



काजू समाचार CASHEW NEWS

काजू अनुसंधान निदेशालय, पुत्तूर : अर्धवार्षिक वार्ता पत्र
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FROM THE DIRECTOR'S DESK

The Cashew : Issues, Challenges and Strategies

Cashew has unique importance in human life as delicious snack food, for resource conservation and utilization of degraded lands, generation of employment opportunities and earning of foreign exchange. Cashew kernel is a rich source of protein, carbohydrate, fat and minerals. Apart from cashew kernels, Cashew Nut Shell Liquid (CNSL) expelled during processing is a valuable industrial raw material which finds use in a number of industries such as friction linings, paints, varnishes *etc.* Other valuable products from cashew industry are cashew testa and tannin. Cashew apple is very rich in ascorbic acid (240 mg/100 g), and also fairly good source of Vitamin A, antioxidants and minerals. Feni is a popular beverage from cashew apple but several other products like juice, pickle, candy *etc.* can be prepared.

India is the first country which commercialized cashew as a horticulture crop. Research and development efforts on cashew have resulted in achieving 5.6 times increase in production and 3.1 times increase in area from 1971-72. During 2012-13, total production of cashew in the country was 7.28 lakh tonnes from 9.82 lakh ha of land with a productivity of 772 kg/ha. Globally, India's share in the cashew area and production is 20 per cent and 16 per cent, respectively. India occupies the largest area followed by Ivory coast (19%), Brazil (16%), Indonesia (12%), Vietnam (7%), Nigeria (7%), Benin

(5%), Guinea-Bissau (5%), Mozambique (2%) and Philippines (1%) (FAO, STAT-2011). The highest production was from Vietnam (30%) followed by Nigeria (19%), India (16%), Ivory Coast (11%), Brazil (5%), Indonesia (3%), Philippines (3%), Guinea-Bissau (3%), Benin (2%) and Mozambique (2%). Few Years back, India was credited with the fame of largest producer, processor and exporter of cashew in the world. As other cashew producing countries acquired the know-how of processing and entered in the international market, currently the India's share in the International market has shrunk to 30 per cent. On the other hand, the domestic consumption in India has increased considerably, owing to largest consumption of cashew kernel.

Moreover, low productivity is the main concern in cashew cultivation in India. The productivity is low particularly in the states of Karnataka, Goa, Tamil Nadu, Andhra Pradesh and Odisha. The major factors for low productivity in these states are the large plantations under seedling origin and poor orchard management practices. There is a wide gap between potential productivity and present productivity. The productivity can be doubled by proper dissemination of technologies developed at research institutions and if all senile plantations of seedling origin are replaced by improved varieties. The adoption of

advanced technologies is very low, warranting much more extension efforts by various agencies. A close coordination between the research organizations and developmental departments is the basic need in successful implementation of the strategies aimed at increasing the productivity and quality of cashew. Considering these facts in view, there is an urgent need to address the emerging issues, challenges and to formulate strategies for achieving higher productivity and better quality of cashew.

A. Researchable Issues

Genetic Resource Management: i) Narrow genetic base, ii) Introduction of germplasm with desired traits and iii) Cryo-preservation of germplasm.

Crop Improvement: i) Development of dwarf genotypes with high yield potential suitable for high density planting, ii) Varieties for cold tolerance, variable CNSL content, cashew apple, early maturing varieties for NEH region and nutrient efficient varieties with synchronized flowering and fruiting, iii) Development of SSR markers, iv) Linkage mapping to identify markers linked to economic traits and v) Introgression of genes from wild species.

Crop Management: i) GIS based delineation of cashew area, ii) Variety and location specific management, iii) Development of nutrient diagnostic norms, iv) Input use efficiency, v) Foliar feeding and use of growth regulators, vi) Management of canopy architecture, vii) Identification of rootstock, viii) Cashew based cropping systems, ix) Better understanding of crop phenology and x) Farm mechanization.

Crop Protection: i) Development of pheromone and kairomone traps, ii) Utilization of entomopathogenic nematode (EPN) for management of cashew stem and root borers (CSRB) and fungal pathogens for tea mosquito bug (TMB) and other minor pests, iii) Development of pest forecasting models, iv) Evaluation of new and safer molecules for management of pests, v) Economic threshold

level for foliage pests and vi) Monitoring pests and disease dynamics in the scenario of climate change.

Post-Harvest Technology: i) Mechanization of cashew processing, ii) Development of standards for raw cashewnuts, iii) By-product utilization, iv) Product diversification and v) Non-thermal processing of cashew (cold).

Transfer of Technology and HRD: i) Constraint analysis, ii) ICT based TOT, iii) Crop advisory system and iv) Human Resource Development.

Policy Issues: i) Poor coordination between research and development agencies, ii) Reliable data base, iii) Crop insurance and iv) Minimum support price.

B. Challenges

Genetic Resources: i) *In vitro* clonal regeneration.

Crop Improvement: i) Development of varieties resistant to CSRB and TMB and ii) Breaking the yield barrier.

Crop Management: i) Enhancement of cashew productivity, ii) Expansion of area under moderate cold climate, iii) Organic production of cashew and iv) Sustained supply of raw cashewnuts to industries.

Crop Protection: i) Eco-friendly and cost effective management of CSRB and TMB and ii) Early detection of CSRB infestation.

Post-Harvest Technology: i) Automation of cashew processing and ii) Commercialization of cashew apple based value products.

C. Strategies

Genetic Resources: i) Broadening of genetic resources, ii) Conservation, evaluation, characterization and cataloguing of germplasm accessions and iii) Standardization of cryopreservation protocol.

Crop Improvement: i) Introduction of dwarf cashew types from Brazil and African countries through NBPGR, ii) Development of trait specific varieties, iii) Development of varieties for biotic and abiotic stresses through inter-specific hybridization and back-crossing and iv) Identification of molecular

markers linked to economic characters and construction of genetic maps.

Crop Management: i) Management strategies to improve nutrient and water use efficiency, ii) Diagnosing nutrient related constraints and development of integrated management options, iii) Management options for organic farming, iv) Adaptation and mitigation strategies for climate change effects, v) Clonal rootstocks for dwarfing plant stature and biotic and abiotic stresses, vi) Canopy architecture management to suit the requirement of different plant densities and system of planting, vii) Rejuvenation / Replacement of old senile cashew orchards and viii) Identification of compatible components and development of management practices for Integrated cashew based farming system.

Crop Protection: i) Development of integrated pest management strategies for the management of major insect pests, ii) Development of appropriate strategy for emerging diseases, iii) Standardization of mass rearing techniques for the important pests of cashew and their natural enemies and iv) Determination of 'safe period' for different insecticides.

Post-Harvest Technology: i) Development of efficient cashew processing machinery, ii) Development of low cost moisture meter for raw nut, iii) Reduced post harvest losses and waste utilization, iv) Reducing drudgery, v) Development of value added products, vi) Alternate use of cashew by-products and viii) Popularization of cashew apple based products using mass media.

Transfer of Technology: i) Intensified extension efforts to bridge the gap between actual yield and potential yield, ii) Utilizing advances in ICTs for wider farmers reach and iii) Development of Human Resource par excellence.

Policy Initiatives: i) Sufficient budgetary allocation for research, ii) Development of state of art facilities, iii) Global interaction and knowledge sharing, iv) Extending crop insurance to cashew growing states and v) Provision for minimum support price to safeguard the interest of cashew farmers.


(P.L. Saroj)
Director

FOCUS ON RESEARCH

Development of Updraft Gasifier for Utilization of Cashew Shell Cake

D. Balasubramanian

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Cashewnut processing relies on thermal energy to carry out the desired operations to achieve high processing efficiencies during material conversion processes. The gasification of biomass into useful fuel enhances its potential as a renewable energy resource. Cashew shell cake (CSC) is the by-product of cashewnut processing industry and a total quantity of 5.2 lakh tonnes was generated in India during the year 2011-12. This huge quantity of CSC is unutilized efficiently and causing extensive pollution to the environment by the direct combustion. Updraft gasifier has high thermal efficiency as the sensible heat of the producer gas is

recovered by direct heat exchange with the entering feed-stock which is dried to undergo pyrolysis before entering the gasification zone.

A CSC based updraft gasifier suitable for applications needing thermal requirement in the range of 10 to 12 kW has been developed at Directorate of Cashew Research. It consisted of a reactor serving as gasifying media, blower, ash outlet and gas burner. Operational procedure includes loading CSC into the reactor, initiating combustion of the loaded CSC through ignition port, filling water in the annular space to prevent possible

gas leakage and regulating air supply for combustion process through blower. Producer gas generated from cashew shell cake passed through conduit and reaches the burner. Cost of the gasifier is ₹ 30,000/- only.



Gasification process of cashew shell cake based updraft gasifier

Starting time of gasifier was observed to be 15-20 min at 1st ignition. After each intermittent feeding, the gas can be quickly obtained within a short period of 2-3 min. The intermittent feeding period for operation of gasifier was computed to be 50-55 min depending on the operator's skill level. Consistent gasification has been observed while operating the gasifier continuously for 72 h and the biomass consumption was found to be in the range of 8 to 10 kg h⁻¹. The tar generation was observed with

the progressive run of the gasifier needing periodical cleaning of gas conduit.

The moisture content of CSC was found to be in the range of 2-3 per cent d.b. which ideally suits for gasification process. Average values of ash, volatile and fixed carbon were determined as 13.3, 26.0 and 57.4 per cent, respectively and this proximate analysis clearly indicates that producer gas could be generated from CSC. Average calorific values of CSC were found to be 4403 Kcal kg⁻¹ and the gas generated was 490 M³ kg⁻¹.

Effect of feed stock on the gasification of CSC using updraft gasifier is depicted in Fig. 1. Average flame temperature and period of generation of producer gas ranged from 437 to 456°C and 36 to 66 min, respectively while varying the feed stock of CSC in the updraft gasifier from 3.5 to 14.0 kg. This indicated that quantum of feed stock has direct influence on the gasification process. Air velocity during gasification process significantly influenced the duration of gasification process (Fig. 2). Although average temperature of the flame remained same, gasification time decreased by 63 per cent in the case of higher velocity of air *i.e.* 7.5 m sec⁻² to lower level of 3.75 m sec⁻² indicating thermo-chemical conversion takes place at faster rate at higher air velocity.

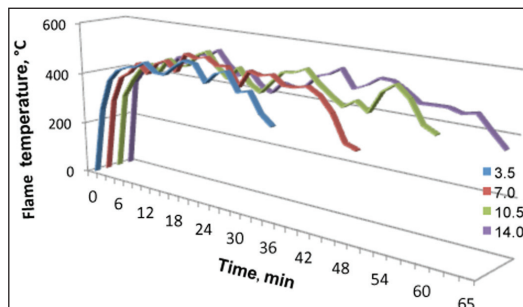


Fig. 1. Effect of feed stock on flame temperature in the cashew shell cake based gasifier

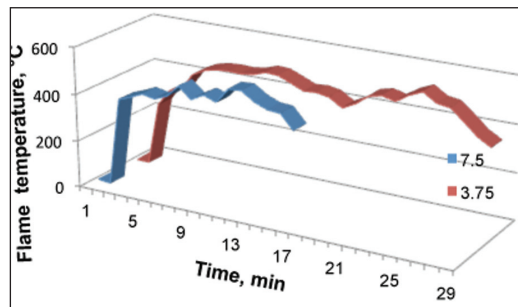


Fig. 2. Effect of air velocity on flame temperature in the cashew shell cake based gasifier

Moisture content of the feed stock plays an important role in the gasification process as evident from thermo-gravimetric analysis. Effect of moisture content of cashew shell cake in gasification is presented in Fig. 3. Results indicated that a minimum of 8 to 15 min is required for initiating the generation of producer gas depending on the moisture level. Average flame temperature recorded varied from 434 to 451°C for the moisture level of feed stock in the range of 3.74 to 9.35 per cent d.b. Overall performance analysis revealed that average flame temperature (456°C), period of producer gas generation (52 min) for the feed stock of 10 kg with moisture content of 3.74 per cent d.b,

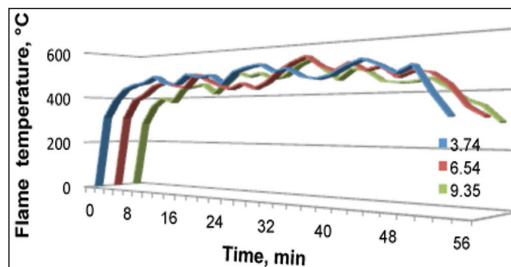


Fig. 3. Effect of moisture content of feed stock on flame temperature in the cashew shell cake based gasifier

cashewnut processing operations can be carried out with control on air pollution. A protocol for the operation of CSC based gasifier has been developed.

JHARKHAND STATE HORTICULTURE MISSION - A PROFILE

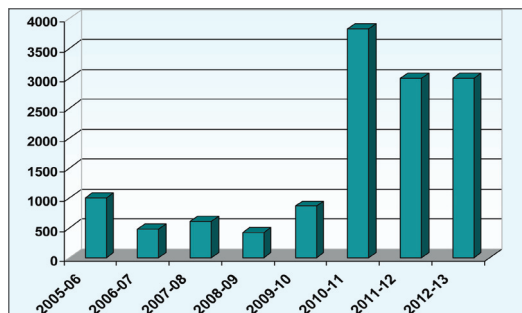
National Horticulture Mission (NHM) has been launched as a Centrally Sponsored Scheme to promote holistic growth of the horticulture sector through an area based regionally differentiated strategies. For implementation of NHM programmes in the state, a society, Jharkhand State Horticulture Mission (JSHM), has been registered under Society Registration Act by Department of Agriculture and Cane Development, Jharkhand. The NHM in the Jharkhand state was launched in late 2005-06 initially in 10 districts (Ranchi, Hazaribagh, Chatra, Latehar, Logardaga, Saraikela, Palamau, East Singhbhum, Deoghar and Dumka) with main focus on production of planting materials, vegetable seed production, establishment of new gardens, creation of water resources etc. Establishment of new gardens include perennial and non perennial fruits, spices, floriculture, aromatic and medicinal plants. The endeavor will be to double the production of horticultural crops in coming seven years.

The scheme was 100 per cent sponsored by Central Govt. during 2005-06 and 2006-07 (X Five Year Plan). However, during 2007-08

and onwards (XI Five Year Plan), this scheme has been implemented in 15 districts (Ranchi, Hazaribagh, Chatra, Latehar, Logardaga, Saraikela, Palamau, East Singhbhum, Deoghar, Dumka, Jamtara, Pakur, Gumla, Simdega and West Singhbhum) with the pattern of assistance as 85 :15 by Central Govt. and State Govt. respectively. Now two new districts viz., Khunti and Ramgarh carved out from Ranchi and Hazaribagh, respectively have been included under NHM programme. Horticultural crops have been adopted under NHM as per their area suitability.

Cashew was introduced in the state in 1990 by the forest department for the purpose of soil conservation. The launching of NHM has come as an opportunity for the state to take up cashew as a plantation crop and creation of marketing infrastructure. Cashew plants in the state are of seedling origin and bearing period is quite long and thereby production is low and uneven. In the first year (2005-06) of implementation of the project, 1000 ha of wasteland was brought under cashew. During 2006-07 to 2009-10, an area of 2330 ha was covered under this

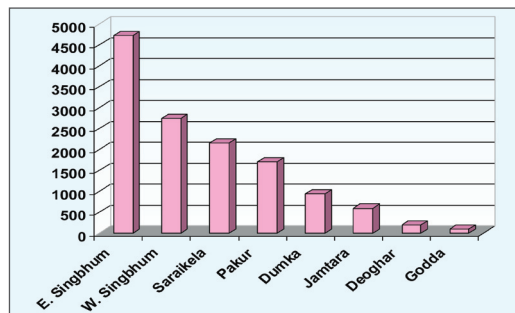
programme. With this a total of 3330 ha of area was covered under cashew cultivation in Saraikela (400 ha), East Singbhum (2630 ha) and West Singbhum (250 ha) districts of the state. Cashew varieties V-4 and V-7



Year wise area expansion (ha)

As a part of cashew development programme under State Horticulture Mission, many farmers have taken up planting of cashew over 3000 ha every year. Thus, the production of cashewnut is expected to increase many folds in future. Majority of the farmers have on an average of 1 to 2 ha wasteland in which cashew is planted. Cashew plantations of 4 to 6 years old yielded about 4 to 5 kg nuts/tree, which may increase to 9 to 10 kg nuts/tree or more in another 2 to 3 years. In Jharkhand, three cashewnut processing units have been established with

are recommended for the state. During 2009-10 to 2011-12, the area expansion under cashew was speeded up covering 13155 ha of area in five more districts (Pakur, Dumka, Jamtara, Godda and Deoghar).



District wise area expansion (ha)

a processing capacity of 60 kg/8 h in East Singbhum district. These units have started processing for the last three years. With the establishment of these processing units, the socio-economic status of the cashew farmers has been improved.

Address for communication

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PROGRAMMES ORGANIZED

AGRICULTURAL EDUCATION DAY-2013

Agricultural Education Day-2013 was organized at DCR, Puttur on 30 January 2013. Around 260 students along with their teachers from various schools and colleges around Puttur participated in the programme. The lectures were delivered on the topics like Scope of Agricultural Education, Developments in Agricultural Research, National Agricultural Research and Education System *etc.*

Prof. P.L. Saroj, Director, DCR appraised the students on Agriculture Scenario at National and Global level and also the services rendered by agricultural scientists in achieving food and nutritional security.

Students were taken to various experimental plots, cashew museum and laboratories, where they interacted about research achievements and technologies developed by the Directorate.



Students participating in Agricultural Education Day

ANNUAL CASHEW DAY-2013

Annual Cashew Day was organized at DCR, Puttur on 23 February 2013 in which representatives of progressive farmers, nursery men, developmental departments



Dignitaries on the dias during Cashew Day

and scientists shared their experience with the farmers. Dr. M.G. Nayak, Principal Scientist (Hort.), delivered a talk on Advances in Cashew Production Technologies. He advocated that the adoption of scientific management practices along with high yielding cashew varieties is need of the hour for realizing the quantum jump in production and productivity of cashew. He opined that technology can bring revolution in cashewnut production in the country in near future if adopted on a large area. Dr. P.S. Bhat, Principal Scientist (Agril. Entomology), emphasized on timely management of TMB infestation and importance of phytosanitation measures to minimize the infestation of CSRB in cashew.

Chief Guest of the function Prof. P.K. Balakrishna, Professor (Economics) of Vivekananda College, Puttur, stressed on the need for increasing profitability in cashew farming. He highlighted the importance of intercropping, scientific management practices, formation of cashew growers association and processors groups in order to increase revenue to the farmers. Shri. Balakrishna Kolathaya, Progressive

cashew farmer also shared his experiences in rejuvenation of cashew orchards for increased profitability. On this occasion, Shri. Vishnu Prasad, Manager, Federal Bank, Puttur explained about various schemes for promotion of cashew cultivation.

Dr. M.G. Bhat, Former Director, DCR shared his views on high yielding varieties and scientific cultivation of cashew. Prof. P.L. Saroj, Director, DCR, in his Presidential Address stressed the need for synergy between farmers and researchers. He exhorted the farmers to follow improved technologies to get higher profit from cashew



Director, DCR addressing the farmers

cultivation. Farmers were taken to the cashew museum, post-harvest technology workshop and various experimental plots to know about the latest research developments. This was followed by farmer-scientist interaction session.

27TH FOUNDATION DAY OF DCR : INNOVATIVE CASHEW FARMERS MEET

The Directorate of Cashew Research, Puttur celebrated its foundation day on 18 June 2013. Innovative Cashew Farmers Meet-2013 was organized to mark the occasion. More than 150 participants including innovative farmers, progressive farmers, nursery men, representatives of development departments, NGOs and scientists participated in the programme.



Dignitaries on the dias during Innovative Cashew Farmers Meet

Dr. M.G. Nayak, Principal Scientist (Hort.), DCR welcomed the gathering. He advocated that the adoption of scientific management practices along with high yielding cashew varieties to increase production and productivity of cashew. Innovative farmers from Karnataka, Kerala and Tamil Nadu presented their innovations. Shri. Badanaje Shankar Bhat, Innovative farmer from Karnataka explained about bio-pesticides prepared from cashew nut shell liquid. Shri. Baby Jacob from Kerala presented the method of multiple rooting system of old cashew orchard rejuvenation while Shri. S. Thangarasu from Tamil Nadu shared his experiences on high density planting in cashew under organic management practices.

Chief Guest of the function Shri. N. Kumar, Member, ICAR Governing Body,

stressed on the need for increasing profitability in cashew farming. He observed that cashew farmers are focusing on reduction in cost of cultivation in order to achieve better income. He appreciated the low cost techniques used by innovative farmers. Shri. V.L. Meena, MD, Karnataka Cashew Development Corporation (KCDC), Mangalore appreciated the technologies developed by DCR and observed that large scale area expansion under cashew brought about by KCDC was possible only due to the technological support provided by DCR, Puttur. These technologies have in turn benefitted the cashew farmers in the region. Prof. P.L. Saroj, Director, DCR gave an overview of the present status of cashew research in India. He emphasized upon adoption of improved technologies developed by the DCR and urged to follow the scientific method of cashew cultivation in order to get higher returns. He further emphasized that production of non-alcoholic beverage using cashew apple needs a special focus. Farmers were taken to the cashew museum and laboratories and were appraised of the research achievements. On this occasion, a technical bulletin on 'Development of concentric drum type rotary sieve grader for raw cashew nut' was released. This was followed by a farmer-scientist interaction session.

MEETINGS

राजभाषा हिन्दी कार्यक्रम

इन छह: महीनों में पुनूर नगर राजभाषा कार्यान्वयन समिति (नराकास) की दो अर्ध वार्षिक बैठकों और हिन्दी कार्यान्वयन समिति की दो तिमाही बैठकों का निदेशालय में आयोजन किया गया ।

तिमाही बैठकों में कार्यालय में हो रही हिन्दी कार्यों की गतिविधियों और संबंधित जरूरी सूचना की चर्चा की गयी एवं वार्षिक कार्यक्रम सूचि के अनुसार लक्ष्य प्राप्ति के लिए उठाये गये जरूरी कदमों से संबंध में चर्चा करके, भविष्य में हिन्दी भाषा बढ़ावा के लिये निर्णय लिये गये ।



हिन्दी कार्यशाला प्रगति में

जनवरी महीने में पुत्तूर नराकास की 23 वीं अर्ध वार्षिक बैठक का आयोजन किया गया। जिसमें विभिन्न सदस्य कार्यालयों के सदस्य उपस्थित थे। उसी दिन सुबह से दोपहर तक सदस्यों के लिए 'हिन्दी कार्यशाला' आयोजन किया गया था। कार्यशाला में निदेशालय के कर्मचारियों सहित विभिन्न सदस्य कार्यालयों से 40 से ज्यादा कर्मचारियों ने भाग लिया।

18 जून को निदेशालय के कर्मचारियों के लिए एक विशेष कार्यशाला का आयोजन किया गया। इस में कर्मचारियों को हिन्दी में पत्र लेखन, मसोदा तैयार करना, नोट लिखना आदि के बारे में प्रशिक्षण दिया गया।

Institute Management Committee (IMC) Meeting

The 38th meeting of the IMC was held on 8 February 2013 under the Chairmanship of Prof. P.L. Saroj, Director, DCR. In his introductory remarks, the Chairman highlighted the research achievements of the Directorate. Various administrative and financial matters were discussed and finalized. Dr. K.S. Ananda, Principal Scientist, CPCRI (RS), Vittal; Dr. Anitha Karun, Principal Scientist, CPCRI, Kasaragod; Shri. T.D.S. Prakash, Senior Finance and Accounts Officer, CPCRI, Kasaragod; Shri. N. Narayana Bhat (Non-Official Member), Noojibailu, Bantwal, Karnataka; Dr. P.S. Bhat and Dr. T.R. Rupa, Principal Scientists and Shri. T.S. Ponnaiah, Administrative Officer from DCR, Puttur attended the meeting.

Research Advisory Committee (RAC) Meeting

The second meeting of the VI RAC (17th meeting) of the Directorate was held during 11-12 June 2013 under the Chairmanship of Dr. P. Rethinam, Former Executive Director, APCC and Former ADG (Plantation Crops), ICAR. Prof. P.L. Saroj, Director, DCR welcomed the RAC and made introductory remarks about research activities of DCR. Later, the chairman of the VI RAC, in his opening remarks, opined that research work should be intensified based on the research findings of the DCR. He also informed that certain aspects of cashew cultivation such as

hybrid development, canopy management, micronutrient application and efficient pest management should be given priority to realize the full potential of cashew to meet domestic raw nut requirement. He stressed that partnership approach for evaluation and level of adoption of recommended technologies in the farmers' fields and further impact studies need to be initiated. Dr. K.U.K. Nampoothiri, Former Director, CPCRI and M.S. Swaminathan Research Foundation, Jeypore, Odisha; Dr. S. Chandrasekharan, Professor, Centre of Plant Protection Studies, Tamil Nadu Agricultural University, Coimbatore; Dr. M. Udayakumar, Emeritus Scientist, University of Agricultural Sciences, Bengaluru and Dr. S.K. Malhotra, ADG (Hort.I), Member (ICAR representative) participated in the meeting.



RAC meeting in progress

The progress made under various research projects were discussed. After detailed discussion, recommendations were finalized for submission to the Council. The meeting concluded with vote of thanks proposed by Dr. T.N. Raviprasad, Member Secretary, RAC.

Quinquennial Review Team (QRT) Meeting

The wrap-up meeting of QRT, under the Chairmanship of Dr. Kirti Singh, Former Chairman, Agricultural Scientists' Recruitment Board, New Delhi was held during 9-10 April 2013 at DCR, Puttur. Dr. V.A. Parthasarathy, Former Director, Indian Institute of Spices Research, Kozhikode; Dr. S.P. Singh, Former Director, PDBC (Presently NBAll), Bengaluru; Dr. V.B. Singh, Professor of



QRT meeting in progress

Horticulture, SASARD, Nagaland University; Dr. S.I. Hanamashetti, Dean, KRC College of Horticulture, Arabhavi, Karnataka (Members of QRT) participated in the meeting. The team had interaction with the scientists and the IMC members also. The QRT finalized the report and submitted to ICAR.

TRANSFER OF TECHNOLOGY

Training Programmes

Two special training programmes on Cashew Production Technology with special emphasis on rejuvenation techniques were organized at DCR on 5 January 2013 and 19 January 2013 for 25 farmers and 27 farmers, respectively from Dakshina Kannada district of Karnataka. Cashew production technologies, pest management, orchard management and rejuvenation techniques were explained to the trainees. The training programme on 19 January 2013 was inaugurated by Dr. W.S. Dhillion, ADG (Hort.I), ICAR, New Delhi.



ADG (Hort. I) inaugurating Cashew Production Technology training programme

The training programmes were sponsored by the Department of Horticulture, Dakshina Kannada district, Karnataka.

A training programme on Softwood Grafting Technique in Cashew was organized during 1-2 March 2013 in which 19 officials from Department of Horticulture, Govt. of Odisha participated. Training was provided on production and maintenance of rootstock, maintenance of scion bank, grafting



Preparation of cashew grafts

technique, maintenance of grafts and overall nursery management techniques.

Consultancy / Advisory Visits

A team of scientists of this Directorate provided consultancy as and when requested and also participated as resource persons in the following cashew related programmes:

- National Level Training Programme on Cashew Production and Processing organized at Zonal Agricultural Research Station (University of Horticultural Sciences), Brahmavara, Udupi district, Karnataka on 13 March 2013.
- Cashew Mela organized at Horticultural Research Station, Ullal, Dakshina Kannada district, Karnataka on 13 March 2013.
- Horticultural Fair organized by DCCD, Kochi and Academy for Sustainable Development at Shimoga, Karnataka under NHM programme on 16 March 2013.

Exposure Visit to DCR

Several individual visitors and visitors in batches including farmers, students and officials to the Directorate were taken

to various experimental plots, cashew nurseries, cashew museum and laboratories

and were appraised of the achievements and technologies developed by DCR.

Visitors Category	Organization	No. of Participants	Date of Visit
Farmers	Dept. of Agriculture, Dakshina Kannada, Karnataka	25	05 January 2013
Students	University of Agricultural Sciences, GKVK, Bengaluru	50	10 January 2013
Farmers	Dept. of Agriculture, Dakshina Kannada, Karnataka	27	19 January 2013
Students	Various schools and colleges of Puttur, Karnataka	260	30 January 2013
Farmers/Officials	Dept. of Agriculture, Raigad district, Maharashtra	18	20 February 2013
Farmers/Officials	Dept. of Horticulture, Sullia, Karnataka	20	20 February 2013
Farmers	Various districts of Karnataka	140	23 February 2013
Officials	Dept. of Horticulture, Govt. of Odisha	19	01 March 2013
Farmers/Officials	KVK, Belagavi, Karnataka	12	27 April 2013
Farmers	Various districts of Karnataka, Kerala and Tamil Nadu	132	18 June 2013
Farmers/Officials	Dept. of Horticulture, Uttara Kannada, Karnataka	32	20 June 2013
Farmers/Officials	Dept. of Agriculture, Baghmara, Meghalaya	12	22 June 2013

Supply of Planting Material

More than 1,00,000 cashew grafts of high yielding and recommended varieties were produced under two different revolving fund schemes viz., Mega Seed Project and DCCD Revolving Fund besides the graft production under Institute Revenue Generation programme. Cashew grafts

have been supplied to the farmers and developmental agencies.

Technical Publications

- Improved Cashew Cultivation (Sudharitha Geru Besaya - in Kannada).
- Development of Concentric Drum Type Rotary Sieve Grader for Raw Cashewnuts.
- DCR Directory.

STAFF NEWS

Promotion

- Ms. K. Padminikutty (LDC) - Promoted as UDC w.e.f. 22 March 2013.
- Shri. T.S. Ponnaiah (Administrative Officer) - Promoted as Senior Administrative Officer w.e.f. 31 May 2013.

Retirement

- Shri. P. Honnappa Gowda, Skilled Support Staff - Superannuated on 30 April 2013.

- Shri. T.S. Ponnaiah (Administrative Officer) - Superannuated on 31 May 2013.
- Shri. Venkappa Naik, Skilled Support Staff - Superannuated on 31 May 2013.

Awards / Honours / Recognitions

Accreditation of DCR Nurseries: The Directorate has two nursery units for production and supply of quality planting material to the farmers to obtain quality

and high yielding cashewnut for the benefit of farming community. Ever since the standardization of softwood grafting (wedge-cleft method) by DCR, the Directorate has been regularly supplying the quality grafts of popular varieties like Bhaskara, NRCC Sel-2, Ullal-1, Ullal-3, Vengurle-4, Vengurle-7, Priyanka, Dhana, Madakkathara-2, VRI-3 *etc.* to the end users. The nurseries have the capacity to produce more than two lakh grafts per year. Based on the evaluation made by the Expert Committee of National Horticulture Board, Gurgaon, on 16 May 2012, accreditation was issued to the nurseries of DCR with a rating of 4 star (Excellent). Out of the 3 nurseries in the country that were rated as Excellent (****), two nurseries are from DCR (Kemminje and Shantigodu campuses).

ICAR Inter-Zone Sports Meet

ICAR Inter-Zone Sports Meet 2012-13 was held during 18-21 January 2013 at Indian Agricultural Research Institute, New Delhi. Shri. P. Abdulla won the first prize in Carom.

Cashew Statistics in India : 2012-13

State	Area ('000 ha)	Production ('000 tonnes)	Productivity (kg/ha)
Kerala	84.88	76.96	898
Karnataka	121.88	68.64	588
Goa	57.47	29.95	540
Maharashtra	184.20	224.64	1040
Tamil Nadu	136.42	62.40	469
Andhra Pradesh	183.95	118.14	646
Odisha	163.91	99.84	679
West Bengal	11.00	12.06	1096
Chhattisgarh	13.50	15.60	1560
Jharkhand	11.50	4.64	336
Tripura	4.10	5.72	1427
Meghalaya	8.50	9.36	1001
Assam	0.90	0.52	505
Total	982.21	728.47	772

Source: DCCD, Kochi

ICAR Inter-Institutional Sports Meet (South Zone)

The following staff members participated and won the prizes in ICAR Inter-Institutional Sports Meet (South Zone) held during 18-22 February 2013 at Sugarcane Breeding Institute, Coimbatore, Tamil Nadu.



Participants of DCR in the ICAR Inter-Institutional Sports Meet (South Zone) with Director, DCR

- Shri. R. Muthuraju - II place (800 m Race) and III place (200 m Race).
- Shri. B. Kushalappa Gowda - III place (1500 m Race).
- Shri. R. Muthuraju, Dr. Ramkesh Meena, Shri. K. Gopalakrishna, Shri. P. Vijay Achary and Shri. K. Shiva - II place (4 x 100 m Relay).

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