COTTON INNOVATE

Cotton Innovate

A Monthly Newsletter from ICAR-Central Institute for Cotton Research, Nagpur

"Cotton Farmer- Anantapur –District"
Contributed by Dr. P. Valarmathi, Scientist, Plant Pathology,ICAR-CICR,RS, CBE.

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Research Note Clipping

Unravelling molecular mechanism of leafhopper resistance in cotton using quantitative proteomics

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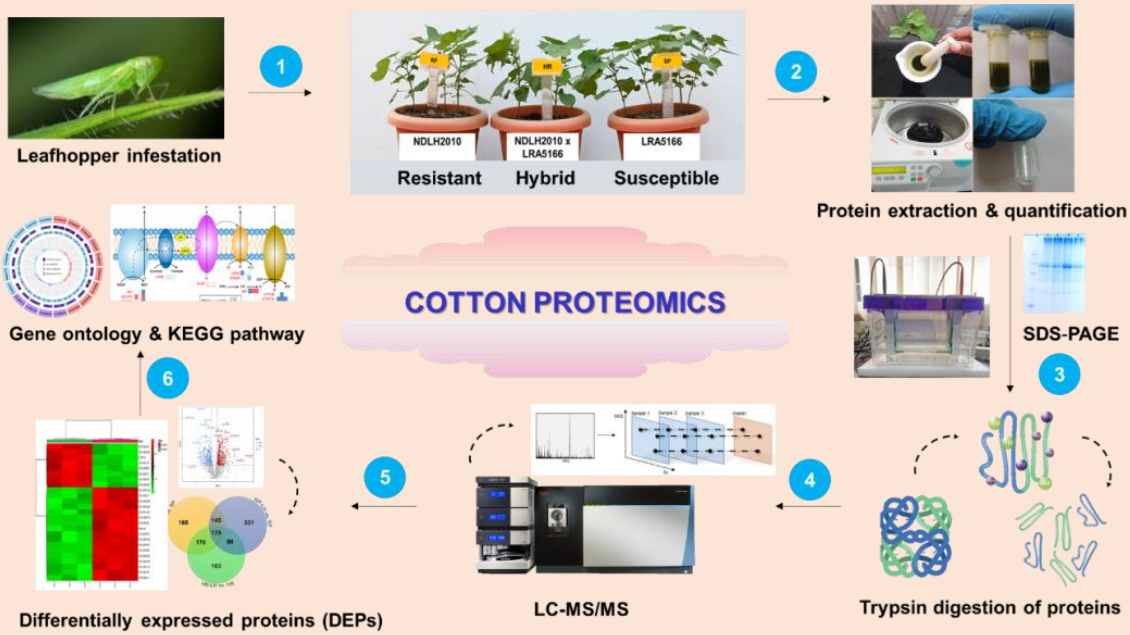
The cotton leafhopper (*Amrasca biguttula biguttula*) has emerged as one of the major sucking pests affecting the cotton crop. As a result, the leaves exhibit downward curling followed by browning of the leaf margins a phenomenon known as "hopper-burn". In severe cases, potential yield loss upto 50% were reported of leafhopper damage in cotton. Sap feeding of leafhoppers mainly deterred by external leaf trichomes, thickness of phloem bundles, and cuticular wax. These attributes impede the probing of plant tissue by stylets, thereby prolonging the feeding and sap ingestion durations. Plant defense responses lead to changes in host cells at the level of either gene or protein expression. Quantitative proteome analysis offers insights into dynamic shifts in plant proteome responses, focusing on the functions of stress-induced proteins in plant defense. This is achieved through the identification, quantification, and expression analysis of plant defense proteins. Yet, only a scanty number of reports have delved into the proteome analysis of cotton in response to insect attacks. Therefore, comprehending the molecular interplay between cotton and leafhopper elucidated at the proteome level, holds promise for more effective pest management strategies.



We have conducted a comparative proteomic analysis of cotton genotypes in response to leafhopper infestation. We have screened the 54 cotton genotypes for leafhopper resistance in field, and selected the genotypes showing either high levels of resistance or susceptibility. As a result, NDLH2010 (Resistant parent), LRA5166 (Susceptible parent), and the F_1 (Hybrid) resulting from the cross between NDLH2010 and LRA5166 were taken for studying the resistance mechanisms.

At 45th day of vegetative phase, cotton plants were infested with leafhoppers for extraction of total protein. Leafhoppers consisting of both males and females were collected from cotton fields and were kept without food for 2 hrs for starving. Then, they were placed in a zip-lock bag, with five leafhopper in each bag. These bags were secured to the leaves of the genotypes for a 24-hrs period to facilitate infestation. Total proteins from leafhopper infested (treatment) and uninfested leaves (control) were isolated and analysed by liquid chromatography coupled with tandem mass spectrometry (LC-MS/MS) to compare the diversity and abundance of proteins. In total, 2,347 proteins were identified from these three cotton genotypes, and the complete dataset is accessible via *ProteomeXchange Consortium, PRIDE (**PXD038644**)*. Differentially Expressed Proteins (DEPs) were identified based on a fold-change (FC) threshold of >1.5 or <0.65, with a significance threshold of P-value <0.05. These DEPs were compared to identify proteome differences/similarities between the genotypes.

After leafhopper infestation, proteins in all three cotton genotypes exhibited marked changes. In resistant genotype, 743 DEPs were identified, of which 399 showed up-regulated expression and 344 were down-regulated after infestation. In susceptible genotype, 659 DEPs were identified, with 346 up-regulated and 313 down-regulated after infestation. Whereas in hybrid, 620 DEPs were identified, of which 329 showed up-regulated expression and 291 were down-regulated after infestation. Gene ontology (GO) enrichment analysis showed that DEPs identified in resistant genotype were enriched in the following GO terms: nucleic acid binding, structural molecule activity, and organic cyclic compound binding in molecular function. KEGG pathway analysis revealed that these DEPs were enriched in glyoxylate and dicarboxylate metabolism, ribosome, photosynthesis and nitrogen metabolism. GO enrichment analysis of hybrid showed that transferase activity, catalytic activity, and NADP binding were major molecular function; cysteine and methionine metabolism, biosynthesis of cofactors, and aminoacyl-tRNA biosynthesis were major enriched pathways. On the other hand, the DEPs identified in the susceptible genotype were enriched in the catalytic activity, antioxidant activity, and isomerase activity in the molecular function. KEGG pathway analysis showed that alpha-linolenic acid metabolism, glyoxylate and dicarboxylate metabolism, and cysteine and methionine metabolism were the major pathways.

In conclusion, this research furnishes comprehensive insights into molecular reactions to leafhopper infestation,

This research furnishes comprehensive insights into cellular and molecular response of cotton hybrid towards leafhopper infestation, thereby aiding the development of leafhopper resistant cotton genotypes. DEP identified would be helpful in developing protein-based functional markers for breeding leafhopper resistant cotton genotypes.

Funding

This project is funded by DST-SERB-CRG (CRG/2020/000308)

CICR Happenings

Farmers Visit ICAR-CICR Nagpur

Twenty Five farmers from ATMA Jharkhand visited insectary (*Helicoverpa* section) and KVK of ICAR-CICR, Nagpur on December 27, 2023, where they interacted with scientists and got basic exposure about ongoing research activities.

Students visit ICAR-CICR Nagpur

Twenty eight B.Sc. final year Students of biochemistry and biotechnology along with three faculty members from Dada Ramchandra Bhakaru Sindhu Mahavidyalaya, Nagpur visited insectary Bt referral lab, Tissue culture lab, and Biotechnology Lab of ICAR-CICR, Nagpur on December 28, 2023. They were given exposure to ongoing research activities.

Inputs distribution, farmers training programme and monitoring of fields under NFSM project

Farmers' training programme and inputs distribution to near twenty-nine farmers of Virugalpatti village of Tiruppur district were organized through ICAR-CICR,RS, Coimbatore and SIMA on December 19, 2023 under NFSM-special project on cotton. The training was given to farmers on ELS cotton cultivation technologies and integrated nutrient, pest and disease management. Dr. K. Sankaranarayanan, Principal Scientist (Agronomy) & Co-PI of the special project on cotton briefed about the ELS technology. Dr. D. Kanjana, Senior Scientist (Soil science) briefly emphasized the need for soil testing and importance of integrated nutrient management practices to achieve higher yield in cotton.

Dr. K. Shankarganesh, Senior Scientist (Agrl. Entomology) explained about the key pests of cotton and its integrated management with emphasis on the installation of traps. Dr. P. Valarmathi, Scientist (Plant Pathology) briefed about the symptoms and integrated management of cotton diseases. Inputs such as nutrient mixture, plant growth regulator and trap with lure were distributed to the farmers by the scientists. Dr. M. Asha Rani, Secretary and chief cotton breeder, SIMA explained about the benefits of special project.

Dr. M. Kumar, Professor and Head, TNAU-KVK, Pongalur described about the characters of varieties such as MCU 5 and SVPR 6 to the farmers. AO, AAO from state agriculture department, resource persons from SIMA were also involved. Monitoring of farmers' field under ELS and technology intervention were carried out.

Monitoring of NFSM Special Project Cotton Fields in Mancherial district in Telangana

Dr A. Sampathkumar, Senior Scientist (Plant Pathology), CICR RS Coimbatore, Nodal Officer for Mancherial district, Telangana monitored the NFSM Special Project Cotton Fields in Bellampally, Luettipet divisions of Mancherial district from 12-13, December 2023. Dr Sivakrishna, Programme Co-ordinator and Head, KVK, Bellampally along other KVK Staff and Shri. Ilaiah, Territory Manager and his team, RASI Seeds Coordinated the visit. The team interacted with project farmers from different villages and recorded their opinion on HDPS method of cotton cultivation.

Field Day

Dr Usha Rani, Principal Scientist (Agricultural Extension) and Nodal officer (SAIRD, KVK, Gaddipally) of the special project participated in the Kisan Mela and inaugurated the Agricultural Exhibition organized by the KVK at Gaddipally, Suryapet on December 23, 2023. In the program, Dr M Malla Reddy, Associate Director of Research, Regional Agricultural Research Centre, Palem participated as Chief guest. The project partners and officials from line departments had participated in the program.

Field Day at Krishna and Guntur districts of Andhra Pradesh under NFSM project

Field day was organised at Krishna district on December 27, 2023 at Cheemalapadu village, Mylavaram mandal. Farmers' fields were monitored at venkatapuram and cheemalapadu villages where the second picking was being carried out. Dr. K. Bhagyalakshmi, CICR Nodal Officer cum Scientist, CICR, Coimbatore, Dr. S. Krishnam Raju, Programme Coordinator, Dr. N. Rajasekhar, SMS (Plant Protection), Sri. Sk. Tippu sultan, Agricultural Officer, Sri. Murali Kumar, General Manager (Nuziveedu Seeds) and YP of the project participated in the programme. A total of 76 farmers participated in the programme and shared their success stories.

Field day was organised on December 28-29, 2023 at Parithipadu village of Guntur district. More than 50 farmers participated in the field day. Dr. Ganga, KVK Guntur, Dr. Sai, Nuziveedu and Dr K. Baghyalakshmi CICR, RS participated in the programme. The farmers actively participated in the programme and shared their success stories and also discussed the issues related to crop canopy management.

ప్రత్తి పంటపై రైతులకు సూచనలు

ఎ.కొండూరు సమస్టే-శ్రీశైల మ్యూస్ : గరికపాడు డాక్టర్ కే.ఎల్ .రావు కృషి విజ్ఞాన కేంద్రం శాస్త్రవేత్తలు బుధవారం ఎ.కొండూరు మండలంలో లోని చీమలపాడు పరిసర ప్రాంతంలోని పత్తి పంటను పరిశీలించి క్షేత్ర దినోత్సవం నిర్వహించారు. ఈ క్షేత్ర దినోత్సవం లో జాతీయ ప్రత్తి పరిశోధన సంస్థ శాస్త్రవేత్త డాక్టర్.భాగ్యలక్ష్మి పాల్గొని క్షేత్ర సందర్శన చేపట్టి ప్రత్తి లో చేపట్టిన అధిక సాంద్రతలో విత్తే పద్ధతి పెరుగుదలను నియంత్రించే రసాయనం (మెపిక్వాట్ క్లోరైడ్) ఉపయోగించి అధిక దిగుబడులు, నాణ్యమైన ఉత్పత్తిని సాధించడానికి చేపట్టిన ప్రక్రియ ద్వారా రైతులకు మేలు జరుగుతుందని ప్రయోగపూర్వకంగా నిరూపించారు. ఈ సాంకేతిక పరిజ్ఞానాన్ని ఈ ప్రాంత రైతులందరికీ చేరేలా వచ్చే ఏడాది కూడా రైతుల పొలాల్లో ప్రదర్శన నిర్వహించడం జరుగుతుందని తెలియజేశారు. ఈ సందర్భంగా డాక్టర్ కే.ఎల్.రావు కృషి విజ్ఞాన కేంద్రం యొక్క ప్రోగ్రాం కో-ఆర్డినేటర్ డాక్టర్.ఎన్. కృష్ణంరాజు, నూజివీడు సీడ్స్ లిమిటెడ్ జనరల్ మేనేజర్ కె.మురళీమోహన్ రైతులను ఉద్దేశించి మాట్లాడుతూ నాణ్యమైన అధిక దిగుబడి సాధించవలసిన విధానాలు రైతులకు తెలియజేశారు. ఈ సమావేశంలో సస్యరక్షణ విభాగం శాస్త్రవేత్త, డాక్టర్ ఎన్ రాజశేఖర్ మాట్లాడుతూ గులాబీ రంగు పురుగు యాజమాన్యం పై రైతులకు వివరించడం జరిగింది. ఈ కార్యక్రమంలో యంగ్ ప్రొఫెషనల్ జి. శోభిత వై.గోపి, ఎం.సిరి రెడ్డి, మండల వ్యవసాయాధికారి షేక్. దిప్పుసుల్తాన్, గ్రామీణ ఉద్యాన సహాయకులు ఎం.వెంకటేశ్వరరావు, వ్యవసాయ విస్తరణ అధికారి ఏ.రామచంద్రరావు, అభ్యుదయ రైతులు భూత్యా గనియా,గ్రామ సర్పంచ్ లక్ష్మీ సాంబశివరావు, రైతులు పాల్గొన్నారు.

Did you Know

Cotton & the Wright Brothers

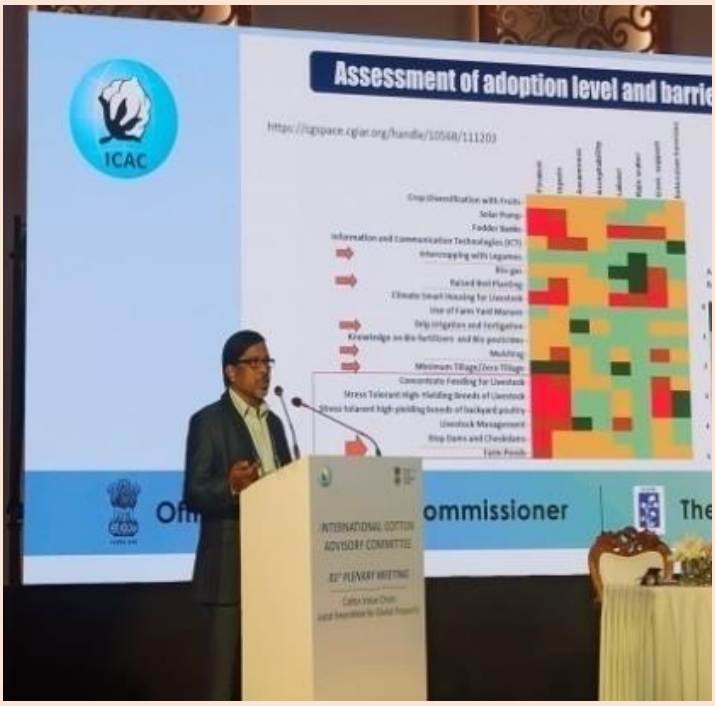
The Wright Brothers used cotton to cover the wings of their aircraft for the first powered flight in 1903.

Source: https://www.cottoninc.com/about-cotton/

Contributed by Dr. Pooja Verma, Scientist, Plant Biochemistry, ICAR-CICR, Nagpur

Scientists' Corner

- Dr YG Prasad, Director, ICAR-CICR, Nagpur participated in the Regional Committee Meeting No. III on 1st December, 2023 through virtual mode. Dr Ganesh Behere, Head, Division of Crop Protection also participated in the meeting.
- Dr Y G Prasad, Director, ICAR-CICR attended the 81st plenary meeting of International Cotton Advisory Committee (ICAC) at the convention Centre, Mumbai during 02-05 December, 2023 organised by ICAC, Washington, DC, US, ICAR-CIRCOT, Mumbai, ICAR-CICR, Nagpur and IFS, Mumbai.



- Dr Y G Prasad, Director, ICAR-CICR attended the centenary celebration of ICAR-CIRCOT, Mumbai on 3rd December, 2023 at Mumbai.

- ICAR-CICR celebrated World Soil Day at ICAR-CICR, Nagpur on 05.12.2023 with the theme "Soil and Water; a Source of life". Eighty Six farmers, scientists and school students participated in the programme. Dr GT Behere, Incharge Director, ICAR-CICR, Nagpur was the Chairman of the function. Dr A S Tayde, Head, Division of Crop Poduction, Dr RK Singh, Head, KVK and Dr A Manikandan, Senior Scientist were present.

- Dr. S. K. Sain, Principal Scientist (Plant pathology) delivered a lecture on 'Role of microbial in soil and crop health management' on the eve of "World Soil Day" organized at KVK, Sirsa on December 05, 2023. A total of 250 farmers were participated in the programme.

- Dr Y G Prasad, Director, ICAR-CICR, Nagpur, Dr. A. H. Prakash, Head, ICAR-CICR, RS, Coimbatore, Dr S. Manickam Principal Scientist (Plant Breeding), Dr. A. Manivannan, Senior Scientist (Genetics and Plant Breeding), Dr. K. Baghyalakshmi Scientist (Genetics and Plant Breeding), Dr. K. Sankaranarayanan, Principal Scientist (Agronomy), Dr. P. Nalayani Principal Scientist (Agronomy), Dr. R. Raja, Principal Scientist (Agronomy) Dr. S. Usha Rani, Principal Scientist (Agricultural Extension), Dr. J. Annie Sheeba, Senior Scientist (Plant Physiology) from Crop Production and Dr. J. Gulsar Banu, Principal Scientist (Nematology), Dr. K. Shankar Ganesh Senior Scientist (Entomology) from Crop Protection, Dr. Rishi Kumar, Head (I/c) & Principal Scientist (Entomology), Dr. Amarpreet Singh, Scientist (SS), Agronomy, Dr. Subhash Chandra, Scientist (SS), Plant Breeding and Dr. Debashis Paul, Scientist (Seed Science and Technology) and Dr. V. Santhy, Principal Scientist (Seed Technology) participated in the 9th ACRDN international conferernce held at CIRCOT, Mumbai during 6-8 December 2023. Dr. Rishi Kumar acted as co-chairman of one of the sessions and also as one of the organizing committee members for the international conference.

- Dr. V. Santhy, Principal Scientist (Seed Technology) and Dr. Debashis Paul, Scientist (Seed Science and Technology), ICAR-CICR, Regional Station, Sirsa participated and delivered oral presentations at 12th National Seed Congress during December 11-13, 2023 organized at Aurangabad, Maharashtra.

- Research Advisory Committee (RAC) meeting was held during 18-19 December 2023 under the chairmanship of Dr P K Chakravarty, Former Member (Plant Science) of ASRB (MoA & FW, GoI). All RAC members and officials from ICAR-CICR, Nagpur and Regional Stations Coimbatore and Sirsa attended the meeting along with Director, ICAR-CICR Nagpur. Dr. Rishi Kumar, Head (I/c) & Principal Scientist (Entomology), ICAR-CICR, Regional Station, Sirsa attended Research Advisory Committee (RAC) Meeting at ICAR-CICR Nagpur and presented the progress of ICAR-CICR, RS, Sirsa during December 18-19, 2023.
- Dr Y G Prasad, Director, ICAR-CICR, Nagpur organised a Kisan Mela and input distribution programme under DAPSC schemes at ICAR-CICR, Nagpur on 19.12.2023.
- Dr. Rishi Kumar, Head (I/c) & Principal Scientist (Entomology), ICAR-CICR, Regional Station, Sirsa delivered a lecture on “Off season management of PBW in Cotton” during ‘*Kisan Mela*’ on the occasion of “International Year of Millets 2023” organized by Deputy Director of Agriculture, Sirsa on December 20, 2023. Dr. S. K. Sain, Principal Scientist (Plant pathology) also delivered a lecture on “Soil Health Management”. A total of 600 farmers were participated in the programme.

- Dr YG Prasad, Director, ICAR-CICR Nagpur participated in a meeting under the Chairmanship of ADG (Seeds), ICAR, New Delhi to examine proposals and recommend transfer/ sale/ purchase/ change in name of GEAC recommended Bt cotton hybrids. Dr GT Behere, Head, Crop Protection Division, Dr AH Prakash, Head, CICR Regional Station, Coimbatore and Dr V Santhy, Principal Scientist, Seed technology participated in the meeting.
- Dr. Rishi Kumar, Head (I/c) & Principal Scientist (Entomology), Dr. S. K. Verma, Principal Scientist (Plant Breeding), Dr. S. K. Sain, Principal Scientist (Plant pathology) and Dr. Amarpreet Singh, Scientist (SS),

Agronomy, ICAR-CICR, Regional Station, Sirsa attended National Conference on Pioneering the future of cotton research in conjunction with Golden Jubilee Celebration of 'Rasi Seeds' organized by 'Rasi Seeds Pvt. Ltd' during December 23-24, 2023 at Salem, Tamil Nadu. Dr Rishi Kumar, Delivered a lecture on "Pink Bollworm: Scenario in India & Mitigation Strategies" among 300 participants from scientific community.

- Dr Y G Prasad, Director, ICAR-CICR Nagpur, Dr. A. H. Prakash, Head, ICAR_CICR< RS, Coimbatore, Dr. K. Rathinavelu, Principal Scientist (Seed Technology), Dr S. Manickam Principal Scientist (Plant Breeding), Dr. A. Manivannan, Senior Scientist (Genetics and Plant Breeding), Dr. K. Baghyalakshmi, Scientist (Genetics and Plant Breeding), Dr. K Sankaranarayanan, Principal Scientist (Agronomy), Dr. P. Nalayani Principal Scientist (Agronomy), Dr. R. Raja, Principal Scientist (Agronomy) Dr. D. Kanjana, Senior Scientist (Soil science) from Crop Production and Dr. J. Gulsar Banu, Principal Scientist (Nematology), Dr. K. Rameash, Principal Scientist (Entomology), Dr. K. Amutha, Principal Scientist (Entomology) Dr. K. Shankar Ganesh, Senior Scientist (Entomology) from Crop Protection, participated in the National Conference 2023 on cotton held at Attur, Salem, during 23rd to 24th December 2023
- Dr Y G Prasad, Director, ICAR-CICR Nagpur virtualy attended the review meeting of ATRs of ICAR institutes held on 27th December, 2023 under the Chairmanship of DG, ICAR at ICAR, Krishi Bhawan, New Delhi.

Publications

- Baghyalakshmi K., S. Manickam, M. Amutha, A. Sampathkumar, M. G. Yamuna and A. H. Prakash. 2023. Site regression and multivariate analysis for genetic diversity in Gossypium barbadense accessions. Electronic Journal of Plant Breeding. Vol 14(3) : 775 – 786. NAAS: 5.6
- Santhy, V., Balasubramani, G., Biswas, A. et al. (2023) Determination of minimum sample size for testing proportion of non-Bt seeds under refuge-in-bag (RIB) for Bt cotton. Environ Dev Sustain https://doi.org/10.1007/s10668-023-04188-8 NAAS rating: 10.09

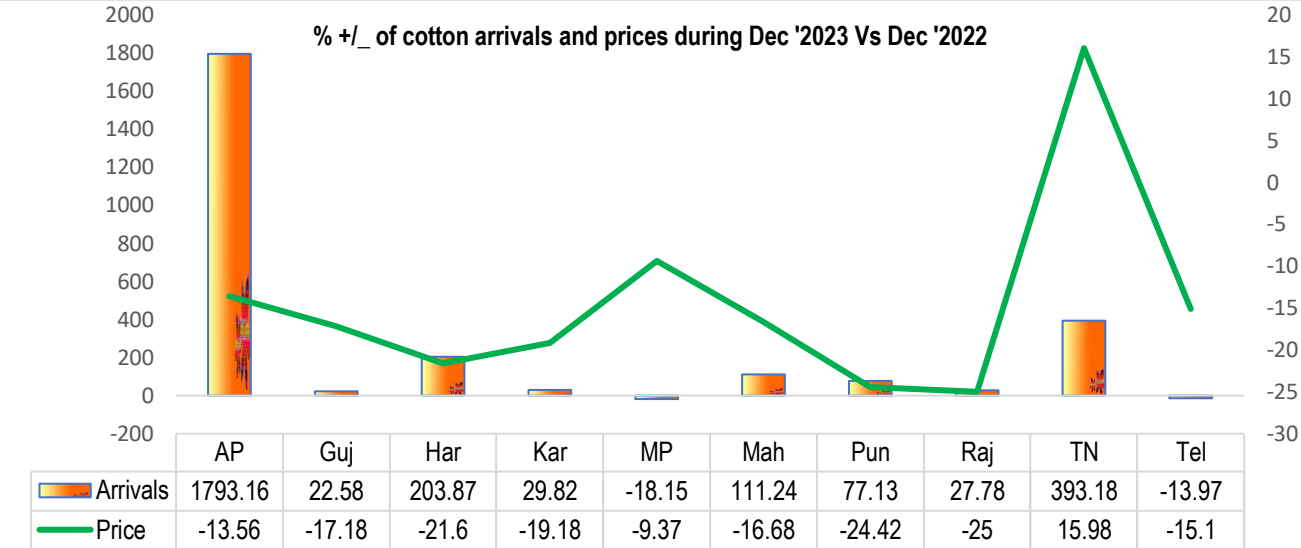
Cotton Trade Scenario during December' 2023

Dr. Isabella Agarwal, Principal Scientist,
ICAR- CICR, Regional Station, Coimbatore

The global trade projection was lowered -100,000 bales to 43.1 million. In terms of imports, the largest change was for Indonesia (-300,000 bales to 2.0 million) followed by Pakistan (-200,000 bales to 3.8 million), and China (+500,000 bales to 11.5 million). For exports, the largest changes were for India (-200,000 bales to 1.6 million), followed by the U.S. (-100,000 bales to 12.1 million), Australia (+100,000 bales to 5.8 million), and Turkey (+150,000 bales to 1.1 million). Prices for the NY/ICE March contract continued to trade within the range between 78 and 82 cents/lb that has contained them since early December. The latest values have migrated towards the higher end of that range; around 81 cents/lb.The A Index changed little over the past month, holding to values between 90 and 92 cents/lb.Chinese prices (China Cotton Index or CC 3128B) were flat to marginally higher in international terms, rising from 103 to 105 cents/lb. Indian spot prices (Shankar-6 quality) were steady at levels near 85 cents/lb. In domestic terms, values ranged between 54,500 and 55,300 INR/candy. The INR held around 83 INR/USD over the past month.

Domestic Cotton Trade Scenario

According to the first advance estimate 2023-24, cotton crop is estimated at 316.57 lakh bales as compared to 336.60 lakh tonnes in 2022-23. Among the states, Gujarat is leading in cotton production with 89.44 lakh bales followed by Maharashtra (75.75 lakh bales), Telangana (47.99 lakh bales), Rajasthan (28.10 lakh bales) and Karnataka (19.29 lakh bales).



	AP	Guj	Har	Kar	MP	Mah	Pun	Raj	TN	Tel
Arrivals	1793.16	22.58	203.87	29.82	-18.15	111.24	77.13	27.78	393.18	-13.97
Price	-13.56	-17.18	-21.6	-19.18	-9.37	-16.68	-24.42	-25	15.98	-15.1

According to the current conditions, the crop is now estimated to be around 304 lakh bales in 2023-24 after considering decline in yield in MP and Telangana along with the fall in production in Northern region. The mill consumption in the domestic market is likely to remain same this year since many SSI units got shut last year due to disparity and weaker demand. The lower consumption resulted in higher ending stock witnessing weaker prices during 2022-23 seasons. Total demand is estimated at 334 lakh bales up by around 1% in 2023-24 as the global demand is expected to improve in a gradual manner towards the end of the year.

In a move aimed at arresting the declining cotton production in India, the union Government plans to promote the shift of cotton cultivation from disease infested fields to disease free cultivable and irrigated areas within Punjab, Haryana, Rajasthan, Maharashtra and Telengana.

Cotton in Media

Indian cotton: A composite economics

■ By Suresh Kotak

COTTON is one of the most vital agricultural produces affecting production and consumption nationally and globally. For many centuries, cotton has been linking farmers to international consumers. For the producing nation, it has spelled prosperity with linkages across many sectors.

Koray Caliscan, in his book 'Market Threads,' depicts how cotton farmers, industry and traders create global textile universe through cotton, which serves and subserves the clothing needs of mankind.

The cotton commodity chain includes various factors in production, marketing, trading and processing of cotton including seed research institutions, input suppliers, cotton farmers, ginners, local traders, exporters, international traders; and spinners, weavers, knitting, apparel manufacturers at the processing and conversion stage. As more specific needs arise, this chain gets elongated and develops its dynamic effect evolutionally. I would like to enunciate how cotton is all encompassing.

As far as an economist's view for cotton is concerned, cotton is subject to international attention, debates, discussions and, may be, controversies too. The crop is depicted as an agent of development and prosperity, creator of jobs, and a remover of poverty as well as change inducer.

Globally, cotton has the largest area under a single crop, grown across 100 countries, traded by 150 countries, making it world's most widely traded commodity, considering its deliverability, liquidity, tradability, and usability.

The history of technological changes in cotton is a huge subject. It suffices to say in Indian context that we have had successful diversification through hybrid technology, interrogation methods as well as introduction of biotechnology for crop protection after India's Partition. High Density Planting System and relevant hybrids and advancement in crop protection methods and deployment of various irrigation methods along with development of new seeds as required for consumption, outline the technological infusion in this domain. Seed development is very time-consuming but can pioneer many new applications.

GUEST COLUMN

Cotton requires efforts and high degree of extension services to take changes and new practices to farmers, enabling them to break away from herd mentality and status quoist thinking.

Australia has solved this problem wonderfully by assiduously collecting improvements in practice, inputs and researches to achieve technological mastery. It also publishes the same in an annually revised manner as Best Management Practices (BMP) of the crop with extensive follow up with the farmers raising productivity to 2000kg/ha. May be, we can draw a leaf out of it. New technology like genetically edited fiber crop leveraging, genome editing for fiber crop improvement in relation to cotton crop, can be adopted. This technology has potential to address issue of decreasing yield.

Precision agriculture needs to be introduced with integrated data and analytics, crop science to enable scientific decision-making and use of technology such as GPS, Soil Sensors, Weather Data, drones etc to drive substantial yield gain whilst optimising resource use.

WAY FORWARD TO COTTON ECONOMICS: Cotton plant was first cultivated in India before 1500 BC as per the 'Rigved' hymn. However, low productivity ails our hitherto strength. We have looked at cotton very narrowly -- merely as a fiber to be exported and supplied to domestic industry.

However, cotton is bi-component crop in nature -- 33 per cent fiber on one side and 67 per cent seed on the other. On textile products, may be, we need to look for diversification, blending, as well as designing to leverage core strengths.

However, all-round growth can happen only if cotton is looked at holistically as the crop is fiber, food, feed, fodder, and also fuel. It is multiplex, multisectoral, and multi-functional.

In America, there is a department called Fiber Engineering and Research on Cotton Applications, which develops various aspects of cotton.

We should increasingly use forward economies for specific industrial and technological fabrics in 12 identifiable areas, and drive on to create opportunities.

The backward economies of cotton are further sequencing it into many products out of cotton seed, including cotton seed oil as an opportunity.

The lint is a rich source of cellulose, which is of a very high grade and capable of creating many products where linters can be utilised. Austrian and Chinese factories use the linters in a great way.

On a limited scale, this has started in Andhra Pradesh and Telangana. It is an area worth expanding.

Even other components of cotton plant are usable. The husk on cotton seed is being used to replace oil extraction property which guam-guvar has. In mills, cotton seeds are used as livestock, poultry and fish feed and also as fertilizers. The stock and leaves of cotton plant are ploughed under to enrich soil. Residues of plant such as stalk can be used for manufacturing fiber bores and also for generating electricity with its technical applications. We are looking forward to concerted thinking in coming ICAC's 81st Plenary Session 'Magical Cotton Connecting Continents' will be held from December 2 to 5 at Jio World Convention Centre, Mumbai. The theme is 'Cotton Value Chain: Local Innovations for Global Prosperity'.

INNOVATIONS: The innovations in cotton are taking place on a continuous basis in various institutes like VJTI, CIRCOT, and other textile universities. Dr Telli in VJTI has created a number of products amenable for technical uses riding on absorbency, hygiene products, medical products, even shoe sole, adhesives for dental plants, tyre cords, tents, traps and the list can go on. CIRCOT has 60 patented, researched, and licensed products available. It can open huge opportunities for wealth creation through manufacturing, also creating high employability. They have achieved nano cellulose technology application in a significant manner.

CIRCULAR ECONOMICS AND COTTON: We all have a realisation of fundamental economic truth that wants are unlimited but resources are limited. The concept of Circular Economy resonates with Mahatma Gandhi's hardened lifelong message for conservation of resources.

Being regenerative and biodegradable, cotton is highly environment compatible natural choice for sustainability in value chain.

The message to friends in cotton is very simple -- Attitudes Determine the Altitude. So, we must realise and seize the opportunities in the offing and become 'Aatmanirbhar' while contributing to the wider concept of 'Vasudhaiva Kutumbakam'.

(The author is Chairman, Textile Advisory Group)

The Hitavada, 2 December, 2023

'India will be largest cotton producer'

Indian textile industry working towards achieving $250 billion by 2030, including $100 billion in exports, says Textiles and Commerce Minister Piyush Goyal; inaugurates global cotton producing nations' meet; also introduces 'Kasturi Cotton Bharat', a 'blockchain traceable' textile brand

The Hindu Bureau
COIMBATORE

India will strive to become the largest cotton producer globally, Minister for Textiles, Commerce and Industry, Piyush Goyal, said in Mumbai on Saturday, inaugurating an annual global meeting of a UN recognised body of cotton producing and consuming nations.

At the 81st plenary session of the International Cotton Advisory Committee (ICAC), the Minister said India has the largest area under cotton cultivation and is the second largest producer. "We need to become the world's largest producer," Mr. Goyal stressed, adding that the textile advisory group on cotton will work towards improving productivity similar to the level in countries like Australia.

Manmade fabric

India will provide leadership in cotton textiles and technical textiles. It has two advisory groups - for cotton and manmade fibre. These groups have representation from the entire textile value chain and take policy decisions with inputs from sector representatives, India has also launched PM MITRA - a

Cotton class: India has the largest area under cotton cultivation and is the second largest producer, says Piyush Goyal. ANI

Central government scheme to set up mega textile parks and promote the entire value chain.

Mr. Goyal said the National Technical Textiles Mission promotes research and development in technical textiles. These are manmade fabric meant for a specific function and are not generally used for apparel or aesthetic appeal

The Indian textile industry is working towards achieving $250 billion by 2030, including $ 100 billion exports, he said.

In a fortnight, the Textile Ministry and the Department of Consumer Affairs would open state-of-the-art testing laboratories nationwide to ensure high quality textile products are manufactured and exported from India, Mr. Goyal said.

He introduced "Kasturi Cotton Bharat" brand, which he claimed could be traceable using blockchain technology, and that it would be "carbon positive".

The first set of textile products made using Kasturi cotton were also introduced at the event. Indian cotton farmers will benefit from drone-based pesticide spraying launched by Prime Minister Modi recently, the Minister said, adding that the use of innovation and Internet of Things will benefit Indian cotton farmers.

The four-day event on "Cotton Value Chain: Local Innovations for Global prosperity" is expected to be attended by delegates from 35 countries.

The Hindu, 3 December, 2023

Cotton in Media

CICR conducts farmers' meet under Devpt Action Plan for SCs

A woman cotton farmer receiving inputs under Development Action Plan for SC farmers from Dada Lad, the Chief Guest. Other dignitaries standing include Dr. P.K. Chakrabarti, Former Member, ASRB and, Research Advisory Chairman for CICR, Dr. D.M. Hegde, Dr. P. Ramasundaram, Dr. Kalpana Shastry and Dr. Pankaj Rathore, members RAC, Dr. Y. G. Prasad, Director and Dr. Jayant Meshram, Principal Scientist, ICAR-CICR, Nagpur.

■ **Staff Reporter**

CENTRAL Institute of Cotton Research (CICR), Nagpur organised a Farmers' Meet and input distribution programme under Development Action Plan for Scheduled Castes (DAPSC) on Tuesday at its premises.

Dada Lad, Developer of Dada Lad Technique of cotton cultivation and Organisational Secretary of Bharatiya Kisan Sangh of Maharashtra and member of CICR Institute Management Committee, was the chief guest. Dr P K Chakrabarti, former Member, Agricultural Scientist Recruitment Board and Research Advisory Chairman for CICR, was the guest of honour.

Other dignitaries present on the occasion included members of Research Advisory Committee including Dr D M Hegde, Dr P Ramasundaram, Dr Kalpana Shastry, and Dr Pankaj Rathore. Dr Y G Prasad, Director, ICAR-CICR, welcomed the participants and briefed them about various technological interventions being carried out on a large scale by CICR under the Ministry-sponsored Special Project and CCI-sponsored Pilot Project across eight States for enhanced cotton productivity in the country.

Dada Lad advised the farmers to adopt his technique of monopodial removal in cotton after 40 days of sowing and detopping after 90 days of sowing to realise seed cotton yield upto 20 quintals per acre.

Dr Chakrabarti emphasised upon frequent farmer-scientist interaction for timely solutions to various issues faced by farmers.

Dr Chakrabarti also spoke about the role of ICAR, which deals with different aspects of agriculture as a whole in farmers' welfare. During the programme, inputs consisting of knapsack sprayer, LED torch, and irrigation tubes were distributed to farmers at the hands of the dignitaries.

A technical session was held wherein Dr Jayanth Meshram explained the modalities of high-density planting system, Dr Shivaji Thube dealt with the damage symptoms and management of important sucking pest of cotton. Dr Shailesh Gawande spoke on the management of boll rot in cotton.

Dr Jayanth Meshram, Principal Scientist-cum-Nodal Officer, SCSP, was the Organising Secretary, and Dr Shailesh Gawande, Senior Scientist, coordinated the event. About 150 farmers from various villages of Wardha, Yavatmal, and Amravati districts attended the one-day event and got benefitted.

The Hitvada, 22 December, 2023

Cotton in Media

Community News

World Soil Day celebrated

Farmers and staff during the World Soil Day programme held at ICAR-CICR, Wardha Road on Tuesday.

The World Soil Day was celebrated at ICAR-CICR, Nagpur on Tuesday on the theme of 'Soil and Water; A Source of life'. On this occasion, 86 farmers including scientists, school students participated in this programme.

In-charge Director Dr G T Behere presided over the function. Senior Scientist Dr Manikandan, head crop production Dr A S Tayde, head crop improvement Dr Vijay Waghmare, head KVK Dr R K Singh, Dr Manik Shingare and other staff of institute and KVK were present at this occasion. Different programmes like Essay and Drawing Competition for children of Bhavans School on theme of 'Soil and Water; A Source of life' were conducted. Soil health cards were distributed among farmers followed by technical sessions. After technical sessions field visit was conducted at IFS Garden.

Farmers were motivated towards adopting the chemical free farming, production and use of vermi-composting etc. All staff of CICR Institute and KVK, Nagpur work hard to make this programme successful.

Lokmat Times 7.12.23

शनिवार, २३ डिसेंबर २०२३

सकाळ अॅग्रोवन

व्यवस्थापन बदलातून कापूस उत्पादकता वाढ शक्य

दादा लाड : केंद्रीय कापूस संशोधन संस्थेत मेळावा

अॅग्रोवन वृत्तसेवा

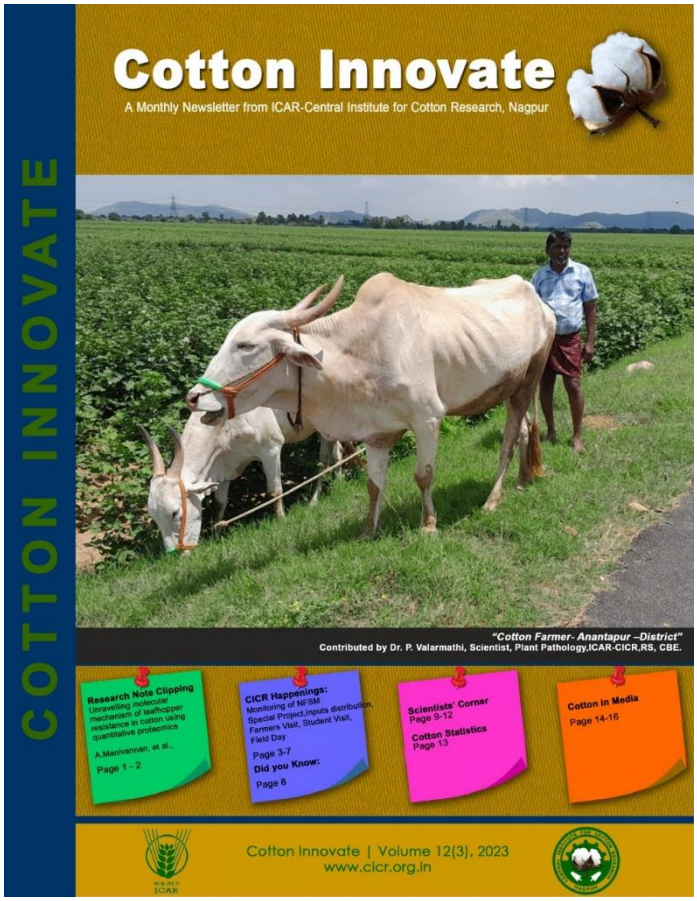
नागपूर : शेतकऱ्यांनी कापसाच्या लागवडीनंतर ४० दिवसांनी कापसाचे मोनोपॉडियल काढत पेरणीनंतर ९० दिवसांनी डी-टॉपिंग करावे. या माध्यमातून एकरी वीस क्विंटलपर्यंत उत्पादकता मिळविणे शक्य असल्याचे प्रतिपादन दादा लाड कापूस तंत्रज्ञानाचे जनक दादा लाड यांनी केले.

अनूसूचित जाती विकास कृती आराखडा प्रकल्पाअंतर्गत केंद्रीय कापूस संशोधन संस्थेत शेतकरी मेळावा व साहित्य वितरणाचे आयोजन करण्यात आले होते. या वेळी प्रमुख मार्गदर्शक म्हणून लाड बोलत होते. शेतकरी मेळाव्याला शास्त्रज्ञ निवड समितीचे माजी सदस्य डॉ. पी. के. चक्रवर्ती, 'सीआयसीआर' संशोधन सल्लागार समितीचे सदस्य डॉ. डी. एम. हेगडे, डॉ. पी. रामसुंदरम, डॉ. कल्पना शास्त्री, डॉ. पंकज राठोड यांचा समावेश होता.

केंद्रीय कापूस संशोधन संस्थेचे संचालक डॉ. वाय. जी. प्रसाद यांनी, देशात कापसाच्या उत्पादकतावाढीला प्रोत्साहन दिले जात असून त्यासाठी अतिसघन कापूस लागवड प्रकल्प संस्थेच्या माध्यमातून राबविला जात आहे. त्या प्रकल्पाच्या अंमलबजावणी संदर्भातील विविध बाबींची माहिती त्यांनी या वेळी दिली.

डॉ. चक्रवर्ती यांनी आपल्या भाषणात शेतकऱ्यांना भेडसावणाऱ्या विविध समस्यांवर तोडगा काढण्यासाठी शेतकरी-शास्त्रज्ञ यांच्यात वारंवार साधण्याची गरज असल्याचे मत व्यक्त केले. या वेळी शेतकऱ्यांना शेतीशी संबंधित साहित्याचे वितरण करण्यात आले. यानिमित्ताने एका तांत्रीक सत्राचेही आयोजन करण्यात आले होते. त्यामध्ये डॉ. जयंत मेश्राम यांनी अतिसघन लागवडीकरिता विकसित कार्यपद्धती समजावून सांगितली. डॉ. शिवाजी ठुसे यांनी कापसावरील महत्त्वाच्या रसशोषक कीडी, त्यांची लक्षणे आणि व्यवस्थापन याविषयी माहिती दिली. डॉ. शैलेश गावंडे यांनी कापसावरील बोंडअळीच्या नियंत्रणासाठीच्या उपाययोजनांविषयी सांगितले.

शेतकरी मेळाव्याला वर्धा, यवतमाळ, अमरावती जिल्ह्यांतील १५० हून अधिक शेतकरी उपस्थित होते.



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