

# COTTON *Innovate*



Weekly Newsletter from Central Institute for Cotton Research, Nagpur

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## RESEARCH ROUND-UP



### ***E-kapas* - a new high-tech Information and Communication Technology (ICT) initiative**

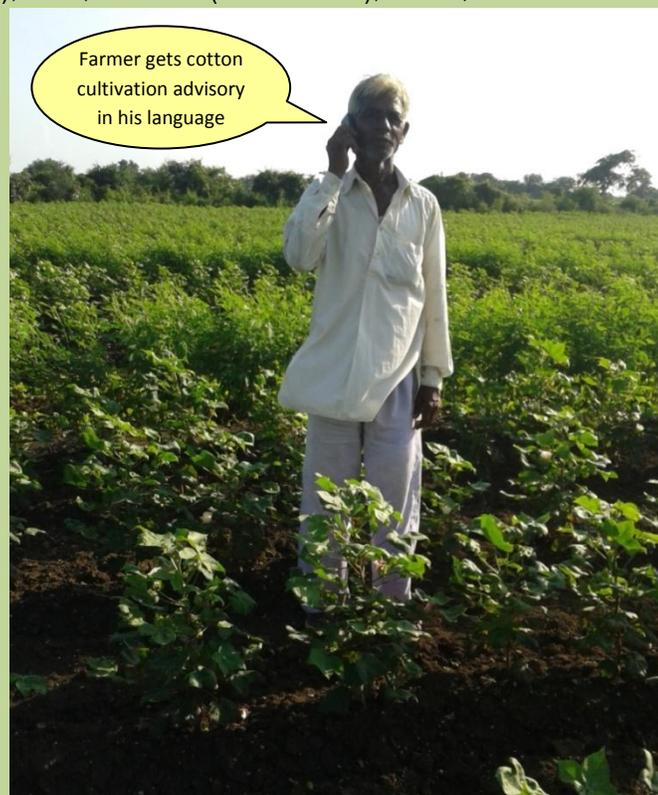
Dr.S. M. Wasnik, Principal Scientist, Extension CICR, Nagpur

Information and communication support for cotton farmers during last 65 years has mainly been conventional through extension personnel. In order to speed up the dissemination of cotton production technologies from research system to end users, a novel extension mechanism of 'e-kapas' networking of farmers has been initiated by Central Institute for Cotton Research, Nagpur aiming to empower cotton farmers with knowledge.

CICR has designed programme to cover more than 1,00,000 farmers across the cotton growing states by involving seventeen centres including SAUs working on cotton through mobile- based advisory services. The seventeen partners including CICR, Nagpur (Maharashtra) as Lead Centre and other centres viz. CICR Regional station, Coimbatore (TN); CICR Regional station, Sirsa (Haryana); UAS, Dharwad (Karnataka); GAU, Junagarh (Gujarat); MPAUT, Banswana (Rajasthan); RAU, Sriganaganagar (Rajasthan); ANGRAU, Lam Guntur (A.P); NAU, Surat (Gujarat); CCSHAU, Hisar (Haryana); PAU, Faridkot (Punjab); PDKV, Akola (Maharashtra); OAUT, Bhawanipatnam (Orissa); RVSKVV, Khandawa (MP); MAU, Parbhani (Maharashtra); MPKV, Rahuri (Maharashtra) and UAS, Raichur (Karnataka) are catering to the farmer's needs in local regional languages. By using modern ICTs and establishing a strong linkages between research and technology 'e-kapas' system helps in creating and sustaining significant changes in the productivity and profitability.

### **Mobile based voice message advisory services**

In India mobile technology has unleashed a paradigm shift in communication medium to reach out the masses. As per statistics over 870 million mobile subscribers in India, India has emerged as the world's second largest mobile market globally only after China. To tap this vast potential medium, CICR has introduced voice based cotton advisory services to the farming community. CICR and participating centres provide voice messaging service that act as automatic voice dialler which sends the recorded messages in the form of automatic phone calls to the registered farmers. This service is provided to all farmers irrespective of telecom network. The service is highly accepted since it alleviates the language barriers of visual communication. The service is available only to the registered farmers and can be availed at free of cost.



## SCIENTIFIC TALKS

Dr. S.B. Nandeshwar, Principal Scientist, Biotechnology, delivered two talks on “Engineering C4 Cotton” and “Genetically modified pollen” under the aegis of CICR innovation cell on October 26, 2013.

### Engineering C4 cotton

With projections of 9.5 billion populations by 2050, humankind faces the challenge of growing enough food for the teeming millions while using the same amount of water, fertilizer and arable land as today. Plants have three photosynthetic pathways C3, C4 and CAM. Most of the dicot plants use C3 photosynthetic pathway while C4 and CAM pathways are adaptation to arid condition because they result in better water use efficiency. C4 plants can photosynthesize faster under arid conditions (high temperature and light) than C3 plants because these plants use an extra biochemical pathway and special anatomy to reduce photorespiration.

In C4 plants, CO<sub>2</sub> is first incorporated into 4-carbon compounds and CO<sub>2</sub> delivered directly to RUBISCO for photosynthesis. Photosynthesis takes place in inner cell i.e. mesophyll and bundle sheath cells (Kranz Anatomy) as light and dark reaction which occur separately.

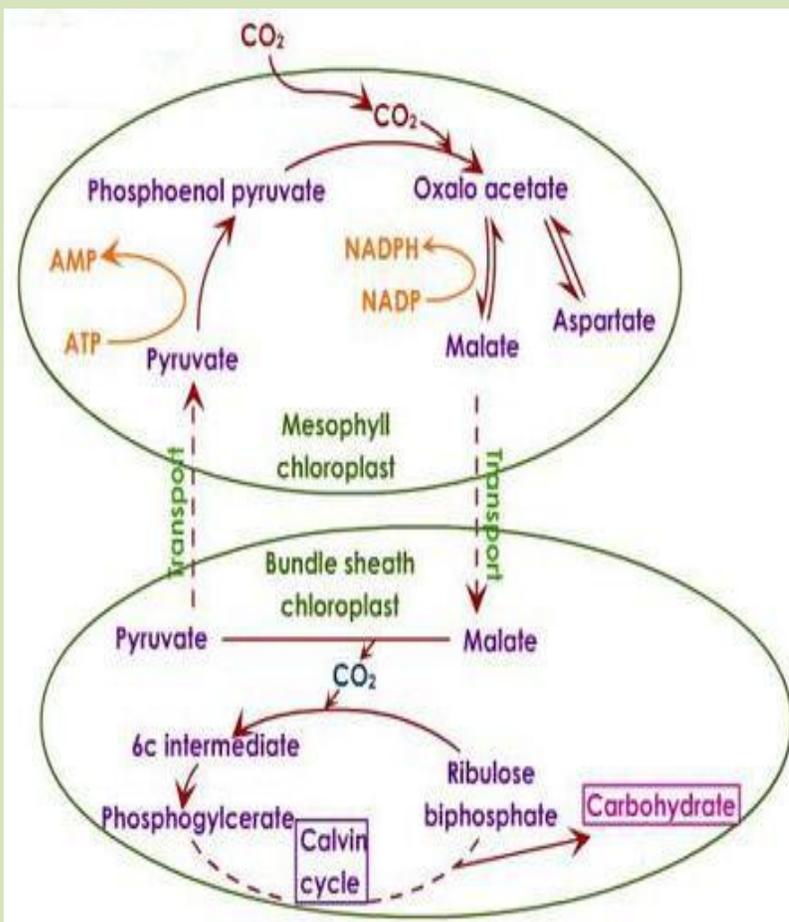


Fig.1- C4 Pathway

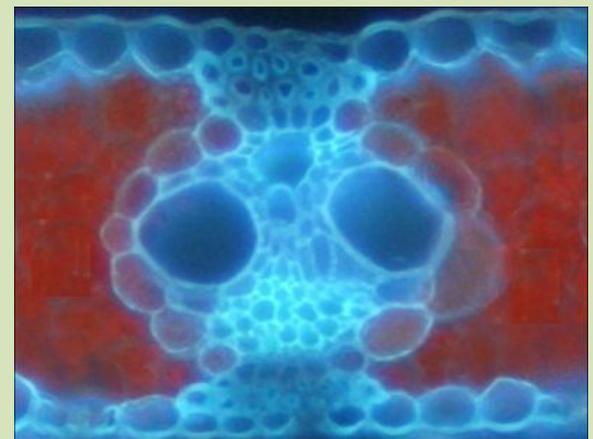


Fig.2- Kranz Anatomy ; Image Source: Cornell Chronicle, Jan-23,2013



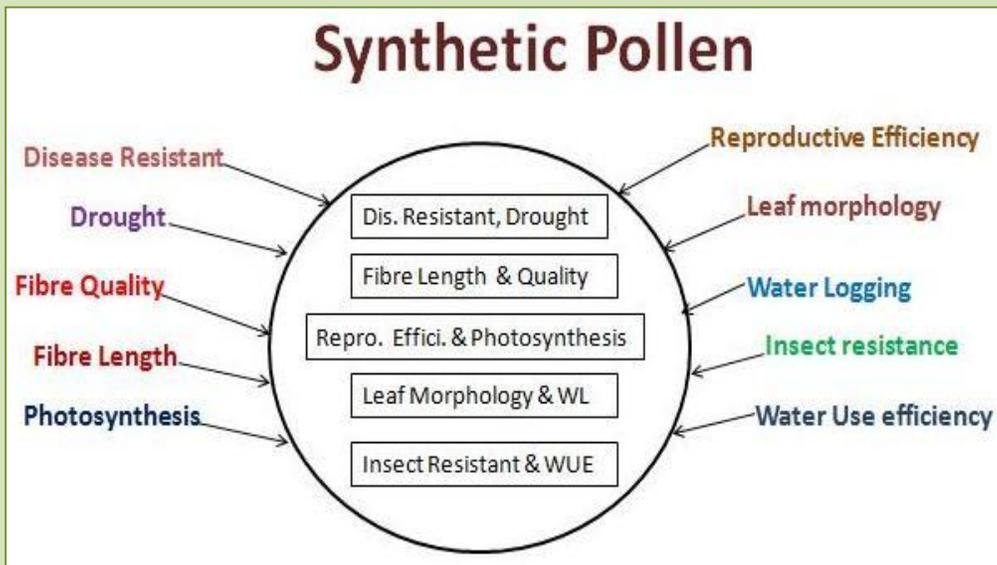
Cornell researchers have taken a leap towards discovering a gene called Scarecrow, to control a special leaf structure known as Kranz anatomy which leads to more efficient photosynthesis. Engineering C4 pathway enabled plants like cotton; rice through genetic engineering will enable to grow these crops in hotter, dryer environments with less fertilizer and boosting yields by as much as 50 %.

## Genetically modified pollen

Many of the important economic traits present in different cotton species/ varieties such as diseases/ insect resistant, drought, photosynthetic efficiency, water use efficiency, leaf morphology and fibre quality can be combined in Pollen by engineering different genomic fragment in the form of chromosomes, keeping genetic load similar to that of female genotype. Such synthetic pollen can

be used to produce **super cotton varieties**. Such pollen can also be stored in pollen bank at ultra low temperature for further use.

As part of the weekly scientific seminar, a scientific talk on **Impact of global climate change on cotton production chain and mitigation strategies** was delivered by Dr. A.H. Prakash, on October 26, 2013, at CICR, Regional Station, Coimbatore.

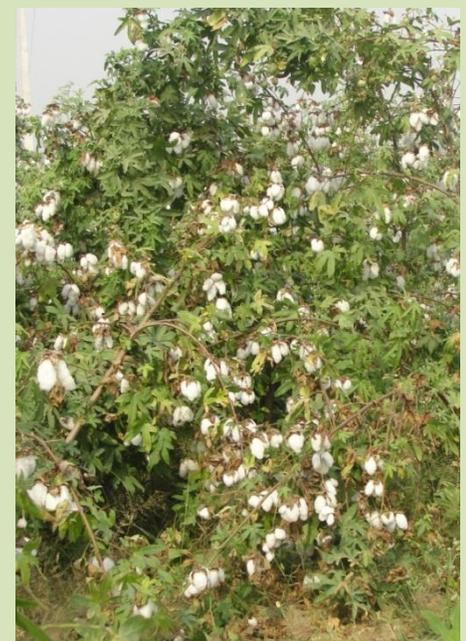


## Demonstration on Mechanical Picking of Cotton

Dr. D. Monga, Dr. S.L. Ahuja, Dr. R. A. Meena, Dr. Rishi Kumar from CICR, Regional Station, Sirsa and Er. Gautum Majumdar from CICR, Nagpur participated in the demonstration on mechanical picking organized by John Deere and Bayer Crop Science on October 24, 2013 in a village Ramsara (Abohar), Punjab. The mechanical picker was operated in RCH 773 BG-II cotton hybrid sown under High Density Planting System (80cm x15cm) with three sprays of stance at 60, 75 & 90 DAS for reduction in height and spray of defoliant, drop ultra at 75% boll opening. The scientists from PAU, Ludhiana and officials from Cotton Corporation of India were also present. The scientists held discussion regarding the issues related to synchronized boll opening, type of hybrid sown and its amenability to HDPS and clean picking.

## Visit to Surgical Cotton Industry

Dr. R. A Meena, Principal Scientist (Seed Technology), visited 6 surgical cotton producing industries in Jind District of Haryana on October 23, 2013, well known for absorbent cotton producing industrial zone. He held discussion with entrepreneurs regarding the development of absorbent cotton by the institute under TMC project entitled TMC MM 1.4 "Agro techniques for high density planting system and surgical cotton varieties". Germplasm line CISA 504 is suitable for development of surgical cotton and is also high yielding. Availability of Desi cotton genotype carrying the desirable traits for development of surgical cotton will be a boon for the farmers as well as surgical cotton industry.



**CICR Germplasm line CISA 504  
suitable for surgical properties &  
high yield**

## DISTINGUISHED VISITORS

### Trainees from Africa visit CICR, Regional Station, Coimbatore

Under the Government of India, Ministry of Agriculture, a training programme on "Field Oriented Training on Cotton Production" under Cotton Technical Assistance Programme (CTAP) 2013-14 for 18 African delegates (3 from each country namely Benin, Burkino Faso, Chad, Malawi, Nigeria and Uganda) is under way at Directorate and Extension Education Institute, (EEI), at Hyderabad As part of the programme, five day orientation programme (20-25th October, 2013) was coordinated by CICR (RS), Coimbatore.

Dr. A.H. Prakash, Project Coordinator and Head briefed the activities of the Regional Station, AICCIP and Cotton Scenario in India. During the interaction session they discussed about the problems of Extra Long Staple Cotton under African Conditions. Exposure was also given by the PC & Head about the High Density Planting System. Dr. P. Nalayini delivered a lecture on achievements and activities of Crop Production Section. The delegates were exposed to different crop production techniques such as Drip Irrigation, Poly Mulching, Herbigation. Dr. B. Dhara jothi, Principal Scientist (Entomology) delivered a lecture on the research activities and the recent technologies developed by the Scientists of Crop Protection of CICR, Regional Station, Coimbatore.



### Students from UAS, Raichur visited Bt referral lab

Sixty final year B.Sc. (Ag) students from University of Agricultural Sciences, Raichur, Karnataka led by Dr. Shivananda Kumar, Asst. Prof. (Ag. Extension) visited Bt referral laboratory at CICR, Nagpur on 22-10-2013. The farmers friendly Bt detection kit (Bt Express) - dip stick method and Cry protein quantification through ELISA (Bt quant) were demonstrated and explained in detail.



## Monitoring of AICCIP trials 2013-14

The monitoring team of AICCIP trials for central zone visited CICR, Nagpur on October 22, 2013. The team comprised of Dr. S. S. Patil, Principal Scientist (Cotton) UAS, Dharwad, Dr. S. K. Parsai, Senior Scientist (Entomology) JNKVV Regional Station, Khandwa, Dr. Ajay Kumar M. Y. (Agronomy) UAS, Raichur and Dr. S. Nakkeeran (Plant Pathology) TNAU, Coimbatore. The team members were accompanied by Dr. K. R. Kranthi, Director, CICR, Nagpur; Dr. (Mrs.) Sandhya Kranthi, Head, Division of Crop Protection; Dr. (Mrs.) Suman Bala Singh, Incharge Head, Division of Crop Improvement; Dr. S. M. Palve; Dr. Punit Mohan; Dr. V. N. Waghmare; Dr. Santosh and Dr. Saravanan. Three National trials Br 02 (b), Br 22 (b) and Br 25 are being conducted at CICR, Nagpur, during the crop season of 2013-14. Director and team members critically examined all the genotypes of AICCIP trials for boll setting, fruiting potential, plant architecture, earliness and reaction to pest and diseases.

**Visit**  
**[www.aiccip.cicr.org.in](http://www.aiccip.cicr.org.in)**  
**for more AICCIP activities**



## PARTICIPATION IN SEMINAR

National seminar on "Technology for Development and Production of Rainfed Cotton" was held from 24th to 25th October, 2013, organized by Navsari Agricultural University at Maktampura Farm, Regional Cotton Research Station, Bharuch, Gujarat. Dr. Sandhya Kranthi, Dr. A.H. Prakash, Dr. M.V.Venugopalan, Dr. Manickam, Dr. T. R. Loknathan, Dr. S. M. Palve, Dr. J. Amudha, Dr. Sankaranarayanan, Mr. M.Sabesh, Dr. M. Saravanan, and Dr. H.B. Santosh, participated and presented research papers in the seminar.

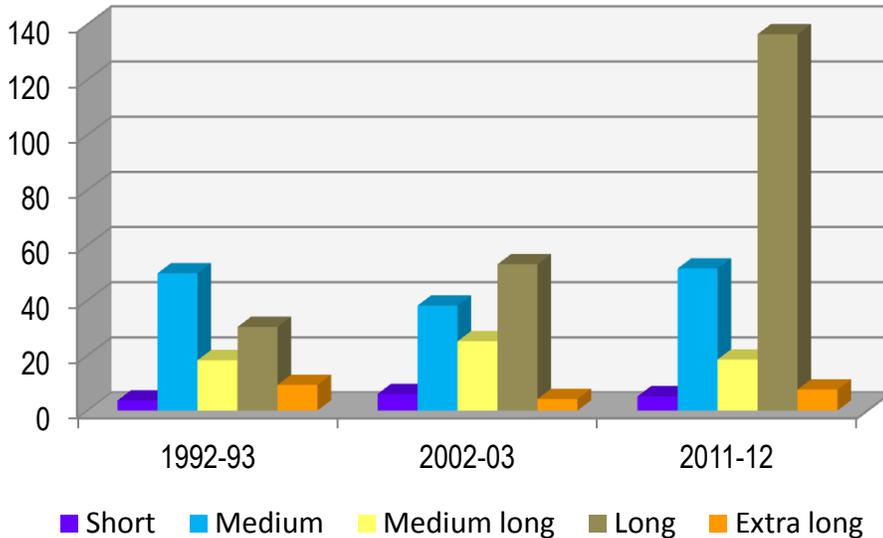
Dr. S. Kranthi, Head Crop Protection Division received the best lead paper award for 'Refuge in bag: a concept of resistance management' (authored by S. Kranthi, Rishi Kumar, M. Bheemanna, H. Desai, G. M. V. Prasad Rao, B. Dharajothi & K.R.Kranthi). Dr. M.V.Venugopalan, Principal scientist (Agronomy), Division of Crop Production received the award for the paper 'HDPS-A promising option for rainfed cotton (authored by M.V.Venugopalan, D. Blaise, N.R.Tandulkar & Shubhangi Lakde) in the 'lead papers' category. Paper by Dr.Vinita Gotmare titled 'Wild Species and Introgression Breeding in Cotton' (authored by Vinita Gotmare, Prachi Akhare, Kirti Kalmegh, Saravanan M, Santosh H. B & Punit Mohan) presented by Dr. H. B. Santosh, Scientist (Plant Breeding) received the best oral presentation award. Dr. J. Amudha, Senior Scientist received the best Poster presentation award in the seminar.





by M. Sabesh, Scientist-Computer Applications

## STAPLE-WISE MILL (Non-SSI) CONSUMPTION OF COTTON



- Long staple cotton consumption by Non-SSI mills in India was just 30 lakh bales in 1992-93, increased to 136 lakh bales in 2011-12.
- The raise in long staple cotton consumption started from the year 2003-04 with more local production of long staple cotton.
- Not much change in the consumption pattern of other staple classes for the past two decades

**Metadata:** Short - below 20 mm; Medium - 20.5 to 25.5 mm; Medium Long - 26 to 27.5 mm; Long - 28 to 33.5 mm; Extra Long - 34 mm & above  
 Quantity in Lakh bales of 170 kg. each  
 Data source: Office of the Textile Commissioner, Mumbai.

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 Editors : Dr. J. Annie Sheeba, Dr. Vishlesh Nagrare, Dr. J. Amutha, Dr. M. Saravanan  
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 Central Institute for Cotton Research  
 Post Bag No. 2, Shankar Nagar PO, Nagpur 440010  
 Phone : 07103-275536 Fax : 07103-275529; email: [cicrnagpur@gmail.com](mailto:cicrnagpur@gmail.com)