



# काजू समाचार CASHEW NEWS



भा.कृ.अनु.प.-काजू अनुसंधान निदेशालय, पुत्तूर के अर्धवार्षिक वार्तापत्र  
HALF YEARLY NEWSLETTER OF ICAR-DIRECTORATE OF CASHEW RESEARCH, PUTTUR

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## FROM THE DIRECTOR'S DESK

### Directorate facilitates the formation of All India Cashew Growers Association



In the recent budget outlined by the Government of India, the import duty on cashew kernels is hiked from 45 to 70%. It is a welcome move as it discourages import of low quality cashew kernels into India from other countries, which is expected to help cashew processors in the country as their products will fetch higher prices. However, there is no change in the import duty on raw cashewnuts that was reduced to 2.5% earlier. This means the import of inferior quality raw cashewnuts when compared to nuts of Indian origin would continue from African and other countries at lower prices. In fact, this will help the processing industries facing shortage of raw materials. On the other hand, there is a drastic reduction in the price of raw cashewnuts procured from Indian cashew farmers in recent times. The cost of raw cashewnuts has come down to Rs. 80-90/kg compared to last couple of years when the price was around Rs. 140-160 per kg. This is

mostly attributed to the lowered import duty on raw cashewnuts that has certainly harmed the interest of Indian cashew farmers.

For a long time, cashew was grown as a neglected crop in waste and marginal lands without proper management. But in the recent years, an upward trend in area under cashew and its systematic cultivation has been observed, which is very significant towards improving the cashew productivity in our country. As it geared for revival, the price crash this year has doused off the interest in cashew cultivation to certain extent. While it is very essential to protect the interest of the processors, it is equally important to protect the interest of farmers. However, there seems to be no effort to improve the price or to curb price fluctuations of raw cashewnuts, which is considerably affecting the cashew growers. To uphold the interest of cashew growers, there is a need of farmers' organisation which can voice its opinion at the government level for various issues. Further, cashew farmers need to come under single umbrella to fulfil needs of awareness, communication and marketing in the country.

Keeping these in view, as desired by farmers, a meeting was held on 18 June 2019 in the premises of ICAR- Directorate of Cashew Research, Puttur during its Foundation Day with the objective of forming a national level cashew growers



association to protect the interests of cashew growers. Growers from Karnataka, Maharashtra, Andhra Pradesh and Kerala were present during the occasion. The meeting was chaired by Mr. S.R. Sathischandra, the President of CAMPCO. The formation of a national level association was endorsed by the growers gathered during the occasion.

The All India Cashew Growers Association thus formed has the objectives of enhancing communication among the cashew farmers, giving voice to cashew growers at central and state government levels, communication between various organizations and departments, delivering scientific cashew farming and processing information to



farmers, promoting farmer producer companies and holding cashew melas and fairs.

It is hoped that this association will work towards fulfilling the aspirations of cashew growers throughout the country. Further, it is also expected to increase the utility of research carried out at the Directorate in terms of catering to the needs of growers besides strengthening the institute's effort in promoting formation of FPOs in cashew.

**(M.G. NAYAK)**  
**Director (Acting)**

## FOCUS ON RESEARCH

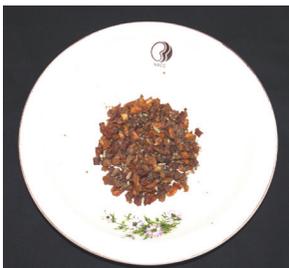
### Cashew Apple Products and Cashew Sprout Preethi, P. and M. Shamsudheen

The cashewnut got considerable commercial attention because of its delicious and nutritive kernels. However, the cashew apple and cashew sprouts did not receive much attention with respect to their commercial utilisation. Nearly 90% of cashew apples are thrown in the plantation after collection of cashewnuts. The cashewnuts left behind during harvest or those are hidden in between weeds and dried leaves of cashew start germinating with the onset of monsoon. In cashew plantations, it is common to observe people go in search of sprouted cotyledons which are relished by the

coastal inhabitants of Karnataka and Kerala. In view of this, research on utilization of cashew apple and improvising the nutritional status of cashew nuts through sprouting were taken up at this directorate. Cashew apples cannot be stored for long time even under refrigerated condition because of complex physiological nature and thin skin and hence, processing is essential. Dehydration and drying are the most common practices of preservation followed by human since many decades. The following products are developed using either one of these techniques.

### CASHEW APPLE CHEW

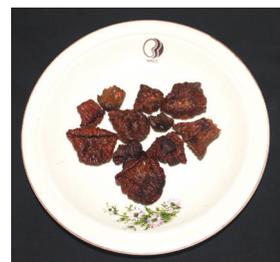
Fresh and firm cashew apples are selected and washed with running water for removal of debris and adhesives and wiped off the excess moisture. Cashew apples are



cut into 0.5 cm cubes and mixed thoroughly with the prepared sweet spices powder (cloves – 4 nos, cardamom – 5 nos, cinnamom – 1 cm<sup>2</sup>, cumin – 40 g, sugar – 50 g, for 500 g cashew apple), spread as single layer over a clean dry stainless steel tray for dehydration using cabinet dryer at 40-45°C for 6-7 h. Frequent stirring or turning of sliced cashew apples is essential to avoid microbial infection. The sweet spice mixture acts as an osmolyte and the released aqueous solution from cashew apple is again impregnated into spice coated cashew slices to enhance the retention of vitamin-C. This can be taken as such like a mouth freshener or along with betel leaves.

### CASHEW APPLE FIG

Whole fresh and firm uniform sized cashew apples are selected and washed with running water. The apple base and distal ends are removed by chopping and soaked



in sugar solution of concentrations ranging from 50-70°Brix and 0.6% potassium metabisulphite (KMS) as preservative. To encourage osmosis, gentle slits are made on four sides of cashew apples using bamboo splint or stainless steel knife. The sugar solution concentration should be maintained at 60°Brix for at least 3-4 days. The apple slices in solution should be frequently stirred to ensure complete immersion, to avoid microbial infestation. After 3-4 days, the sugar solution is drained off and the separated cashew apples are dehydrated using cabinet dryer at 40-45°C temperature for 7-8 h.

The vitamin C, protein, starch and total phenol content of cashew apple chew and cashew apple fig prepared at ICAR-DCR are furnished in Table. 1.

**Table 1. Biochemical characters of cashew apple chew and cashew apple fig**

	Ascorbic acid (mg/100 g)	Protein (%)	Total phenols (% catechol equivalents)
Cashew apple chew	35.32	2.73	0.69
Cashew apple fig	15.83	2.33	1.20

### CASHEW APPLE CRISP

Cashew apple crisp is an important extruded product prepared out of cashew apple pomace powder. The methodology for preparation of cashew apple pomace powder (CAPP) has been standardised by ICAR-DCR, Puttur. By converting the perishable cashew apple in to powder form, the raw material can be stored for diversified uses during off season. Corn flour (CF) and rice flour (RF) are the major ingredients in extruded product preparation. These ingredients are predominantly poor in minerals,

proteins and fibre. Hence, to enrich the product with bio minerals, protein and fibre, CAPP is added as one of the ingredients along with commercially available corn flour and rice flour. The optimised quantity of cashew apple pomace powder ranged from 5-25% (Fig.1) for successful exit of extruded products. Effect of addition of cashew apple pomace powder on physical and biochemical parameters of the final products are furnished in Table 2. The research work was carried out in agro processing complex, ICAR-CPCRI, Kasaragod.



75% RF + 25% CF



5% CAPP+75% RF + 25% CF



10% CAPP+65% RF + 25% CF



15% CAPP+60% RF + 25% CF



20% CAPP+55% RF + 25% CF



25% CAPP+50% RF + 25% CF

**Fig.1 Cashew apple crisp prepared using different proportions of cashew apple pomace powder (CAPP), rice flour (RF) and corn flour (CF)**

**Table 2. Physical and biochemical characters of cashew apple crisp**

Treatments	Physical parameters					Biochemical parameters	
	Expansion ratio	Specific length (mm/g)	Bulk density (g/mL)	Water absorption index (%)	Water solubility index (%)	Ash (%)	Protein (%)
75% RF + 25% CF	3.86 <sup>a</sup>	32.74 <sup>d</sup>	0.24 <sup>a</sup>	13.94	5.47 <sup>d</sup>	0.93	3.97 <sup>d</sup>
5% CAPP+70% RF + 25% CF	3.16 <sup>b</sup>	52.14 <sup>c</sup>	0.17 <sup>b</sup>	13.62	10.24 <sup>c</sup>	0.93	4.47 <sup>c</sup>
10% CAPP+65% RF + 25% CF	2.98 <sup>bc</sup>	56.39 <sup>b</sup>	0.15 <sup>bc</sup>	12.29	11.28 <sup>c</sup>	0.93	4.66 <sup>bc</sup>
15% CAPP+60% RF + 25% CF	2.87 <sup>c</sup>	56.70 <sup>b</sup>	0.14 <sup>bc</sup>	12.03	12.14 <sup>c</sup>	0.94	4.72 <sup>bc</sup>
20% CAPP+55% RF + 25% CF	2.59 <sup>d</sup>	56.89 <sup>b</sup>	0.13 <sup>bc</sup>	9.98	17.23 <sup>b</sup>	0.94	4.93 <sup>ab</sup>
25% CAPP+50% RF + 25% CF	2.34 <sup>e</sup>	59.91 <sup>a</sup>	0.12 <sup>c</sup>	8.18	22.89 <sup>a</sup>	0.96	5.31 <sup>a</sup>
CD (0.01)	0.25	3.68	0.06	NS	5.78	NS	0.64

[RF: Rice flour, CF: Corn flour; CAPP: Cashew Apple Pomace Powder]

## CASHEW SPROUTS

Cashewnut is preferred as snack in the form of roasted or salted or both. Cashew being rich in monosaturated fatty acid (40-48%) and protein (18-20%), supports the tissue build up and strengthens the immune system. Phytic acid is a natural anti-nutritional substance believed to cause digestive issues and cashew contains considerable amount of phytic acid. In general, germination, soaking in water, steaming, frying, fermentation are the methods followed in many leguminous and cereals for reduction of phytic acid. Germination is the best effective method and is reported to reduce the phytic acid even up to 80% and consequently increasing the bioavailability of nutrients. At ICAR-DCR, Puttur,

the nutritional factors and biochemical quality parameters of cashew sprouts raised under etiolated conditions were studied. In the process of germination, the fat content was drastically reduced to 19-22% from 42-48% compared to the cashew kernel. Two fold increase in total phenol content (the representative of antioxidant property) was recorded in cashew sprouts compared with the cashew kernel. Germination exerts significant increase in minerals such as calcium, iron, manganese, zinc and copper (Table 3).



**Table 3. Bio-chemical and nutritive status of cashew sprouts and cashew kernel**

Parameters	Cashew sprout	Cashew kernel
Fat content	19-22%	42-48%
Fibre content	4.3%	3.3%
Total sugars	2%	8%
Total Phenols	472 mg/100 g	210 mg/100 g
Free Amino acids	1.06%	0.48%
Essential minerals	Potassium – 0.85% Calcium – 0.58% Magnesium – 0.14% Iron – 336.94 ppm Manganese – 10.1 ppm Zinc – 60.62 ppm Copper – 9.80 ppm	Potassium - 0.85% Calcium – 0.03% Magnesium – 0.03% Iron – 30.4 ppm Manganese – 2.32 ppm Zinc – 9.1 ppm Copper - 0.66 ppm

In addition to the existing products of cashew apples such as jam, jelly, RTS beverages, cider, these new products developed at this Directorate open up different ways of utilizing cashew apples. This is expected to enhance the income of cashew farmers and livelihood options for self help groups.

## PROGRAMMES ORGANIZED

### ANNUAL CASHEW DAY - 2018

Annual cashew day of ICAR-DCR, Puttur was organized on 22 January 2019. The programme was inaugurated by Smt. J. Mercykutty Amma, Hon'ble Minister for Fisheries, Harbour Engineering and Cashew Industry, Government of Kerala. On the occasion, first cashew hybrid of ICAR-DCR, H-130 was released by distributing it to Horticultural department officials from Karnataka and Kerala. In the program, a website serving as

tool for monitoring cashew phenology in relation to environmental parameters was launched. The minister urged the need for increasing cashew production and towards this end, the ICAR-DCR, Puttur is striving hard to develop better technologies. She stressed the need for adapting ultra high density planting system for higher productivity of cashew. The guest of honour, Mr. Shirish, K., Special Officer (Cashew) and Managing Director, Kerala State Agency for Expansion of Cashew Cultivation outlined many initiatives to revive cashew cultivation. Another guest of honour, Dr. Anitha Karun, Director (Acting), Central Plantation Crops Research Institute, Kasaragod, lauded the efforts of ICAR- DCR in developing technologies for improved cashew cultivation.



An exhibition on different cashew production technologies and cashew apple products was organized. More than 200 cashew farmers besides nursery men, representatives of KVK, development departments and scientists participated. Field visits to cashew research plots were also arranged during the programme.

### WEB TELECASTING OF LAUNCHING OF PRADHAN MANTRI KISAN SAMMAN NIDHI (PM-KISAN) SCHEME

The launching of Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) scheme by Shri. Narendra Modi, Honourable Prime Minister of India at Gorakhpur, Uttar Pradesh was web casted at ICAR- DCR, Puttur on 24 February 2019. On the occasion, Shri. Parshottam Rupala, Union Minister of State for Agriculture and Farmers Welfare, Shri. Amitabh Gautam, Joint Secretary, Department of Agriculture Cooperation and Farmers Welfare,

Shri. Nalin Kumar Kateel, Member of Parliament, Mangaluru, D.K. and Shri. Sanjeeva Matandoor, Member of Legislative Assembly, Puttur, D.K., Karnataka were present. Besides President (ZP), D.K., President (APMC), Puttur and Members of ZP (D.K.), Panchayat President, Puttur Taluk, President (CAMPCO) and several others were present on the occasion.



The programme started with welcome and introductory speech by Dr. M.G. Nayak, Director (Acting), ICAR-DCR. Then the important features and benefits of PM-KISAN scheme were explained to the farmers in Kannada language by Dr. T. N. Raviprasad, Principal Scientist, ICAR-DCR, Puttur. Brief speeches were made by MP, MLA and the union minister about this unique programme started for farmers' welfare. It was followed by web telecasting of Mann Ki Bath programme of PM and digital launching of PM-KISAN scheme at Gorakhpur. After the launching, PM interacted with the beneficiary farmers from different parts of country through live web casting organized at different research institutes of ICAR. During the interaction session, Shri. Sediypu Janardhana Bhat, a farmer from Puttur also spoke about PM-KISAN programme which was translated into Hindi for PM by Dr. T.N. Raviprasad, Principal Scientist, ICAR-DCR, Puttur. Then, a short film on PM-KISAN scheme and PM's inaugural speech on the importance of this scheme were webcasted. More than 300 farmers, people's representatives, invited officers and the staff of ICAR-DCR attended the programme.

**INTERNATIONAL WOMEN'S DAY**

The International Women's Day was celebrated on 08 March 2019 at ICAR-DCR. Dr. (Mrs.) Babli Mog, Scientist & Chairperson (Women's Cell) gave the welcome address. Dr. M.G. Nayak, Director (Acting), addressed the gathering and appreciated the women staff of the Directorate for their contribution in the development of this Institution. Dr. (Mrs.) Babli Mog, Chairperson addressed the gathering with a talk on



the theme "Think Equal, Build Smart & Innovate for Change". She highlighted the achievements made by women in different fields. She stressed on the importance of gender equality, education and health care in the lives of women. Mr. Muralikrishna, Chief Technical Officer spoke about women empowerment and Mrs. K. Padmini Kutty, Upper Division Clerk expressed the need of gender equality. Web telecast of Honourable PM's address was arranged on this occasion. It was followed by interaction among the women staff of DCR for the betterment in working place and other places of interest.

**INSTITUTE FOUNDATION DAY, FARMERS' MEET AND SCSP LAUNCHING PROGRAMME**

ICAR-DCR, Puttur celebrated its 33<sup>rd</sup> foundation day along with a farmers' meet and SCSP launching programme on 18 June 2019. In the beginning, Dr. M.G. Nayak, Director (Acting) welcomed the dignitaries, delegates, farmers and other participants. Launching of SCSP programme was done by the chief guest of the programme, Shri. Sanjeeva Matandoor, MLA, Puttur. In his introductory speech, he talked about the role of agriculture in Indian society and changing agriculture



scenario in the country. The Guest of Honour, Shri. Venkatesh Hubballi, Director, Directorate of Cocoa and Cashew Development (DCCD), Kochi, talked about the programmes of DCCD for popularisation of cashew and its area expansion to non-traditional cashew growing regions. Another Guest of Honour, Shri. Prakash Natelkar, Managing Director, Karnataka Cashew Development Corporation (KCDC), Karnataka congratulated the Directorate for the achievements made over the years for improving cashew production.

Six publications on cashew cultivation and related aspects prepared by scientists of ICAR-DCR, Puttur were released. It was followed by felicitation of Shri. K. Nagaraja, a progressive cashew farmer of Kolar district for producing high cashew yields by following scientific cashew cultivation practices. Later, Mr. S. Ramesh, resource person delivered a lecture on role of NABARD in the formation of Farmer Producer Organizations (FPOs). Shri. Ramkishore Manchi, Director, Pingara FPO shared his experiences in running a FPO for the production of value added products of banana and jackfruit. Shri. Shiva Prakash,



ADH, Department of Horticulture, Beltangadi delivered a talk on State Horticulture Department's incentives and technical support for the farmers to start FPOs. The programme was attended by about 200 participants including farmers and SCSP beneficiaries.

## INTERNATIONAL DAY OF YOGA

International day of Yoga was observed in ICAR-DCR, Puttur on 21 June 2019. During the occasion, videos on common yoga protocol developed by Ministry of AYUSH (Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy) were screened. This



was followed by demonstration of different yoga postures by Shri K. Prasanna, Yoga Instructor, Puttur to the DCR staff.

## MEETINGS

### QUINQUENNIAL REVIEW TEAM (QRT) MEETING

The Quinquennial Review Team (QRT) under the Chairmanship of Dr. S.P. Ghosh, Former DDG (Hort.), ICAR, New Delhi reviewed the work done by the ICAR-Directorate of Cashew Research, Puttur and All India Coordinated Research Project on Cashew for the period 2013-18. Interaction meeting was also conducted with development departments such as DCCD, Kochi; Kerala State Agency for Expansion of Cashew Cultivation, ATARI, Bengaluru; NABARD, Mangaluru. QRT also interacted with different cashew processing industries and office bearers of Karnataka Cashew Manufacturers Association, Mangaluru to assess the problems and requirements of the processors. Some of the major recommendations of QRT include enhancing the production and supply of cashew grafts, capacity building for technology driven faster growth in cashew, establishment of additional field gene banks,

developing dwarf and compact cashew hybrids, rootstock breeding programme, studies on salinity tolerance, leaf tissue test based fertiliser scheduling, intensified research on pheromones and kairomone technologies and development of reliable moisture meter for raw cashewnuts.

### INSTITUTE JOINT STAFF COUNCIL (IJSC)

The IJSC meeting was held on 29 March 2019 under the chairmanship of Director (Acting), ICAR-DCR, Puttur at Kemminje, and the agenda items were discussed for the benefit of DCR staff.

### MEETING ON INFORMATION CONVENTION ON WORKERS RIGHTS AND PRIVILEGES

A meeting on Legal literacy campaign and chain of programme on movement of Lok Adalat was held at ICAR-DCR, Puttur on 10 April 2019 to create awareness on Labour Rights and Privileges. Dr. M.G. Nayak, Director (Acting), ICAR-DCR welcomed the dignitaries. Smt. Chandravathi, Specialist on Labour Rights provided information on privileges and facilities to be provided to common workers as outlined in the constitution of India. The President of Puttur Bar Association, Shri. K.V. Manohar presided over the function and, Smt. Latha Devi, G.A., Senior Civil Judge, Puttur was the Chief Guest. The programme was organized jointly by District Legal Services Authority, Taluk Legal Services Committee and Bar Association, Puttur.



**RESEARCH ADVISORY COMMITTEE (RAC) MEETING**

The second meeting of 8<sup>th</sup> RAC was held on 26 and 27 April 2019. After the welcome address by



Dr. M.G. Nayak Director (Acting), Dr. D. S. Rathore, Chairman (RAC) made introductory remarks. He discussed about recent QRT recommendations and global trends in cashew research and felt the need to align the research programmes with QRT recommendations too. Dr. P. C. Lenka, Member, RAC, felt the need to devise moisture meter for cashew. The other two members, Dr. Subhash Chander and Dr. K. B. Hebbar, also made introductory remarks about research needs. Action taken report on the previous RAC recommendations was presented by Dr. J. D. Adiga, Member Secretary. Thereafter, presentations on progress of research activities in crop improvement, crop management, crop protection, post harvest technology and transfer of technology were made by the scientists of DCR. Based on the presentations and discussions, the RAC made recommendations for different research programmes.

**INSTITUTE RESEARCH COUNCIL (IRC) MEETING**

The 32<sup>nd</sup> annual meeting of Institute Research Council (IRC) of ICAR-DCR, Puttur was held on 15 and 16 May 2019 under the Chairmanship of Dr. M.G. Nayak, Director (Acting). There were four technical sessions chaired by experts of the field:



Dr. A. Mohan Rao, Professor, Department of Genetics and Plant Breeding, UAS, GKVK, Bengaluru for crop improvement, Dr. Ravi Bhat, Head, Division of Crop Production, CPCRI, Kasaragod for crop management, Dr. Kamala Jayanti, Principal scientist, Division of Entomology and Nematology, IIHR, Bengaluru for crop protection and Dr. Harinder Singh Oberoi, Head, Division of Post Harvest Technology, IIHR, Bengaluru for post harvest technology sessions. In each session, results of various ongoing projects were presented along with new project proposals by the scientists of DCR and the technical programme for 2019-20 was finalized.

**HINDI MEETING - राजभाषा हिन्दी कार्यान्वयन**

इस छः माही में निदेशालय में राजभाषा कार्यान्वयन समिति की दो तिमाही बैठकों का आयोजन हुआ। बैठक में 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 राजभाषा कार्यान्वयन समिति के अधिकारी उपस्थित थे।

निदेशालय के और नराकास के सदस्य कार्यालयों के कर्मचारियों के लिए नियमित रूप से हिन्दी कार्यशालाओं का आयोजन किया गया। कार्यशाला में दैनिक काम-काज में उपयोग होनेवाले पत्र लेखन, मसौदा लेखन, नोट लिखना आदि के बारे में प्रशिक्षण दिया गया। हिन्दी समिति की पुनर्गठन किया गया। निदेशालय के विस्तारण विभाग के अनेक विवरणिकाओं को अंग्रेजी से हिन्दी में अनुवाद करने के लिए निर्णय लिया गया।

**TRANSFER OF TECHNOLOGY**

**EXHIBITION/ FARMERS MELA**

Eradasappa, E.	26 February 2019	Participated as a resource person and delivered a talk on 'Cashew cultivation practices' in the Agri and Horticulture Farmers Mela at Alike, DK organized by Kampu Agriculture and Horticulture Crop Producer Company Limited, Vittal, D.K., Karnataka.
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## ADVISORY VISITS / CONSULTANCIES

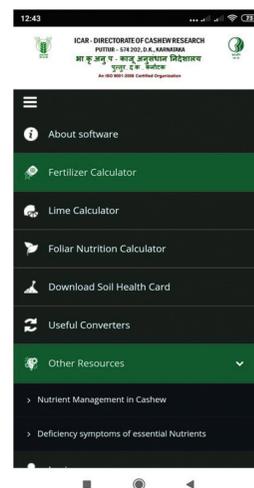
Eradasappa, E.	22 January 2019	Field day/exposure visit to DCR experimental fields and section was arranged to 50 farmers of Farmers Producers Organization, KVK Tiptur, Tumkur District of Karnataka.
Shamsudheen M.	15 February 2019	Field day/exposure visit to DCR experimental fields and section was arranged to 25 farmers from Vengara block, Malappuram under ATMA programme.
Shamsudheen M.	23 March 2019	Field day/exposure visit to DCR experimental fields and section was arranged to 45 farmers from ATMA, Wayanad.
Shamsudheen M.	7 March 2019	Field day/exposure visit to DCR experimental fields and section was arranged to 30 farmers from ATMA, Raigad, Maharashtra.
Mohana, G.S.	15 April 2019	Delivered a talk on Cashew production technologies in Sasaravalli village, Sagar Taluk
Mohana, G.S.	12 May 2019	Delivered a talk on Cashew production technologies in Neechadi village, Sagar Taluk and acted as facilitator for planting of VRI-3 variety under ultra high density planting system in Neechadi and surrounding villages of Sagar Taluk.
Shamsudheen M.	25 May 2019	Field day/exposure visit to DCR experimental fields and section was arranged to 33 farmers and 7 officials from the office of the Asst. Director of Agriculture, Thiruvalla, Pathanamthitta under ATMA programme.

## e- extension through social media/ mobile app/ website

### NUTRIENT MANAGEMENT SOFTWARE AND MOBILE APP

The application of the right quantity of required fertilizer at the right time is important for judicious management of resources for achieving the maximum benefit and income. In this regard, software for nutrient management in cashew was prepared under the project funded by RKVY-RAFTAAR. This is available in both English and Kannada. It is available on the ICAR-DCR website for calculating fertilizer requirement, lime requirement, foliar application of major and micronutrients. The deficiency symptoms of major and micronutrients commonly observed in the field are also included in the software. The software also allows the farmers to download the soil health cards issued by ICAR-DCR, Puttur. The link is <https://cashew.icar.gov.in/soil>.

The mobile app version of the software was also developed (DCR Cashew Nutrient Manager) under RKVY-RAFTAAR. This has got bilingual functionality (English and Kannada). The app can be downloaded from the Google play store. Offline software in both English and Kannada was developed to generate the soil health card, under RKVY-RAFTAAR. It enables to generate error free soil health card from the analytical results as single and multiple pdf files.



### TV PROGRAMMES / RADIO TALK

M.G. Nayak	TV talk and discussion on 'Cashew cultivation practices' - DD1 recorded on 28 January 2019 and telecasted on 2 May 2019.
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### TECHNICAL PUBLICATIONS/ EXTENSION LITERATURE

- ✦ Mangalassery, S., Nayak, M.G., Adiga, J.D., Preethi, P. and Muralidhara, B.M. 2019. Nutrient management in cashew, Technical Bulletin No. 1/2019. ICAR-Directorate of Cashew Research, Puttur, Karnataka, India, pp. 28.
- ✦ Preethi, P., Rajkumar A.D., Mangalassery, S. and Nayak, M.G. 2019. Prospects of cashew apple - a compilation report, Technical Bulletin No. 2/2019. ICAR-Directorate of Cashew Research, Puttur, Karnataka, India, pp. 28.
- ✦ Muralidhara, B.M., Savadi, S., Nayak, M.G., Adiga J.D., Preethi P. and Shamsudheen, M. 2019. Geru beleyalli poshakanshagala nirvahane. ICAR-Directorate of Cashew Research, Puttur, Karnataka, India [Kannada].

- ✦ Muralidhara, B.M., Savadi, S, Nayak, M.G., Adiga, J.D and Shamsudheen, M. 2019. Yerehulu gobbara mattu yerejala tayarike vidhana mattu krishiyalli ivugala balake. ICAR-Directorate of Cashew Research, Puttur, Karnataka, India [Kannada].
- ✦ Muralidhara, B.M., Savadi, S., Nayak, M.G., Adiga, J.D., Preethi, P. and Shamsudheen, M. 2019. Geru thotagalalli poshakanshagala nirvahanege mannu mattu yele madari tegeyuva vidhana. ICAR-Directorate of Cashew Research, Puttur, Karnataka, India [Kannada].
- ✦ Shamsudheen, M., Manikandan. N and Muralikrishna. K. 2019. Kasumavu-krishireethikal. ICAR-Directorate of Cashew Research, Puttur, Karnataka, India [Malayalam].
- ✦ Shamsudheen, M., Nayak, M.G., Adiga, J.D., Preethi, P. and Muralidhara, B.M. 2019. Nutrient management in cashew. ICAR-Directorate of Cashew Research, Puttur, Karnataka, India [English].
- ✦ Shamsudheen, M., Nayak, M.G., Adiga, J.D., Preethi, P. and Muralidhara, B.M. 2019. Soil and leaf sampling for nutritional management in cashew orchards. ICAR-Directorate of Cashew Research, Puttur, Karnataka, India [English].

**VISIT OF DIGNITARIES**

<b>Name</b>	<b>Address</b>	<b>Date of visit</b>
Smt. Mercykutty Amma Shri. Shirish, K.	Minister for Fisheries, Harbour Engineering and Cashew Industry, Govt. of Kerala. Special Officer (Cashew), MD, Kerala State Agency.	22 January 2019
Dr. S.P. Ghosh Dr. M.G. Bhat Dr. K.R.M. Swamy Dr. J.C. Bhatt Dr. George V. Thomas Dr. A.K. Mehta	QRT Chairman (Former DDG (Hort.), ICAR, New Delhi). QRT Member (Former Director, ICAR-DCR). QRT Member (Former Head, Vegetable Science, ICAR-IIHR, Bengaluru). QRT Member (Former Director, ICAR-VPKAS, Almora). QRT Member (Former Director, ICAR-CPCRI, Kasaragod). QRT Member (Former ADG (Agri. Extension), ICAR, New Delhi).	05-08 February 2019
Shri. Venkatesh Hubballi Shri. Prakash Kalbavi Shri. Subraya Pai Shri. Srinivasa Reddy Shri. Vinod Kamath Shri. Sudhakar Kamath Dr. Ravi Bhat	Director, DCCD, Kochi. Chief Executive, Kalbavi Cashews. Chairman, KCMA, Mangaluru Principal Scientist (ATARI), Bengaluru. Ganesh Cashews, Puttur Jalsur, Sullia Member IMC, DCR, Puttur	07 February 2019
Shri. S.N. Bhat Khandige Shri. G. Chandrasekhar	Vice- President, CAMPCO, Mangaluru Scientist, DRDO, Hyderabad.	20 February 2019
Shri. Parshottam Rupala Shri. Amitabh Gautam Shri. Nalin Kumar Kateel Shri. Sanjeeva Matandoor	Union Minister of State for Agriculture and Farmers Welfare, Govt. of India. Joint Secretary, Department of Agriculture Cooperation and Farmers Welfare, Govt. of India. Member of Parliament, D.K. MLA, Puttur.	24 February 2019
Shri. Krishnappa Shri. Chandrakantha Bellada Shri. Basavaraj Vibhuthi	Former MLA, Bannur, Mysore District. Former MLA, Dharwad. Progressive farmer, Dharwad.	25 February 2019 4 March 2019
Dr. S. Rajan Dr. G.K. Mukunda Dr. D.S. Rathore	Former ADG (Hort.) Professor (Hort.), GKVK, Bengaluru. Chairman (RAC) (Former ADG (Hort.), ICAR and Ex-Vice Chancellor, Himachal Pradesh Agriculture University, Palampur, Himachal Pradesh.	25 March 2019
Dr. P.C. Lenka Dr. Subhash Chander Dr. K.B. Hebbar	Member (RAC), Former Professor (Horticulture), OUAT, Odisha. Member (RAC), Principal Scientist, Entomology, ICAR-IARI, New Delhi. Member (RAC), Head, Division of Crop Physiology, Biochemistry & Post Harvest Technology, ICAR-CPCRI, Kasaragod	26 & 27 April 2019
Shri. Venkatesh N. Hubballi Shri. Sanjeeva Matandoor Shri. Prakash Natelkar Shri. S. Ramesh Shri. Ramanath Rai	Director, DCCD, Kochi. MLA, Puttur. MD, KCDC, Mangaluru. Development Officer, NABARD, Regional Office, Mangaluru. Former Minister, Forests & Environment and Biological Sciences, Govt. of Karnataka.	18 June 2019 28 June 2019

## SUPPLY OF PLANTING MATERIAL

Recommended high yielding cashew varieties are regularly produced at this Directorate under institute revenue generation programme, and a total of 1,34,701 grafts were supplied to the farmers and developmental agencies from this Directorate during January-June, 2019.

## STAFF NEWS

### HONOURS/RECOGNITIONS/AWARDS

- **Dr. Shamsudheen Mangalassery**, Senior Scientist (Soil Science) – Received the Outstanding Best Paper Award of the Novel Research Academy, Puducherry for the research paper “Effect of inorganic fertilizers and organic amendments on soil aggregation and biochemical characteristics in a weathered tropical soil”.
- He also received the ‘Highly Cited Researcher Award 2018’ of the Novel Research Academy, Puducherry.
- **Dr. Babli Mog**, Scientist (Plant Physiology)- Received Kanwar Virender Singh Memorial All India Best Publication Award in Fruit Science-2018 by SADHNA for research article “Germination and seedling establishment in cashew (*Anacardium occidentale* L): an interaction between seed size, relative growth rate and seedling biomass authored by Mog B, Adiga JD, Nayak MG and Mohana GS. Journal of Plantation Crops, 2017, 45(2): 110-120 doi:10.19071/jpc.2017.v45.i2.3305.
- She also received second position in oral presentation in the National seminar on abiotic stress management - Challenges and Opportunities at TNAU, Coimbatore- 25-26<sup>th</sup> October, 2018 for research abstract “Simple Screening Methodologies for evaluation of cashew accessions for salinity stress tolerance” by Babli Mog, Nayak M.G and Mohana G.S.
- **Dr. K. Vanitha**, Scientist (Agricultural Entomology) – received Young Achiever Award - 2018 by Society for Advancement of Human and Nature (SADHNA), Dr. Y.S. Parmar University of Horticulture and Forestry, Solan, Himachal Pradesh.



### RETIREMENT

- Shri. K. Babu Poojari, Senior Technical Assistant superannuated on 31 January 2019.
- Shri. Surendra Kumar Indra, Coffee/Tea maker superannuated on 28 February 2019.
- Shri. Jayarama Naik K.M., Administrative Officer superannuated on 31 March 2019.
- Shri. K. Balappa Gowda, Gestetner Operator superannuated on 30 April 2019.



Shri. K. Babu Poojari



Shri. Surendra Kumar Indra



Shri. Jayarama Naik K.M.



Shri. K. Balappa Gowda



हर कदम, हर डगर  
किसानों का हमसफर  
भारतीय कृषि अनुसंधान परिषद

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