

COTTON Innovate



Weekly Newsletter from Central Institute for Cotton Research, Nagpur

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RESEARCH ROUND-UP



Chimeras in cotton plant

Dr. V.S. Nagrare, Senior Scientist, Entomology

Chimeras or variegated leaves in cotton plant are observed sporadically. During current season 3 out of eleven thousand cotton plants were recorded with chimeras in Bt-cotton hybrids.

Pathogens or insect damage have not been implicated as causal agent for these chimeras. Chimeras occur in plants as well as in animals. In general, chimeras have two types of tissues from the same zygote and difference is often due to spontaneous or induced mutations, by the sorting-out from variegated seedlings after plastid mutation, by grafting, by the layering of mixed populations of cells or by somatic hybridization through protoplast fusion. Most often cotton production stakeholders enquired for control measures for chimeras; however, chimeras cannot be suppressed or controlled with any chemical.



SCIENTIFIC TALKS

Scientific Talks were delivered by Dr. Sunil Rokde, Senior Scientist, Livestock Production and Management, and Dr. G. Balasubramani, Principal Scientist, Biotechnology, CICR, Nagpur under the aegis of CICR innovation cell on 19th of October, 2013.



Agro-homeopathy- A promise for bright agriculture

Dr. Sunil Rokde in his talk on “**Agro-homeopathy- A promise for bright agriculture**” emphasized the use of homeopathy in Agriculture. It is cheap, eco-friendly and a sustainable alternative therapy. Many agro-homeopathic medicines are prepared from plants and animals. Many pests and diseases of various crops have reported to be effectively controlled by these agro-homeopathic medicines. Till now no work has been done on the effect of agro-homeopathic medicines on control of pests and diseases in cotton. Hence, there is lot of scope in this area of research.

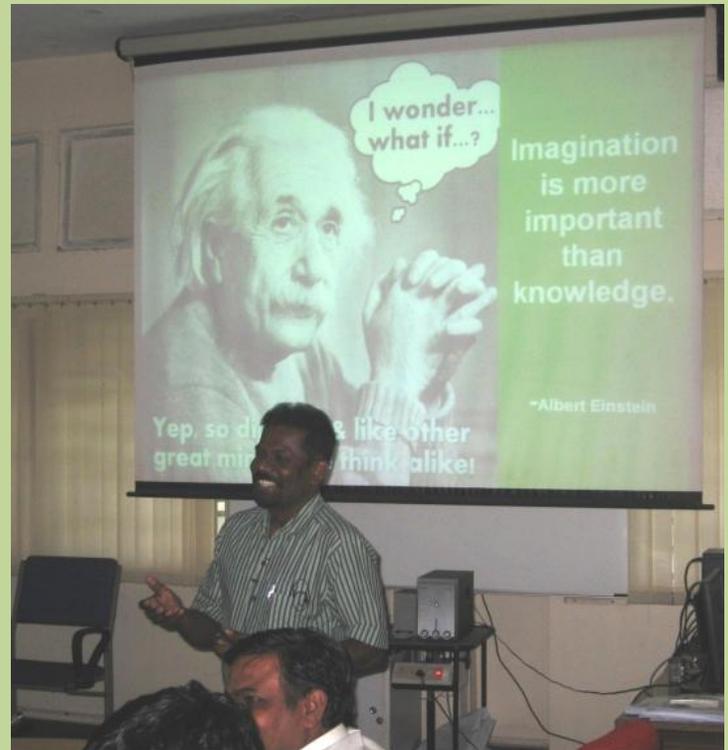


Creation of New Cotton Plant



Dr. G. Balasubramani in his talk wondered if nature evolved combination of allopolyploid in cotton is the best and visualized creation of New Cotton Plant. The genus *Gossypium* (Cotton) comprises 45 diploid species that are divided into 8-monophyletic groups (A, D, B, C, E, F, G and F). Ancient hybridization between

A and D diploids resulted a new allopolyploid (AD) genome. Two of descendant allopolyploids (AD-genome *G. hirsutum* and *G. barbadense*) and two African-Asian diploids (A-genome *G. arboreum* and *G. herbaceum*) were domesticated independently for their spinnable fine fiber. With advancement of molecular characterization and availability of complete nucleotide sequence data of D-genome and functional genes of AD-genome revealed that enormous modification of genome has occurred compared with their ancestors. The bioinformatic analysis also discloses that D-genome contributes more on fiber traits than A-genome. He wondered whether any possibility exists combining other diploid genome to evolve new cotton plants by using current genomic tools. Pollen could be used as “super vector” to manipulate desirable traits from gene pool present in the wild species to overcome the cross compatibility. Nanotechnology would be one of the options to make artificial pollens across the season and use for making desirable crosses among 8-monophyletic groups to accomplish desirable traits especially fiber, resistance to biotic and abiotic stresses and high yields.



REVIEW MEETING ON 'KRISHI VASANT' HELD AT CICR

A meeting was held at CICR on 15th October, 2013 to review the progress made and to chalk out the future course of action for 'KRISHI VASANT' National Agricultural Fair cum Exhibition, being jointly organized by the Ministry of Agriculture, Government of India, the Indian Council of Agricultural Research (ICAR) & the State Government of Maharashtra during 15-19th January 2014 at the Central Institute for Cotton Research, Nagpur to commemorate the birth centenary of Shri. Vasant Rao Naik Former Chief Minister of Maharashtra and architect of the green revolution in the state. The meeting was chaired by Dr Dalip Singh, Additional Secretary, Department of Agriculture and Cooperation, Ministry of Agriculture Government of India. Dr S. K. Goel, Additional Secretary, Agriculture, Animal Husbandry, Dairy Development & Fisheries Department, Government of Maharashtra, presided over the proceedings. The meeting was attended by 40 senior officials of various Government Departments of Maharashtra, senior officials of CICR and staff of the CII (Confederation of Indian Industries).

Dr. K. R. Kranthi, Director, CICR, briefed the progress made thus far regarding the layout arrangements at CICR and also highlighted the need for inclusion of the ICAR logo in the brochure. Dr. M. V. Venugopalan, Principal Scientist, CICR, presented the progress made in arrangements made for the layout and sowing operations for the Live-Crop-Demonstration plots at CICR. He said that so far CICR received 304 entries of 54 crops from 14 ICAR institutes, 10 private companies, 4 SAUs, 2 international organizations and 4 public sector undertakings. He said that the sowing operations were expected to be completed by the end of October for all crops except wheat which would be sown in the first week of November. Dr. Sandhya Kranthi, Dr. Blaise Desouza and Dr. R. B. Singandhupe from CICR participated in the meeting.

DEMONSTRATION ON HIGH DENSITY PLANTING SYSTEM AT CICR, RS, SIRSA

A district level farmers fair (*Kisan Mela*) and exhibition was organized by Department of Agriculture, Sirsa, Haryana under the aegis of Agriculture Technology Management Agency (ATMA) on October 11, 2013. Dr. D. Monga, Head, CICR, RS, Sirsa delivered a lecture on Bt cotton scenario in North Zone. Around 250 farmers visited the HDPS demonstrations on F-2383 (*Gossypium hirsutum*), CICR-I and CICR-3 (*G. arboreum*). Dr S.L. Ahuja, Principal Scientist (Plant Breeding), addressed the queries raised by the farmers particularly on the plant population, spacing and other agronomical details of the technology and the yield benefits. The concern about the pest management under this technology was discussed in detail by Dr Rishi Kumar (Sr Scientist). The farmers showed keen interest in the technology and inclination for its adoption.



LITERATURE SCAN

New Organelle: The Tannosome

Researchers from French National Institute for Agricultural Research ([INRA](http://www.inra.fr)) (Jean- Marc Brilleout and his colleagues) unveiled a newly discovered plant organelle "Tannosome". The team found a new organelle by transmission electron microscopy (TEM) imaging methods. Tannosomes are small structures that originate within chloroplasts. Tannins are polyphenols produced by plants, valuable to their hosts for fending off herbivores, pathogens, and UV radiation, and valuable to humans for helping wine age. It's responsible for churning out tannins, the naturally occurring molecules belonging to the polyphenols class of organic chemicals which are found in tree bark, vascular plant leaves and not-yet-ripe fruit. The researchers scrutinized a variety of plant types to find the source of tannin manufacturing in cells and identified an entirely new organelle, which they called the tannosome.

Reference

J-M Brillouet, C. Romieu, B. Schoefs, K. Solymosi, V. Cheynier, H. Fulcrand, J-L. Verdeil and G. Conéjéro. (2013). The tannosome is an organelle forming condensed tannins in the chlorophyllous organs of Tracheophyta. *Ann Bot.* 112(6). 1003-1014. doi: 10.1093/aob/mct168 First published online: September 11, 2013.

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