



28-29/11/2018

**1ST INTERNATIONAL CONFERENCE ON
SOIL & CROP HEALTH IN CHANGING CLIMATE**



Conference Report by: Dr. Abid Hussain

KEYNOTE

SPEAKER

PROF. DR. SERGEY
SHABALA, AUSTRALIA
PROF. DR. JAVĀID
AKHTER, FAISALABAD

CHIEF GUEST

MS. ZARTAJ GULL
MINISTER OF STATE FOR
CLIMATE CHANGE
MR. SAMI ULLAH CH.
PROVINCIAL MINISTER FOR
FOOD

PATRON

PROF. DR. ASIF ALI
VICE CHANCELLOR,
MNS – UAM

ORGANIZER

DEPARTMENT OF SOIL
& ENVIRONMENTAL
SCIENCES

CONVENER

DR. TANVEER UL HAQ
MNS- UNIVERSITY OF
AGRICULTURE, MULTAN
OLD SHUJABAD ROAD
MULTAN

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Background of the conference

The adverse changes in climate are posing serious threats to soil health and crop quality. The maintenance of good soil health has key role in sustainable agriculture. The soil health is deteriorating due to losses in organic matter, desertification, unbalanced fertilization, misuse of agrochemicals, contamination of heavy metals and soil erosion. Therefore, it's a major challenge for scientific community to optimize and sustain soil health by improving carbon stocks, nutrient cycling, exploiting the soil biodiversity and maintenance of soil structure. Agriculture contributes 21% to GDP of Pakistan and directly and indirectly provides employment to 70% population, which cannot be sustained in future without productive soils. Since last few years, cultivars of major crops in Pakistan failed to produce their actual potential yields due to unexpected rainfall events, shift in sowing times and fluctuations in seasonal temperatures. Owing to climate change, the productive soils are losing their health and thus not supporting the good crop

productions. Moreover, the shortage of irrigation canal water forced farmers to grow crops by using brackish underground water which is increasing the extent of salt affected soils in Pakistan. About 50% of arable lands in Pakistan are affected with the problem of soil salinity and this figure will further increase with an alarming rate, if we do not take actions to sustain soil health.

The traditional cropping patterns and intensive cropping under changing climate have made our soils low in organic matter and deficient in nutrients. These conditions have badly affected soil and crop productivity. In current scenario, improvement and conservation of organic carbon stock, efficient use of fertilizers, appropriate soil amendments and high-water productivity are the key challenges for improving soil and crop health. Advances in soil fertility and soil microbiological research together with advanced technologies of saline agriculture can have positive impacts on soil and crop health even under changing climate. Moreover, suitable adjustments in cultivation methods can save nutrient losses and improve physio-chemical properties of soils. One of

the important dimensions of the efforts for improving soil health and crop production under changing climate is to increase farmer's awareness and skills through outreach. In this context, Department of Soil and Environmental Sciences, MNS University of Agriculture, Multan is holding 1st international conference on "Soil and Crop Health under Changing Climate". This conference aims to bring together researchers, people from industry, students and progressive farmers on single platform to discuss and share their knowledge about advanced technologies for improving soil health under changed climate. This event will focus on variety of advanced research topics including GIS and remote sensing, carbon sequestration, soil fertility and plant nutrition, saline agriculture, soil microbiology and biofertilizers, brackish and wastewater treatment, soil and water conservation, crop and nutrient modeling, greenhouse gas emissions and climate change impact on agriculture. Another objective of this program is to initiate interdisciplinary dialogues regarding the contemporary issues in soil and crop health, and to provide their

cost-effective technological solutions. To meet this challenge the Department of Soil & Environmental Sciences has organized a conference on November 28-29, 2018 at Muhammad Nawaz Shareef University of Agriculture, Multan. The main theme of the conference were

- Saline Agriculture
- Soil Microbiology and Biofertilizers
- Soil and Water Pollution
- Soil and Water Conservation
- Brackish and Waste Water Treatment
- Soil Reclamation and Bioremediation
- Soil Fertility and Plant Nutrition
- Climate Change Impact on Agriculture
- Sustainable Agriculture
- Conservation Agriculture
- Greenhouse Gas Emissions in Different Cropping Systems
- Remote Sensing and GIS
- Crop and Nutrient Modeling
- Carbon Sequestration
- Nutrient Cycling
- Other topics related to conference theme

About the conference messages of chief guests and Patrons has been issued and published in newspaper.

Words from Minister for State Climate Change Ms. Zartaj Gul

Without substantial and sustained global mitigation and regional adaptation efforts, climate change is expected to



cause growing losses to soil health and crop production. To address this Issue, Department of Soil & Environmental Sciences, MNS-UAM has been playing a pivotal role by conducting 1st International

Conference on “Soil crop health in changing climate”.

I would like to congratulate the MNS-UAM on being the beacon of light to address the important challenges and prospects of climate change and crop production in Pakistan. This is a great platform for academia, scientific personals and key stakeholders to join hands with each to improve soil and crop health in changing climate.

Words from Minister Food, Sami Ullah Chaudhry

While addressing the concluding session, he said, I would like to appreciate MNS- University of Agriculture on conducting 1st



International Conference on “Soil crop health in changing climate”. Both soil health and climate are indispensable for sustainable crop production, as well for regional and global food security. To meet the projected world food demand, there is need to explore cutting-edge technologies to break the yield barriers and make crop production more remunerative.

Words from Vice Chancellor, Dr. Asif Ali, MNS-University of Agriculture Multan

MNS- University of Agriculture is always focused on sustainable agriculture. I feel proud to mention that



Department of Soil & Environmental Sciences is very much clear and serious to take up the issue of climate change and its impacts on soil health, crop production and farming systems in Pakistan. . I am convinced that this gathering is a big opportunity for all stakeholders to share their experiences for fixing the emerging challenges of soil and crop health in changing climate.

Words from Dean FAES, Dr. Shafqat Saeed, MNS-University of Agriculture Multan

World’s soils are prone to degradation due to abrupt changes in climate. Pakistan is among the most affected



countries by climate change. To secure the food security for growing world population, there is need to utilize our soil resources on sustainable basis. The initiative taken by the Department of Soil & Environmental Sciences is an excellent step for moving forward. The 1st International Conference

on “Soil crop health in changing climate will bridge gap between the academia, industry and farming community to adopt mitigation measures on sustainable level.

Words from Chairman, Dr. Tanveer Ul Haq, Department of Soil & Environmental Sciences

A brighter future with soil health is the basis for 1st International Conference on “Soil crop health in changing climate. We have to improve the soil that helps us more. We do not have to put everything in there and get everything out every year. We have improve water productivity through precision agriculture, nutrient productivity by apply 4R principal, providing more coverage to soil, using land according to its capability to secure food for future generations.



Proceedings of Conference

The conference has been started with the name of Allah and Naat has been recited. After that welcome address has been given by Prof. Dr. Asif Ali, Vice Chancellor, and MNS-University of Agriculture Multan. In his address he welcomed the participants, and dignitaries from local universities, research institutes and keynote speakers from China, Australia, Malaysia and Iran. He emphasized that the

International Food Policy Research Institute states in its 2009 report, South Asia will be the most severely impacted by climate change. By 2050, it could lose 50% of its high water requirement crops (sugarcane, wheat, cotton, maize). The agriculture in the whole of the Indus Valley is under threat, resulting in direct and indirect impacts on agriculture that could cost billions of dollars. This threat translates into direct impacts to over 100 million people and indirect impacts to the entire burgeoning population of 180 million, which is projected to increase to 240 million by 2035. Salt affected area worldwide: 14 billion ha and 6.5 billion ha of this land is comprised of arid and semi-arid regions, while 1 billion ha of this arid and semi-arid region is salt-affected. Losses due to salinization of agricultural land could reach 11.4 billion US\$ in irrigated land and 1.2 billion US\$ in non-irrigated areas. In Pakistan, about 6.67 million hectares of land is salt-affected.

Pakistan needs to put in place immediate Adaptation Measures directed at its agriculture sector that will help stabilize its agricultural growth rate at around 5% above the population growth rate of 2.4%.

This needs:

- Investment in research and development that provides solutions to high-stress

- Agriculture
- Hi-tech meteorological services along with early warning systems to predict floods, drought, cyclones, tsunamis, wind shear, fog, hailstorms, etc.
- Breeding of livestock species and multiplication of seed varieties that are resistant to drought
- Building up food reserves to cater for extreme events
- Development of an Action Plan that focuses on adaptation and mitigation measures to enable sustainable growth in agriculture
- Financial resources to the tune of US \$30 billion or more to address the needs of agriculture alone over the next 10 years
- Know-how, farmer training and capacity building for the 8 highly diversified agro-ecological zones
- Technology transfer in the area of renewable energy at farm level and green technologies to save the environment from the vagaries of Climate Change
- Massive investment in forest and tree cover across the board with due attention paid to special ecologies, e.g. the coastal belt, where mangroves are the most suitable
- Lastly, a major focus on the youth and children to prepare them to face the consequences of Climate Change. Their education and involvement are a vital part of any sensible strategy.

Keynote address by Prof. Dr. Sergey Shabala.

Prof. Shabala is an eminent scientist of stress physiology (University of Tasmania, Australia)



Global food production will need to increase by approximately 50% by 2050 to match the projected population growth. At the same time, the most suitable land has already been cultivated, implying a need for either expansion into new areas to meet the above target or a dramatic increase in crop production on existing cultivated lands. Given the fact that about 15% of the total land area of the world has already been degraded by various factors, and the other half is ‘perennial desert’ or ‘drylands’ which can only be made more productive by irrigation, both tasks appear to be rather challenging. One of the major threats to this is soil salinity. Over 800 million hectares of land worldwide is affected by salinity comprising nearly 7% of the world’s total land area. Irrigation systems are particularly prone to salinization, with nearly one third of irrigated land being severely affected. Despite persistent questioning of the sustainability of irrigation as a method to increase food production it is highly unlikely that such practices will be

stopped in the near future. Most crops are glycophytes, thus are not capable of growing in high concentrations of salt in the soil. Given the above trends, improving crop salt tolerance is fast becoming one of the key aspects of plant breeding in the future. However, all attempts so far towards improving crop salt tolerance through conventional breeding.

programmes have met with very limited success, primarily because of the physiological and genetic complexity of this trait. Professor Shabala suggested that a new approach of breeding plants for salt tolerance by targeting K homeostasis in plant tissues. Our understanding of the importance of K transport systems and its cytosolic homeostasis under saline conditions has increased considerably in recent years. Indeed, it is becoming more and more accepted that the ability of a plant to maintain a high cytosolic K/Na ratio is crucial in plant salt tolerance mechanisms. In spite of this, only a small number of genes responsible for K as well as for Na transport have been fully characterized physiologically. Furthermore, the majority of these studies on plants have been mostly carried out on the model Arabidopsis species.

Prof. Dr. Javaid Akhtar

Salt-affected is a general term used for soils, which contain soluble salts or exchangeable sodium and/or both, in such amounts that can retard growth and development of plants. Such soils cause reduction in crop yield and are required to be managed and remediated for sustainable agriculture. Mostly salt-affected soils exist in arid and

semi-arid regions but also found in some humid to sub-humid climatic areas, where conditions are favorable for their development. In Pakistan 6.67×10^6 ha area is under salt contamination mainly due to unavailability of good quality water for irrigation. Salts may originate from various sources acting either alone or in combination. Salts accumulation in the arid regions often involves “fossil-salts” which are a consequence of earlier deposits or entrapped solutions in former marine or lacustrine deposits.

However, the primary and major source of salts in soils and oceans is rocks and minerals present in the Earth crust, which are weathering, with the passage of time. Although the salts currently occurring in the ocean arise mainly from the weathering process of the rocks and minerals in Earth crust, now the ocean is functioning as an important “source” for the redistribution of salts. Utility of inorganic fertilizers is increasing and that of organic manures is decreasing in agricultural fields but their contribution to overall salt build-up in soils is insignificant.



Prof. Javaid further added the solutions to salinity; several techniques are adapted to reclaim salt-affected soils. The

fitness of each technique depends upon a number of factors, e.g., 1) Physical, chemical and mineralogical characteristics of the soil; 2) Internal soil drainage; 3) Presence of pans in the subsoil; 4) Climatic conditions; 5) Content and types of salts present; 6) Quality and quantity of water available for leaching; 7) Quality and depth of ground water; 8) Desired rate of replacement of excessive exchangeable Na⁺, if present; 9) Presence of lime or gypsum in the soil; 10) Availability and cost of the amendments; 11) Availability of the equipment for soil tillage, if needed; 12) Crops grown in the region; 13) Topographic features of the land; and 14) Time available for reclamation. Good internal soil drainage, land leveling, and deep ground water (preferably below 3 m) are considered essential prerequisites for successful reclamation. From reclamation point of view, the salt-affected soils may be divided into two categories; 1) saline and 2) sodic/saline-sodic. Organic matter is needed to maintain and even to improve the physical, chemical and fertility characteristics of normal as well as salt-affected soils.

**Speech for Ms. Zartaj Gull, Minister of
State for Climate Change
at Inaugural Ceremony of 1st
International Conference on "Soil and
crop health in changing climate"**

Honourable Minister acknowledged the Vice Chancellor, Distinguished Foreign Delegates, Excellency's, Farmers,

Scientists, Teachers and Students on organizing conference on such a hot issue.

Ms. Zartaj Gul also thanked the delegates from the Australia and China who have travelled a long way from their countries to participate in 1st International Conference on "Soil and crop health in changing climate".

She added, that she is delighted to inaugurate 1st International Conference on "Soil and crop health in changing climate". She also appreciated the agenda of this international conference. Both soil health and climate are indispensable for sustainable crop production, as well as for regional and global food security. To meet the projected world food demand, there is need to explore cutting-edge technologies to break the yield barriers and make crop production more remunerative.

Today's conference addressing a wide range of very important challenges and prospects of climate change and crop production in Pakistan, food security concerns and pragmatic strategies to address these issues will be a very good learning and interactive experience for all stakeholders, she said.

One very important issue crop production is water availability and importance of even a single drop of water for sustainable agriculture cannot be denied. Scarcity of water resources especially in the backdrop of climate change scenario and dwindling natural resource base has become a key challenge to contemporary agriculture.

Pakistan's agriculture sector is almost wholly dependent on irrigation and 90% of the country's water is being used for agriculture. The quest to optimally use the limited resources available for crop production in a profitable manner is the need of hour. Crop production depends on the successful implementation of the agricultural and water management technologies. This is vital to feed the growing world population. Water is the scarcest resource. The importance of the judicious use of water in

agricultural sector for sustaining agricultural growth and the retardation of environmental degradation needs no elaboration. Now it is time to implement principles of crop water requirement in true sense.

Pakistan would have remained largely a desert without the development of system of canals, dams and hydraulic structures. We are aware of the contribution of the government through large investment and efforts by the scientific community for “making the desert bloom”. We wish every success in this noble endeavour to increase agricultural production through the management of water resources.

No matter how much we can do by ourselves on the national level, whether it be research or development, it is never enough. In a spirit of true cooperation, we in this region of the world must join in an action-oriented effort to address and solve the problems that beset land and water development.

If on the national level we can pursue agricultural development as a multi-dimensional concept, encompassing the economic, social, institutional and physical elements of development, in a wider sense, it would be relatively easy to affect the necessary adjustments for a truly effective cooperation on the regional basis.

At the end, she again congratulated the MNS, University of Agriculture Multan, for taking lead to address very important soil health and crop production in changing climate and adoption of innovative technologies for their solutions. She extended my heartiest felicitations to the organizers, sponsors, and participants. The valuable commitment and creativity with which you are working will pave road to success, and will help achieve the noble cause of food security. I also acknowledge many accomplishments and milestones reached by this Institution in a short span of time.



Preliminary Session

The preliminary session was started after the tea session and Prof Anwar Ul Hasan given first presentation on the topic of “Impact of climate change on soil health”. He explained that climate change is a serious global threat and Pakistan has been ranked eighth on the list of countries most vulnerable to climate change by the German watch Global Climate Risk Index. In a recent global greenhouse gas (GHG) emissions study from 2011-2015, Pakistan has been ranked 137th and has contributed only 0.47 percent of global GHG emissions, but owing to its climatic conditions it is consistently bracketed with countries that have drastic climate change effects.

The impact of climate change on soils is a slow complex process as because soils not only be strongly affected by climate change directly (for example effect of temperature on soil organic matter decomposition and indirectly, for example changes in soil moisture via changes in plant related evapotranspiration) but also can act as a source of greenhouse gases and thus contribute to the gases responsible for climate change. In addition, changes in the functions and uses of soils may be driven more by socio-economic factors than environmental ones. These losses of soil carbon will also affect other soil functions like poorer soil structure, stability, topsoil water holding capacity, nutrient availability and erosion. The loss of soil carbon is also accelerated by the increase in temperature. However, these effects could be counteracted by enhanced nutrient release resulting in

increased plant productivity vis-a-vis litter inputs. Increased rainfall could expect increased peat formation and methane release, whilst areas experiencing decreased rainfall could undergo peat, CO₂ loss, increased moisture deficit for arable crops (especially on shallow soils) and for forest soils thereby affecting foraging patterns, reproduction and survivability of the soil invertebrates of the food web and natural plant pathogens.

Dr. Shou-Qing Ni, Shandong University, China

In his presentation Dr. S. Q Ni added that nitrogen-rich wastewater has received much attention due to its potential threat to aquatic ecosystem. Anaerobic ammonium oxidation (anammox) was regarded as highly efficient and cost saving process to remove nitrogen from wastewater. In this process, anammox bacteria directly convert ammonium to nitrogen gas using nitrite as electron acceptor under anaerobic condition. Although the processes based on anammox were high efficient, anammox plants were still a little around the world. The greatest challenge for implementation was the slow growth rate of anammox bacteria, i.e. the double time of 11 days. However, a shortened double time of 3 days for anammox was found in a membrane bioreactor (MBR) and the availability of a fast anammox process opened real perspectives for practical application from laboratory scale. Moreover, MBR was proved to exhibit an excellent performance for the start-up of anammox process. MBR seemed to be a good solution for the development of anammox related process.

Prof. Dr. Saleem Akhtar

Mr. Muhammad Saleem Akhtar briefly discussed about the Aflatoxin which are a family of toxins produced by certain fungi that are found on agricultural crops such as maize (corn), peanuts, cottonseed, and tree nuts. He talk about the introduction of Aflatoxin and sources by which they comes into the animals. Clay minerals are common example for the adsorption of aflatoxin e.g. smectite. The

main objectives of the presentation were to determine mineral composition and characterization of bentonite to evaluate the bentonite effectiveness and sequestering toxins. Criteria for the selection of bentonite was also told 50 mines samples in Pakistan was collected. Their mineral analysis was done for xrd, pH and organic matter content. The results of adsorption were shown graphically. They were classified in 6 mineralogical groups on XRD basis. Smectites were the best adsorbents. Among 50 samples, 4-6 mines were good adsorbents. Their size was about clay 10 microns. Aflatoxin adsorption isotherm for the clays were 1100micro grams per gram which was best for Quetta. Aflatoxins has adsorption capacity for the clays.

Dr. Shahzada Munawar Mehdi

Dr. Shahzada Munawar Mehdi had a talk on the following aspects. He talk about land utilization under different scenario. The soil orders of Pakistan and the classes, which falls under these soil orders. He also discussed the fertilizers use and their status inn different major crops of Pakistan. Micronutrients were important discussion of this presentation. Micronutrients which are being used and are deficient in our soils. The presentation was about nutrients depletion over a time and K depletion per year also. Nitrogen use (phenotypically) kg per hectare in wheat in Safdarabad was elaborated. How much amount of nutrients is being used to produce per ton of biomass, was also discussed in detail. How much fertilizers are being used worldwide was show in comparison with Pakistan. How much fertilizer is needed by a crop and how much is being provided, their way of application and provision gap was also highlighted. Nutrients use efficiency and method of increasing efficiency was also brief. Nutrients low use can be helpful by improving the efficiency of nutrients. Experiments was also conducted to use nutrients efficiently. Recommendations related to crop and nutrients was also advised. Nutrients approaches should be build-up. To use nutrients efficiently new

design like centre rotary design should be adopted. Wheat crop shows a good response to various types of nutrients. Crop response to nitrogen, phosphorus and potassium was also described. A map of Multan division was prepared having OM, pH, EC, P, K, SAR, RSC parameters. Other than Multan division the maps of different districts was also shown. A sample of 1000 acres was shown as an example of fertility use. Models to facilitate the farmers was also prepared and adoptability of the recommendations by the farmers was assessed, 70% adaptations were noticed by 40 billion. Increasing trend for the installation of tube wells was recorded. Imbalance use of fertilizer and high cost of fertilizers are major issues for less production.

Technical Sessions

More than 60 presentations have been conducted in technical sessions. The scientists and students from renowned universities has participated in Oral and Poster presentations. Based on all presentations which were conducted for two days of conference, the recommendations were prepared and presented as follows.

Conference recommendations

- In the next decades, agriculture in Pakistan will move into marginal lands not suitable for current crops. This will require a major shift in the current management practices and develop new technologies to ameliorate negative effects of extreme climate by using new chemical (plant growth regulators) and biological (growth promoting bacteria and fungi) tools
- To increase soil organic matter and sustain soil fertility, judicious residue management should be opted. Burning of residue should be avoided. Use of organic amendments/green manure crops in conjunction with synthetic fertilizer sources can help reduce fertilizer input

- Growing legume/cover crops can prevent soil degradation and will improve soil fertility and physical health
- Current fertilization practices will unlikely work under predicted climate change scenario. Current policies and recommendations to growers need to be adjusted to reflect this, and crops with higher nutrient use efficiency under stress conditions need to be developed
- Use of untreated sewage water for crop production especially vegetables should be avoided. Sewage water should only be used after effective treatment. Technological interventions and policy reforms need to be devised and implemented.
- Advanced type of fertilizers, their balanced use and precise site-specific application will lead to economical and ecological benefits while maximizing fertilizer use efficiency
- Pakistan will become warmer and dryer, and agricultural crop production in the country will become drought prone and saline and rely heavily on use of a low-quality irrigation water. This warrants the need for developing and using more drought and salt-tolerant cultivars and species by implementing an effective, large-scale crop improvement programs for adaptation & drought/salt tolerance
- Reforestation of wasted saline lands with suitable salt tolerant tree species could bring economical, environmental and social benefits and should be considered as one of the top priorities for a future
- Current fertilization practices will unlikely work under predicted climate change scenario. Current policies and recommendations to growers need to be adjusted to reflect this, and crops with higher

nutrient use efficiency under stress conditions need to be developed

- Use of untreated sewage water for crop production especially vegetables should be avoided. Sewage water should only be used after effective treatment. Technological interventions and policy reforms need to be devised and implemented.
- Advanced type of fertilizers, their balanced use and precise site-specific application will lead to economical and ecological benefits while maximizing fertilizer use efficiency

Concluding session

In his Address Honourable Provincial Minister for Food (Punjab) Mr. Sami Ullah Chaudhry, thanked worthy Vice Chancellor, distinguished international and national scientists, researchers, academia, representatives of private sector companies, farmers, ladies and gentlemen.

It is my immense pleasure and honour to be amongst the galaxy of experts from Australia, China and Pakistan for this auspicious event of “1st International Conference on Soil and Crop Health in Changing Climate”.

Agriculture is the basic economic sector of Pakistan, which contribute 19.5 % to gross domestic production, engages 42.3 % of the labour force and provide raw material for value addition. Pakistan’s five major crops cotton, wheat, rice, sugarcane and maize along other crops contribute 6.81 % to total GDP of the country. Though the country has great potential to flourish by improving its agriculture sector, the growing challenges of Aridity, soil salinity, low water productivity and weather extremes due to global climate change are threatening country’s food and energy security. Pakistan has already been placed in top ten countries which are the most vulnerable to climate change impacts and it has been clearly observed by changing weather patterns, rainfall distribution, and heat waves in the country. It is great time to develop

knowledge-based response to soil health and food sustainability, environmental and broader sustainability challenges. Let us enhance competitiveness to meet the challenges of crop production through maintaining soil fertility and health in changing climate. The national and international scientists need to work together to create a coherent and ambitious vision reflecting the best Pakistan Agriculture cooperation with other countries.

I on behalf of Govt of the Punjab extend gratitude to the scientists from around the world and Pakistan who have travelled a long way to participate in this conference. I hope your valuable scientific vision will help the Pakistan agriculture to accept the challenges of aridity, drought, monsoon shrinking and shifting, floods etc. I also strongly believe that these friends of Pakistan will also extend their co-operation in terms of transfer and exchange of technology and human resource, development of joint ventures to address the challenges of framing system for food security.

At the end, Minister appreciate the efforts of Vice Chancellor, MNS University of Agriculture, Multan and his team taking lead to set this platform of discussion for findings solutions of problems associated to climate change. He also congratulate all the participants from research, academia, agriculture industries, farmers and social workers to honour this event for a big cause.

Souvenir Distribution

At the end souvenir has been distributed among the foreign speakers and special souvenir is awarded to farm manager Ch. Abdul Shakoor. The certificates also distributed among the postal presentation winner. The first prize was won by Ms. Iqra Fatima from Quaid-e-Azam University, second prize was won by Mr. Naeem Akhtar PhD Scholar and Third Prize was secured by Miss. Qurat-ul-Ain from MNS- University of Agriculture Multan.



Some glimpses of the international conference



MUHAMMAD NAWAZ SHAREEF UNIVERSITY OF AGRICULTURE, MULTAN
OLD SHUJABAD ROAD, MULTAN

REGISTRAR OFFICE

Tel: 061-9201541, E-mail: registrar@mnsuam.edu.pk

No: MNS-UAM/RO-49/991
Date: 16.08.2018

Notification

The Vice Chancellor has been pleased to accord approval to organize 1st International Conference on “**Soil and Crop Health in Changing Climate**” on November 28-29, 2018 at MNS University of Agriculture, Multan by Department of Soil & Environmental Sciences by constituting the following committee for all types of arrangements of the said conference. The aim of said conference is to bring together researchers, people from industries, students and progressive farmers on single platform to discuss their knowledge about advanced technologies for improving Soil and Crop Health in Changing Climate. Four International Keynote Speakers will participate in the said conference. The funding will be from HEC, PARB, PSF and other sponsors to hold this conference.

Main Advisory Committee

Prof. Dr. Asif Ali
Dr. Ghulam Rasul

Prof. Dr. Ishtiaq A. Rajwana

Prof. Dr. Sergey Shabala

Prof. Dr. Shafqat Saeed

Vice Chancellor, MNS-University of Agriculture, Multan
Director General, Pakistan Meteorological Department,
Islamabad

Pro-Vice Chancellor, MNS-University of Agriculture,
Multan

School of Agricultural Sciences, University
of Tasmania, Hobart, Tasmania 7001, Australia

Dean, FA&ES, MNS-University of Agriculture, Multan

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Prof. Dr. Shafqat Nawaz

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Agricultural Chemist, Pesticide Quality Control Laboratory, Multan.

Mr. Fiaz Ahmad Tahir

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Dr. Muhammad Baqir Hussain

Assistant Professor, Dept. of Soil & Environ. Sci., MNS-UAM.

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Dr. Unsar Naeem Ullah Member
Dr. Wazir Ahmad Member
Dr. Shakeel Ahmad Member
Mr. M. Asif Nawaz Member
Dr. Abid Hussain Secretary

Transport, accommodation and guest receiving committee


Dr. M. Asif Raza Convener
Dr. Abid Hussain Member
Dr. Wazir Ahmad Secretary

Registration and invitation committee

Dr. Shakeel Ahmad Convener
Dr. Muhammad Baqir Hussain Member
Ms. Rubina Ahmad Member
Dr. Shah Rukh Secretary

Report writing and Media Coverage committee

Dr. Muhammad Imran Convener
Dr. Amar Matloob Member
Mr. Muhammad Ali Raza Member
Mr. Muhammad Naeem Member
Mr. Muhammad Usman Jamshaid Secretary


Muhammad Rafiq Farooqi
Registrar

CC:-

1. Pro-Vice Chancellor, MNS-UAM.
2. Dr. Ghulam Rasul, Director General, Pakistan Meteorological Department, Islamabad.
3. Deans/Directors/HOD's/Chairmen of all Teaching Departments, MNS-AUM
4. All concerned Conveners & Members of the Organizing Committees.
5. Treasurer, MNS-UAM
6. Chief Security Officer, MNS-UAM.
7. PRO, MNS-UAM.
8. Secretary to the Vice Chancellor, MNS-UAM.
9. Notification File.