing policy with incentives for small scale agro-processing units in rural areas, forging the public-private partnerships in food processing industry and food infrastructure including cold storage, rural godowns etc., developing mobile units for mechanization of farm operations for grains, fruits, vegetables etc., facilitating direct marketing by farmer to the processor or consumer, establishing world-class food testing laboratories and reaching international standards of food safety and quality. He said that extrusion machinery has many benefits as it handles millets and coarse grains bringing them back into the food chains as highly nutritious products under sanitary conditions.

Dr Sajid Alavi, Associate Professor, Department of Grain Science and Industry, College of Agriculture, KSU, welcoming the chief guest, guest of honour and other dignitaries, gave an overview of the workshop on extrusion technology with focus on its basic principles, its evolution over the years and its applications in food, pet food, animal and aquatic feed and

non-industrial applications. He said that KSU actively organizes workshops in different countries and discusses need based technology areas. He said that modern processing is important in handling the produce most efficiently.

Dr K.S.Minhas, Head, Department of Food Science and Technology, PAU, anchoring the proceedings of the inaugural session, said the workshop will provide an opportunity to discuss about the role of food processing technologies and the new innovations developed by Indian research institutions. He welcomed the deans, directors, additional directors, heads and faculty of various departments of PAU.

The participants of the workshop were provided with hands on experience in the laboratories of PAU and CIPHET. Dr. S.Balasubramanian, Sr. Scientist delivered lecture on 'Development of Extruded Health Foods from Legumes and Millets' and demonstrated collet extruder, rotating head extruder and phase transition analyzer to the participants.

CIPHET Facilitated Scientist for Lifting Overall Best Athlete Trophy

Ms. Deepika Goswami, Scientist at the institute has made the institute proud by clinching overall best women athlete trophy during the ICAR Sports Tournament, North Zone, held at Central Soil and Water Conservation Research Training Institute (CSWCRTI), Dehradun. The institute also got overall third position among the 16 institutes participated in the tournament, which was held from April 18-21, 2011.



On April, 28, 2011 Dr R.T Patil facilitated her for bagging four gold medals and one silver medal into the institutes' kitty. He also congratulated all the medal winners for bringing a proud moment for the institute. Dr S.K Nanda, Project Coordinater (PHT), was leading the CIPHET contingent. The function was organized by the staff recreational club.



As many as 785 athletes participated in the games from the ICAR institutes located in north zone and CIPHET contingent was represented by 29 athletes. Dr Goswami clichéd gold medals in 100 m (women), 200 m (women), long jump and badminton doubles with Jasvir Kaur. She also added one silver medal in high jump securing her place for the best women athlete of the tournament. On the other hand, Sunita Rani and Hardev Singh bagged bronze medals in 200 m (women) and 100 m (men) race, respectively.

Prisoners Got Tips to Adopt Green Chilli Technology as Business

The technology of making green chilli powder/puree were introduced to the prisoners of Ludhiana Central Jail on April 6, 2011 by the institute. The institute has begun series of training programme with the objective to provide respectful livelihood to the prisoners after they get released from the jail. Dr Dilip Jain, Senior Scientist, who has standardized process of preparing green chilli powder and puree, dwelled upon how the technology could be used for establishing into a successful business. Explaining process of making powder and puree from the green chillies, he said that value addition would be as high as double.

“Since CIPHET has recently started transferring the technology to entrepreneurs, there would be enough space for newcomers to run successful business,” said Dr Jain, adding that small scale industrial unit could be set up with cost of less than Rs 3 lakh. On the occasion, Dr Anil Dixit, Senior Scientist, provided inputs on the marketing and financial support. S.P Khanna, Jail Superintendent, said that such training programs would be useful for prisoners in leading a respectful life after the completion of their sentences. Amrik Singh, Deputy Superintendent (Jail), said that food processing sector could provide ample of employment opportunities.

CIPHET Licensed Package of Technologies

On April 21, 2011 the Institute signed a MOU with Krishna Foods and Seed Processors (KFSP), Gurdaspur, for transferring the package of technologies. The transferred technologies included design/ drawing for fabrication of CIPHET tomato grader, porous bricks, modified atmospheric packaging of different vegetables, low cost technique for enhancing shelf life of tomato, shrink wrap packaging of fruits and vegetables and process of vermi drain -a liquid plant growth tonic. Besides, CIPHET would also be providing training and technical support to the entrepreneur.

Dr Jatinder Singh Dhaliwal, Project Manager of KFSP, said that all these technologies would help them in value addition and providing better quality to consumers. “Earlier, they were only growing mushrooms but now they have also entered into production of vegetables,” he said, adding that modified atmosphere packaging and shrink packaging would help in enhancement of the shelf life. “On the other hand tomato grader would be useful for grading tomatoes whereas, vermi compost technology developed by CIPHET would save unnecessary use of chemical fertilizers,” Dr Jatinder Dhaliwal further added.

MoU Signed for Meat Processing and Value Addition

On April 22, 2011 Institute signed a MoU with Punjab Broilers, Ludhiana for commercial scale use of meat processing and value addition technologies developed by the institute.

Punjab Broilers is a leading poultry processors and suppliers in Ludhiana. Currently it is supplying fresh meat to major establishments. Speaking on the occasion Dr. R.T.Patil Director, said that value addition technologies hold a significant role in developing meat processing sector in India. He further emphasized on hygienic standards, value added products and product quality for gaining the confidence of consumers.

Bhupinder Singh of Punjab Broilers said that he was in poultry business during last 20 years. “In my recent visit to abroad realized the economic potentials of further processing and value addition to poultry meat. That is the reason entering into MoU with CIPHET for developing poultry processing business,” he added. Senior Scientist Dr. Suresh Devartkal said that CIPHET train the entrepreneur in meat processing, value addition, products development and provide necessary technical assistance for establishing processing centre.

Two Entrepreneurs got CIPHET Groundnut Milk Technology

On April 30, 2011 CIPHET licensed technology of groundnut milk to Sangrur and Tarantaran based entrepreneurs. The institute has standardized the groundnut based products technology with deodorizing technique and negligible nutty flavor.

Handing over copies of MoUs to entrepreneurs, Dr S.K Nanda, Project Coordinator (PHT), said that groundnut milk had very high potential in ever growing market for milk products. He said that it could emerge as healthy alternative to meet shortage of animal milk.



Baldev Raj, an entrepreneur based in Taran Taran, said that he saw lot of scope in groundnut milk as business. “Animal milk is inadequate to meet the demand of current population. On the other hand, groundnut milk has high nutritious value,” he said, expecting that people would respond to this product. Another entrepreneur S. Garg, who got the technology, said that consumers are now getting more conscious about the health aspect. “Already consumers have started taking soyabean milk, and groundnut milk could be another good option,” he added. “The groundnut is also the richest source of Niacin. It is free from lactose and cholesterol. Similarly, it contains Vitamin B-6 and phytochemicals, which act as anti cancer and anti cholesterol agents,” added Dr D.N Yadav, who has standardized this technology.

Training and Licensing of Green Chili Powder and Puree

Chilli is spice-cum-vegetable of commercial importance. Processing has vast potential for fresh & processed markets. CIPHET has developed a process to prepare the green chilli powder. The basic process involved the destalking, washing, blanching, crushing, drying and powdering. The green chilli has more Vitamin C and antioxidant properties and finds a different place for preparation of Indian recipes. The processing of green chilli into green chilli puree and green chilli powder is thus important to preserve the natural instinct.

- Meva Singh s/o Sukhram Singh, VPO Bahmanwala, Teh. Ratia, Dist. Fatehabad-125051,M(09729145325) on 18-04-2011
- Mr. Rajesh Sharad Rao Misal, 128-Sahkar Nagar Khanmla, Near Gajanan Maharaja Mandir Nagpur-440023,M(09545999995) on 18-04-2011

New Joining



Dr. Sangita Bansal joined CIPHET on 1st April, 2011 as Senior Scientist (Biotechnology-Plant science). in the division of Food Grains & Oilseeds Processing. She did M.Sc. from CCS University, Meerut and doctorate from GB Pant University of Agriculture & Technology, Pantnagar. Dr. Bansal has been involved in Teaching, Research and Extension at SVPUA&T, Meerut. She has expertise in gene isolation, cloning and transformation. She has numerous publications in International journals of repute and has guided a number of students in the area of Biotechnology.

Dr. Manisha Mangal, has joined the CIPHET on 29th April, 2011 as Sr. Scientist (Biotechnology-Plant science). She did her Master and PhD in Plant Biotechnology from YSP University of Horticulture and Forestry, Solan. She was awarded BOYCAST fellowship during 2008-2009 by DST, New Delhi to work in the area of Life Sciences on Molecular Biology of biotic and abiotic stresses in plants at University of California, Davis, USA. She has also been granted three patents. She has been involved in various externally funded projects from ICAR and DBT. She has published several research papers in national and international journals.



TECHNOLOGY OF THE MONTH

Stabilization of Rice Bran by Ohmic Heating

Rice bran is the outer layer of the rice kernel and a by-product of the rice milling process. Several studies have reported that rice bran is an excellent source of nutrients and bioactive compounds including proteins, vitamins, dietary fibers, tocopherols, tocotrienols and α -oryzanol. Raw bran is a light coloured oily, unstable meal of various particle sizes. The most important and crucial property of rice bran is the instability of its oil caused by an oil-splitting enzyme, lipase, inherently present in it. The enzyme, lipase acts as a catalyst.



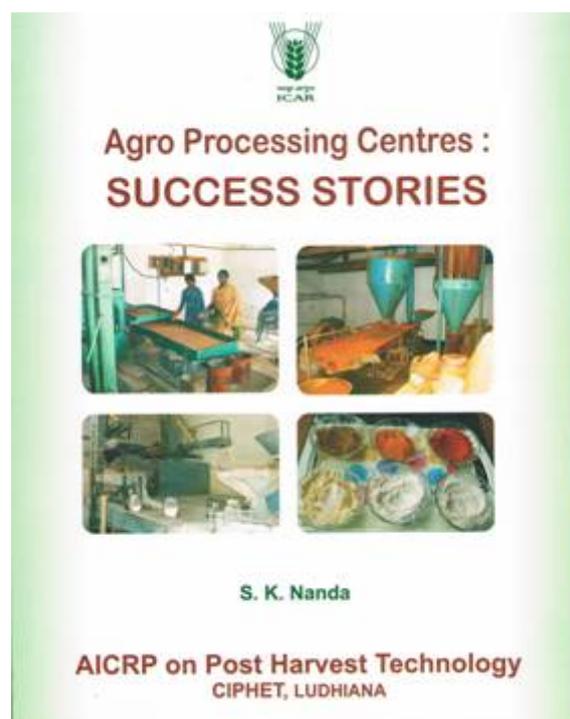
Ohmic heating system enclosed in wooden frame (left) and mounted on a stand (right)

Thus, stabilization of rice bran is considered important to inactivate the enzymes. Stabilization of bran extends the storage period of bran without any appreciable change in FFA content. Various stabilization methods, applied to protect rice bran oil degradation, have been reported such as steaming, extrusion and microwave heating. Stabilization of rice bran by ohmic heating has been successfully tried at CIPHET. The complete system was enclosed in a wooden frame and mounted on a MS stand. The unit is shown in figure. The volume of the system to fill rice bran was 0.02 m^3 and 10 kg hydrated rice bran could be easily filled in the system for each batch. The electrical field strength of 15 V/cm was applied. The current flow increased with increase in temperature of the rice bran. Heating was continued till steam started emanating. It took around 20 minutes to heat bran from 20°C to 100°C . At this point electrical current was switched off. The heated rice bran was taken out from the system and dried in a tray drier. The % FFA in treated (ohmically heated) bran was observed to be 4.77 % after 75 days of storage whereas it was 41.84 % in case of raw bran. Ohmic heating using the simple equipment developed at CIPHET effectively checked the development of FFA in rice bran.

Publication of the Month



CIPHET News



Agro Processing Centres: Success Stores

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