

2nd SINO-PAK International Conference on
**INNOVATIONS IN COTTON BREEDING AND
BIOTECHNOLOGY**



November 26-27, 2018

Organized by

Institute of Plant Breeding and Biotechnology

MNS-University of Agriculture Multan



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SUMMARY

Cotton the “King-Crop” remains the world’s favorite natural fiber, because of its versatility, appearance, performance and above all, natural comfort. It is a difficult crop to grow well and faces multitude problems in its lifespan. Water shortage, its abundance, polluted lands with salinity and heavy metals as well as the insect pests infestations particularly the pink bollworm and whitefly are the major limiting factors for the cotton production. To solve these issues a scientific collaboration was developed between the eminent scientists of the Biotechnology Research Institute, Chinese Academy of Agricultural Sciences (BRI CAAS), Beijing, P. R. China, Muhammad Nawaz Shareef University of Agriculture (MNSUAM), Multan, Pakistan, Department of Plant Breeding and Genetics, Bahauddin Zakariya University (BZU), Multan, Pakistan and Central Cotton Research Institute, Multan (CCRI), Pakistan. Due to the collaborative efforts of these sides a SINO-PAK International conference on Innovations in Cotton Breeding and Biotechnology was held at MNSUAM in November 2017. Where the scientist from China, Pakistan, Malaysia, Turkey and Uzbekistan were gathered to discuss the solutions for the issues of the cotton crop and to present their recent research work on cotton. This 2nd International SINO-PAK conference on Innovations in Cotton Breeding was scheduled on the same line of cotton betterment, It was held at MNSUAM in collaboration with BRI CAAS, BZU, CRI and, Government of Punjab on 26-27 November 2018. It was the second event in series after the successful conduct of first SINO-PAK international conference on Innovations in Cotton Breeding and Biotechnology. The occurrence of this second event is the evidence of the success of this scientific collaboration. The aims of this conference were to bring together scientists, research scholars, ginners and progressive farmers on a single platform to share and enhance the knowledge about the solutions associated with the problems of the cotton crop. The conference was held to promote interdisciplinary dialogues regarding the contemporary issues in cotton. Total sixteen international scientists from China, USA, Malaysia and Iran as well as 39 national scientists presented their research work on the following research themes i.e. cotton breeding, cotton genomics and bioinformatics, sustainable cotton production and cotton seed technology. This event has provided awareness about technological advances in agriculture to cope with the rising problems for cotton production. Moreover, this event brought together the national, international scientists and the stakeholders of the local companies, especially a meeting between the SANIFA and the international scientists was concluded with the

remarks that the Chinese scientist will launch their products in Pakistan through a contract with SANIFA.

The technical sessions of this conference were very comprehensive those have covered all the major problems and their proposed solutions pertaining to cotton production in Pakistan as well as globally. The Chief Guest Syed Hussain Jahania Gardezi, Provincial Minister of Punjab for Management and Professional Development highly appreciated the efforts of the scientists in the conference. He further hoped that if such efforts continue the cotton will soon become a robust and problem free crop. The recommendations derived from the technical sessions were presented by the Dr. Abid Mehmood, Director General, Agriculture Research, Punjab at the concluding session. It was unanimously recommended that extensive use of the insecticide must be discouraged because it is increasing the resistance in whitefly biotypes and eliminating the populations of *Chrysoperla carnea* a predator of whitefly. New technologies like CRISPR/dCas9 based genome editing should be used to complement conventional breeding. Use of cotton shredder should be increased, it helps to shred unopened bolls and cotton sticks, this practice can easily manage the pink bollworm infestation in the cotton field. The conference ended with a vote of thanks by Prof. Dr. Asif Ali. It was a successful event and scientists, present in the conference, pledged to organize this conference every year with an aim to increase cotton production by making it high yielder and climate-smart. It was agreed by Prof. Dr. Zhang Rui from BRI CAAS and Prof. Dr. Asif Ali vice-chancellor MNSUAM that the 3rd SINO-PAK International conference on Innovations in Cotton Breeding and Biotechnology will be organized by BRI CAAS, at Beijing China.

RECOMMENDATIONS

As a result of the discussions and thinking during conference, following are the recommendations for the improvement of cotton in Pakistan:

A. Cotton Growers

- The cultivation of maize and sugarcane should be avoided in cotton zone to increase the area under cotton crop.
- The extensive use of pesticides must be discouraged because it has led to an increase in resistant whitefly biotypes which are more efficient in begomovirus transmission. Moreover, the heavy use of pesticides is also eliminating the populations of *Chrysoperla carnea* which are the natural predators of the whitefly.
- Precision agriculture should be adopted to overcome the current challenges of climate change.
- The inappropriate spread of fertilizers, urea top dressing on hot soil, and late season application of nitrogen fertilizer should be avoided. The inappropriate use of these fertilizers may deplete the quality of soil, cause eutrophication and accelerate climate change.
- Storage of cotton sticks should be deter to control the pink bollworm infestation.

B. Breeding and Biotechnology

- Development of mechanical picking friendly varieties should be focused to complete the process of cotton picking neatly and swiftly.
- Potential of the interspecific cotton hybrids should be exploited to improve cotton production. By interspecific hybridization the cotton breeders can unlock the huge potential variability present in this fiber plant.
- New technologies like CRISPR/dCas9 based genome editing and modern molecular approaches should be complemented with conventional breeding.
- Development of short duration varieties should be encouraged to reduce the extensive losses due to heat stress.
- Keeping in view the agricultural drought, water use efficient varieties should be focused.

C. Insects and Virus Management

- Whitefly species/biotypes those are transmitting begomoviruses in cotton should be identified. This practice may help to devise an effective management strategy.
- Adoption of triple gene technology to minimize the bollworm losses and significantly reduce the herbicidal use should be encouraged. It refers to the next-generation three genes cotton expressing chloroplast-targeted herbicide tolerant gene resistant to broad and narrow-leaved weedicide sprays and two *B. thuringiensis* insecticidal genes δ -endotoxin Cry2A and vegetative insecticidal protein gene VIP3A are used to control weeds and insects at the same time.
- Use of plant-derived insecticidal toxins against sucking insect pests should be promoted.
- The identification and eradication of alternate hosts of cotton infecting begomoviruses should be accomplished.
- Management of Cotton wilt should be adapted.
- The incorporation of resistance through pathogen-derived genes minimizing the begomoviruses replication in Cotton should be worked on.
- Use of cotton shredder to shred unopened bolls and cotton sticks to manage the pink bollworm infestation should be promoted.
- Observations on the behavior of insects to devise management strategies should be recorded.
- The focus should be given on natural fauna for the sustainable management of whitefly. Natural predator particularly *Chrysoperla carnea* is one of the best solutions to curb the infestation of whitefly.

BACKGROUND

Cotton is being grown, spun and woven into cloth since 3,000 years BC in Pakistan. Archaeologists found cotton fabric 5,000 years old at Mohenjo Daro, an ancient town in the Indus River Valley of West Pakistan. Today in Pakistan, it is a leading cash crop, producing 11.935 million bales during 2018. This crop has a 1% share in GDP and contributes 5.5 percent in agriculture value addition. It is being cultivated on an area of 2,699 thousand hectares. It is an annual crop grown in regions that experience climate variability. So the high temperature, water scarcity and the salinization of the soil are major abiotic stress factors those limit cotton yield. The healthy cotton crop is unfortunately very attractive to insects throughout their whole growing period. Over 100 different types of pests attack cotton which makes crop protection an important part of a cotton growers job. In our region, the infestation of whitefly, pink bollworm and cotton leaf curl disease are the major damaging factors causing huge yield and quality losses. Farmers are extensively using pesticides to control these damaging tiny creatures. But the over use of pesticides is not a wise strategy, it is damaging environment and causing enormous harm to the farmer's friendly insects; the natural predators. Keeping in view the importance of cotton and the risks associated with its growth and development the MNSUAM realized to find solutions of these problems and helping growing community to ensure high production of good quality cotton, ultimately contributing to improve the national economy. For this purpose, linkages were developed with national and international, public and private institutes/organizations, especially the Biotechnology Research Institute, Chinese Academy of Agricultural Sciences, Beijing, P. R. China who has a major breakthrough in cotton biotechnology. It was decided to gather all cotton stakeholder with the aim to find a sustainable solution of problems faced by the cotton crop. It was the result of these linkages that 1st SINO-PAK International Conference on Innovations in Cotton Breeding and Biotechnology was held at MNSUAM. A team of Chinese scientists led by Dr. Rui Zhang from BRI, CAAS participated in the conference along with scientists from Uzbekistan, Malaysia and Turkey. A collaboration was developed between MNSUAM and BRI, China which opened new endeavors for researchers to share ideas and transfer of technology to enhance cotton productivity and profitability. The conference venue was Multan, a city that is the hub of agriculture with huge farmer's community, core cotton area of Punjab, Pakistan, a complex of cotton-related research institutes and private business companies and stakeholders. In the light of scientific talks and meetings, it was concluded that integrated pest management should be implemented to

control the infestation of pink bollworm. Ultra-narrow row (UNR) spacing with nitrogen application at 150 kg/ha should be adapted to get maximum seed cotton yield and profit. The true potential of the genetic engineering should be exploited for the betterment of cotton crop. After one year of the first conference, a second SINO-PAK Conference on Innovations in Cotton Breeding and Biotechnology was held on November 26-27, 2018 at MNSUAM. It was successfully completed with the collaborative efforts of BRI, CAAS, MNSUAM, BZU, CCRI and Government of Punjab. It was two days conference where scientists from China, Pakistan, USA, Malaysia, and Iran talked on the following research themes i.e. Cotton Breeding, Cotton Genomics and Bioinformatics, Cotton Seed Technology and Sustainable Cotton Production.

LIST OF INTERNATIONAL GUESTS

1. Prof. Dr. Rui Zhang, (Chinese Academy of Agricultural Sciences, China)
2. Dr. Yi-Xiong Tang (Chinese Academy of Agricultural Sciences, China)
3. Prof. Dr. Xiongming Du, (Chinese Academy of Agricultural Sciences, China)
4. Dr. Zhigang Meng (Huazhong Agricultural University, China)
5. Prof. Dr. Zhongxu Lin, (Huazhong Agricultural University, China)
6. Prof. Dr. Xianglong Zhang, (Huazhong Agricultural University, China)
7. Prof. Dr. Shuangxia Jin, (Huazhong Agricultural University, China)
8. Prof. Dr. Longfu Zhu, (Huazhong Agricultural University, China)
9. Prof. Dr. Lili Tu, (Huazhong Agricultural University, China)
10. Dr. Chao Shen, (Huazhong Agricultural University, China)
11. Liuling Pei, (Huazhong Agricultural University, China)
12. Prof. Dr. Liu Shu Sheng (Zhejiang University, China)
13. Dr. Pan Li-Long, (Zhejiang University, China)
14. Prof. Dr. Judith Brown, (University of Arizona, Tucson, USA)
15. Dr. Siva K. Balasundram, (University Putra Malaysia)
16. Dr Kamal Ghasemi Bezdi, (Cotton Research Institute of Iran)

CONFERENCE PROGRAM

Monday, November 26, 2018

Inaugural Session

Venue: MNS University of Agriculture, Multan

Time	Activity
9:30 am	Registration and seating of guests
10:00 am	Recitation from Holy Quran
10:10 am	Welcome Address by Prof. Dr. Asif Ali, Vice Chancellor MNSUAM
10:25 am	“Present situation and future prospects of cotton in Pakistan” by Dr. Abid Mehmood, Director General Agri. (Res) Punjab
10:50 am	“Pollen magnetofection for genetic modification with magnetic nanoparticles as gene carriers”, by Prof. Dr. Rui Zhang, Biotechnology Research Institute, CAAS, China
11:15 am	“Dynamics of the whitefly vector associated with the cotton leaf curl outbreak” by Judith K. Brown
11:40 am	“Genes and Genomics for cotton fibre development” by Prof. Dr. Xianlong Zhang, Ex-Vice President Huazhong Agricultural University, Wuhan, China
12:00 pm	Comments by Representative of Pioneer Seeds
12:20 pm	Chief guest address, Chief Guest Syed Hussain Jahania Gardezi
12:40 pm	Vote of Thanks by Dean FAES, MNSUAM

Session 1. Innovative Technologies in Cotton Improvement

Venue: MNS University of Agriculture, Multan

Chair: Prof. Dr. Zhang Rui

Co-chair: 1) Dr. Khalid Abdullah

2) Dr. Tassawar Hussain Malik

Time	Topic	Name of Scientist
2:00 pm	Increased lateral root formation by CRISPR/Cas9-mediated editing of arginase genes in cotton	Dr. Zhigang Meng
2:40 pm	Recent progress and future prospect of cotton genome editing	Shuangxia Jin, Lin Sun, Lei Qin, Hangping Rui, Guanying Wang, Jianying Li, Xianlong Zhang
3:00 pm	Genome wide association study reveals key SNPs associated with salinity stress tolerance in cotton	Du Xiongming, Tussipkan Dilnur, Yasir Muhammad, PengZhen, HeShoupu, Pan Zhaoe, Gong Wenfang, Jia Yinhua, Sun Gaofei, Geng Xiaoli
3:20 pm	SIT Vs RIDL in Current Scenario and Future Prospects: An Overview	Rao Muhammad Shamraiz, Shafqat Saeed, Muhammad Nasir, Mamuna Ijaz
3:40 pm	TEA BREAK	
4:00 pm	The function of ascorbate peroxidase in fibre development	Kai Guo, Lili Tu
4:20 pm	dsRNA Silences the <i>PgCadh</i> Gene in Pink Bollworm and Suppresses the Resistance	Jam Nazeer Ahmad, Dilawar Majeed, Muhamamd Zahid

	Evolution against the <i>CryIAc</i>	Sharif and Samina J. N. Ahmad
4:40 pm	Understanding and utilization of cotton resistance to biotic stress	Longfu Zhu
5:00 pm	Regulation of cotton fiber development in diploid and tetraploid cotton varieties	Uzma Qaisar, Samina Yousaf, Fouzia Akhtar, Tanzeela Rehman, Mahnoor Imran and Maria Sohail

Session 2. Viruses – Cotton Interactions

Venue: MNS University of Agriculture, Multan (MNS-UAM)

Chair: Prof. Dr. Judith K. Brown

Co-chair: 1) Dr. Saghir Ahmad 2). Dr. Shahid Mansoor

Time	Topic	Name of Scientist
2:00 pm	Engineering multiple insect and virus resistance in cotton	Dr. Shahid Mansoor
2:20 pm	Transmission specificity of begomoviruses by different whiteflies and its significance in virus disease control	Dr. Liu Shu-Sheng
2:40 pm	Novel association of <i>Cotton leaf curl Multan Betasatellite</i> with <i>Mesta yellow vein mosaic virus</i> infecting <i>Malvastrum coromandelianum</i>	Hasan Riaz, Muhammad Ali, Malik Nawaz Shuja, Nadeem Ahmad, Muhammad Arslan Khan, Muhammad Ashfaq
3:00 pm	Targeting Non-Coding Region of <i>Begomo virus</i> by RNA-guided Cas9 Nuclease Efficiently Suppresses Virus Replication	Muhammad Salman Mubarik, Sultan Habibullah Khan, Zulqurnain Khan, Sabin Aslam, and Aftab Ahmad
3:20 pm	Gene Stacking in Cotton for Virus Resistance using Site Specific Recombinases	Sabin Aslam, Sultan Habibullah Khan, Aftab ahmed, Thomsan James and Abhya Dandekar
3:40 pm	TEA BREAK	
4:00 pm	CRISPR/dCas9-mediated inhibition of replication of begomo viruses	Zulqurnain Khan, Sultan Habibullah Khan, Aftab Ahmad, Sabin Aslam, Muhammad Salman Mubarik, and Sehrish khan
4:20 pm	The <i>Agrobacterium tumefaciens</i> single-stranded DNA binding protein <i>VirE2</i> reduces accumulation of diverse begomoviruses in transgenic <i>Nicotiana benthamiana</i>	Sumaira Yousaf, Ghulam Rasool, Imran Amin, Shahid Mansoor and Muhammad Saeed
4:40 pm	Understanding the role of environmental factors towards population of natural enemies and whitefly (<i>Bemisia tabaci gennadius</i>) on cotton crop in Multan	Muhammad Iqbal, M. Jalal Arif, Mansoor ul Hasan, Rabia Saeed, Shafqat Saeed, Noor Abid Saeed
5:00 pm	Pathology of <i>Fusarium oxysporum</i> in cotton and its management	Muhammad Arslan Khan, Shafqat Saeed, Fida Hussain, Hasan Riaz, Nadeem Ahmed, Asif Mehmood Arif, Muhammad Kashif
5:20 pm	Microbial Community Shifting based on 16S rRNA gene in a Bt and Non-Bt Cotton Soils.	Muhammad Zubair Ghouri, Sultan Habibullah Khan, Muhammad Saleem Arif

Session 3. Abiotic Stress Management in Cotton

Venue: Central Cotton Research Institute, CCRI, Multan

Chair: Prof. Dr. Zhongxu Lin

Co-chair: Dr. Zahid Mahmood

Time	Topic	Name of Scientist
2:20 pm	The Precision Agriculture Paradigm Shift: Research Priorities and Opportunities	Siva K Balasundram
2:40 pm	The study of in vitro culture conditions of explants in a number of Iranian cotton cultivars	Kamal Ghasemi Bezdi
3:00 pm	Cotton breeding program in climate change scenario: challenges and opportunities.	Muhammad Iqbal, Sami Ul-Allah, Muhammad Naeem
3:20 pm	Physiological, biochemical and morphological response of upland cotton under high temperature conditions	Muhammad Tehseen Azhar, Sajid Majeed, Muhammad Tanees Chaudhary, Tanwir Ahmad Malik and Iqrar Ahmad Rana
3:40 pm	TEA BREAK	
4:00 pm	Quantifying stress tolerance in cotton genotypes grown under normal irrigation and water deficit conditions	Fiaz Ahmad, Asia Perveen, Noor Muhammad and Zahid Mehmood
4:20 pm	Exploring genotypic variation in cotton (<i>Gossypium hirsutum</i> L.) for K use efficiency in hydroponics	Muhammad Naeem Akhtar, Tanveer-ul-Haq, Fiaz Ahmad, Wazir Ahmed, Abdul Ghaffar and Muhammad Imran
4:40 pm	Nutrient Management Challenges for Sustainable Cotton Production	<u>M. Abbas Aziz, Rashid Manzur, Sajid Farid and M. Tariq</u>
5:00 pm	Genetic basis of variation for water deficit tolerance in cotton (<i>Gossypium hirsutum</i> L.)	Aziz Ullah, Amir Shakeel, Tanwir Ahmad Malik and Muhammad Farrukh Saleem
5:20 pm	Genetic Variability in Proline and its Relationship With Yield and Yield Parameters of Cotton Cultivars Grown Under Water Stress Conditions	Muhammad Kashif Shahzad Sarwar

Tuesday, November 27, 2018

Session 4. Cotton Breeding and Biotechnology

Venue: Bahauddin Zakariya University, Multan

Chair: Prof. Dr. Zhongxu Lin

Co-chair: 1) Dr. Rao Abdul Qayyum 2) Dr. Muhammad Iqbal Bandesha

Time	Topic	Name of Scientist
9:00 am	Major cotton crop issues and research interventions for solution	Saghir Ahmad, Zia Ullah Zia, Wajad Nazeer, Abdul Latif Khan Tipu, Abid Mahmood
9:15 am	Investigating the possibility of using tissue culture method for F1 cotton hybrid propagation	Kamal Ghasemi Bezdi
9:45 am	Genetic components of variations for yield contributing traits in <i>Gossypium hirsutum</i> grown under moisture stress	Areej Javaid, Faqir Muhammad Azhar
10:00 am	DNA markers for Highest Boll Size of Cotton in Pakistan	Muhammad Asif Saleem, Abdul Qayyum, Muhammad Waqas Amjid, Muhammad Ismail, Arfa Zaheer and Muhammad Kashif
10:15 am	Association mapping economic traits using SSR markers in QTL clusters/hotspots in upland cotton (<i>Gossypium hirsutum</i> L.).	Muhammad Atif Wahid
10:30 am	TEA BREAK	

Chair: Prof. Dr. Du Xiongming

Co-chair: 1) Dr. Rao Abdul Qayyum 2) Dr. Muhammad Iqbal Bandesha

11:00 am	Interspecific germplasm development promotes the genetics and breeding in cotton	Zhongxu Lin
11:20 am	QTL mapping using introgression lines and genome-wide association study, and recombination rate variation in cotton	Chao Shen
11:40 pm	Cotton FGD (Cotton Function Genomics Database) and two case studies in cotton genomics research	TaoZhu, Chengzhen Liang, Zhigang Meng, Guoqing Sun, Zhaohong Meng, Sandui Guo and Rui Zhang
12:00 pm	Genetic analysis of boll size variations in interspecific introgression line derived populations	Mahmood Ahmed
12:20 pm	Correlation of earliness and yield related parameters in upland cotton (<i>Gossypium hirsutum</i> L.).	M. A. Bhutta, M. K. Qureshi, H. R. Khan, M. U. Farooq, M. Z. Ahsan, M.I. Khan
12:40 pm	Growth of different Cotton Varieties under the Climatic Condition of Lasbela Uthal Balochistan	Sultan Ahmed, Aziz Ahmed, , Shahab-u-din, Attaullah Jattak

Session 5. Insects-pest Management of Cotton

Venue: Bahauddin Zakariya University, Multan

Chair: Prof. Dr. Liu Shu-Sheng

Co-Chair: 1) Dr. Shafqat Saeed 2) Dr. Abdul Razzaq

Time	Topic	Name of Scientist
9:00 am	Cotton leaf curl disease: which whitefly is the vector?	Pan Li-Long , Cui Xi-Yun, Chen Qun-Fang, Wang Xiao-Wei, Liu Shu-Sheng
9:15 am	Biological and genetic characterization of a Pakistani isolate of <i>Spodoptera litura</i> nucleopolyhedrovirus	Ghulam Ali, Wopke van der Werf and Just M. Vlak
9:30 am	Expression level of transgenes (<i>Cry1Ac</i> and <i>Cry2Ab</i>) in different genetic backgrounds	Hafiza Masooma Naseer Cheema, Kashif Noor, Asif Ali Khan, Hanan Ahmad, Harm Aziz Alvi, Muhammad Amjad, Muzammal Ahmad
9:45 am	Characterization of recombinant proteins using multiple biological and computational tools for the control of hemipteran insect pests	Shaista Javaid, Afshan Majeed, Sehrish Naz, Imran Amin, Georg Jander, Zaheer Ul-Haq and Shahid Mansoor
10:00 am	Resistance status of <i>Helicoverpa armigera</i> against <i>Bt</i> cotton in Pakistan	Shakeel Ahmad, Hafiza Masooma Naseer Cheema, Asif Ali Khan, Sohail Ahmad Khan, Jam Nazeer Ahmad
10:15 am	Association Analysis for Ginning Outturn in Upland Cotton Germplasm using Genotyping-by-Sequencing	Khezir Hayat
10:30 am	TEA BREAK	

Chair: Dr. Longfu Zhu

Co-chair: 1) Dr. Shafqat Saeed 2) Dr. Abdul Razzaq

11:00 am	Identification and Functional Analysis of <i>SP</i> Gene Controlling Development of Cotton Petal Spot	Muhammad Ali Abid, Chengzhen Liang, Zhigang Meng, Waqas Malik, Sandui Guo and Rui Zhang
11:15 am	Bioassay for evaluating the susceptibility level of army worm (<i>Spodoptera litura</i>) against double gene <i>Bt</i> cotton	Muhammad Amjad, Hafiza Masooma Naseer Cheema, Kashif Noor, Hanan Ahmad, Haram Aziz Alvi, Muzammal Ahmad, Jam Nazir Ahmad
11:30 am	Development of Cotton Stalk Puller Shredder for Mechanical Control of Pink Boll Worm	Alamgir A. Khan
11:45 am	Response of <i>Bemisia tabaci</i> (Hemiptera: Aleyrodidae) to volatiles	Waqar Jaleel, Qurat Ul Aine, Muhammad Nadir Naqqash, Muhammad Umair Sial, Qamar Saeed, Muhammad Sarmad, Muhammad Nasir, Rashid
12:00 pm	Management tactics for Pink bollworm <i>Pectinophora gossypiella</i> (Saunders) in Cotton	Rao Ahsan Ayaz, Mohsin Qayyum, Muhammad Ishtiaq, Muhammad Rafiq Shahid,

		Muhammad Tariq Mushtaq, Muhammad Sadique, Amir Abbas
12:15 pm	Conservation of predatory fauna through un-sprayed conditions and their impact on sucking insect pest of cotton in Pakistan	Muhammad Rafiq Shahid, Wajid Nazeer, Muhammad Akram, Muhammad Shahid Iqbal, Abid Mahmood, Saghir Ahmad, Muhammad Shahid and Ali Raza
12:30 pm	Impact of varietal Performance on Population dynamics of cotton Jassid, <i>Amrascadevastans</i> against various cotton genotypes	Unsar Naeem-Ullah, M.Ishtiaq, M.Shahid, M.A. Qayyum and Shafqat Saeed

Concluding Session

Venue: Bahauddin Zakariya University, Multan

Time	Activity
1:00 pm	Recitation from Holy Quraan
1:10 pm	Welcome Address by Vice Chancellor BZU Multan
1:20 pm	Recommendations of the conference
1:40 pm	Remarks by Prof. Dr. Zhang Rui
1:50 pm	Remarks by Prof. Dr. Judith K. Brown
2:00 pm	Remarks by Prof. Dr. Zhongxu Lin
2:10 pm	Remarks by Prof. Dr. Du Xiongming
2:20 pm	Address by Guest of Honor
2:40 pm	Address by Chief guest
3:00 pm	Vote of Thanks

INAUGURAL CEREMONY

VENUE: MNS-UNIVERSITY OF AGRICULTURE, MULTAN

The inaugural session of the conference was started with the verses of the Holy Quran. Director General (Res.), Vice Chancellor MNS-UAM, research scientists, faculty and students of MNSUAM & BZU, cotton growers, representatives of seed industry, representatives of private sector agrochemical companies participated the workshop.

The Vice-Chancellor, MNSUAM **Prof. Dr. Asif Ali** amiably welcomed everyone at the conference especially chief guest Syed Hussain Jahania Gardezi, Provincial Minister of Punjab for Management and Professional Development; Ms. Rabia Sultan, Dr. Abid Mahmood, D. G. Agriculture Research, Punjab; foreign as well as national scientists and public/private stakeholders.



The Vice-Chancellor said that the conference is without exaggeration, a long waited event. He termed the conference as the largest gathering after International Cotton Advisory Committee and said that it will immensely help in shaping the global cotton research and we expect lively discussions in it. He further added that if we take a look at the conference programme, we will agree that this conference is going to be busy and productive. There is a lot to offer for the two-day event. He said that it is gratifying to note that the agenda of the conference covers a wide range of very interesting talks relating to the problems of cotton. He greatly appreciated the Chinese scientists for their collaboration and helping the world particularly Pakistan in combating challenges encountered by the Cotton crop. He underlined the need to find sustainable solutions for problems incurred by changing climate scenario. The development of resistance against heat, sucking insects pests especially whitefly, pink bollworm and begomoviruses induced Cotton leaf curl disease should be achieved by coordinated research activities beyond borders. Professor Dr. Asif Ali shared the success story of the management of Pink bollworm by the MNSUAM. The Pink bollworm is a devastating pest of Cotton drastically reducing yield and quality. He told the audience about the management strategy (the use of PB ropes) involving only one spray in whole cropping cycle enormously reducing the number of sprays for Pink bollworm and whitefly which were

normally 12 to 16 per cropping cycle. He vowed to go for zero-spray strategy in next season in MNSUAM fields. The Vice Chancellor also informed the audience about the MNSUAM led Cotton Mission 2025 which was an intense exercise of deliberations involving all stakeholders to identify constraints and possible solutions pertaining to the cotton supply chain in Pakistan. Prof. Dr. Asif Ali expressed utter satisfaction on the new collaborative projects between MNSUAM and Chinese scientists under Pakistan Science Foundation and National Natural Science Foundation, China. The Vice-Chancellor concluded his talk by thanking everyone for making the conference a success and said that we hope that all of the participants will enjoy the conference, and he wished that our visitors from abroad will have a very pleasant stay in our city.

Dr. Abid Mehmood, Director General, Agriculture Research, Punjab, presented a comprehensive outlook of the cotton crop in Pakistan. Cotton production in Pakistan is integral to the economic development of the country. The nation is largely dependent on the cotton industry and its related textile sector, and the crop



has been given a principal status in the country. He said that the Earth's climate is now changing faster than at any point in the history of modern civilization, this change is badly affecting the cotton production. Particularly in the cotton belt of Pakistan, the rise in temperature is affecting the flowering and boll formation and also makes the crop more vulnerable to pest attack. He shared the work of the different research institutes of Punjab that how they are developing better yielding cotton cultivars for the changing climate. Like, development of determinate varieties those are better for the machine picking to save time and labor, CLCuD resistant varieties those are hope to save our cotton crop from the big problem of the virus, short duration and heat tolerant varieties, development of cultivars with better fiber quality along with the strategies developed for the better weed and disease management. He further discussed that there are two cotton varieties developed by the scientists of Punjab i.e. FH-142 and FH-152 these varieties can tolerate up to 48°C temperature moreover these are also tolerant to the cotton leaf curl disease and have excellent fiber quality. Dr. Abid shared the future vision of cotton scientists which involved the

development of the short-statured, Bt-glyphosate resistant cotton varieties through triple gene technology. This triple gene technology will give an opportunity to speed up the development of cotton varieties conferring insect resistance and herbicide tolerance.

Prof. Dr. Rui Zhang from Biotechnology Research Institute, Chinese Academy of Agricultural Sciences presented her work on “Pollen magnetofection for genetic modification with magnetic nanoparticles as gene carriers”. She was immensely thankful to MNS-UAM for highlighting the challenges faced by



the cotton crop at a global scale and for providing such a big forum to discuss and sort out the solutions for these challenges. She introduced the audience with the novel method of tissue-culture independent plant transformation which successfully bypassed the laborious and long process of genetic modification of plants mediated by *Agrobacterium tumefaciens* and tissue culture. Dr. Rui’s research involved the combination of exogenous DNA with magnetic nanoparticles and their transfer into pollen with the help of a magnetic field. The process produces transgenic seeds expressing the desired protein in the next generation. Dr. Rui termed it as a milestone in the field of plant transformation and recommended to adapt her novel method for making transgenic cotton.

Dr. Judith K. Brown is a Professor in the School of Plant Sciences, University of Arizona, Tucson, USA. She is a prominent begomo-virologist and Whitefly specialist and has vast experience in studying the global whitefly and begomovirus populations and their interaction with each other. She



congratulated the Vice-Chancellor, MNSUAM for holding such a magnificent conference. She delivered a talk on “Dynamics of the whitefly vector associated with the cotton leaf curl outbreak”. She summarized the Cotton leaf curl disease epidemics, in the subcontinent, occurred in the past which resulted in the loss of billions of dollar to Pakistan’s economy. She studied Pakistan’s wide population of whiteflies covering 11 districts with 569 whiteflies

analyzed. She found all identified whiteflies to be associated with Asia II major clade. Moreover, a detailed analysis divided the whiteflies population into Asia II-1 (84%) and Asia II-5 and Asia II-7 (16%) mitotypes within the Asia II major clade. She concluded from the results that increased use of pesticide and release of virus-resistant Cotton varieties contributed towards the Asia II-1 and Asia II-7 mitotypes genetic expansion since the early 1990s. Thus two cooperating phenomena appear to have exerted selection on the CLCuD complex, resulting in the emergence of a resistance-breaking virus as the polyphagous Asia II-1 and -7 mitotypes underwent genetic expansion, thereby creating ‘a perfect storm’.

Prof. Dr. Xianlong Zhang, National Key Laboratory for Crop Genetic Improvement, Huazhong Agricultural University, Wuhan, Hubei, China discussed the “Genes and Genomics for Cotton Fiber Development”. Dr. Zhang highlighted the importance of Cotton for the world mainly due to its fiber production. He



studied the transcriptomes, functional genomics and population genomics to understand the process of fiber development. Dr. Zhang’s research proved the role of Micro-RNAs in the fiber development specifically miRNA156/157 along with functional non-coding RNAs. He informed the audience about the effects of human selection on fiber parameters and showed that asymmetric subgenome domestication was coupled with a directional selection of long fibers. He claimed that his study provides new insights into the evolution of gene organization, regulation and adaptation in cotton, and should serve as a rich resource for genome-based cotton improvement.

Mr. Aftab, from Corteva Agriscience lauded the efforts of MNSUAM in promoting agriculture activities and bridging the gap between farmers, researchers and the private sector. He further highlighted the contribution of the private sector in the improvement of cotton research



and development. He said that the food security programme seeks to contribute to private sector development for food and nutrition security, particularly through analytical work and facilitation of public-private dialogue. He further added that the private sector is playing an important role in developing technologies to raise cotton productivity. Mr. Aftab appreciated the collaboration of national and international scientists for the improvement of cotton research in Pakistan. He said that the triangle of international, national scientists and the private sector can help to solve the problems of the cotton production and market policy.

The **Chief Guest Syed Hussain Jahania Gardezi** is a veteran politician and Provincial Minister of Punjab for Management and Professional Development. He expressed gratitude to Prof. Dr. Asif Ali for inviting him on such a splendid conference. He said cotton is very close to his heart and a mainstay for Pakistan's economy. He



reminded the old gold times of cotton in Pakistan when the production was increased from 3 to 12 million bales in a short span of 8 years. The chief guest praised the efforts of Mr. Muneer Udin Khan and Cotton Research Institutions for determined efforts in enhancing cotton yield in Pakistan. He stressed upon the need to adopt new technologies to increase cotton yield and production. He further stated that he is very much optimistic in Cotton's future. The collaboration between national and international scientists along with the private sector will effectively solve the problems of cotton productions. Syed Hussain Jahania Gardezi highly acknowledged the contribution and participation of foreign scientists, especially the Chinese scientists, at the conference.

On behalf of MNSUAM the vote of thanks was given by **Prof. Dr. Shafqat Saeed**, Dean, Faculty of Agriculture and Environmental Sciences, MNSUAM. He expressed sincere gratitude to Chief Guest, dignitaries, foreign and national scientists especially Chinese scientists, Higher Education Commission of



Pakistan, Punjab Agriculture Research Board, Pakistan Science Foundation, Punjab Higher Education Commission, collaborating academic and research institutions, Pakistan crop protection association and other private sponsors. He also acknowledged the faculty and staff of MNSUAM and BZU, Multan and security agencies who worked tirelessly to make the conference successful.

SESSION I: INNOVATIVE TECHNOLOGIES IN COTTON IMPROVEMENT

VENUE: MNS UNIVERSITY OF AGRICULTURE, MULTAN

Chair: Prof. Dr. Zhang Rui

Co-chair: 1) Dr. Khalid Abdullah

2) Dr. Tassawar Hussain Malik

Dr. Zhigang Meng:

Associate professor at Biotechnology Research Institute, Chinese Academy of Agriculture Sciences discussed “Increased lateral root formation by CRISPR/Cas9-mediated editing of arginase genes in cotton”. He explained how CRISPR/cas9 system can induce desire mutations



in crop plants. He further explained the bottlenecks of this system in cotton like protoplast transformation efficiency is very low, Cas9 expression vector and sgRNA expression vector cannot be transformed into the cotton cell at the same time and upland cotton is tetraploid having two sub-genome with two copies of each gene.

He also explained how they have combined Cas9 expression vector and sgRNA expression vector into one vector. It increased expression level and Cas9 enzyme activity in cotton. They fused eGFP with Cas9 to identify positive cells in the tissue. He added that this CRISPR system need not test in protoplast. The vector can directly use to transform by tissue cultural method. They used Agrobacterium-mediated transformation method to transform CRISPR plasmid into cotton tissue, induced callus a month later, use a fluorescence microscope to screen positive callus and took a part of callus to extract DNA to identification edit efficiency. He concluded that their study is valuable for the creation of genome-edited cotton

to improve agronomic traits and CRISPR/Cas9 system can be utilized with high efficiency in polyploid crops to edit multi-copy genes.

Dr. Shuangxia Jin: Professor, College of Plant Science and Technology, Huazhong Agricultural University Wuhan, China discussed the “Recent Progress and Future Prospect of Cotton Genome Editing” and explained how they successfully knock-out several cotton genes by CRISPR-Cas 9 system with an average 65-85% efficiency.



They also performed the whole genome sequencing to investigate the off-target in the CRISPR-Cas9 edited cotton plants. They found more than 2000 potential off-targets sites (allowing 5 mismatches within the 20-bp sgRNA and 3-bp PAM sequences), the WGS data revealed that only four are bona fide off-target mutations and validated by Sanger sequencing which suggested that CRISPR/Cas9 system is highly specific for the editing of genes of polyploid plant species. Then, they further developed a high-throughput genome editing system in cotton: a sgRNAs library (containing 1100 sgRNAs targeted to 600 independent genes) was constructed and cloned into the CRISPR-Cas 9 vector. In addition, the potential off-target sites of two sgRNAs of *GhCLA* were predicted and sequenced, and the results showed that no base editing was detected at potential off-target sites. He concluded that the base system has high specificity and can perform base editing efficiently and accurately in cotton.

Dr. Xiongming Du: Professor at the Chinese Academy of Agricultural Sciences (CAAS) Institute of Cotton Research (ICR) the Anyang Peoples Republic of China discussed “Genome-wide association study reveals key SNPs associated with salinity stress tolerance in cotton”. He told that the global



scarcity of the water resources, ecological pollution and enlarged salinization of soil and water became a noticeable problem at the beginning of the 21st century. He further discussed

the situation of salt stress in China. In China, out of 100 million hectares 6.66 million hectares is polluted with different degrees of salinization. From his research work, he concluded that GWAS study provides new knowledge about the genetic control of salt tolerance at the seedling stage, which could aid in the elucidation of genetic and molecular mechanisms of salinity stress tolerance in the cotton crop. In their research, the nine SNP rich regions analysis revealed 143 polymorphisms distributed across 40 candidate genes. He further added that by focusing on the genetic diversity and richness of germplasm the use of genome-wide analysis can provide more variation (phenotypic and molecular variance) for breeding new cultivars for salt-affected areas.

Mr. Rao Muhammad Shamraiz:

Ph.D. scholar at the Department of Entomology, MNSUAM explained the “Sterile Insect Technique Vs RIDL in Current Scenario and Future Prospects”.



He told that insect pest control has become a major challenge around the Globe. A number of insects, pests in agro and other ecosystems gain economic importance and posing serious threats to our crops, humans and animals. Conventional pest control methods especially chemical control have failed to provide effective pest control in many cases due to development of resistance and environmental concerns. Researchers are now more interested in modern insect control techniques using the genetic molecular tools from the last few years. Genetic manipulation of insect pests by using sterile insect technique (SIT) and Release of insects carrying dominant lethal (RIDL) techniques are area-wide approaches that focus on the population suppression and replacement had now been used for successful pest control.

Dr. Lili Tu: Professor of the National Key Laboratory for Crop Genetic Improvement, Huazhong Agricultural University, Wuhan, Hubei, China. She explained that the transgenic cotton has longer and stronger fiber. A



gene named *EXPRATR* changes cell wall properties and improves fiber quality by reducing the cellulose and increasing the callose contents. Down-regulation of cytosolic APX expression results in massive accumulation of H₂O₂ and induces oxidative stress. This stress induces genes related to the early development of secondary cell wall. She summarized that to control the cell H₂O₂ level, Cytosolic *GhAPX1A_T/D_T* are preferentially expressed in the elongated fiber cells level. A previously unrealized grouping of cAPXs including GhAPX1 contributes to redox equilibrium controls elongating fiber cells. RNA-seq reveals that oxidative stress induced by cytosolic APX suppression results in shorter fibers by initiating secondary cell wall-related gene expression.

Longfu Zhu: From Huazhong Agricultural University National Key Laboratory of Crop Genetic Improvement discussed the “Understanding and utilization of cotton resistance to *Verticillium dahlia*”. He said that no resistant germplasm is available in *Gossypium hirsutum* for this devastating disease of cotton. In China, it infects 50% cultivated area and 40% yield loss. He added that the activated lignin synthesis improves cotton resistance to *V. dahlia*, jasmonic acid signal pathway confers cotton resistance to *V. dahlia*. Activated Lignin synthesis improves cotton resistance to *V. dahlia*. He said that they also found the kinase region of *GbSOBIR1* could interact with multiple defense-related proteins, including *ARABINOGLACTAN PROTEIN 31 (AGP31)* and *AVIRULENCE INDUCED GENE FAMILY PROTEIN2-like (AIG2-like)*. Among the interacting proteins, a basic helix-loop-helix (*bHLH*) transcription factor was identified as *GbbHLH171* and it confers resistance to cotton against *V. dahliae*. Furthermore, they found phosphorylation at Ser413 is essential for the physiological function of *GbbHLH171GbbHLH171*. Collectively, these results demonstrate that *GbSOBIR1* could interact with proteins such as *GbbHLH171GbbHLH171*, and plays a critical role in cotton resistance to *V. dahliae*.

SESSION 2: VIRUSES-COTTON INTERACTIONS

VENUE: MNS UNIVERSITY OF AGRICULTURE, MULTAN

Chair: Prof. Dr. Judith K. Brown

Co-chair: 1) Dr. Saghir Ahmad 2). Dr. Shahid Mansoor

The session included seven oral presentations from international and national scientists.

Dr. Pan Li-Long, Post-doc fellow, Zhejiang University, China talked on “Cotton leaf curl disease: which whitefly is the vector”. He compared transmission efficiency of cotton leaf curl Multan virus (CLCuMuV), one of the major begomoviruses associated with cotton leaf curl disease, by four



whitefly species, of which two are indigenous to Asia and two are invasive worldwide. Only the indigenous Asia II 1 species was able to transmit this virus with high efficiency. Moreover, he verified the role of coat protein in the whitefly transmission of CLCuMuV and based on a phylogenetic analysis of the virus coat proteins, he found that most begomoviruses associated with cotton leaf curl disease might share similar whitefly transmission characteristics. Dr. Pan claimed that his findings advanced the understanding of the nature of cotton leaf curl disease and provide information for the development of control and preventive strategies against this disease.

Dr. Shahid Mansoor, Director General, National Institute of Biotechnology and Genetic Engineering, Faisalabad spoke on “Engineering multiple insect and virus resistance in Cotton” Dr. Shahid shared his research work with the audience which included the Development of Double (*Cry1Ac* +



Cry2Ab) and Triple gene (*Cry1Ac* + *Cry2Ab* + *EPSPS*) transgenic cotton, different versions of *Cry1Ac* for effective control of resistant pink bollworms, Modified *Cry51Aa2* (*Bacillus thuringiensis*) for control of *Lygus* spp. (hemipteran) and Plant derived insecticidal toxins (Tma12, ASAL and PTA) for control of sap-sucking and chewing insect pests. Dr. Mansoor further explained the potential on-going research on the Development of CLCuV resistant cotton by CRISPR based editing of susceptible genes and Engineering of Plant immune system for broad-spectrum pathogen resistance.

Dr. Hasan Riaz, Assistant Professor, Department of Plant Pathology, MNSUAM delivered a talk on “Novel association of Cotton leaf curl Multan Betasatellite with Mesta yellow vein mosaic virus infecting *Malvastrum coromandelianum*”. During his talk, he highlighted the role of alternate hosts in



providing safe haven to Cotton leaf curl disease inducing begomoviruses and associated satellites. He explained the symptom-inducing Cotton infecting Betasatellites notably the *Cotton leaf curl Multan Betasatellite* (CLCuMB). Dr. Riaz’s findings identified a weed *Malvastrum coromandelianum* harboring CLCuMB trans-replicated by *Mesta yellow vein mosaic virus*. Dr. Hasan emphasized the identification of alternate hosts of Cotton infecting begomoviruses and their eradication or minimum cultivation in Cotton belt of Pakistan.

Mr. Muhammad Iqbal, Ph.D. Scholar, Department of Entomology, University of Agriculture, Faisalabad presented his work entitled “Understanding the Role of Environmental Factors Towards Population of Whitefly (*Bemisia Tabaci* Gennadius) and Natural Enemies on Cotton Crop in Multan”. He discussed that the role of environmental factors in the early and



late sown cotton crop on the population of whitefly (*Bemisia tabaci* Gennadius) and different natural enemies (*Chrysoperla carnea* Stephens, *Orius* spp., *Geocoris* spp., spiders). Mr. Iqbal planted the transgenic cotton variety, Bt Cyto-179 on two planting dates i.e., in 1st week of April and June during the year 2018 at Central Cotton Research Institute (CCRI), Multan. In early sown cotton (April), maximum mean population of whitefly was found during the 3rd (10.38/leaf) and 4th week of June (10.19/leaf) and 1st week of July (6.44/leaf). Accordingly, there were average 3.96, 4.96 and 4.46 flowers and 2.96, 3.63 and 5.04 bolls per plant of these dates respectively. He observed that the population remained above ETL (economic threshold level i.e., 5 whitefly/leaf) from mid-August to September. Whereas, in late sown cotton (June), maximum mean population was recorded in 1st week of August (9.02/leaf) and

then found above the ETL afterward. There were average 2.33 flowers and 1.02 bolls per plant during 1st week of August in late sowing. He observed the population of natural enemies (*C. carnea*) maximum from mid-May to mid-June in early sown crop, whereas it was from mid-August to September in late sown cotton. He noted the rainfall during first (4mm) and third (5mm) weeks of July and raising relative humidity, which reduced the pest population. He further recorded the average temperature around 35°C from June to September and observed maximum temperature in the month of June (38.90°C) and relative humidity was 51.47% which gradually increased during July and August. Based on his results, Mr. Iqbal suggested that early sown cotton crop must be protected during June and July to keep whitefly population below ETL for healthy plant growth and better crop production and in a late sown cotton crop, the month of August is critical to keep the population of whitefly below ETL.

Dr. Zulqurnain Khan,
Assistant Professor, Institute of Plant Breeding and Biotechnology, MNSUAM talked on “CRISPR/dCas9-mediated inhibition of replication of begomoviruses”. Dr. Khan checked the efficiency of dCas9 as DNA binding protein targeting the nonanucleotide sequence of CLCuV to inhibit virus



replication. He used *Nicotiana benthamiana* to evaluate the efficiency of CRISPR/dCas9 system for viral interference and assessed resistance against virus infection and suppression of replication of the virus by PCR, RT-PCR and symptoms development on plant leaves in terms of days' post inoculation (dpi). The expression of the Cas9 and gRNA was quantified using RT-PCR and his results showed partial inhibition of CLCuV replication, lower disease symptoms and virus accumulation as compared to control plants. He compared the results of dCas9 with his previous study involving TALEs and found dCas9 slightly less efficient to suppress virus replication. He recommended the multiplexing of gene editing techniques could be the way forward to engineer virus resistance in plants.

Dr. Muhammad Arslan Khan, Assistant Professor, Department of Plant Pathology, MNSUAM presented his work “Pathology of *Fusarium oxysporum* in cotton and its management”. Dr. Arslan surveyed Punjab to identify the cause of Cotton wilting and found *Fusarium oxysporum*



the most frequent pathogen isolated from soil and infected plant samples which was identified on morphological and molecular characteristics. He also conducted pathogenicity test to confirm the cause of Cotton wilting. Dr. Khan conducted the management trials of *Fusarium oxysporum* and found biological (*Trichoderma harzianum*) and chemicals (Azoxystrobin) agents can efficiently control this wilt. He recommended farmers to do the best management of cotton wilt in the month of August and September before disease appearance in fields.

Ms. Sumaira Yousaf, Scientific Officer, Nuclear Institute of Agriculture and Biology, Faisalabad on “The *Agrobacterium tumefaciens* single-stranded DNA binding protein VirE2 reduces accumulation of diverse begomoviruses in transgenic *Nicotiana benthamiana*”. In her work she introduced the VirE2, the *Agrobacterium tumefaciens*



virulence ssDNA binding protein, under the control of Cauliflower mosaic virus 35S promoter, into *Nicotiana benthamiana* to develop resistance against begomoviruses. VirE2 transgenic plants showed attenuated symptoms upon agroinoculation with infectious clones of Cotton leaf curl Kokhran virus (CLCuKoV) along with Cotton leaf curl Multan betasatellite (CLCuMuB) or Tomato leaf curl New Delhi virus (ToLCNDV). She found that the relative to infected non-transgenic plants, infected VirE2 transgenic plants were associated with reduced viral DNA levels. Ms. Sumaira concluded that the VirE2 is a promising candidate gene for the development of tolerance against a range of begomoviruses.

SESSION 3. ABIOTIC STRESS MANAGEMENT IN COTTON

Venue: CCRI, Multan

Chair: Prof. Dr. Zhongxu Lin

Co-chair: Dr. Zahid Mahmood

Dr. Siva K Balasundram from Department of Agriculture Technology, Faculty of Agriculture, University Putra Malaysia talked about precision agriculture. He mentioned that Technology structure is the key challenge for precision agriculture and connected farms are the need of a new century. New and updated



technological components such as sensors, data analytics, telematics, hardware and software systems, and communication systems are being added into the precision agriculture toolbox. As a result of the paradigm shift in precision agriculture, research priorities are beginning to change and new opportunities for scientific collaboration are beginning to emerge. To achieve food security the use of precision agriculture is a dire need.

Muhammad Tehseen Azhar

Department of Plant Breeding and Genetics, University of Agriculture, Faisalabad Pakistan addressed the problems of the cotton plant in Pakistan. He said that southern areas of Punjab and Sindh provinces are major contributors to the production of cotton but increasing temperature



exerting a negative impact on its production. Less germination rate, low dose of BT toxin, imbalanced used of fertilizer and infestation of whitefly are also the major constraints in good cotton production. Heat stress can be minimized by developing short duration varieties and implementation of conventional breeding with molecular approaches is the need of the hour to get maximum yield.

Dr. Muhammad Iqbal addressed the main causes of climate change are emissions of greenhouse gasses. Effects of climate change include rising temperature, summer and winter duration, drought and rainfall distribution and increased level of atmospheric CO₂. Changes in duration of winter and summer, cotton leaf curl virus, fertilizer and marketing are the challenges as well as the threat for cotton production in Pakistan. He mentioned that in future CLCuV tolerant/free genotypes, plant ideotype, inter-varietal breeding program, interspecific breeding program and mutation breeding must be adopted for efficient crop management and good uniform fiber quality.



Mr. M. Abbas Aziz from Fauji Fertilizer Company Limited, Pakistan talked about nutrient management challenges for sustainable cotton production. Pakistani soils are deficient in nitrogen and phosphorus and were once considered adequate in potassium and other micronutrients. The first step to meet the



challenge of profitable cotton production is the timely application of recommended doses of fertilizer based on site-specific nutrient management. Micro and macronutrients play a central role in enhancing production through plant growth by improving root system, metabolism and hormone activities. He concluded that awareness among cotton growers regarding 4Rs Nutrient Stewardship Strategy to enhance the crop nutrient use efficiency is the need of the day to get maximum profitable yield of cotton.

Dr. Fiaz Ahmad from Central Cotton Research Institute Multan talked that Pakistan is facing severe water shortage. He worked to evaluate the performance of cotton genotypes under normal and deficient irrigated conditions and recommended that characterization of cotton genotypes on the



basis of physiological and drought tolerance indices can provide baseline information for variety selection and its sowing under defined agro-climatic conditions.

SESSION 4. COTTON BREEDING AND BIOTECHNOLOGY

VENUE: BAHAUDDIN ZAKARIYA UNIVERSITY, MULTAN

Chair:

Co-chair: 1) Dr. Rao Abdul Qayyum 2) Dr. Muhammad Iqbal Bandesha

Dr. Saghir Ahmad Director Cotton Research Institute Multan gave a talk on “Major Cotton crop issues and research interventions for the solution “. In his talk, he explained the economic importance of cotton and its impact on the country and informed that cotton and cotton products contribute 1% of the GDP and 51 % of the foreign exchange earnings of the country. He discussed in detail about all the problems to the cotton crop including both biotic and abiotic stresses. In the abiotic stresses, the major loss to the crop is due to high temperature and low rainfall especially in the cotton growing areas including Punjab. While among the biotic stresses Pink Bollworm, whitefly and dusky cotton bug are the main pathogens that are deteriorating the productivity of the crop. He also suggested some recommendations that can play a vital role for overcoming the cotton losses including the use of 3rd generation Bt & glyphosate-resistant genes good fiber quality genotypes, selection of climate resilient and stress-tolerant varieties, identification of zone-specific varieties and adaptation of new production technologies and the use of mechanical picking. The use of these new techniques and modern varieties can help to get bumper yield from the cotton field.



Dr. Kamal Ghasemi Bezdi Associate professor from Agricultural Research Education and Extension Organization, Cotton Research Institute of Iran, presented his work on “Investigating the possibility of using tissue culture method for F₁ cotton hybrid propagation”. He explained briefly about the cotton crop, its problems and economic importance. It was also highlighted that the production of hybrid seeds of cotton is very costly it is one of the biggest challenges for the production of hybrid cotton. Any method that

can reduce the cost of hybrid seed production will be worthwhile. In his experiment, tissue culture-derived plantlets produced in the laboratory were cultivated at the field conditions, and after a selection, a completely distinct cotton plant was selected and named KGH-TC (Briefly, the K cotton line). In 2015, during hybridization between the K-line and Golestan cotton cultivar was



produced about 100 g of F₁ hybrid seed, and named KG. F₁ seeds with their parents entered tissue culture experiments and several characteristics of explants on MS nutrient medium containing different hormonal compounds were studied. After 6 months, 241 strong stems were produced and transferred to root induction nutrient media. Mr. Kamal concluded that the propagation of F₁ cotton hybrids is possible through in vitro methods.

Mr. Muhammad Kashif presented his research on “DNA markers for highest boll size of cotton in Pakistan” in which he explained the importance of boll size in the economically important crop Cotton and its role in the lint production. He said that the highest boll size has been reported in a cotton variety FH-Lalazar whereas, a variety CRIS-134 produce smaller bolls.



Therefore, he hybridized parents FH-Lalazar and CRIS-134 produce F₁ and F₂ populations. The populations were grown in the field to evaluate boll related traits such as boll size, boll weight, number of locks, number of seeds, seed index, fiber length, fiber strength and fiber fineness. According to him, A total of 100 EST-SSR markers were screened to observe parental polymorphism from which 24 EST-SSR primers on the basis of showing clear polymorphism. He informed that the nearest markers to these QTLs were NAU1151 and NAU120 7that can be used in molecular breeding to increase boll size in cotton.

Dr. Zhongxu Lin from National Key Laboratory of Crop Genetic Improvement, China presented his research entitled “Interspecific germplasm development promotes the genetics and breeding in cotton”. He discussed the importance of genetic diversity of upland cotton. He explained his study in which he developed new germplasm resources by hybridizing *G. barbadense*, *G. Darwinii*, *G. tomentosum* and *G. mustelinum*. He explained that the maps he constructed could be useful in targeting quantitative trait Loci and genes those could be used in the cotton breeding programs.



Dr. Chao Shen from Huazhong Agricultural University, Wuhan, China discussed the importance of genomic variation of tetraploid cotton species in his talk entitled “QTL mapping using introgression lines and genome-wide association study and recombination rate variation in cotton”. He also shared his findings of the development of



introgression line *G. mustelinum* that was resulted from the combination of *G. hirsutum* and *G. mustelinum*. He said that lines they developed showed wide variations in yield components and fiber quality. He informed that they detected a total of 48 QTLs, including 19 for yield components and 29 for fiber quality those will be used in the fine mapping and cloning.

Dr. Yi-Xiong Tang from Biotechnology Research Institute Chinese Academy of Agricultural Sciences talked entitled “Functional characterization of stress-responsive genes and genetic engineering in cotton” He explained that drought and salinity stress severely inhibit growth and reduce cotton crop yields to a



greater extent.

He informed that they have cloned *PeDREB* and *KcERF*, isolated from *Populus euphratica*, *Kandelia candel*. Introduced these genes via *Agrobacterium*-mediated transformation system. He claimed that when compared with the control cotton plants, the genetic cotton showed higher germination ratio of seeds, elevated levels of soluble sugars, and lower levels of malondialdehyde, under stress conditions.

Mr. Mahmood Ahmed from Huazhong Agricultural University, Wuhan, China reported about the importance of fiber stability of cotton in his presentation, entitled “Genetic dissection of boll size regulation” He gave a view that enhancement of weight of cottonseed can contribute in increased fiber yield. In this regard, he shared that he performed Map-based cloning of a regulating locus qSCW-c12, which led to the identification of GhBRH1_A12. Genetic transformation of this locus into the other cultivars also exhibited an enhanced boll weight. The locus was found to be actively involved in the cotton boll development that can be further utilized in cotton improvement overall.



Mr. Sultan Ahmed Baloch reported the status of Cotton growth in different parts of Pakistan. He highlighted the growth of cotton crop specifically in Baluchistan. He gave a view that Baluchistan offers the huge potential of cotton production due to its fertile and productive soils. He informed



that Cotton has been cultivated in 19 different districts of the Province Baluchistan. He explained a trail that was conducted at Lasbella for testing and evaluating the performance of commercial cotton varieties for general cultivation, which are high yielding early maturing, heat tolerant with desirable fiber characteristics resistant/tolerant to insect pest and disease particularly cotton leaf curl virus (CLCV) of different breeders. They found CRIS-129,

CYTO-179 FH-901 and CIM-602 as the best performing cultivars that can be further use in the cotton production and hybridization program.

SESSION 5. INSECTS-PEST MANAGEMENT OF COTTON

VENUE: BAHAUDDIN ZAKARIYA UNIVERSITY, MULTAN

Chair: Prof. Dr. Liu Shu-Sheng

Co-Chair: 1) Dr. Shafqat Saeed 2) Dr. Abdul Razzaq

Dr. Ghulam Ali: Presented his work on “Biological and genetic characterization of a Pakistani isolate of *Spodoptera litura* nucleopolyhedrovirus”. He said that due to Bt-cotton *Heliothis* populations are controlled, but *S. litura* filled the niche and has resurged as major insect pest in cotton and other crops. Irrational use of insecticides has created resistance in *S. litura* populations. The object of his research was to explore the potential of wild-type *Spodoptera litura* nucleopolyhedrovirus (SpltnNPV) from Pakistan to manage *Spodoptera litura* populations. And to find out are there wild-type SpltnNPV isolates available in



Pakistan? Is there biological and genetic relevant diversity among SpltnNPV isolates from Pakistan? Is it possible to select SpltnNPV biotype for biocontrol? He concluded that clear evidence of variations in biological activity. Pakistani SpltnNPV-Pak-BNG isolate is more closely related to the SpltnNPV type species G2. Interspecific genetic diversity among the tested isolates. SpltnNPV-Pak-BNG is a potential candidate to control *Spodoptera litura*.

Dr. Khezir Hayat from CCRI, discussed “Association Analysis for Ginning Outturn in Upland Cotton Germplasm using Genotyping-by Sequencing”. He said that the aim of his research was to determine ginning outturn related markers. Exploring the elite alleles and germplasm accessions related to fiber quality traits will accelerate the breeding of cotton for fiber quality improvement. Genotyping-by-sequencing (GBS) is a method that can rapidly identify and genotype a large number of single nucleotide polymorphisms (SNP).



Genotyping the germplasm using GBS technologies will enable us to identify marker-trait associations with high resolution. He further said that association mapping using mixed linear model (MLM) and General linear models (GLM) was performed. Marker-trait associations were identified and it was shown that 74 SNPs found to be highly valuable in GLM, 11 SNPs found to be associated with ginning outturn which lies on chromosome 5, 13, 14, 15, 16, 18, 19 in MLM. Among these markers, SNPA8810 and SNPA9279 had probability of 0.0001, 0.00007 and r^2 0.11434, 0.07562 respectively. He concluded that there is great potential for mining elite alleles from germplasm accessions for ginning outturn improvement via modern cotton breeding.

Muhammad Ali Abid: From Biotechnology Research Institute CAAS discussed the “Identification and Functional Analysis of *SP* Gene Controlling Development of Cotton Petal Spot”. Cultivated upland cotton lacks a petal spot but such spots have been found in the so-called primitive cotton or race stocks. The five petals of *G. hirsutum*, and *G. barbadense* contained an area of anthocyanin pigmentation at the base, called a petal spot, like in Asiatic cotton, *G. arboreum*. In his study, F₂ interspecific population of ISR and P30A (parental genotypes) had been used for mapping of candidate gene responsible for spotted/non-spotted petal trait in cotton. Primary mapping revealed that spotted/non-spotted petal trait is controlled by region on chromosome # A07 between InDel primers A07INS8 and A07DEL13, this region was further narrowed and mapped candidate gene using 5000 F₂ plants yielding a fragment of 70 kb in size. This 70 kb region include 7 genes, among these genes only one gene SP (spotted petal) belong to MYB transcription factor and that might be responsible for anthocyanin pigmentation because mostly MYB transcription factors are responsible for anthocyanin pigmentation. Expression analysis through qPCR showed that SP was highly expressed at bud development stage, followed by candle and least expressed when flower fully opened. Virus-induced gene silencing (VIGS) was used to silent the *GbSP* gene in ISR that confirm spotless to slight spotted petal. He concluded that the MYB proteins (SP) control anthocyanin biosynthesis via activating the late biosynthetic steps by establishing MYB-bHLH-WD40 (MBW) complex to activate the late biosynthetic genes.

Mr. Kashif Noor: Ph.D. Scholar Department of Plant Breeding and Genetics University of Agriculture Faisalabad. Discussed that the Bt cotton was developed against lepidopteran insect pests i.e. American bollworm, Pink bollworm and Army worm but reports showed that the target pests like American bollworm and Pink bollworm developed resistance against Cry1Ac. Double gene Bt cotton was officially approved for general cultivation in 2017, but

the susceptibility level of target pest against this stacked gene cotton has not been determined yet. He shared the results of his experiment in this regard. He said that bioassay was conducted by feeding 1st larval instar of armyworm on four cotton genotypes (G1, G2, G3, G4, G5, G6). The genotypes G1 and G2 contained double genes (Cry1Ac and Cry2Ab) but G3 and G4 contained only single gene (Cry1Ac) and G5 and G6 contained only single gene (Cry2Ab). After 7 days of larval feeding, genotype one (G1) with double genes (Cry1Ac & Cry2Ab) showed 80% larval mortality at toxin concentration of 21.12mg/g of Cry2Ab and 1.74mg/g of Cry1Ac, second genotype (G2) with double genes (Cry1Ac andCry2Ab) showed 75% mortality at 21.3mg/g of tissue of Cry2Ab and 1.86mg/g of tissue of Cry1Ac. Third genotype (G3) with Cry1Ac showed 30% larval mortality at 2.1mg/g of tissue of Cry1Ac and fourth genotype (G4) with Cry1Ac showed 50% larval mortality at 2.55mg/g of tissue of Cry1A. Fifth genotype (G5) with Cry2Ab showed 78% larval mortality at 22.14mg/g of tissue of Cry2Ab and sixth genotype (G6) with Cry2Ab showed 85% larval mortality at 21.54mg/g of tissue of Cry2Ab. He concluded that less resistance in army worm (*Spodoptera litura*) against genotype with both Cry1Ac and Cry2Ab genes was developed as compared to genotypes with single Bt genes. He further recommended that performance of Bt cotton largely depends upon the expression of *Cry1Ac* gene in Pakistan, therefore there should be a standard concentration of Bt toxin for approval of Bt cotton variety. Promote “Refuge cotton” along with Bt cotton to delay insect resistance against Bt cotton. Policies should be established to monitor Bt toxin in all Bt cotton varieties and to ensure availability of authentic seed to farmer.

Dr. Muhammad Rafiq Shahid: Assistant entomologist, Cotton Research Institute Multan presented his research work entitled “Conservation of predatory fauna through un-sprayed conditions and their impact on sucking insect pest of cotton”. He said that conservation of predatory insects is very useful in the sustainable management of harmful insects. He said that in his experimnts were performed under unsprayed conditions at Cotton Research Institute, Faisalabad during 2015-16. For this purpose cultivars comprising of MNH-992, FH-Lalazar, FH-444, VH-363, FH-242, FH-342, FH-312, FH-326, FH-313 and FH-142 were sown on normal sowing times (10-5-2016) and bed sowing method to safe water. Results revealed that with an increase in insect pest population there was also an increase in predators population because cotton whitefly was maximum (10.1 to 12.1 per leaf) from 15-8-2016 till 30-9-2016. Similarly peak population of predators i.e., predatory bug (20.0/5plants), coccinellid beetle (9.2/5plants) and chrysoperla (24.2/5plants) were also observed during this

period on 15-09-2016. So whitefly was most favorite prey for all the predators. He concluded that Chemical control disturbed natural ecosystem due to insect resistance, secondary insect pest outbreak, resurgence of primary pest problem and toxic effect on predatory fauna. He said that from the results it is clear that we should not be worried because for every action there is reaction with same magnitude but with opposite direction. We should save the lives of non-targeted arthropods from the toxic effect of insecticides because they are very helpful in controlling insect pest pressure.

CONCLUDING SESSION

VENUE: BAHAUDDIN ZAKARIYA UNIVERSITY, MULTAN

The concluding session was started with the recitation of few verses from the Holy Quran and the recitation of a Naat Rasool-e-Maqbool.

Prof. Dr. Masood Akhtar, Dean Faculty of Veterinary Sciences, Bahauddin Zakariya University, Multan welcomed all the national and international guests at BZU. He appreciated the efforts of MNSUAM, CAAS, BZU and CCRI for the successful conduction of this conference. He hoped that this conference will help to solve the problems of



the cotton growers, dealers and technologists moreover it will also help for the technology transfers between the national and international scientists. In the end, he added that it will be an honor for the BZU if some parts of the future SNIO-PAK cotton conference will be again hosted at their campus.

Mr. Abdul Hayi Dasti advisor to the Chief Minister Punjab declared the conference a success. He said that the efforts of MNSUAM will bring a significant revolution in the field of cotton breeding and biotechnology in Pakistan. Mr. Abdul Hayi Dasti also expressed his thanks to the Chinese scientists for their coming and making this event more significant in case of the welfare of farmers, scientists and overall society. He said that the SINO-PAK cotton conference is a practical example of friendship



between Pakistan and China, the government will always welcome our Chinese brothers for their contribution to the field of science and technology. He ended his talk with the words of “Long live Pakistan China friendship”.

Prof. Dr. Asif Ali, Vice-Chancellor MNSUAM concluded the session and appreciated the efforts of the organizers from MNSUAM, BZU and CCRI particularly the Institute of Plant Breeding and Biotechnology MNSUAM for their extensive exercise to make this event a success. The Vice-Chancellor also appreciated the Prof. Rui Zhang for her proposal of hosting 3rd SINO-PAK



conference at CASS Beijing China. He acknowledged all the public and private sectors those have sponsored this event including Higher Education of Pakistan, Punjab Agriculture Research Board, Punjab Higher Education Commission, Pakistan Science Foundation, Pioneer, Fauji Fertilizer Company, SunCrop Group, Fatima Fertilizer Ltd. and GIBS foods. He said that this conference will open new ways for the success of sustainable cotton production and the cotton technology transfer between China and Pakistan. He further wished that the conference will be organized every year until we solve the problems of the farmer community of both countries.

Dr. Abid Mehmood, Director General Research, in his concluding remarks appreciated the efforts of MNSUAM, CAAS, Beijing China, BZU, Multan and CCRI, Multan for providing an opportunity to the researchers, academia, growers, public and private sector seed producers, students and other stakeholders to sit together and discuss the issues faced by cotton crops and finding solutions of the problems. He hoped that the effects of these efforts will leach to the end users. If such conferences will be conducted on yearly basis there is no doubt that we will overcome all issues

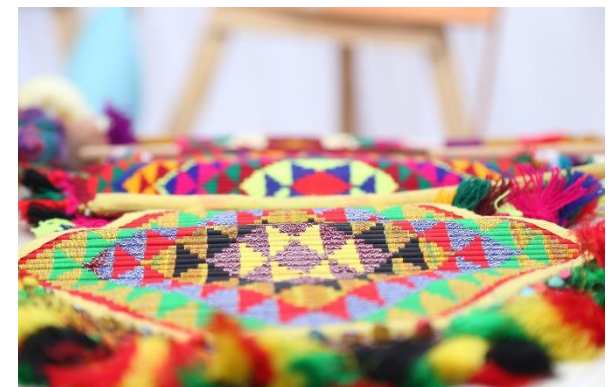
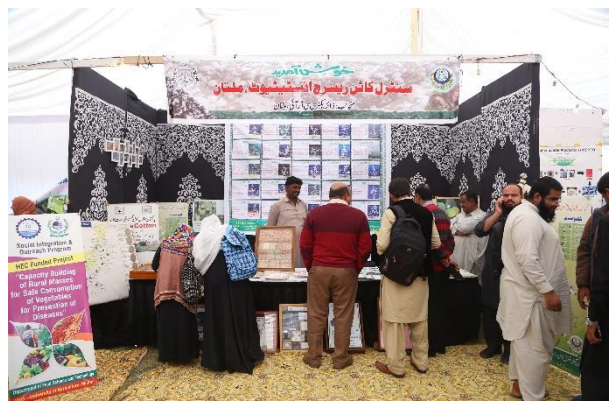


related to this King Crop. He further presented the cumulative recommendations derived from all the talks delivered during five technical sessions. These recommendations are given above.

WRAP-UP OF THE CONFERENCE



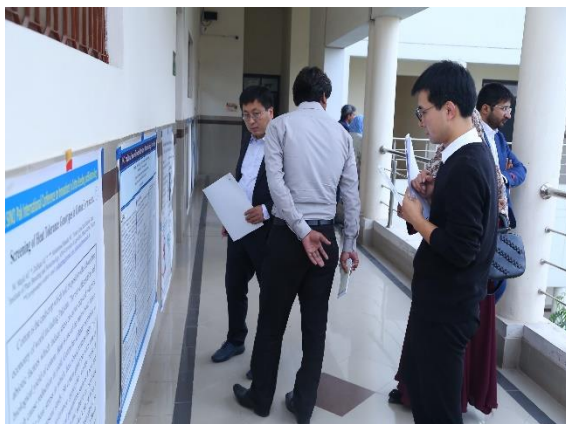
STALLS OF THE STUDENTS AND PRIVATE COMPANIES



STALLS OF THE STUDENTS, PUBLIC AND PRIVATE COMPANIES



POSTER EVALUATION



CONCLUDING SESSION



CONCLUDING SESSION



MEDIA COVERAGE

DAILY EXPRESS

روزنامہ ایکسپریس

ملتان

TUESDAY, NOVEMBER 27, 2018

پاکستان کے 11 شہروں سے یک وقت شائع ہونے والا واحد اخبار

جلد 17، شمارہ 102 | منگل 18 ربیع الاول 1440ھ 27 نومبر 2018، 13 ستمبر 2075 ب۔ صفحات 12 قیمت 20 روپے



ملتان: بین الاقوامی سائنسوپاک کاشن کانفرنس سے وی سی پروفیسر ڈاکٹر آصف خطاب کر رہے ہیں

ملتان: زرعی یونیورسٹی میں دوسری بین الاقوامی سائنسوپاک کاشن کانفرنس

10 بلین کا نئے کپاس کا مقررہ ہدف پورا ہوتا نظر نہیں آتا، صوبائی وزیر حسین جہانیاں

ملتان (نامہ نگار) محمد نواز شریف زرعی یونیورسٹی کے زیر اہتمام دوسری بین الاقوامی سائنسوپاک کاشن کانفرنس کا انعقاد کیا گیا۔ افتتاح صوبائی وزیر برائے مینجمنٹ اینڈ پروفیشنل ڈولپمنٹ حسین جہانیاں، گورنری، وائس چانسلر جامدہ پروفیسر ڈاکٹر آصف علی، ممبر صوبائی اسمبلی حاجی عطاء الرحمن اور ڈائریکٹر جنرل

ایگریکلچر ریسرچ پنجاب ڈاکٹر عابد محمود نے کیا۔ صوبائی وزیر حسین جہانیاں گورنری نے کہا کہ ایم این ایس 93 اور اس جیسی دوسری اقسام سے کپاس کی زیادہ پیداوار حاصل کی جاسکتی ہے۔ ہرگزرتے سال کے ساتھ ہماری کپاس کی مجموعی پیداوار کم ہوتی جا رہی ہے۔ اس سال 10 بلین کا نئے کپاس کا ہدف مقرر کیا (باقی صفحہ 5 نمبر 18)

18) کانفرنس

گیا تھا جو پورا ہوتا نظر نہیں آتا۔ موسمیاتی تبدیلیوں کی مناسبت سے نئے تیار ہونے والی کپاس بھی عالمی معیار کی تیار ہو سکتی ہیں۔ وائس چانسلر جامدہ پروفیسر ڈاکٹر آصف علی نے کہا کہ سائنسوپاک کاشن کانفرنس چائنہ اور پاکستان کے سائنسدانوں کے درمیان تحقیقاتی اشتراک بڑھانے کیلئے بہت معاون ثابت ہوئی۔ زرعی سائنسدان دوسرے ممالک کے ساتھ مل کر کپاس کی ایسی اقسام بنانے کی کوشش کر رہے ہیں جو کم پانی میں زیادہ پیداوار دے سکی ہیں۔

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وقت

روزنامہ

پناب کی ساری خبریں
 اور ہر جگہ کی ساری خبریں
 پاکستان کی ساری خبریں

روزنامہ کوئی اور نہیں ہے / اسلام آباد کوئی اور نہیں ہے / ملتان سب سے پہلے

اسلام کے سچے
 ساتھ تھامیں اور
 قلم اٹھائیں اور

— سے کہہ کر نہیں ڈر
 (پیشہ) رہا ہے 50 ام تو
 خدات سے زبان سے کہیں
 تم میں سے اکثر لوگ حق سے
 لڑتے رہتے رہتے چھٹے کما
 نہیں ہے کسی کا پانی ہوا کر
 لیا ہے مبینہ ہاؤسنگ کی پور
 کام نہ لے لے نہیں کیا
 کا پانی لے لے لے لے لے لے لے
 جن میں سے کسی کا کھانہ نہیں
 منے (تعمیرات) سے نہیں رہے
 ہیں لکھنؤ سے کہیں پاکستان
 کے ہی سے نہیں ہیں

سورۃ انفراق
 (آیت: 78-80)

جلد	18	تاریخ اشاعت	27 نومبر 2018ء 14 ستمبر 2017ء			صفحہ	12
فون	41	فون	111-222-007	111-222-007	4545571-74	قیمت	20 روپے
			157	96	12	شمارہ	157



فیسول ہائیڈروجن کی ہولڈنگ کے نام پر اسٹیٹ بینک سے لے کر ان کے عہدے کے خلاف پورے پاکستان میں احتجاجی دھڑوں کا انعقاد کیا گیا ہے۔

ہزاروں کوئی پینال آرمی کی کیا رکبتی تھی یہ کیوں مینا تھی تھی تیار ہو گیا

اسلام آباد: گھاتوں کا رونا کرنا اور فائرنگ کا شہسوار بننا، آرمی کی طرف سے ایجنٹوں کے خلاف کارروائیوں کا آغاز ہے۔ ایجنٹوں کے خلاف کارروائیوں کا آغاز ہے۔ ایجنٹوں کے خلاف کارروائیوں کا آغاز ہے۔

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جیٹ ایڈیٹر: قیاس شاہ

ملتان

QR Code

Daily
KHABRAIN

روزنامہ

ایڈیٹر: امتنان شاہ

جلد 27

شکل 18 ربیع الاول 1440ھ 27 نومبر 2018ء 14 ستمبر 2017ء تا 12 اکتوبر 2020ء ہے

نمبر 175



روزنامہ کھبراہن کی ادارت و اشاعت کے لیے تمام تر عملی امور کا
کامیاب انجام دینے کا مقصد ہے۔

PM Imran vows to facilitate investors in country

ISLAMABAD: Prime Minister Imran Khan on Tuesday said that his government was committed to facilitate investors and vowed to provide favourable investment climate in the country. Talking to a delegation of Coca Cola from Turkey, which visited him here in Islamabad on Tuesday, PM Khan said that their government will help guide businessmen in taking advantage from the existing opportunities in the country by providing level playing field. -APP

BusinessNews

Wednesday, November 28, 2018

Three US soldiers killed in Afghanistan: NATO

KABUL: Three US soldiers were killed and three wounded by a bomb in Afghanistan Tuesday, NATO said, taking the number of American service personnel to die in the war-torn country this year to 12. NATO's Resolute Support mission would not immediately release any details about the soldiers, but said they had been killed when an improvised explosive device (IED) detonated near Ghazni city in central Afghanistan. -Monitoring

Cotton-Recommendations: Experts advise not to cultivate maize, sugar cane in cotton zone

Country's future, economy links to cotton, says Husasin Jahania Gardezi

Jehangir Khan Tarret

MULTAN: A two day Sino-Pak International conference concluded with a set of recommendations advising farmers not to cultivate maize and sugar cane in cotton growing areas in the country.

The second session of the conference ended at Jinnah Hall, Multan of Bahauddin Zakariya University wherein delegates from home and abroad suggested that farmers should not use excessive pesticides because it has led to increase in resistant white fly bio-types which were more efficient in transmitting transmission.

Precision agriculture to overcome the current challenges of climate change and the inappropriate spread of fertilizers, use top dressing on hot soil, and late season application of N fertilizer should be discouraged besides storage of cotton sticks, the experts recommended.

They also suggested development of mechanical picking friendly varieties and exploitation of potential of late specific Cotton hybrids to improve Cotton.

Use of new technologies like CRISPR/Cas9 based genome editing technology and molecular approaches to complement conventional breeding and development of short duration varieties to reduce extensive losses due to heat stress and development of varieties with low water requirements identification of white fly species/bio-types transmitting begonia virus in Cotton to devise effective management strategy were recommended.

The experts said that use of cotton shredder to shred unspun bolls and cotton sticks to manage pest, boll worm along with observations on behavior of insects to devise management strategies and focus on natural fauna for sustainable management of white fly would also help in better yield of cotton.

Speaking on the occasion, Advisor to CM Punjab on Cotton, Akhbar Ishaq Dasti said that agriculture was the top priority of the government saying it was part of PTI's goal too.

He stated that Prime Minister/Imran Khan, was focusing on Agriculture



said that Pakistan was years of flowers on land, but unfortunately, it did not have sincere leadership in the past.

Imran Khan was much sincere to the country, Mr Ishaq said and added that all of us would observe lot of change after 5 years of PTI government.

Economic condition of the farmers, who are facing adverse situation now, would be improved soon, he hoped.

Addressing the concluding session, Muhammad Nawaz Sharif University VC, Dr Asif Ali informed that next session of the conference would be held in China next year.

He stated that Cotton was his "first love" adding that this years 60 per cent presentations were from Pakistan while 40 per cent from China, USA, Iran, Malaysia and Turkey suggesting that next year it should be 50-50 from Pakistan and other countries delegates.

Chinese Scientist, Dr Zhang Rui

said that the conference came to an end successfully after one and half day. She announced the the next conference would be organized in China next year and invited all the participating delegates to attend it.

Acting VC BZU, Dr Masood Akhtar extended vote of thanks. A large number of students, agri scientists, and faculty members attended the concluding session.

Tarret, A two day Sino-Pak 2nd International conference on "Innovation in Cotton Breeding and Biotechnology" opened at Muhammad Nawaz Sharif University of Agriculture (MNSUA) here on Monday.

Delegates from China, Malaysia, Turkey, Iran besides national agri scientists are attending the conference held under the auspices of Institute of Plant Breeding and Biotechnology in collaboration with Biotechnology Research Institute China, Bahauddin Zakariya University and Punjab government.

Speaking on the occasion, Provincial Minister for Management and Professional Training, Husasin Jahania Gardezi, said that cotton was the future and economy of the country and we cannot do without cotton.

Synagogue sponsored by powerful lobbies has affected cotton, he said adding that we could do without sugarcane but we cannot do without cotton. The minister informed that three

decades ago, Pakistan had produced 12 million (1200) cotton bales representing that last year Pakistan produced 10 million bales only.

The country is lagging behind in cotton production because technology and breeding system of the crop has changed in the world, Mr Gardezi said and added that one cannot avoid change in technology the world is bringing in.

He stated that the country has to import cotton to meet our needs because we could not go with the pace of the world after modifications.

Over 30 per cent of Pakistani exports consisted of cotton or cotton made items, the provincial minister said adding that we could improve our exports if we go

for value addition of cotton.

South Punjab is the home to cotton and if MNSUA made it a regular feature to organize such international conferences annually, it would attract lot more scientists from across the globe, he hoped.

Earlier, MNSUA Vice Chancellor, Dr Asif Ali highlighted the objective of the conference and announced to make a annual feature of the variety.

He hoped that international delegates experiences will be helpful to improve the cotton scenario in the country.

Dr Rai Zhang, Dr Jialin K. Ishaq, Dr Xiansing Zhang, DG Agriculture Research Punjab, Dr Ahsan Mehmood and others also spoke.

Sino-Pak conference on cotton from 26th

MULTAN:-

A two day Sino-Pak international conference on 'Innovation in Cotton and Biotechnology' will start on November 26 at Muhammad Nawaz Sharif University of Agriculture (MNSUA), Institute of Plant Breeding and Biotechnology in collaboration with Biotechnology Research Institute China, Bahauddin Zakariya University and Punjab government would organize the conference. MNSUA would welcome scientists from China, USA, Iran, Uzbekistan, Turkey and Malaysia besides national agriculture scientists. —APP

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'Future of Pakistan's economy linked to cotton'

MULTAN
APP

A two-day Sino-Pak international conference on "Innovation in Cotton Breeding and Biotechnology" commenced at the Muhammad Nawaz Sharif University of Agriculture (MNSUA) on Monday.

Delegates from China, Malaysia, Turkey and Iran along with national agri scientists are attending the conference held under the auspices of Institute of Plant Breeding and Biotechnology in collaboration with Biotechnology Research Institute China, Bahauddin Zakariya University and the Punjab government.

Speaking on the occasion, Punjab Management and Professional Training Minister Hussain Jahania Gardezi said

that cotton was the future of the country's economy.

The minister informed that three decades ago, Pakistan had produced 12 million cotton bales, regretting that last year the country only produced 10 million bales.

"Pakistan is lagging behind in cotton production because technology and breeding system of the crop has changed in the world," Gardezi noted, adding that one cannot avoid the continuous changes in technology the world was bringing in.

He said the country had to import cotton to meet domestic demands because it could not match the pace of the world.

"Over 50 per cent of Pakistani exports consisted of cotton or cotton items," the provincial minister said. "We

could improve our exports if we go for value addition of cotton."

He said South Punjab was home to cotton and if MNSUA made it a regular feature to organise such international conferences annually, it would attract a lot more scientists from across the globe.

Earlier, MNSUA Vice-Chancellor Dr Asif Ali highlighted the objective of the conference and announced to make it an annual feature of the varsity.

He hoped that the experience of international delegates would be helpful in improving the cotton scenario of the country.

A large number of scientists, agriculture dept officials, farmers, businessmen and students attended the conference.

Wednesday
November 26, 2018

Rabi ul Awwal 19, 1440 A.H

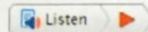
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Foreign scientists present research papers to mitigate whitefly attacks



MULTAN: The Chinese, Malaysian, Iranian and American scientists presented their advanced researches on cotton, combating whitefly and pink bollworm during the two-day Second Sino-Pak international Conference held here on Tuesday on the topic of 'Innovations in Cotton Breeding and Biotechnology'. The Chinese delegation announced that China will host the third conference next year for better yield and production in cotton. Muhammad Nawaz Sharif University of Agriculture and Bahauddin Zakariya University jointly organised the conference at BZU. A 17-member delegation led by Prof Zhang Rui from China participated in the conference. Iranian delegation was led by Prof Kamal, the US delegation was led by Prof Jodi Brown while the Malaysian delegation was led by Prof Dr Siva. They presented their respective researches on innovative techniques which can be helpful in preventing and minimising whitefly and pink bollworm attacks. Plant Breeding and Genetics director Prof Dr Abdul Qayyum said that it would open new windows of research in Pakistan for the betterment of cotton and increase in per acre yield. Punjab Cotton Research Board director general Dr Abid Mehmood said that Pakistan should use Chinese technology against whitefly and pink bollworm attacks.

INTERNATIONAL **THE NEWS**

SINO PAK INT'L CONFERENCE ON COTTON FROM 26TH: A two-day Sino-Pak international conference on Innovation in Cotton and Biotechnology will start at Muhammad Nawaz Sharif University of Agriculture (MNSUA) from November 26.

Institute of Plant Breeding and Biotechnology in collaboration with Biotechnology Research Institute China, Bahauddin Zakariya University, and Punjab government would organise the conference. MNSUA would welcome scientists from China, USA, Iran, Uzbekistan, Turkey and Malaysia besides national agriculture scientists. —APP

Cotton-Recommendations: Experts advise not to cultivate maize, sugar cane in cotton zone

Country's future, economy links to cotton, says Husain Jahania Gardezi

Shehbaz Khan Farooq

MIRANSHAH: A line of 500-700 handloomed traditional cottons are displayed with a set of new recommendations on spinning yarns to use in cotton zone and other cotton producing growing zones in the country.

The second session of the cotton conference, titled "Cotton - Backbone of Pakistan's Economy", was held at the Sheraton Hotel, Miran Shah, on Sunday. The session was presided over by the Minister for Agriculture, Dr. M. Mansoor Khan. He stressed the need to improve the quality of cotton yarns to meet the demand of the international market.

The conference was organized by the Pakistan Cotton Growers' Association (PCGA) in collaboration with the Ministry of Agriculture. It was the first of its kind in the country. The session was attended by representatives from various cotton producing provinces, including Punjab, Sindh, Balochistan, and FATA.

The session was held in the presence of the Minister for Agriculture, Dr. M. Mansoor Khan, and other senior officials of the Ministry. The session was a success and it was felt that it would help to improve the cotton industry in the country.

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	<p>Registration Form</p> <p>2nd SINO-PAK International Conference on Innovations in Cotton Breeding and Biotechnology November 26 – 27, 2018</p> <p>MNS-University of Agriculture Multan, Pakistan</p>	
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321.	Dr. Zhongxu Lin		Huazhong Agricultural University
322.	Dr. Chao Shen		Huazhong Agricultural University
323.	Dr. Rui zhang		
324.	Mr. Mahmood Ahmed		
325.	Mr. Sultan Ahmed		
326.	Mr. M. Rafiq Shahid		
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338.	Liling Pei		Huazhong Agricultural University.
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