

COTTON Innovate



Weekly Newsletter from Central Institute for Cotton Research, Nagpur

www.cicr.org.in

Issue : 1, Volume :6, June 1-7, 2015

National Seminar

ICAR- CICR participates in the National Seminar on Value Addition of Cotton Stalks and other Agro-Wastes for Rural Livelihood

National Seminar on “Value Addition of Cotton Stalks and other Agro-Wastes for Rural Livelihood” was organised by GTC, Nagpur of ICAR- Central Institute for Research on Cotton Technology (CIRCOT), Mumbai in association with Indian Society for Cotton Improvement, Mumbai and Agro Plus Foundation, Nagpur at Dr. S. P. Roy choudhary Auditorium, ICAR-NBSS & LUP, Nagpur on 6th June 2015. Apart from CICR Scientists, the seminar was attended by more than 200 farmers, stake holders, business personals, state agricultural department officials, scientist of ICAR institutes. Sh Nitin Gadkari, Hon Union Minister for Road Transport and Highways & Shipping was the Chief Guest while Dr. C. D. Mayee, Ex-ASRB Chairman & President ISCI, Mumbai; Dr. P. G. Patil, Director, CIRCOT; Dr. A. J. Shaikh, Secretary, ISCI and Sh G. H. Wairale, President, Agro Plus Foundation, Nagpur were present on dais. Dr. K. R. Kranthi, Director, ICAR-CICR, Nagpur chaired the Technical Session I: Logistics for harvesting/uprooting, chipping and transportation of raw materials to the industry out of the four technical sessions held during the seminar.



Dr. K. R. Kranthi, Director, Chairing the Technical Session



Hon Nitin Gadkari interacting with Dr. K. R. Kranthi

FLDs on Cotton Plans at *Girad* areas

ICAR-CICR Nagpur has to conduct FLDs on cotton under AICRP on cotton. For undertaking cotton FLD interventions on *Desi* cotton, cotton intercropping and integrated cotton management discussions with farmers were held in *Girad* and adjoining villages. Dr S. M. Wasnik, Principal Scientist Extension, CICR, Nagpur attended farmers meet on the occasion of 'seed mahotsava' organised at *Girad* by *Magan Sangrahalay Girad, Samudrapur Tahsil, Wardha district* for the farmers on 5th June 2015 which was participated by more than 200 farmers and organic seed producers and apprised about cotton FLDs. Cotton *desi* variety Phule Dhanwantary and Suraj was also provided to farmers.



School Students Educational Visit to CICR, Nagpur

Students from various schools of Nagpur, Saraswati Vidyalaya, Kendriya Vidyalaya, Bhagawan Das Purobit Vidya Mandir, NEERI Modern School, Hadas High School and Tata Parsi Jr. College who have passed their tenth, eleventh and twelfth class undertook an educational visit to CICR, Nagpur on 3rd June, 2015. The visit was held under 9th vacation programme on Natural Resources organized at CSIR-NEERI to inculcate scientific temper in students. The students were apprised about significant contributions made by CICR towards cotton farming. They were also made aware about cotton picking, ginning, role of mechanization, existence of colour cottons etc. There was a brief interaction with Director, CICR, Nagpur and had a visit to CICR Biotechnology laboratory where they were exposed to the various methods for development of transgenic cotton including Bt cotton and other transgenics. Dr. Gautam Majumdar, Dr. Vinita Gotmare and Dr. V. Santhy Co-ordinated the visit.



Institutional Biosafety Officers (IBOs) Training

ICAR has initiated a new program on “Biosafety Awareness and Compliance Readiness” with selected institutions, which include CICR, Nagpur. Two Institutional Biosafety Officers (IBOs) Dr. G. Balasubramani and Dr. V. Nagrare are nominated for those biosafety training. The 1st phase of training was conducted by ICAR in association with BCIL, New Delhi and ILSI Research Foundation, Washington, USA at NASC complex, New Delhi. Two days training program was attended by IBOs on Specific duties in all biosafety related issues especially safe handling and storage of regulated biological materials, to ensure safety to human and the environment. IBOs were trained to provide general biosafety training to their employees working with regulated biological materials in the laboratory.

Institutional Biosafety Committee (IBSC) meeting:

The IBSC meeting was held on 03-06-2015 at CICR, Nagpur. The committee discussed on submission of an application to RCGM through ICAR for commercial release of single gene Bt cotton varieties expressing approved events Mon531 under event based approval mechanism (EBAM). The committee discussed on the proposal of Delhi University’s transgenic cotton event Tg2E-13 and signing of MOU and MTA for green house trial. GM events generated at CICR, Nagpur was also discussed for further screening in green house conditions and reconfirmation of the events.

Dr. H. B. Santosh, Scientist (Plant Breeding), ICAR-CICR, Nagpur participated in “*Training Workshop on Monitoring of Confined Field Trials of Regulated, Genetically Engineered (GE) Plants*” organized by Ministry of Environment, Forests & Climate Change (Government of India) during June 3-4, 2015 at ICAR–National Academy of Agricultural Research Management (NAARM), Hyderabad. The two days training workshop was conducted by Center for Environmental Risk Assessment (CERA)–ILSI Research Foundation, USA and coordinated by Biotech Consortium India Limited (BCIL), New Delhi.



Literature Scan

Water “thermostat”: OSCA1 gene encoding protein for engineering drought-resistant crops

Duke University researchers found a gene that tells the plant to conserve water when it senses changes in water availability and adjusts water conservation machinery. It’s similar to a thermostat demonstrated by Prof. Zhen-Ming Pei at Duke. The gene, named *OSCA1*, is responsible for encoding a protein in the cell membrane of plants that perceives changes in availability of water and modifies the plant’s water conservation system as per requirement. *OSCA1* allows calcium to surge into the cell in times of water shortage. This is the trigger which makes plants launch mechanisms to deal with changed water levels.

Significance:

Droughts, a major reason for crop failure across the world, are likely to become more frequent with global warming and climate change making rainfall patterns irregular. The finding can be a handy tool to engineer crops that can survive in areas facing water shortage and help in meeting the hunger needs of the world’s population which is projected to increase by more than two billion by 2050. A dry spell at a crucial stage of the growing season can cut some crop yield in half. The calcium levels in plant cell under drought stress tell the plant that there is a lack of water, which can trigger further coping mechanisms. Gene encodes a protein in the cell membranes of plant leaves and roots so it knows there is a lack of water. The team from the university grew normal plants (wild-type) and those with a defective version of the gene (mutant) in the same pot. Plants with defective versions of the calcium channel don’t send an alarm signal under water stress like normal plants do. When the plants were exposed to drought conditions, the plants wilted more than those with the gene intact. But engineering plants to withstand drought has proven difficult to do, largely because plants use so many strategies



2bn

People have been affected
by drought since 1900

Source: FAO

to deal with dehydration and hundreds of genes are involved. The gene, OSCA1, which allows calcium to surge into the cell in times of drought, was identified in *Arabidopsis thaliana*. They found OSCA1 forms calcium-permeable channels that may serve as osmosensors, which detect how much water is available and cause the plant's water conservation machinery to adjust accordingly. Although it was previously known that plant cells respond to drought by boosting their calcium levels, the molecular machinery involved in this process had not been identified. "Plants that enter drought-fighting mode quickly and then switch back to normal growth mode quickly when drought stress is gone should be able to allocate energy more efficiently toward growth. It will be an interesting line of research in future to investigate how manipulation of the OSCA1 gene and other related genes affect a plant's ability to respond to drought, which could lead to the development of crops that respond more quickly and efficiently to dehydration.

Reference:

Fang Y, Yang H, Xue Y, Kong D, Ye R, Li C, Zhang J, Lynn T, Tayle S, Bryan K, Johnson D M, Swift, G B, He Y, Siedow J N, & Zhen-Ming Pei. (2014). OSCA1 mediates osmotic-stress-evoked Ca²⁺ increases vital for osmosensing in *Arabidopsis*, *Nature*, 514, 367–371, doi: 10.1038/nature13593

Contributed by: Dr. Jayant H Meshram, Scientist, Plant Physiology, CICR, Nagpur

Produced and Published by : Dr. K. R. Kranthi, Director, CICR, Nagpur
Chief Editor : Dr. S. M. Wasnik
Editors : Dr. J. Annie Sheeba, Dr. Vishlesh Nagrare, Dr. J. Amutha, Dr. M. Saravanan
Media Support & Layout design : Mr. M. Sabesh

Citation : Cotton Innovate, Issue-1, Volume- 6, 2015, ICAR-Central Institute for Cotton Research, Nagpur.



Publication Note: This Newsletter presented online at <http://www.cicr.org.in/NewsLetter.html>
Cotton Innovate is the Open Access CICR Newsletter

The Cotton Innovate – CICR Newsletter is published weekly by
ICAR-Central Institute for Cotton Research
Post Bag No. 2, Shankar Nagar PO, Nagpur 440010
Phone : 07103-275536 Fax : 07103-275529; email: cicrnagpur@gmail.com