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CTCRI NEWS

Central Tuber Crops Research Institute
Sreekariyam, Thiruvananthapuram 695 017
Kerala, India

National Seminar on Climate Change & Food Security Organized

Indian Society for Root Crops (ISRC) in association with Central Tuber Crops Research Institute (CTCRI) organized a National Seminar on "Climate Change & Food Security: Challenges and Opportunities for Tuber Crops" (NSCFT) at CTCRI during 20-22 January, 2011. Shri Mullakkara Ratnakaran, Honorable Minister of Agriculture, Government of Kerala, inaugurated the Seminar, in a function presided over by Dr. H.P.Singh, Deputy Director General (Hort.), Indian Council of Agricultural Research (ICAR). Dr. S.K.Naskar, Director, CTCRI welcomed the delegates and Dr. M. Anantharaman, President, ISRC proposed vote of thanks. Shri Mullakkara Ratnakaran stressed that agriculture practice should make a wholesome approach in rhythm with natures' balance while making maximum benefits. Dr. H.P.Singh, visualized tuber crops as more hardy and would be lesser affected and hence gain importance for compensating the reduction in food production anticipated due to climate change. Shri K.C. Shashidhar, Chief General Manager, NABARD, Thiruvananthapuram was the guest of honour. The three days seminar dealt with various topics like Climate change, Food security and biodiversity, Biotic & abiotic stress, Crop Improvement and Genetics, Plant, water and nutrient management, Participatory technology development & technology commercialization, Post harvest technology and value addition. There were about 226 delegates and 65 of them are from outside the State Kerala representing Tamil Nadu, Karnataka, Andhra Pradesh, Goa, Maharashtra, Gujarat, New Delhi, Jharkhand, Orissa, Bihar, Manipur, etc. There were about 29 theme lectures, 46 oral and 56 poster presentations highlighting various issues related to the main and sub themes.

From the Director's Desk

Dear Readers,

The contribution of agriculture to the Gross Domestic Product (GDP) has been declining from 31% in 1980's to 18% now owing to the reasons such as climate change, declining land holdings, etc. while the number of people depending on it remaining the same. Secondary agriculture under such circumstances can play an important role to enable the Indian economy to sustain in the long run with increased contribution to GDP by complementing the primary agriculture. Secondary agriculture adds value to the basic agricultural commodities to allow small farmers to get better returns for their efforts through promoting small scale industries at village/semi-urban level that produce products that local people need and also to produce unique products for national and global markets. As the importance of tuber crops as food has been declining with low expenditure elasticities due to changing food habits, increased per capita income and availability of many high value foods, these crops can survive if and only if their potential to produce diverse value added products is exploited. Our research efforts also should be fine tuned to such changing economic scenario. CTCRI has already taken initiatives to move in this direction and concerted efforts are being made to increase value addition to the underutilized potential tuber crops. Efforts to create awareness about already generated value added technologies such as Stakeholders meet on "Tuber Crops Research- Industry Interface: Promotion and Commercialization"; imparting training on tuber crops production and processing technologies to farmers not only at the Institute but also demonstrating technologies at tuber crops production centres/villages are progressing well. Two potential cassava triploid clones have been registered. I congratulate all for successfully organizing the National Seminar on "Climate Change & Food Security: Challenges and Opportunities for Tuber Crops" to generate awareness about the importance of tuber crops during this period of climate change. I welcome on board Dr. Asha Devi who joined the Crop Improvement Division of the Institute on transfer.

S.K. Naskar

Two potential triploid cassava clones Registered

Two potential triploid cassava clones, 4-2: INGR 10144 and 5-3: INGR 10145 have been registered during the XXII meeting of Plant Germ plasm Registration Committee (PGRC) of Indian Council of Agricultural Research. 4-2 was derived from an interploid cross between the diploid accession OP4 and an induced tetraploid of a released variety Sree Visakham and 5-3 from the cross between a diploid land race 'Ambakkadan' and the induced tetraploid of the released variety 'Sree Sahya'. Farmers' Participatory Trials of these two clones were conducted in the irrigated plains in Tamil Nadu being the centre for cassava based starch factories in India for six consecutive years from 2001 onwards along with H-226 and Mulluvadi, the popularly grown varieties in the state for industrial use. The average tuber yield recorded for 4-2 and 5-3 was 39.1 and 38.4 t ha^{-1} respectively compared to 27.3 and 25.4 t ha^{-1} in the check varieties. The extractable starch is 30% in the former and 28.8% in the latter compared to 23.4 and 25.4% in the check varieties While the mean starch yield is 11.7 and 11.1 t ha^{-1} respectively in the triploids, it was less than 7.0% in the local varieties. Uniform tuber shape, easy extractability of starch, improved starch qualities such as high viscosity and bright white colour of tuber starch of these clones enable to produce quality products at a relatively lesser manufacturing cost. Farmers and industrialists gained confidence in the superior and stable performance of these clones and accepted for large scale cultivation for industrial use.

Field view and tubers of triploid cassava clone 4-2

Field view and tubers of triploid cassava clone 5-3

Forthcoming events

1. 37th Institute Research Committee meeting of CTCRI is scheduled to be held during 26-29, April 2011, at CTCRI, Thiruvananthapuram.

2. NAIP sponsored "National Training on Structure, function and dynamics of bio-molecules used in pest management of horticultural crops." is scheduled to be held during 10-23, May 2011 at Regional Centre of CTCRI, Bhubaneswar.

Secondary Agriculture: Defining Roles for Tuber Crops

Green revolution enabled India to achieve self sufficiency in food grain production. In spite of this, the share of agriculture in National GDP has declined from 31% in 1980's to 18% now; and increasing population and declining land holdings are causing the scenario further bleak suggesting that primary agriculture by itself would not be able to sustain the agriculture based Indian economy. Primary agriculture is to be complemented by secondary agriculture. Adding value to the basic agricultural commodities, to allow small farmers to get better returns from their efforts, to create new jobs in the rural sector and grow the agro-economy is all about secondary agriculture in a comprehensive way.

At present the total value added by the food processing industry is only about 8% of the total food production. The scenario in the horticulture sector is very much disheartening. Currently only 2.2% of horticulture products are processed while more than 35% of fruits and vegetables are wasted due to lack of storage and processing facilities. Demand for processed foods is expected to increase many folds along with the basic foods in the near future as the Indian economy is growing at an annual average growth of 8%. Thus significant scope exists to harness the benefits by transforming primary agriculture into secondary agriculture that would empower the farmer to take part in the open economy with a changed perception about agriculture from subsistence nature to a commercial business venture.

Value addition to farm produce can be done at three levels *viz*., post harvest primary processing (Cleaning, sizing and packaging especially suitable to fruits and vegetables), post harvest secondary processing (basic processing, packaging and branding) and High end processing (Complex processing technologies involving big equipment and finances). Secondary agriculture in the mixed economy of India need to promote two types of industries *viz*., Small scale industries at village/ semi-urban level that produce products that local people need and also to produce unique products for national and global markets.

Tuber crops also can play their role during the process of country's transition from primary agriculture to secondary agriculture. As the importance of these crops as food has been declining with increased per capita income and availability of many high value foods, these crops can survive if and only if their potential to produce diverse value added products is exploited at the R & D level by research organizations like CTCRI concentrating its efforts to develop technologies/ produce modified tuber starches for the food and non-food products industries, extruded ready to eat foods, bio-ethanol production, development of colourants, neutraceuticals, efficient utilization of starch factory residues and crop residues as animal feed, etc., along with technologies for improving the productivity of tuber crops with due policy support from Government.

Average Wholesale market prices for tuber crops and value added products

(January-March 2011)

Tuber Crop/ Value added product	State	Average Wholesale Price (₹/Mt)
Tapioca	Kerala	12428
	Tamil Nadu	7000
	Andhra Pradesh	4000
Sweet Potato	Orissa	9310
	Jharkhand	8040
	Uttar Pradesh	6052
	West Bengal	9542
Elephant Foot Yam	Kerala	20656
	Gujarat	13462
	Himachal Pradesh	18663
Taro	Kerala	18650
	Madhya Pradesh	10023
	Uttar Pradesh	17717
Yam	Andhra Pradesh	15250
Rathalu (Yam)	Kerala	22574
	Gujarat	23654
	Rajasthan	25875
Tapioca Starch	Tamil Nadu	2305
Sago	Tamil Nadu	3204

Source:www.agmarknet.in

Conducted Stakeholders meeting

A stakeholders meeting on "Tuber Crops Research- Industry Interface: Promotion and Commercialization" was organized at CTCRI in Thiruvananthapuram on 23rd January 2011 in order to bring and adequately showcase the valuable technologies to all stakeholders in an organized form. Mr. K.K.Kaushal, Managing Director, Sago Serve, Salem, who was the chief guest, briefed about the problems in starch and sago industries and the need for developing new

Mr. K.K. Kaushal, MD, Sago serve deleberating during the stakeholders meeting

technologies to solve them. Dr. G.Surendran, Director of Agriculture, Government of Kerala spoke on the processing of tuber crops in Kerala. Dr. S.K.Naskar, Director, CTCRI, in his presidential address stressed the need for value addition in cassava. Dr. M.Anantharaman, Head, Section of Social Sciences welcomed all and Dr. J.T.Sheriff, Convener of the meeting proposed vote of thanks. Eight lectures were delivered by the eminent speakers followed by participatory discussion. About 120 people participated in the meeting including 78 entrepreneurs and eight resource persons from the states of Kerala, Tamil Nadu, Pondicherry and Maharashtra.

Third Meeting of the Research Advisory Committee (RAC) V held

RAC meeting in progress

The third meeting of the Research Advisory Committee-V of CTCRI was held on 4th February 2011 at CTCRI, Thiruvananthapuram under the Chairmanship of Dr. S.M.Paul Khurana. The committee discussed the action taken report on the recommendations of the previous meeting and gave recommendations for the future course of programmes to be taken up by the Institute. The Committee highlighted the increasing scope for secondary agriculture using tuber crops.

XI Annual Group Meeting of AICRPTC at TNAU, Coimbatore

The XI Annual Group Meeting of the All India Coordinated Research Project on Tuber Crops (AICRPTC) was held at Tamil Nadu Agricultural University (TNAU), Coimbatore, during 11-13, March 2011. Dr. H.P. Singh, Deputy Director General (Horticulture), ICAR, New Delhi inaugurated the meeting which was chaired by Prof. P. Murugesa Boopathi, Vice Chancellor, TNAU, Coimbatore. Dr. James George, Project Coordinator, AICRP on Tuber Crops presented the annual progress report. The meeting was also addressed by Dr. S.K. Naskar, Director, CTCRI and Dr. N. Kumar, Dean, College of Horticulture, TNAU, Coimbatore. There were seventy five

Dr. H.P. Singh, DDG (Horti.) inaugurating the XI annual group meeting of AICRPTC

registered participants from different AICRP centres. Directors of ICAR Institutes, Heads of Departments, Dean, Professors, scientists of TNAU and CTCRI also participated in the group meeting. There were six technical sessions including plenary session. The achievements and future technical programmes for each centre were discussed in detail and approved.

TRAINING PROGRAMMES

National Training Course on Molecular Diagnostics for Pathogens Infecting Crop Plants

NAIP sponsored National Training Course on "Molecular Diagnostics for Pathogens Infecting Crop Plants" was organized by Dr. T. Makeshkumar during 16th February 2011 to 3rd March 2011 at CTCRI. The training was inaugurated by Dr. Ashok Pandey, Deputy Director, National Institute of Interdisciplinary Sciences and Technology (NIIST), Thiruvananthapuram. Dr. S.K.Naskar, Director, CTCRI during the occasion stressed the need for capacity building of scientists in such latest techniques for minimizing the losses due to pathogens to crops. A total of 16 participants from Kerala, Tamil Nadu, Karnataka, Madhya Pradesh and Uttar Pradesh representing ICAR and SAUs had undergone the training. Resource persons for the training included Dr. Stephan Winter, Head, Plant Virus Division, DSMZ, Germany, Dr. V.G.Malathi, Dr. A.Kumar and Dr. M.Krishna Reddy, etc. and covered all the advanced techniques *viz*., ELISA, DIBA, PCR, Real Time PCR, Nucleic acid hybridization, etc. Dr. Anand Raj, Project Coordinator (Spices), Kozhikode gave the valedictory address.

Training on Data Analysis using SAS

In order to sensitize the usage of statistical software SAS in National Agricultural Research System (NARS), a training program on "Data Analysis using SAS" was organized by Dr. J.Sreekumar, Senior Scientist, CTCRI during 3-9, March 2011 at CTCRI, Thiruvananthapuram with

Dr. S.K. Naskar, Director, CTCRI, giving inaugural address during the training programme on SAS

the financial assistance from the nodal centre of the NAIP project on Strengthening Statistical Computing for NARS at GKVK, UAS, Bengaluru. Dr. S.K. Naskar, Director CTCRI inaugurated the training program. There were 26 participants from different ICAR institutes and State Agricultural Universities (SAUs) of Kerala and Karnataka. The course provided insights into carrying out advanced statistical techniques using SAS.

National Training Course on Current Approaches and Applications of Bioinformatics in Agricultural Research

National Training on "Current Approaches and Applications of Bioinformatics in Agricultural Research" sponsored by NAIP was organized by

Dr. J.Sreekumar at CTCRI, Thiruvananthapuram from 28th March to 6th April, 2011. There were 20 participants from nine ICAR institutes and four State Agricultural Universities (SAUs) of Kerala, Tamil Nadu, Goa, Karnataka, Madhya Pradesh and Uttarakhand. Resource persons included Dr. A.D.J. van Dijk and Dr. Prasad Gajula from Applied Bioinformatics, Wageningen University of Research, The Netherlands. Different topics covered in this course included an Introduction to Bioinformatics, predicting functional structures, machine learning techniques in relation to protein structures, molecular interactions and its application in agricultural research, gene expression data analysis, metabolic and molecular regulatory networks, analysis of metabolic pathway data and its applications in agricultural research, etc.

Besides, Regional Centre of CTCRI organized training programme on "Training of field staff on Root and Tuber Crops" during 1-2, February 2011, sponsored by office of the Horticulturist, Bhubaneswar, Directorate of Horticulture, Orissa; Training programme to scientists of GVT-KVK, Jharkhand during 29-31, March 2011 and two farmers training programmes on 'Starch extraction using starch extraction machine' at the Khalibandha and Kauriapala villages in Dhenkanal district, training 60 farmers under NAIP project entitled "Sustainable rural livelihood and food security to rainfed farmers of Orissa".

Hands on training on starch extraction

Feed back

"Strive to be models of all-around excellence creating institutions of global standards".

-Shri Sharad Pawar,
Honorable Union Minister for Agriculture and Food Processing Industries, Govt. of India.

"Climate change is purely man made crisis. Agriculture if not going in tune with the nature is likely to be disastrous to mankind. Tuber crops have a great role to play under present circumstances to address the issue of food security".

-Shri Mullakkara Ratnakaran,
Honorable Minister of Agriculture, Government of Kerala

"Team of scientists have come up with effective research output for such neglected crops".

-Dr H.C.Pathak, Member, RAC, CTCRI

"Very hard work is being done at this Institute especially development of transgenic cassava plant against ICMV. Serological and molecular diagnostic techniques have been developed for the detection of different viruses".

-Dr S.J.Singh,
Ex-Head, IARI, RS, Pune and Member, RAC, CTCRI

ICAR Vision 2030

It articulates the strategies to overcome the challenges and tap the opportunities by harnessing the power of science and undertaking boundary less partnership with different stakeholders in food supply chain at national and international level. To accomplish the vision and the mission, the ICAR gives highest priority to farmers as entire strategy is based on 'farmer first' and determined to continuously strive hard to transform the existing National Agricultural Research System into a vibrant National Agricultural Innovation System.

Happenings in brief

Visitors: Among the prominent dignitaries visited the Institute included, Sri Mullakkara Ratnakaran, Honorable Minister of Agriculture, Govt. of Kerala, Dr. H.P.Singh, DDG (Hort.), ICAR, New Delhi, Shri K.C. Shashidhar, Chief General Manager, NABARD, Thiruvananthapuram, Dr. G.Surendran, Director of Agriculture, Govt. of Kerala, Sri K.K.Kaushal, Managing Director, Sago Serve, Salem, Dr. R.Ranganna, Emeritus Scientist, UAS, Bengaluru and Dr. Stephan Winter, DSMZ, Germany, Dr. C.S.P.Iyer, Emeritus Professor, IIITM-K, Thiruvananthapuram, IMC Members *viz*., Dr. S.Devasaham, Principal Scientist & Head, Plant Protection, IISR, Kozhikode, Dr. R. Ajithkumar, Addl. Director of Agriculture (Marketing), Directorate of Agriculture, Government of Kerala, Shri. V.G. Raveendran, Non-official member, Dr. Paul Khurana, Chairman, RAC-V of CTCRI, and RAC members Dr. H.C.Pathak, Dr. S.J.Singh, Dr. N.Mohanakumaran and Shri Salim P.Mathew.

During January-March 2011, 18 batches of farmers were given training on tuber crops production and processing technologies and various activities of CTCRI wherein 592 farmers and 45 officials from Kerala, Tamil Nadu and Maharashtra participated. Seven batches of 209 students and 26 teachers from Kerala, Tamil Nadu, Gujarat, Himachal Pradesh and Arunachal Pradesh also attended awareness programmes on tropical tuber crops and training programmes conducted at CTCRI, Thiruvananthapuram.

Regional Centre of CTCRI imparted training on tuber crops technologies to 19 batches of farmers and three guide officers from different districts of Orissa wherein 504 farmers participated.

Exhibitions: During this quarter, CTCRI participated in five exhibitions (NSCFT-2011, Jeevana 2011, District level workshop on Production and Protection of field crops, Anantholsavam 2011 and Regional Agriculture Fair 2010-11) organized by CTCRI, NIDS, Neyyattinkara at Aryanad, RATTC, Kazhakkuttam, Art of Living Society, Thiruvananthapuram and ICARRCNEH, Barapani, Meghalaya respectively.

Regional Centre participated in one exhibition in "India International Crop Summit" held in Bhubaneswar during 10-11, January 2011.

His Excellency Ranjit Shekhar Mooshahary, Governor of Meghalaya and Dr.S.V.Ngachan, Director, ICARRCNEH, Barapani, at CTCRI stall in the Regional Agriculture Fair 2010-11 held at ICARRCNEH, Barapani, Meghalaya

New Projects: During this quarter, five new projects were sanctioned.

1. A Project on "Adopting Clonally Propagated Crops to Climatic and commercial changes" funded by European Union and lead by SPC, CIRAD was sanctioned to Dr. S.K.Naskar as Leader of the Participating Country Centre.
2. A Project on "Development of low glycaemic noodle from sweet potato and low calorie sago from cassava as antidiabetic foods." funded by Indian Council of Medical Research (ICMR) was sanctioned to Dr. G.Padmaja.
3. A Project on "Novel molecules produced by unique bacteria and their bioactivity." funded by Kerala State Council for Science, Technology and Environment (KSCSTE) was sanctioned to Dr. C.Mohandas.
4. A project on "Establishment of Leaf/Tissue Analysis Laboratory" funded by the Directorate of Horticulture, Govt. of Orissa under National Horticulture Mission was sanctioned to Dr. K. Laxminarayana.
5. A project on "Consumer's need, knowledge, attitude and purchase behavior of functional foods from starchy staples" funded by Indian Council of Social Sciences Research (ICSSR), New Delhi was sanctioned to Dr. P.S. Sivakumar.

CTCRI NEWS congratulates them.

Awards: During the NSCFT 2011, Dr. G.Suja, Senior Scientist, CTCRI, Ms. F.P.P.Evangelin, Karunya University, Coimbatore and Mr. P. Shaji

James, KVK, Pattambi bagged ISRC award for first, second and third best oral presentations respectively while Dr. M. T. Sreekumari, Principal Scientist, CTCRI received ISRC award for best poster presentation, Dr. V.S. Santhosh Mithra, Scientist (SG), CTCRI and Mr. R.S.Sree Rag, Senior Research Fellow, CTCRI shared the award for second best poster presentation and Dr.S.S.Veena, Senior Scientist, CTCRI bagged the third best poster presentation respectively. Dr. A.N.Jyothi, Senior Scientist, CTCRI and Ms. G.S. Radhika, SRF, CTCRI received Dr. G. Rangaswami Memorial Young Scientist award and ISRC Young Scientist award respectively. CTCRI NEWS congratulates them.

VIII IMC meeting: 8th meeting of VIII Institute Management Committee of CTCRI was held on 28.01.11 at CTCRI, Thiruvananthapuram, and discussed the action taken report of the previous meeting and approved the proposals for taking the non-plan works.

ICAR South Zone zonal sports meet: CTCRI sports team of 24 contingent participated in the ICAR South Zone Zonal Sports meet held in Bengaluru during 7-11, February 2011.

National Science Day 2011 celebrations: National science day was celebrated at CTCRI from 26-28, February 2011 with a series of activities such as open house programme for college students, quiz competition for CTCRI staff and the national science day lecture by Dr. C.S.P. Iyer, Emeritus Professor, IIITM-K, Thiruvananthapuram, highlighting the theme "Chemistry in our lives". Under graduate and post graduate college students from Govt. College for women, Thiruvananthapuram participated in the open house programme.

Retirement: Dr.G.Muraleedharan Nair, Principal Scientist, Division of Crop Production and Shri P.Arjunan, Skilled Supporting Staff attained superannuation on 31-01-2011. CTCRI NEWS wishes them a happy retirement life.

Felicitation of Dr. G.M. Nair and Shri. P. Arjunan on the occasion of their Superannuation

New Staff joined: Dr. (Mrs.) Asha Devi, Senior Scientist (Genetics) joined the Division of Crop Improvement of the Institute on transfer from Directorate of Onion and Garlic, Pune on 28-03-2011. CTCRI NEWS welcomes her with best wishes.

हिन्दी विभाग कार्यक्रम: ता. 21.03.2011 में आयोजित राजभाषा कार्यान्वयन समिति की बैठक जनवरी - मार्च की तिमाही बैठक) डॉ. एस. के. नसकर निदेशक महोदय की अध्यक्षता में संपन्न हुई। तारीख 07 से 22 जनवरी 2011 तक नगर राजभाषा कार्यान्वयन समिति, तिरुवनंतपुरम द्वारा आयोजित हिन्दी पखवाड़ा समारोह की हिन्दी प्रतियोगिता में इस संस्थान की प्रधान वैज्ञानिक, डा. लैला बाबू ने भाग लिया और वक्तृता प्रतियोगिता में द्वितीय पुरस्कार प्राप्त किया। इस संस्थान की सहायक श्री. पी. एस. सुरेशकुमार, एवं श्री एम. पद्मकुमार, वैयक्तिक सहायक, ता. 27.01.2011 को नगर राजभाषा कार्यान्वयन समिति द्वारा आयोजित हिन्दी कार्यशाला में भाग लिया। श्रीमती.टी.के सुधालता, तिरुवनंतपुरम नगर राजभाषा कार्यान्वयन समिति की संयुक्त हिन्दी पखवाडा समारोह तारीख 07 से 22 जनवरी 2011 तक की सभी कार्यक्रम में भाग लिया।

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TUBERS FOR HUNGER ALLEVIATION