



# काजू समाचार

## CASHEW NEWS



भाकृअनुप-काजू अनुसंधान निदेशालय, पुत्तूर के अर्धवार्षिक वार्ता पत्र  
HALF YEARLY NEWSLETTER OF ICAR-DIRECTORATE OF CASHEW RESEARCH, PUTTUR

Vol. 21 No. 1

January - June 2016

### FROM THE DIRECTOR'S DESK

## Reaching the Unreached: Efforts of ICAR-DCR under Tribal Sub Plan

The cashew (*Anacardium occidentale* L.) has emerged as one of the most important commercial horticulture crop in India. This has become possible because of the sustained research and development efforts by different research and development organizations in the country. Today, India is one of the major players in cashew trade and exports processed cashew kernel to international market thereby earning a substantial amount as foreign exchange. The cashew processing industries in India are generating ample job opportunities especially to the womenfolk. The research and development programmes conducted at ICAR-Directorate of Cashew Research at Puttur and also at different Centres of All India Coordinated Research Project on Cashew under State Agricultural Universities/ICAR institutes have resulted in the development and release of a number of high yielding varieties and location specific production technologies.



Balanced growth and economic development is the ultimate aim of every country and the strategic plans are designed accordingly. However, it was realized by policy makers that the Scheduled Tribes are still way behind the mainstream development process. Apart from this, it was also been realized that the general plan schemes and programmes designed for the overall development of the economy hardly improved their socio-economic status. Similarly, the benefit of such welfare schemes did not percolate down towards the development of STs Population of the country in significant manner. In order to address these issues, the Tribal Sub-Plan was initiated during Fifth Five Year Plan for socioeconomic amelioration of the tribal communities and continues till date. The ICAR-Directorate of Cashew Research, Puttur has also implemented Tribal Sub Plan from 2012-13 with major focus on cashew based activities. The broad objective is upliftment of tribal farmers through adoption of cashew cultivation in scientific manner.

#### Glimpses of TSP Program at ICAR-DCR

- Awareness programmes on Cashew Production Technology, Plant Protection and Post Harvest Technology on and off campus were undertaken covering more than 2000 tribal beneficiaries.
- Organised training on utilisation and value addition in Cashew apple benefitting more than 500 tribal women.
- Demonstration of major cashew production technologies benefitting 76 tribal farm families were taken up.
- Implemented in 10 cashew growing states covering more than 3500 tribal beneficiaries directly.



The plan is implemented and monitored through a committee comprising of scientists and technical officers.

The Directorate along with the AICRP on Cashew centres under its jurisdiction has made interventions for the development of tribals in Dakshina Kannada, Karnataka; Kasaragode, Kerala; Thrissur, Kerala; West Medinipur, West Bengal; Bastar, Chattisgarh and Valsad, Gujarat. The interventions taken up are as follows:

1. Scientific cashew cultivation through establishment of frontline demonstration (FLD) plots .
2. Scientific nursery management through establishment of low cost cashew nursery.
3. Low cost on-farm cashew nut processing units.
4. Training on home based cashew apple processing.
5. Training on cashew production technologies.
6. Training on integrated pest management in cashew.
7. Method demonstrations on canopy management in cashew.



**Training on Cashew Production Technology**

After extensive surveys of tribal areas, the TSP team of the directorate has identified 25 tribal villages for implementation of the programme and has selected 76 eligible beneficiaries till date. Several awareness programmes and trainings were conducted by the directorate for popularization of cashew based farming systems among tribals. Until 2015-16 the directorate conducted fifty trainings, three interaction meetings and one field day benefitting more than 3500 tribal beneficiaries including 500

tribal women. The trainings were conducted on cashew production technology, pest management in cashew and cashew apple utilisation while a field day was conducted on integrated pest management in cashew. The training on cashew apple utilisation benefitted more than 500 tribal women. The TSP program has also improved the infrastructure for cashew cultivation. The directorate and its AICRP centres have provided nursery sheds, vermin composting pits and cashew nut processing units in selected tribal hamlets.



**Exposure trips to FLD plots**

Major intervention under TSP is establishment of Frontline demonstration (FLD) plots of cashew in selected tribal farmer fields for promotion of scientific cashew cultivation through adoption of cashew based farming systems providing sustainable income and livelihood enhancement. So far the directorate has established 51 FLD plots in Karnataka and Kerala covering more than 50 ha area under tribal belts. These plots have successfully demonstrated performance of improved cashew varieties, impact of high density planting in cashew, canopy management practices, integrated pest management techniques and effect of pruning on yield of major cashew varieties. The directorate has provided monetary assistance @Rs. 105 per cashew tree to all the FLD farmers. This covers entire cost of land preparation, planting material, soil and water conservation, fertilizer and pesticide costs involved in cashew cultivation. In 2016-17 the directorate is establishing 30 new FLD plots and distribution of planting material to selected beneficiaries has





**Distribution of planting material**

already begun. Under the scheme, the directorate has also distributed farm implements like secateurs and pruning shears to all the TSP beneficiaries for better upkeep of their cashew orchards. The total expenditure under TSP between 2102-13 and 2015-16 at DCR and AICRP on Cashew is Rs. 14.43 and Rs. 91.14 lakhs respectively.

The envisaged outcomes of the tribal sub plan include upliftment of tribal farmers through adoption of cashew based farming systems providing sustainable income and livelihood enhancement; providing supplementary income from raising and selling of cashew grafts, ensuring availability of quality planting material in tribal locality, income generation through on-farm cashew processing, nutritional security to tribal farm families from



**Distribution of farm implements**

otherwise wasted cashew apples, scientific cashew cultivation in tribal farmer fields providing sustainable income and livelihood enhancement, preventing income loss due to attack of major cashew pests thereby guaranteeing sustainable income from cashew orchards and development of model high density orchards in tribal farmer fields providing increased income from limited area available with tribal farmers. The directorate with its concerted efforts of TSP team aims to achieve the above outcomes over a period of 20-25 years.

  
**(P.L. Saroj)**  
**Director**

## **FOCUS ON RESEARCH**

### **Cashew apple Lime Blend RTS: A Functional Beverage Rajkumar A. Dagadkhair and M.V. Sajeew**

ICAR-Directorate of Cashew Research, Puttur-574 202, Karnataka

Cashew apple is a tropical fruit rich in vitamins and minerals. The cashew apple contains 10.44 % of fermentable sugars and 261.5 mg/100 g. of Vitamin C, which is almost six times that of citrus fruits (40 mg/100g) and almost ten times more than that of pineapple, an important tropical fruit. With a current annual cashew nut output of 7.28 lakh tonnes, cashew apple production in India is estimated as 60 lakh tonnes per annum; of which very little is consumed

either as fresh fruit or in few cases processed into drinks or pulp, the rest gets wasted; because of its perishable nature. Considering the fact that cashew apples are harvested over a period of 4 -5 months during a year, its use as a raw material for a variety of fruit-based products can trigger revolution in cashew industry. This, apart from making cashew juice products available year round, will equalize supply from one year to another and will improve



earnings from cashew for the farmers. Cashew apple can be processed as wine, gin, brandy, syrup, vinegar and jam some of which are being produced in commercial scale in Brazil, India and Mozambique.

Cashew apple contains 85% juice which is sweet and nutritious, but has astringency due to the presence of tannins, which makes it less palatable at the same time limits processing and marketability of its value added processed products. In order to overcome this problem attempts were made by compatibly blending the cashew apple juice with lime juice and other fruits. Effect of blending of lime juice at different concentrations on the sensory and nutritional quality of the prepared beverage by keeping the cashew apple juice content constant is explained in this article. Blending could lead to the production of delightful and delicious beverages with improved organoleptic quality and high nutritive value. Blending increases taste and flavor of fruit juices. Keeping in view the nutritive and health benefits of cashew apple and lime, the present study was carried out to make cashew apple –lime blend, as it possess bland taste and cashew apple can serve as the best functional food by blending with lemon as taste improver.

The ready to serve beverage prepared from five different varieties i.e. Vengurla-3, germplasm collection-301, Dhana, Bhaskara and Ullal-3. After preliminary organoleptic evaluation RTS prepared from the apples of Dhana variety were chosen over the RTS prepared from remaining varieties owing to its comparatively better overall acceptability. To make out the difference in the palatability and overall acceptance, a control sample product was prepared from the cashew apple juice only and compared with the RTS prepared by blending lime juice with different levels of concentration by keeping cashew apple juice content same (20%) in all the preparations. To overcome the little flat aftertaste all the formulations were added with 0.250g citric acid per liter of the cashew apple juice. The concentration of citric acid was determined by conducting a small trial of experiment. The final quantity of the RTS was made by adding sugar (10°Bx) and water and the mixture was pasteurized and filled with 300ppm

KMS. The product prepared from 3% lime juice (Sample E, Table 1) blending was found superior after conducting organoleptic evaluation based on 9 point hedonic scale (Fig.1).

**Table 1. Organoleptic evaluation of Cashew apple- Lime blend RTS**

Sample Code	Colour	Flavour	Astringency	Taste	Overall Acceptability
A 20:00	3.9	4.5	5.4	4.9	4.5
B 20:1.5	4.9	5.1	5.7	5.0	5.0
C 20: 2.0	4.7	4.4	5.4	5.7	5.2
D 20: 2.5	6.2	6.4	6.7	7.0	6.4
E 20: 3.0	7.6	7.6	7.8	8.2	7.9
F 20: 3.5	6.1	6.2	6.4	6.6	6.4
SEd	0.5538	0.4480	0.5544	0.4753	0.3839
CD (.05)	1.1103	0.8983	1.1116	0.9530	0.7697
CD(.01)	1.4796	1.1971	1.4814	1.2700	1.0258
CV%	22.24	17.58	19.89	17.05	14.55

(Nine point hedonic scale where, score 1: Disliked Extremely; 9: Liked Extremely)

Ascorbic acid is an important nutrient for the human physiology, and it has a role in the production and maintenance of collagen, wound healing, and the reduction in susceptibility to infections, also in the formation of bones and teeth, iron absorption and prevention of scurvy. Phenolic compounds are metabolites that have the ability to neutralize reactive species, helping to protect the body against oxidative stress and have antioxidant activity. Cashew apple juice is a rich source of both of these functional nutrients having nutraceuticals properties which in turn makes the product a functional one unlike traditional fruit drinks. The prepared and organoleptically proven best combination of cashew apple- lime blend RTS was analyzed for its nutritive value.

The product which stood best among the different combinations made was analyzed for its nutritive value and antioxidant activity (Table 2). Antioxidant activity of fresh cashew apple juice, cashew apple lime juice blend RTS and RTS from cashew apple juice only was determined by DPPH scavenging assay (Das et al 1988). The concentration





**Cashew apple - Lime blend RTS**

of phenolics and tannins in the juice was determined using spectrophotometric (Folin-Ciocalteu's) method (Singleton et al., 1999). TSS of the juices was determined by hand refractometer (ERMA). Vitamin C content was measured by 2,6-Dichlorophenol - Indophenol visual titration method (Ranganna, 2000). It is clearly understood that the RTS prepared from the selected combination of Juices was superior over that of from

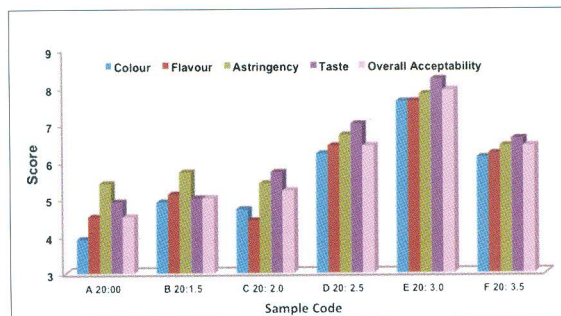
cashew apple juice only. The product could retain maximum of ascorbic acid (75.9 mg/100ml), total phenolics (0.06%). The tannin content (86.62mg/100ml) of the product was found below threshold level of sensation of astringency ( $\leq 0.1\%$ ), at this concentration the product won't give an astringent taste. Presence of sufficient amount of ascorbic acid, tannins and phenolics made the product more functional than the traditional one, DPPH scavenging activity of the selected combination (sample-E) was greater (281.6  $\mu\text{moles}/15\text{min}/100 \mu\text{l}$  juice) than the product prepared only from cashew apple juice (203.8  $\mu\text{moles}/15\text{min}/100 \mu\text{l}$  juice). This is attributed to additional antioxidants in the product due to the presence of extra 3% lime juice unlike the control.

**Table 2. Nutritional value and functional properties of the product compared with fresh juice and RTS without lime juice**

Sl.No.	Parameter	Raw Juice	RTS Without Lime Juice	Cashew Apple- Lime Blend RTS
1.	TSS ( $^{\circ}\text{Bx}$ )	11.5	10.0	10.0
2.	Ascorbic acid (mg/100ml)	330.0	68.0	75.9
3.	Tannin (mg/100ml)	289.0	90.86	86.62
4.	Total phenol (%)	0.28.0	0.04	0.06
5.	DPPH Scavenging Activity ( $\mu\text{moles}/15\text{min}/100 \mu\text{l}$ juice)	1184.2	203.8	281.6
6.	Acidity (%)	0.48	0.33	0.38

N=3

In the present investigation the product preparation was aimed at developing a functional food beverage with high antioxidant activity and nutritional value. The research findings are justifying the objective of the study. The product prepared from 3% lime juice (Sample E, Table 1) blending was found superior after conducting organoleptic evaluation based on 9 point hedonic scale. This, apart from making cashew juice products available year round, will also contribute to equalize supply from one year to another and will improve earnings from cashew for the farmers.



**Fig.1. Organoleptic Evaluation of Cashew apple-Lime Blend RTS**



## PROGRAMMES ORGANIZED

### Cashew Day and Interaction meeting with tribal farmers

To provide technology backstopping to farmers on frontline cashew production technologies, Directorate of Cashew Research, Puttur organised Annual Cashew day on 29-03-2016. More than 150 cashew farmers participated besides nursery men, representatives of KVK, development departments, NGOs and scientists.



**A glimpse of farmers on Cashew Day**

Dr. H.P. Singh, Former DDG (Horticulture) was the Chief Guest of the programme and Dr. S.D. Sharanappa, Superintendent of Police; Dakshina Kannada was the Guest of Honour. The Director, DCR, Puttur, Prof. P.L. Saroj presided over the inaugural session. Dr. H.P. Singh, Former DDG (Horticulture) distributed the financial assistance to tribal farmers for cashew demonstration plots set up by DCR. Later, in the inaugural address, he stressed on the need for better management of cashew orchards utilizing the power of science and technology. He appreciated the research achievements of DCR, Puttur and called for wider outreach of the technologies in collaboration with development departments. He opined that farmer producer associations may be started by cashew farmers so that farmers get more benefit from the crop. Earlier, Dr. S.D. Sharanappa, Superintendent of Police; Dakshina Kannada addressed the gathering and highlighted the importance of farming as the noblest profession. He stressed upon sustainability in yield and income from cashew farming and called for the institutionalization of cashew processing at grass root level.

In his presidential address, Prof. P.L. Saroj, Director, DCR called upon the farmers to follow

the right technologies along with the proper recommendations as indicated by scientists to reap the benefits from cashew cultivation. He promised full cooperation of DCR to cashew farmers of the region and also congratulated the successful farmers for their achievements. He observed that the achievements of these farmers will motivate the new farmers to take up cashew cultivation in a scientific manner. Earlier, Dr. M.G. Nayak, Principal Scientist (Hort.), DCR welcomed dignitaries and participants and highlighted the work done by DCR in last three decades. On this occasion, an exhibition of cashew production technologies was organized along with field trip to various cashew research plots. Farmers in large numbers visited the exhibition and took part in field visits thereby gaining much exposure to latest cashew production technologies. Earlier two publications; 'Insect pests of cashew and their management' and 'cashew cultivation practices' were released by the dignitaries. Progressive cashew farmers also shared their views on cashew cultivation during the programme. A set of pruning implements were also distributed to the beneficiary tribal farmers during the programme. The programme was coordinated by Dr. Sajeew M.V., Scientist (Ag. Extn) and came to an end with a farmer- scientist interaction session and Vote of thanks by Dr. G.S. Mohana, Senior Scientist of the Directorate.

### Foundation Day and Farmers' Meet – 2016

Directorate of Cashew Research, Puttur celebrated its 30<sup>th</sup> foundation day on 18-06-2016. On this occasion 'Farmers' Meet – 2016' was also organized in which more than 150 progressive cashew farmers participated besides nursery men, representatives of ICAR Institutes, KVKs, development departments, NGOs and scientists. Dr. K.L. Chadha, former DDG [Horticulture], ICAR, New Delhi, was the Chief Guest of the programme and Dr. M.G. Bhat, former Director, DCR, Puttur was the Guest of Honour. The Director, DCR, Puttur, Prof. P.L. Saroj presided over the inaugural session.

After the inauguration, three selected innovative farmers were felicitated before the audience. Dr. L.C. Soans, innovative horticulturist from Moodbidri,



Karnataka was felicitated for the various horticultural innovations made in his highly appreciated 'Soans Farm'. Sri. Somappa Rai of Darbethadka, Puttur



**Awarding innovative farmer**

was felicitated for adopting innovative high density planting on a large scale with variety VRI-3. Sri. Sashi Kumar Rai from Karnoor was felicitated for demonstrating high density technique with a yield of 28 Quintals from 1200 trees. The awardees also shared their experiences.

Dr. K.L. Chadha, Chief Guest of the function, congratulated the past and present leadership of DCR for establishing the best infrastructure for cashew research. He highlighted the major technology contributions of DCR as Softwood Grafting Technique, improved varieties and High Density Planting method. He called for adopting latest technologies to combat low productivity in Cashew. He gave the road map for doubling farmers' income in cashew. Dr. M.G. Bhat, Guest of Honour, congratulated cashew farmers and scientists and stressed on the need for better productivity and income from cashew farming. He appreciated the adoption of latest technologies by innovative farmers.

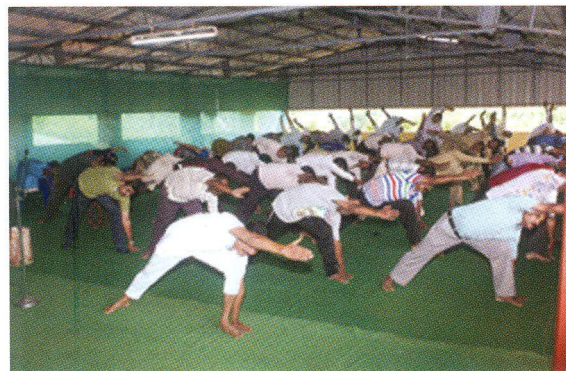
Prof. P.L. Saroj, Director, DCR pointed out the present status of cashew research and cashew cultivation in India. He called upon the farmers to

follow the right technologies along with the proper recommendations as indicated by scientists to reap the benefits from cashew cultivation. He promised full cooperation of DCR to cashew farmers of the region and also congratulated the innovative farmers for their achievements. He observed that the achievements of these innovative farmers will motivate the other farmers to take up cashew cultivation in a scientific manner.

Earlier, Dr. T.N. Raviprasad, Principal Scientist (Ento.), DCR welcomed dignitaries and participants and highlighted the importance of sharing farmer's innovations for facilitating farmer to farmer learning. On this occasion two extension pamphlets were also released. The programme was coordinated by Dr. Sajeew M.V., Scientist (Ag. Extn) and came to an end with a farmer - scientist interaction session and Vote of thanks by Dr. D. Balasubramanian, Principal Scientist of the Directorate.

### **International Day of Yoga**

International Day of Yoga was celebrated at ICAR-DCR, Puttur on 21<sup>st</sup> June, 2016. On the occasion Dr. Rajesh Bhat, well known yoga expert from Puttur conducted a Yoga session at the Directorate in which all the staff and family members participated enthusiastically.



**Yoga session in progress**

### **राजभाषा हिन्दी कार्यान्वयन**

इस छः मही में निदेशालय में राजभाषा कार्यान्वयन समिति की दो तिमाही बैठकें आयोजित हुईं। इसके अतिरिक्त पुनुर नगर राजभाषा कार्यान्वयन समिति (नराकास) को एक अर्धवार्षिक बैठक भी आयोजित हुई।

तिमाही बैठकों में कार्यालय में हो रही हिन्दी गतिविधियों के

बारे में चर्चा किया गया। गृह मंत्रालय, भारत सरकार द्वारा दिये गये वार्षिक कार्यक्रम के अनुसार लक्ष्य प्राप्ति हेतु जरूरी कदम उठाने के बारे में भी चर्चा किया गया। कार्यालयीन कार्यों को हिन्दी में करने के लिए और हिन्दी कार्यान्वयन को बढ़ावा देने के लिए उचित कदम उठाने के बारे में निर्णय लिया गया।



प्रशासनिक कार्यों में हिन्दी की कार्यान्वयन करने के लिए प्रशासन से संबंधित अनेक प्रपत्रों को द्विभाषी में बनाया गया। प्रदर्शन फलक पर “आज का हिन्दी शब्द” के साथ ही कुछ प्रसिद्ध व्यक्तियों के “उद्धरणों” को भी लिखने का निर्णय लिया गया।

27 जनवरी को पुत्तूर नराकास की 29वीं अर्धवार्षिक बैठक की आयोजन हुई। बैठक में पुत्तूर नगर के विभिन्न केंद्र सरकारी कार्यालयों के प्रतिनिधि भाग लिए। बैठक में इन कार्यालयों में हो रही हिन्दी के काम-काज के बारे में चर्चा हुई और जरूरी दिशा-निर्देश भी दिए गए। इस बैठक के अवसर पर सिंडिकेट बैंक ऑफ़ल कार्यालय, मंगलूर से आए राजभाषा अधिकारी उपस्थित थे। उन्होंने सदस्यों को अर्ध वार्षिक रिपोर्ट भरने के बारे में मार्गदर्शन किया।

इस निदेशालय के और नराकास के सदस्य कार्यालयों के कर्मचारियों के लिए हिन्दी कार्यशालाओं का आयोजन किया



मुख्य अतिथि का उद्बोधन

गया। कार्यशाला में दैनिक काम-काज में उपयोग होनेवाले पत्र लेखन, मसौदा लेखन, नोट लिखना आदि के बारे में प्रशिक्षण दिया गया। कार्यशाला में 45 कर्मचारी भाग लिए।

## MEETINGS

### Research Advisory Committee (RAC) meeting

The first meeting 7<sup>th</sup> RAC was held during 06-07th January, 2016. The RAC visited the demonstration plot of cashew varieties, cashew field gene bank, showcasing block and cashew apple experiments of ICAR-DCR. Further, the cashew orchards of farmers were also visited. On both days, presentations on research progress in crop improvement, crop management, crop protection and post harvest technology were made by scientists of DCR. The RAC appreciated the efforts of scientists in various experiments and gave specific suggestions to improve the quality of research. Further, the committee felt that need based collaboration with other research institutes may be initiated and services of KVKs/NGOs may be utilized for transfer of technologies generated by the DCR and in germplasm survey



RAC meeting in progress

and collection. It recommended that the Scientists of DCR should be deputed to visit cashew research institutes in other cashew growing countries such as Brazil, Australia, African countries, China (Hainan) etc. for scientific exposure. For this purpose short term study tours, germplasm collection surveys etc. may be proposed. The committee felt that cashew museum at the Directorate should be upgraded. Looking to the achievements and contributions made by DCR over the last 30 years, Chairman and the Members of RAC felt that ICAR may consider upgrading DCR into Indian Institute of Cashew Research (IICR). The meeting was concluded with remarks by the Chairman and members of RAC followed by vote of thanks by Dr. TN Ravi Prasad, Scientist In-charge, PME cell.

### Institute Management Committee (IMC) Meeting

The 44<sup>th</sup> meeting of the IMC was held on 26<sup>th</sup> February, 2016 under the Chairmanship of Prof. P.L. Saroj, Director, ICAR-DCR, Puttur. The Chairman informed the members about research achievements of the Directorate. Various administrative and financial matters were discussed and finalized. The Joint Director of Horticulture (Plantation and Plant Protection), Directorate of Horticulture, Govt. of Karnataka, Bengaluru; The Special Officer (Cashew), Aravind Chambers, Mundakkal West, Kollam, Kerala; Dr. Sudha Mysore, Principal Scientist (Agril. Eco.), IIHR, Bengaluru; Smt. Sharda R. Rai (Non-Official



Member), Mogarodi, Belthangadi Taluk, Karnataka; Shri. Vishnu Vasanth Bhandarkar (Non-Official Member), Honnavara District, Uttara Kannada, Karnataka; Dr. T.N. Raviprasad, Principal Scientist, ICAR-DCR; The Finance & Accounts Officer, CPCRI, Kasaragod, Kerala; Sri. V. Raghuraman, Administrative Officer, ICAR-DCR and Sri. R. Arulmony, AF & AO In-charge, ICAR-DCR attended the meeting.

### Institute Joint Staff Council (IJSC) Meeting

The IJSC meetings were held on 30th March, 2016 and 30th June, under the chairmanship of Director, ICAR-DCR, Puttur at Kemminje campus of DCR and all the agenda items were discussed for the benefit of DCR staff members.

## TRIBAL SUB-PLAN

### Area expansion and FLD under Tribal Sub Plan (TSP)

Under TSP program, 26 new FLD plots established during 2015-16 in tribal farmer fields of Dakshina Kannada district of Karnataka and Kasaragode district of Kerala were visited by TSP team of DCR comprising of Dr. M.G. Nayak and Dr. Sajeev M.V. for provision of assistance during planting and aftercare and monitoring. Also, 25 FLD plots established under TSP programme during 2014-15 were monitored regularly and technical advice was provided on aftercare, pest management and manuring. Financial support amounting to the tune of Rs. 293800 to 26 tribal farmers as first year installment and Rs. 57190 as second year installment to 25 tribal farmers were

also disbursed under TSP programme. The TSP team of the directorate made 64 field visits during the period covering all FLD fields of tribal farmers and offered necessary technical support.



Distribution of financial assistance to tribal farmers

### Awareness campaigns under NEH programme

Two "Cashew Awareness Campaign" were organized during 7<sup>th</sup> Mar. 2016, at Green Park, Dimapur and on 8<sup>th</sup> Mar. 2016, in Town Hall of Jalukie in Nagaland. Around 50 farmers had participated in these campaigns along with personnel of Department of Horticulture., SASRD, Nagaland University, Medziphema and Dept. of Hort., Govt. of Nagaland, Dimapur, who moderated the discussions in local Nagamese dialect. Details of interested farmers have been collected for area expansion in Chumukedima and Jalukie.



Participants of NEH programme

## MERA GAON MERA GAURAV

Under Mera Gaon Mera Gaurav programme, DCR has identified fifteen villages in Dakshina Kannada district. Scientists of the Directorate had visited the villages viz., Irde Bettampady, Arla Padavu, Nidpalli, Aaryapu, Balnadu, Jalsoor, Nellur Kembraje,

Amara Mudnoor, Aletti and collected the base line data viz., details about the farmer, farm holding, crops, package of practices adopted, general and agricultural problems faced by the famers.

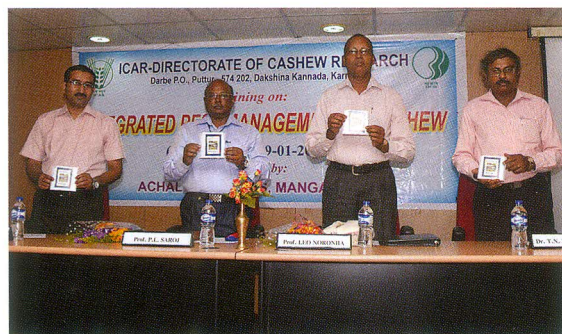


## TRAININGS ORGANISED

### Training on “Integrated Pest Management in Cashew”

Pests and diseases account for nearly 30 per cent of crop loss in cashew. In this scenario, the DCR, Puttur organized a Training Programme on “Integrated Pest Management in Cashew” for 27 farmers from Goa with special emphasis on organic practices during 28-29 January, 2016. The training exposed the participants to integrated management of Tea Mosquito Bug, Cashew Stem and Root Borer and Major Diseases of Cashew and Minor Pests of Cashew along with hands-on practical lab sessions. The training was coordinated by Dr. Sajeew M.V., Scientist (Agri. Extn.) of the directorate. An E-manual

on Integrated Pest Management in Cashew (Series No: 26) was also released during the programme for the benefit of trainees.



Release of E-manual on Integrated Pest Management in Cashew

## TRANSFER OF TECHNOLOGY

### Exhibitions

#### DCR Exhibition at CPCRI, Kasaragode

The directorate put up an exhibition during the inauguration of Centenary Celebration at ICAR-CPCRI, Kasaragode on 12<sup>th</sup> March, 2016. Around 5000 farmers representing various districts of Kerala and Karnataka visited the DCR stall during the exhibition. Since cashew is grown widely in Kerala, there was immense interest among the farmers. A lot of queries were raised on opportunities for utilization of cashew apple. Non availability of quality planting material of latest varieties was a great concern echoed by most farmers.



DCR Exhibition at CPCRI, Kasaragode

### Frontline Demonstrations

Under project on transfer of technology programmes in Cashew, frontline demonstration plots established with financial assistance from NHM through DCCD, Kochi were monitored regularly by extension team of the directorate. A total of 30 FLD plots established in Puttur, Sullia and Bantwal taluks of Dakshina Kannada district were visited during the period and technical advisory was provided to the farmers on pest management, pruning, fertilization and marketing aspects.

### Participatory Technology Development

Participatory technology development has been taken up under project on transfer of technology



Extension team in PTD plots



programmes in cashew with willing cashew farmers to assess and refine various cashew production technologies. Participatory technology development is presently tried in case of ultra high density planting in cashew, pruning and canopy management and suitability of varieties for high density and ultra high density planting in cashew. The plots were monitored regularly, technical advice was given and feedback was collected by the extension team of the directorate.

### E-extension in Cashew

E-extension has been strengthened in cashew through Social Media. The DCR Facebook page [ICAR-DCR PUTTUR] has been regularly edited,

updated and uploaded with relevant content. All HRD programmes and farmer awareness programmes conducted at the Directorate were given wide publicity through DCR Facebook page. During the period around 20 posts were made and 187 organizations/stakeholders are actively following DCR Facebook page for updates.

### Advisory visits/ Consultancy

The scientists of this Directorate were requested for technical advice/lectures on various aspects of cashew production by different organizations. The team of scientists provided consultancy/lectures as and when requested and also participated as resource persons in various cashew related programmes.

### Exposure visit to ICAR-DCR

#### Visit of Dignitaries

Name	Address	Date of visit
Dr. R.R. Hanchinal	Chairperson, PPV & FRA, Govt. of India	06.01.2016
Dr. T. Janakiram	ADG (Hort. Sci. I), ICAR, New Delhi	06.01.2016
Dr. S.N. Puri	Ex-Vice Chancellor, CAU, Imphal	08.01.2016
Dr. Brahma Singh	Former Director, Life Science, DRDO, New Delhi	19.02.2016
Dr. V.S. Korikanthimath	Ex-Director, ICAR-CCARI, Goa	19.02.2016
Dr. Subhash, N.	Retd. Professor & Head, Plant Tissue Culture Lab, Anand Agri. University, Anand, Gujarat	19.02.2016
Shri. Venketesh N. Hubballi	Director, DCCD, Kochi	23.02.2016
Dr. Hanami Shetty	Dean, College of Horticulture, Arabhavi	23.02.2016
Dr. H.P. Singh	Former DDG (Hort), ICAR, New Delhi	27.03.2016
Dr. I.P. Singh	Principal Scientist, Indian Institute of Citrus Research, Nagpur	28.03.2016
Dr. B.R. Salvi	Associate Director of Research, Regional Fruit Research Station, Vengurla	28.03.2016
Dr. B.K. Pandey	Principal Scientist (Plant Pathology), ICAR, KAB-II, New Delhi	28.03.2016
Dr. S.D. Sharanappa	Superintendent of Police, Mangalore	29.03.2016
Dr. K.L. Chadha	Former DDG [Hort.], ICAR, New Delhi	18.06.2016

### TV Programme

Dr. M.G. Nayak	A talk on cashew varieties was delivered and recorded by Doordarshan for telecast	29.03.2016
----------------	---	------------

### Supply of Planting Material

Around 100000 cashew grafts of high yielding and recommended varieties were produced and supplied to the farmers and developmental agencies during the period.



## Technical Publications

- Mohana G.S. and Eradasappa E. (2016), 'Sudharitha Geru Thalikalu' (Kannada).
- Raviprasad T.N. (2016), 'Geru Kanda Hagu Beru Korakke: Gerina Ondhu Pramukha Keeda' (Kannada).

## E-manual

- E-manual on Integrated Pest Management in Cashew (Series No: 26), 2016, prepared for circulation among participants of training programme on Integrated Pest Management in Cashew held during January, 2016 (Ed: Sajeev M.V.), p 26.

## STAFF NEWS

### Inter-Institutional Transfers

- Dr. T.R. Rupa (Principal Scientist) was relieved from this Directorate on 18.02.2016 (AN), to proceed on transfer to ICAR-IIHR, Bangalore.
- Dr. Lakshmipathi, Sr. Technical Officer was relieved of his duties on 09-02-2016 (AN) to proceed on transfer to ICAR-IIHR, Bangalore.

### Retirement

- Mrs. B. Jayashri, PA retired on superannuation on 31.01.2016.

- Mr. A. Padmanabha Hebbar, Sr. Technical Officer retired on superannuation on 30.4.2016.

### Institute recognition

- ICAR-DCR has been awarded with ISO 9001:2008 on 19th March, 2016 for Quality Management System.
- ICAR-DCR has been awarded with Government of India Patent (No. 272371) on 30.03.2016 for the patent filed entitled "Radial arm type cashew kernel extracting machine".

### Awards bagged by Scientists

- Dr. Sajeev, M.V., bagged Best Paper Award for oral presentation of the paper 'ICT usage of cashew farmers: An enquiry of patterns and determinants'. In: 8<sup>th</sup> GCRA International Conference on "Innovative Digital Applications for Sustainable Development" held at UAS, GKVK, Bengaluru during 5-7 January, 2016.
- Dr. Vanitha, K., bagged Prof. P. Kameswara Rao Award - 2015-16 for best research paper oral presentation made on 'Seasonality, life cycle and breeding of an ant mimicking mantid, *Euantissa pulchra* F. occurring in cashew plantations' during XV AZRA International Conference on recent advances in life sciences held at Ethiraj College for women, Chennai, Tamil Nadu during 11-13 February, 2016.
- Dr. G.S. Mohana bagged Peerless Oral Presentation award for presentation on 'Current Strategies in Cashew Breeding: Problems and prospects' at the National conference on Fruit Breeding in Tropics and Subtropics - An Indian Perspective held at ICAR-IIHR, Bengaluru during 27-29 April, 2016.



Published by: **Prof. P.L. Saroj**, Director, ICAR-Directorate of Cashew Research, Puttur-574 202, D.K., Karnataka  
Tel No.: 08251-230902; Fax: 08251-234350 E-mail: director.dcr@icar.gov.in Website: <http://www.cashew.res.in>

Compiled and Edited by: **Dr. Sajeev M.V.**, Scientist (Agricultural Extension)