

COTTON Innovate



Weekly Newsletter from Central Institute for Cotton Research, Nagpur

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Institute Research Committee Meeting (2015)

Institute Research Committee meeting was held at CICR, Nagpur from March 17 to 19, 2015 under the chairmanship of Dr. K. R. Kranthi, Director, CICR, Nagpur. Dr. K. R. Kranthi, Director, CICR, initiated the meeting with the introductory remarks. Dr. M. V. Venugopalan, Head, PME, presented the RAC recommendations. Dr. Vinita Gotmare, Nodal Officer, RFD, explained about the Research Framework Document of 2013-14. Dr. V.S. Nagrare, Secretary, IRC, presented the Action Taken Report of IRC 2013-14. Dr. Sandhya Kranthi, Head, Division of Crop Protection, Dr. D. Blaise, Head, Division of Crop Production, Dr. Suman Bala Singh, Head i/c, Division of Crop Improvement, Dr. D. Monga, Head, Regional Station, Sirsa, Dr. A. H. Prakash, Head, Regional Station, Coimbatore were present. All the Scientists of CICR, Nagpur, CICR, RS, Sirsa and CICR, RS, Coimbatore presented their research findings and the results were discussed. Technical programme for 2015-16 was finalized for each project. Concluding remarks were given by Dr. K. R. Kranthi, Chairman, IRC. Shri. S.P. Muchali, Technical Officer (T5) was felicitated by Chairman, IRC for his services during the IRC meetings conducted over the years as he would be superannuating this year. Dr. J.H. Meshram, Joint Secretary, IRC, proposed the vote of thanks.



Literature Scan

Endangered close relatives of cotton- *Kokia* sp; role of honey creepers in conservation of the species

Kokia is an endemic genus of four amazing species in the Hibiscus (Malvaceae) family confined to Hawaiian Islands.

Kokia cookei O.Deg. - Moloka'i tree cotton

Kokia drynarioides (Seem.) Lewton - Hawaiian tree cotton

Kokia kauaiensis (Rock) O.Deg. & Duvel - Kaua'i Koki'o

Kokia lanceolata Lewton: Wailupe Valley tree cotton

The first three are endangered and the last one is now extinct from O'ahu. Only 23 grafted plants of *Kokia cookei* are available now. *Kokia* sp was cultivated for making pink and lavender dyes from the flower petals, water proof dark red dye for fish-nets from sap of the bark (the resinous dye extends the life of fishing nets and the red colour under water is nearly invisible to fish facilitating better catch), bark for curing thrush and the flowers for lei (Polynesian garland of flowers).

Among the four species, *Kokia drynarioides* (Hawaiian Tree Cotton) was formerly placed under *Gossypium* and called as *Gossypium drynarioides*. They are highly adapted to the dry, nutrient-depleted soil on Kona's lava fields. Leaves are maple shaped. They bloom during spring, summer and early fall. Seeds mature in summer or fall. Seed capsule is five lobed with three bracts. The golden brown to reddish brown seeds are fuzzy and somewhat resemble *Gossypium tomentosum* (Hawaiian cotton) seeds. Seeds are well-suited for island hopping; they can float for several days before the fibers become heavy with water, which is long enough to disperse throughout the islands by oceanic drift.



Kokia drynarioides plant



Kokia drynarioides flower



Kokia drynarioides seed capsule



Gossypium tomentosum plant



Boll of *G. tomentosum*

Reasons for Endangerment of the Species and Extinction

Co-extinction with native nectarivorous birds - The petals of *Kokia sp* resemble a twisted hibiscus flower in a spiral form with a central curved staminal column, designed to match the curved bill of honeycreepers of the family Drepanidinae. Each flower contains copious amounts of nectar and pollen. While the honey creepers are rewarded with a high energy, protein-rich meal, the *Kokia* flowers will be pollinated, ensuring viable seeds for future generations. With the disappearance of Hawaiian honey creepers and nothing to fill their unique niche, due to eradication of them by the Polynesians, their death in large numbers by the mosquito-borne diseases like avian malaria (*Plasmodium relictum*) and fowlpox in the 19th century, predation by non-native mammals and competition by non- native birds, the *Kokia sp* lost its pollinators resulting in no or poor seed set pushing them to the 'endangered' and 'extinct from wild' list.



Hawaiian Honey Creeper with Curved beak designed for pollinating *Kokias* and other related Species

An introduced species of wild grass that covers the lava fields inhibited *Kokia* growth by increasing the frequency of wildfires. A species of arboreally agile rats, introduced in the 1800s, were found eating the seeds right from the branches.



Kokia cookei

Kokia drynarioides

Kokia kauaiensis

Kokia
Malvaceae
 © Nellie Sugii

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