USDA

Annual Report 2022-23

Endowment Fund Secretariat

University of Agriculture
Faisalabad

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University of Agriculture,
Faisalabad


SALUSTIANA

Foreword

The Government of Pakistan and United States of America signed a US$ 12.4 million Food for Progress agreement on September 15, 2003. Under this agreement, the Syndicate under section 25(2)(i) of the University of Agriculture, Faisalabad Act, 1973 approved to establish Endowment Fund at UAF. The Ministry of Finance transferred Rs. 650.00 million through HEC to UAF in 2006. The Endowment Fund, UAF has an independent Board which possesses all of the powers necessary to carry out its activities.

The income generated from investment of this fund is allocated for different activities which focus on food security, poverty alleviation and sustainable agriculture. Agricultural technology has a key role to play for sustainable development and requires investment in human and social capital because they are more knowledge-intensive. According to FAO, one of the major constraints to realizing the potential for increased productivity in Pakistan is the woeful lack of a mechanism to transfer existing technology from government research institutions to farmers. Endowment fund provides an opportunity for the scientists to get financial support for transfer of technologies to the stakeholders.

Research Commercialization is the process that converts ideas, research, or prototypes into viable products that retain the desired functionality. To provide an ecosystem for startups, Endowment Fund Secretariat established "Business Incubation Center" in 2009, with the joint support of Competitive Support Fund (CSF) and Higher Education Commission (HEC), Islamabad. For display/demonstration of developed and tested innovative technologies, a state of the Art Exhibition Centre has been constructed.

Prof. Dr. Iqrar Ahmad Khan (S.I.,H.I.)
Vice Chancellor/Chairman BoD & TAC

Prof. Dr. Ijaz Ahmad Bhatti
Executive Director

Dr. Naeem Mahmood
Additional Director

Mr. Amir Saeed Rana
Deputy Director

Mr. M. Yousuf
Office Assistant

Hafiz. Shoaib Ali Raza
Office Assistant

Mr. Shahzad Afzal
Office Assistant

Mr. M. Waseem Ahmad
J. C. O

Mr. Qaiser Waqas
J. C. O

Contents

Vision & Mission

Vision

To assist the agriculture sector in becoming competitive, profitable and sustainable through innovation and commercialization.

Mission

1. To support UAF faculty and the national scientific community working for the cause of agricultural and rural development.
2. To promote competitiveness in agriculture through competitive/ commissioned Research & Development initiatives.
3. To explore ways and means for strengthening of Endowment Fund for Research & Development.

1. Introduction

1.1 Establishment of Endowment Fund at UAF

Endowment Fund was established with the assistance of USDA with seed money of Rs. 650.00 million. The Syndicate under Section 25(2)(i) of the University of Agriculture Faisalabad Act, 1973 approved the MOU to establish Endowment Fund at UAF. The major objectives of funds are:

a) To support UAF programmes for advanced training in biotechnology, agricultural sciences research, technology transfer and product commercialization.
b) To strengthen faculty and support R&D activities of UAF.
c) To support similar programmes with other institutions of higher learning, private sector, not-for profit organizations, and domestic as international organizations.
d) To encourage increased cooperation among scientists conducting agriculture-related research at universities in Pakistan and the United States of America.

1.2 Management of the Fund

The Board of Directors (BoD) is the governing body of this Fund and is responsible for Fund's program, its financial and managerial policies. Following is the composition of Board:

• Vice Chancellor, UAF (Chairman)	Ex-off
• Vice Chancellor, Agriculture University Peshawar, KPK	Ex-off
• USDA Agri. Attache in Pakistan or his nominee	Ex-off
• Agri. Specialist, USDA, US Embassy in Pakistan	Ex-off
• Eminent Scientists (Two)	For 3-years
• Progressive Farmer (One)	For 3-years
• Executive Director, ALP (PARC), Islamabad	Ex-off
• Registrar, UAF	Ex-off
• Treasurer, UAF	EX-off
• Executive Director, EFS, UAF (member/Secretary)	Ex-off

1.3 Endowment Fund Secretariat

Endowment Fund Secretariat is responsible for the operation of the Fund which consists mainly of the selection, processing, approval, monitoring, evaluation and coordination of projects supported in whole or in part by it. All the activities are planned, approved and coordinated through Endowment Fund Secretariat (EFS) under the supervision of Executive Director. The Endowment Fund Secretariat staff is as under:

1. Executive Director, Professor nominated by Vice Chancellor, UAF
2. Additional Director, Regular (One)
3. Deputy Director, Regular (One)
4. Lecturer, Regular (One)
5. Administration/Supporting Staff (5 Nos)

1.4 Programs

With the approval of Board, the following programs are being sponsored by EFS, UAF

1. Faculty Development
2. Technology Transfer
3. Product Commercialization
4. Research & Development

1.5 Achievements since its inception

The Endowment Fund was established in 2006 at the University of Agriculture, Faisalabad with the assistance of USDA under "Food for Progress" agreement with an amount of Rs. 650.00 million through the Government of Pakistan and Higher Education Commission, Pakistan. The principal amount was invested in banks and the profit generated was allocated for different activities approved by the Board of Directors. Endowment Fund supports the whole value chain of Agriculture including human resource development, sponsoring Research & Development, dissemination of knowledge intensive technologies and promoting University Industry linkages for commercialization of research output.

Since its inception in 2006, EFS has been able to support diverse activities in the university and national level. Its salient achievements are summarized as under.

Endowment Fund Secretariat (EFS) has granted 191 projects worth of about Rs. 630 million, 206 international travel grants and 323 seminars/workshops with total funding of about Rs. 120 million. Endowment Fund has provided technical assistance to all segments of the rural community through Faculty Outreach Program started in 2011 with the focus on skill development and gender mainstreaming. Up till now, EFS has supported 156 outreach activities conducted by UAF faculty at the door step of farmers worth Rs. 21 million.

In addition to this, Endowment Fund has supported the University in developing physical infrastructure like Business Incubation Centre, Farm Market (Rs. 5.91 million), Bio-Safety Lab (Rs 37.31), Exhibition Centre (Rs186.720 million), FM Radio and Integrated Farming Model. Some of the major technology transfer projects sponsored by EFS include projects in Crop Production, Plant Protection, Horticultural Fruits Production, Horticultural Germs Plasm Collection, Vegetable Production, Agro Forestry, Animal Production, Animal Health, Integrated Model Farming, Agri. Mechanization, Water Resource Management, Waste Water Treatment, Alternative Energy Program, Use of ICT in Agriculture, Exhibition & Showcasing, Diagnostic Services, Conservation of Agricultural Heritage, etc.

1.6 Geographical distribution of EFS funded projects

Endowment Fund Secretariat (EFS) provided widespread financial support throughout Pakistan. EFS regularly publishes CALL FOR PROJECT PROPOSALS in the domains of Technology Transfer, Research & Development and Product Commercialization throughout Pakistan via different print media and also issues individual invitation letters to different organizations. EFS had awarded projects to following institutions since its inception.

SN	Year	Institution	No. of projects
1.	2007-08	University of Arid Agriculture, Rawalpindi	01
2.	2008-09	Lesbela University of Agriculture, Water and Marine Sciences, Uthel, Balochistan	01
3.	2008-09	Soil Salinity Research Institute, Pindi Bhattian	01
4.	2011-12	University of Arid Agriculture, Rawalpindi	04
5.	2011-12	Forman College, LHR	01
6.	2013-14	Ayoub Agricultural Research Institute, Faisalabad	01
7.	2013-14	Ayoub Agricultural Research Institute, Faisalabad	01
8.	2014-15	Ayoub Agricultural Research Institute, Faisalabad	01
9.	2014-15	Nuclear Institute of Biotechnology & Genetic Engineering, Faisalabad	01
10.	2014-15	Islamia University Bahawalpur, Bahawalpur	01
11.	2015-16	UAF Sub Campus, Burewala, Vehari	02
12.	2016-17	UAF Sub Campus, Burewala, Vehari	01
13.	2016-17	UAF Sub Campus, Toba Tek Singh	01
14.	2016-17	University of Veterinary and Animal Sciences, Lahore	02
15.	2016-17	Islamia University Bahawalpur, Bahawalpur	01
16.	2019-20	UAF Sub Campus, Burewala, Vehari	01
17.	2020-21	University of Veterinary and Animal Sciences, Lahore	04

SN	Year	Institution	No. of projects
18.	2020-21	Muhammad Nawaz Sharif University of Agriculture, Multan	01
19.	2020-21	UAF Sub Campus, Toba Tek Singh	01
20.	2021-22	Muhammad Nawaz Sharif University of Agriculture, Multan	02
21.	2021-22	UAF Sub Campus, TobaTek Singh	01
22.	2021-22	University of Poonch, Azad Jammu & Kashmir	01
23.	2022-23	University of Arid Agriculture, Rawalpindi	01
24.	2022-23	University of Agriculture, Peshawar	01
25.	2022-23	UAF Sub Campus, Burewala, Vehari	01
26.	2022-23	UAF Sub Campus, Depalpur, Okara	01
27.	2022-23	Shaheed ZA Bhutto Agricultural College Dhokri, Larkana	01

Processing of the Project Proposals

The project proposals are processed in accordance with the procedures approved by the BoD as under:

- Invitation of proposals through National Press.
- Initial evaluation and shortlisting at Endowment Fund Secretariat.
- Review of proposals by three national experts (Nominated by the Chairman BoD/Vice Chancellor)
- Submission of recommended project proposals (at least by two experts) to TAC along with comments of experts for evaluation.
- Rationalization of the recommended proposals by the Committee constituted by the Chairman BoD.
- Final selection/approval by the Board.
- Signing of Implementation Agreement between the executor/PI and UAF.
- Issuance of Administrative approval of the projects.

Section

2

Faculty Development

2. Faculty Development

The Technological Innovations require Investment in human and social capital because they are more knowledge-intensive. Capacity-building in agriculture and allied disciplines has been the prime focus of Endowment Fund, UAF. Further, interaction with the international community and exposure to the developed systems are the additional benefit of this program. A Faculty Development Committee comprising senior faculty recommends such applications to the Chairman BoD for approval.

2.1 Achievements of the year

During 2022-23, following is the achievements under Faculty Development:

1.	Travel Grants for Presenting Papers (Abroad)	01
2.	Short Visit for Institutional Collaboration (Abroad)	02
3.	Seminars/Workshops/Conferences organized at UAF	32

2.2 Short Term Trainings (abroad)

This program has been designed with the objective to accelerate the quantum of research and development in Agricultural Universities through short term trainings that are catalytic to the technological and socio-economic development of the country. Under this program, teachers, scientific and technical staff and researchers of the University of Agriculture Faisalabad can avail the grant for short term local as well as foreign training of their own choice but related to their current field of specialization.

2.3 Travel Grants for Presenting Paper abroad

Endowment Fund Secretariat encourages faculty members to have international exposure by presenting their research findings at various international seminars, conferences, workshops, etc. Following travel grants were provided to faculty members for presenting papers at international events:

SN	Name & Address of the Grantee	Title/organizer/Country
1.	Dr. Hassan Munir, Associate Professor, Department of Agronomy, UAF	Nonspiny Safflower as a Potential Agricultural Intervention for Semiarid and Arid Regions of Punjab Pakistan (Oral presentation) in the IV International Agricultural, Biological and Life Science Conference Organized by Trakya University Edirne Turkey August 28-31, 2022 Trakya University Balkan Congress Center in Edrine, Turkey

2.4 Short Visits for Institutional Collaboration

Travel grants for short visits abroad are provided for strengthening international collaboration and participation in events after nomination by the vice chancellor to represent UAF. Following faculty member was awarded grant under short visits program:

SN	Name /Department	Title/Country
1.	Prof. Dr. Iqrar Ahmad Khan, Vice Chancellor, UAF	To Visit regarding agreement of Cooperation between UAF and Regents of the University of California, USA January 08 to 16, 2023 California, USA
2.	Prof. Dr. Iqrar Ahmad Khan, Vice Chancellor, UAF	Visit regarding: i. To participate in China-Pakistan Horticulture Research and Demonstration Center, (HZAU), China ii. To sign an MoU between Shanghai Academy Agricultural Sciences, (SAAS), China & UAF-Pakistan iii. Meeting at XIU, Urumqi, China for the revival of Confucius Institute. May 16-24, 2023 Huazhong Agricultural University, (HZAU), China

2.5 Seminars/Conferences/Workshops/Trainings organized at UAF

Endowment Fund provides financial support to UAF faculty members to organize seminars/ conferences/workshops at the campus. During the year 2022-23, EFS sponsored following events:

SN	Organizer	Title of Seminar/workshop/conference	Nature
1.	Dr. Javed Iqbal, Associate Professor, Department of Chemistry, UAF	1st International Symposium on Frontiers in Computational Chemistry (FCC). July 4-5, 2022	International
2.	Dr. M. Anjum Zia, Principal, Community College, PARS, UAF	Training entitled One Week Refresher Course for Field Staff. August 01 to 06, 2022	National
3.	Dr. M. Anjum Zia, Principal, Community College, PARS, UAF	Training entitled One Week Refresher Course for Laboratory Staff. August 10 to 16, 2022	National
4.	Mr. Naveed Irshad, Incharge, Department of Humanities & Linguistics, UAF	Workshop on Project Management and Funding in Social Sciences. August 18, 2022	National
5.	Mr. Umar Shareef, Incharge, Motor Pool, UAF	Training of MP-Drivers entitled Capacity Enhancement through Defensive Driving Training Course. August 23-26, 2022	National
6.	Dr. M. Umar Zafar Khan, Assistant Professor, Dr. M. Naveed Anwar, Assistant Professor, Institute of Microbiology, UAF	Workshop entitled Primer Designing, PCR Optimization and Phylogenetic Analysis with its Applications in the Biomedical Field. August 24, 2022	International
7.	Dr. Ayesha Asghar Gill, Lecturer, Department of Humanities & Linguistics, UAF	Training entitled Career Counseling in the Shrinking Borders of Contemporary World. during August, 2022	National
8.	Mr. Bahadur Ali, Lecturer, Department of Humanities & Linguistics, UAF	Seminar on Self-Management. September 05, 2022	National
9.	Dr. Abdul Rashid, Additional Director, ORIC, UAF	Workshop on Newly Inducted Faculty Colloquium for Capacity Sharing with Colleagues and UAF Management. September 17 & 24, 2022	National

SN	Organizer	Title of Seminar/workshop/conference	
10.	Dr. Saqib Ali, Assistant Professor, Precision Agriculture and Analytics Lab, CAS-AFS, UAF	International Symposium on Data Science for Agriculture and Food Security. October 04, 2022	International
11.	Dr. Asim Aqeel, Assistant Professor, Department of Humanities & Linguistics, UAF	Training entitled Disaster Management Course by 1122. October 11 to 13, 2022	National
12.	Prof. Dr. Amer Jamil, Department of Biochemistry, UAF	Symposium on Nutritional Biochemistry. October 17, 2022	National
13.	Prof. Dr. Zulfiqar Ali, Department of PBG, UAF	International Wheat Conference 2022. October 19 to 20, 2022	International
14.	Dr. Anjum Zia, Principal, UAF Community College, PARS, UAF	International Conference on Interdisciplinary Research Innovations. October 26 to 28, 2022	International
15.	Dr. Muhammad Abubakkar, Assistant Professor, UAF Sub-Campus Burewala-Vehari	International Education Expo-2022. October 31 to November 04, 2022	International
16.	Dr. M. Sana Ullah, Associate Professor, Institute of Soil & Environmental Sciences, UAF	International Conference on Climate Change: Impacts & Solutions. November 07-09, 2022	International
17.	Prof. Dr. Zulfiqar Ali, Director, Quality Enhancement Cell, UAF	Training Workshop on Effective Pedagogical Strategies for Lecturers. November 17-18, 2022	International
18.	Prof. Dr. Babar Shahbaz, Director Academics, UAF	Training Workshop on Capacity Building Hybrid/Blended Learning and OBE. December 15, 2022 to November 14, 2023	National
19.	Dr. M. Naeem Faisal, Assistant Professor, Institute of Physiology and Pharmacology, UAF	Workshop on Transgenic Animal Modeling in Biomedical Research. January 24-25, 2023	National
20.	Dr. Rana Ammar Aslam, Lecturer, Department of Structures and Environmental Engineering, UAF	Training workshop on Conceptual Hydrological Modeling. January 23-24, 2023	National
21.	Dr. Zaheer Ahmed, Associate Professor, Department of PBG, UAF	Seminar on National Soybean Policy Dialogue to Develop National Soybean Initiative. February 02, 2023	National

SN	Organizer	Title of Seminar/workshop/conference	
22.	Prof. Dr. Sultan Habibullah Khan, Director, CAS-AFS, UAF	Interactive Workshop to Develop Collaboration between UCD and UAF. March 02, 2023	International
23.	Prof. Dr. Sultan Habibullah Khan, Director, CAS-AFS, UAF	International Conference on Food Security Challenges and Opportunities in D-8 Countries. March 06-07, 2023	International
24.	Dr. Zulfiqar Ahmad Saqib, Associate Professor, Institute of Soil & Environmental Sciences, UAF	Training Workshop on Remote Sensing in Agriculture: Resource Monitoring to Decision Support System. March 06-10, 2023 at UAF	National
25.	Dr. Nazish Jahan, Associate Professor, Department of Chemistry, UAF	First International Conference of Chemistry, Materials & Technology (CMT-2023). March 15-16, 2023	International
26.	Dr. Muhammad Ali, Assistant Professor, Department of Biochemistry, UAF	Two Day International Symposium on Recent Advances in Life Sciences. March 17-18, 2023	International
27.	Dr. Hafiz Mamoon Rehman, Assistant Professor, CABB, UAF	Seminar on Role of Genomics for Soybean Adaptation in Pakistan May 02, 2023	National
28.	Dr. Tahir Munir Butt, Lecturer, UAF Sub-Campus Depalpur, Okara	Training of trainers Gender Role in Food Security Challenges and way Forward May 03, 2023	National
29.	Dr. Asghar Ali, Associate Professor, Institute of Agri. & Resource Economics, UAF	International Seminar Cum Round Table Conference on More Crop per Drop May 08, 2023	International
30.	Dr. M. Aslam, Associate Professor, Department of Plant Breeding & Genetics, UAF	4th International Colloquium on Challenges and Opportunities of Maize Production May 08-10, 2023	International
31.	Ms. Fareha Ghaffar, Lecturer, Institute of Home Sciences, UAF	International workshop on Calligraphy and Miniature-2023 May 08-09 2023	International
32.	Prof. Dr. Khalid Mushtaq, Director, Institute of Agri. & Resource Economics, UAF	Training workshop on Procurement and Supply Chain Management June 23, 2023	National

2.6 Highlights of Some Events

Title of the Event:	**1st International Symposium on Frontiers in Computational Chemistry (FCC). July 4-5, 2022**
Name of Organizer:	**Dr. Javed Iqbal, Associate Professor, Department of Chemistry, UAF**

Objectives

- To strengthen the basics and working of software's used in computational chemistry.
- To stimulate, reward, and publicize methodological advances in computational chemistry.
- To introduce the vastness and important of computational chemistry in the current era.
- To what extent computational chemistry is helping experimental chemistry in every aspect.
- To generalize the computational chemistry applications in various field i.e. material designing, drug designing, optical and laser technology etc.
- To introduce the grand challenges and breakthroughs in computational chemistry methods and applications.

Proceedings

Symposium consisted of 2 sessions: in first session plenary lectures were delivered by Dr. Khurshid Ayub, COMSATS University, Islamabad, Dr. Umar Rasheed, COMSATS, University, Islamabad and Dr. Muhammad Shabbir, Department of Chemistry, College of Science, King Khalid University, Saudi Arabia. In 2nd session lectures were given by Prof. Dr. Reinhold Fink (Online Lecture), Institute of Physical and Theoretical Chemistry, Auf der Morgenstelle 18, D-72076 Tubingen, Germany, Dr. Tariq Mahmood University of Bahrain, Dr. Saima Kalsoom, Department of Chemistry, Preston University, Islamabad, Dr. Aftab Hussain, Centre of physical Chemistry, School of Chemistry, University of the Punjab, Lahore and Dr. Muhammad Arif Ali, Institute of Chemistry, The Islamia University of Bahawalpur.

On 2nd day keynote speakers delivered their lectures which included Prof. Dr. Zaheer-ul-Haq

Qasmi, Panjwani Center for Molecular Medicine and Drug Research, University of Karachi, Prof. Dr. Fu-Quan Bai (Online Lecture), Institute of Theoretical Chemistry, College of Chemistry, Jilin University, Changchun, China, Dr. Mazhar Amjad Gillani, Associate professor HOD, COMSATS University, Islamabad Lahore and Prof Dr. Ijaz Ahmad Bhatti, Dean, Faculty of Sciences, UAF.

Outcome

It was learnt that theoretical chemistry has enormous potential to explain different phenomenon, to quantify results, and how it helps in designing of new materials with novel properties. It was learnt that how practical problems can be solved in chemical sciences by using theoretical models, sensing of toxic chemicals, molecular dynamic simulation and how this simulation used in medicinal chemistry, in silicon drug designing approach, Nonlinear Optics, photo physical properties of materials, it was also learnt that how different theories and methods combine at different length scale, and much more.





Title of the Event:	**Workshop on Project Management and Funding in Social Sciences** **August 18, 2022**
Name of Organizer:	**Mr. Naveed Irshad, Incharge, Department of Humanities & Linguistics, UAF**

Objectives

- How to get funding in social sciences
- How to combine social science and business
- Research management
- Research operations and project management.

Outcome

The activity highlighted the tools and techniques how to earn projects, funding and project management. The participants of this activity definitely polished their qualities. The exposure of participants has extend and updated to initiate project, project planning, execution of research projects its monitoring, management and closing. The participants were asked through questionnaire about how to chose project title, project constrains, project stakeholders, schedule, risk ,communication, managing disruption, resources, funding, and outcome. 95% participants responded accurately. So it is easily claimed that activity achieved its target.

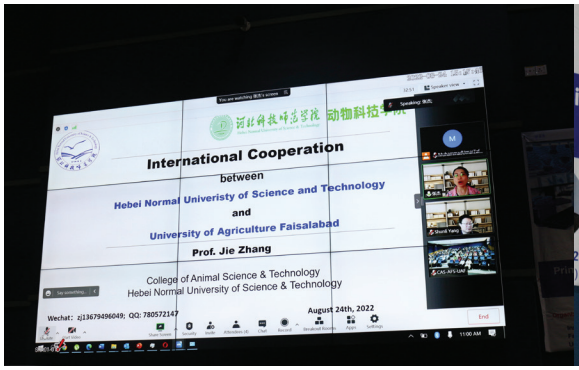
Title of the Event:	**Workshop on Primer Designing, PCR Optimization, Phylogenetic Analysis and its application in Biomedical Field** **August 24, 2022**
Name of Organizer:	**Dr. M. Umar Zafar Khan & Dr. M. Naveed Anwar** **Assistant Professors, Institute of Microbiology, UAF**

Objectives

- Primer designing and its appropriate use in the biomedical field
- PCR optimization and its troubleshooting
- Phylogenetic analysis and its interpretation by using different algorithms

Outcomes of the event

- The event provided the platform for microbiologists Biotechnologist, professional scholars etc., to gain a greater depth of knowledge about bioinformatics tools.
- Helped to develop trained human resources for primer designing, optimization of PCR, and Phylogenetic Analysis for different research domains.
- Helped to the human resources about the deposition of nucleotide and protein sequences in the NCBI database for getting accession number
- Highlighted the current work being carried out in bioinformatics and collaborative research work at the Institute of Microbiology, UAF, and will open future possibilities of collaboration with other national organizations.
- Provided a platform for Young Faculty /scholars and other participants to understand crucial steps of molecular biology like primer designing PCR optimization and phylogenetic analysis with its application in biomedical fields. Build awareness of global, regional, and local problems of AMR among academia, microbiologists, veterinarians, medical professionals, policymakers, etc.
- Developed diagnostic of driftnet disease/drug resistant pattern by PCR.
- Helped to developed scientific collaborations/communication between UAF and other national organizations to work in collaboration via sharing of expertise.

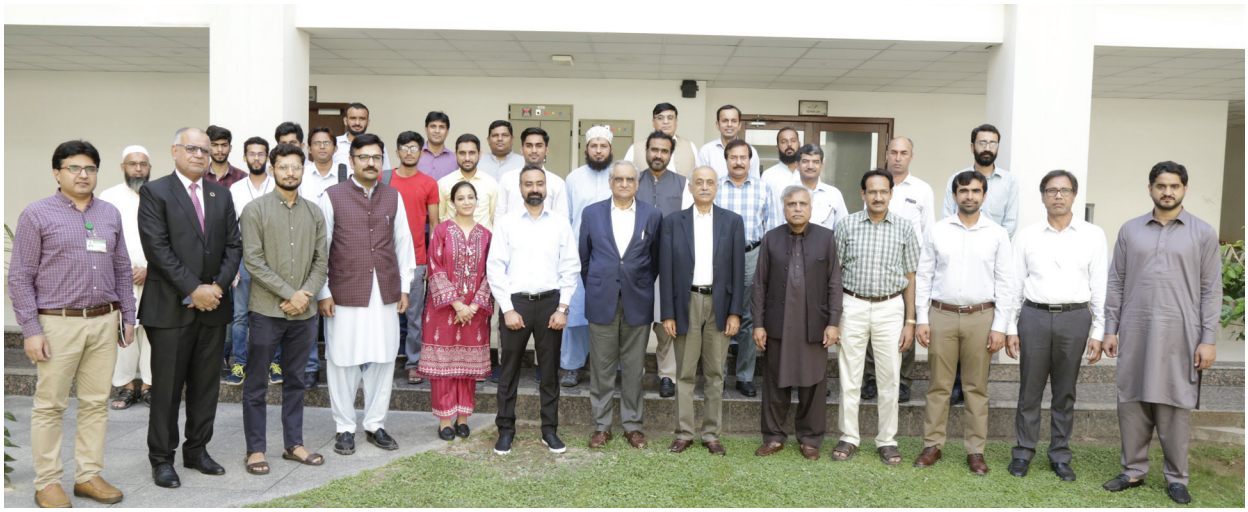


Title of the Event:	**International Symposium on Data Science for Agriculture & Food Security October 04, 2022**
Name of Organizer:	**Dr Saqib Ali, Assistant Professors, CAS-AFS/Department of Computer Science, UAF**

Objectives

- To create an awareness among the academia and professionals to explore and use data science for addressing agricultural problems
- To address the food security issues by using modern data science techniques
- Way forward to cope with climate change and adaptation strategies

The keynote speakers include Dr. Gurjit Singh is an Assistant Professor (Data Science) in the School of Mathematical and Computational Sciences at the University of Prince Edward Island (UPEI), Canada, Tarandeep Randhawa is a Software Developer with IBM Canada and Dr. Aitazaz Farooque is working as an Associate Dean at the School of Climate Change and Adaptation, University of Prince Edward Island (UPEI). The international Symposium was attended by 150 participants present in the auditorium. The guest speakers of international repute shared their visionary insights with the attendees about how modern world is coping with the ever alarming issue of food security. The use of time series data for prediction modelling to plan agriculture cropping system was discussed in detail lecture by the speaker. The interactive question and discussion session envisioned the participants from the knowledge of the speakers. The vice chancellor Prof Dr.Iqrar Ahmad Khan highly encouraged the participants to learn the modern techniques of data science to fully tap the potential of agricultural technologies for reducing impacts of climate change and food security nationally as well as globally. Interdisciplinary research linkages were a point of focus to be adopted for using academia expertise of all the allied disciplines for collective approach to develop sustainable models in agriculture.



Title of the Event: **Symposium on Nutritional Biochemistry**
October 17, 2022

Name of Organizer: **Dr Saqib Ali, Assistant Professors, CAS-AFS/Department of Computer Science, UAF**

Objectives

To create awareness among the community regarding:
- Alarming situation of malnutrition in the country.
- Diet for a healthier life.
- Essential medical tests to avoid fatal diseases.

The symposium was held in Iqbal Auditorium on October 17, 2022. Prof. Amer Jamil, Chairman of the Department, welcomed the guests, keynote speakers and participants of the symposium and emphasized need of the nutritional biochemistry due to emergence of malnutrition in the developing world including Pakistan. Prof. Dr. Iqrar A. Khan, Vice Chancellor, UAF Chief Guest of the symposium appreciated the Dept. of Biochemistry to hold the symposium on this important aspect. He stressed the role of agriculture in providing better nutrition to the community. Three keynote lectures were presented. Prof. Dr. Anwar-ul-Hassan Gilani, hilal-i-imtiaz, delivered a thought-provoking talk on Nutrition Challenges of Modern Life and lifestyle/dietary modification. Dr. Habib Aslam Gaba, consultant cardiologist, talked about Healthy lifestyle for the healthy heart. Dr. Kamran Sharif delivered a talk on Healthy snacking for optimal health. All the three talks were highly appreciated by the participants. Prof. Dr. Khalid M. Khan, SI, President Pakistan Academy of Sciences, was Guest of Honor. He highlighted that more than 37 million people are not getting proper nourishment as per FAO report. The nutritional deficiencies lead to health problems in the people leading to a significant loss in GDP in Pakistan every year. He concluded that such activities should be organized more often for mass awareness. The keynote lectures were followed by a technical session where oral presentations were made.

The symposium exhibited an opportunity for the students and researchers to discover the basic elements of adequate nutrition for healthier life. The eminent researchers and professionals delivered talks to emphasize the importance of health and nutrition to have healthy nation. The symposium helped understand the importance of health & nutrition, its timely diagnostics, remedies and create awareness and knowledge about healthy and nutritious diet.

Title of the Event: **International Wheat Conference**
October 19-20, 2022

Name of Organizer: **Prof. Dr Zulfiqar Ali, Department of PBG, UAF**

Executive Summary

Wheat is the most important staple crop for more than one third of the world population. But climate change is an emerging issue of wheat production and geographical location of Pakistan makes it vulnerable to it. The high temperature may negatively affect the growth of wheat and hence decrease the productivity of wheat. Keeping in view the importance of wheat crop, department of Plant Breeding and Genetics, University of Agriculture, Faisalabad, in collaboration with Washington State University, USA, The University of Sydney, Australia, KWS, UK, CIMMYT, Wheat Research Institute, AARI Faisalabad, PMAS-Arid Agriculture University Rawalpindi, MNS University of Agriculture Faisalabad, Sindh Agriculture University Tandojam, University of Agriculture Peshawar and Lasbela University of Agriculture and Marine Sciences Uthal organized two days "International Wheat Conference 2022" on October 19-20, 2022.

The conference provided platform to discuss major and contemporary problems related to decreased productivity of wheat under climate change scenario, hybrid wheat for food security, breeding climate resilient wheat, addressing malnutrition and commercialization of biofortified wheat commodities, novel breeding techniques in wheat, sustainable wheat production and mechanization of wheat. The foreign delegates from USA, Australia, Turkey, Mexico, UK and national keynote speakers from different institutes of Pakistan participated

in the conference. Other stakeholders included academia, researchers, government officials, industry representative and farmers. Breeding of heat tolerant wheat varieties remain one of the most strategic approaches to cope with risk of unseasonal heatwave.

Due to dynamic development of new virulent races, epidemics appear in high frequency and causes significant losses in gain yield and quality. Breeding wheat varieties carrying highly efficient resistances is the need of the time. Stacking resistance genes through hybrid breeding is a promising approach. Other strategies include crop management practices, monitoring pathogen diversity and applying recent advances such as CRISPER/CAS9 mediated gene silencing to overcome disease losses, transferring useful genes from wild relatives of wheat using genomic and bioinformatics tools. So, understanding structural and functional organization of gene-rich regions and recombination hot spots is utmost important. Secondly, chromosome pairing and homology search is important for introgression of alien fragment into cultivated wheat. Moreover, the use of high throughput phenotyping approaches may be encouraged to design comprehensive selection strategies. Precision agriculture and better crop management practices are also necessary for improved and sustainable wheat yield.
In the conference, it was desired that agriculture scientists will have to make concerted efforts to achieve food self-sufficiency by increasing the per acre productivity. The promotion and initiation of the interdisciplinary dialogues regarding the contemporary issues in wheat during this conference was appreciated.

Recommendations

As a result of the discussions and thinking during inaugural, technical and concluding sessions and meetings, following are the recommendations for the improvement of wheat for food security in Pakistan:

1. Intensive research work is needed on wheat hybrids for its commercial feasibility by reducing the cost of F1 hybrids and exploit hybrids for mobilizing traits like rust resistance, quality, climate resilience etc.
2. Improving heat and drought tolerance in wheat by developing wheat varieties using fast-breeding methods: MABS/MAFB – which give new variety in two years
3. Transferring useful genes from wild relatives by manipulating the Ph1 gene which allow crossing of cultivars with wild landraces and transferring only desirable genes
4. Deploying 3-tier phenotyping strategy for heat tolerance screening – Field (drone, Amphyasys Z32), heat chamber and glasshouse (pollen viability and meiosis)
5. Accelerated introduction of disease resistance in wheat using gene editing of disease resistance genes directly in elite lines will not only reduce the time for product development, save field resources and eliminate drag of undesirable traits
6. Testing the rust resistant novel lines by CIMMYT for rust genes Lr67 and Lr34
7. Prolonging the dough life of wheat flour by knocking out grain PPO homeologs
8. Value addition through mainstreaming of biofortification and focus should be to develop nutrient dense wheat varieties
9. Socio-economic analysis of hybrid wheat seed production, stewardship and commercialization of hybrid wheat seed
10. There is a significant genetic variation in wheat germplasm for the resistance against

abiotic stress, which should be exploited in breeding programs, particularly durum wheat is becoming popular in Pakistan and research should be focused on development of durum wheat varieties
11. More research trials should be conducted in areas with high temperatures and low rainfall for more accurate estimation of heat and drought tolerance studies.
12. The research findings should not be merely a publication documentation but an outcome product deliverable in hand to farmers so that they can advantage from it.
13. A proper mechanism for subsidy targeting farmers fertilizers/ inputs needs should be designed instead of complex system through dealers or industry.
14. Grain/Wheat Board/Commission to monitor production, input supply, coordination for better productivity.
15. Transformation of atrazine degrading gene in wheat (trzN) is a better and stable solution.
16. Molecular markers based on superior alleles of associated signals will accelerate the marker-assisted breeding programs.

The distinguished speakers of the conference include:
1. Prof. Dr. Iqrar Ahmad Khan, Vice Chancellor, UAF
2. Prof. Dr. Richard Trethowan, Director, Plant Breeding Institute, The University of Sydney, Australia
3. Prof. Dr. Kulvinder Singh Gill, Professor and Director, Climate Resilient Wheat Innovation lab gave presentation on Lab
4. Dr. Kanwarpal S. Dhugga, Principal Scientist from CIMMYT, Mexico.
5. Jenny Walton, Head of Commercialization and Scaling (Global) from Washington, DC, USA
6. Prof. Dr. Harbans Bariana, Professor from PBI, University of Sydney.
7. Dr. Rebecca Thistlethwaite, Research Fellow at Plant Breeding Institute, The University of Sydney.
8. Dr. Jacob Lage, Head of Breeding Wheat at KWS, UK.
9. Dr. Mukhtar Ahmad, Chairman, Higher Education Commission (HEC).
10. Dr. Asif Chaudhry, U.S. Ambassador (Ret.) and Vice President International Program of Washington State University (WSU) Pullman.
11. Prof. Dr. Qamar-ul-Zaman, Vice Chancellor of PMAS-Arid Agriculture University, Rawalpindi.
12. Rana Tanveer Hussain, Federal Minister for Education

1. DEMONSTRATION OF PRECISION AGRICULTURE

The following technologies were demonstrated during the International Wheat Conference by the Pir Mehr Ali Shah Arid Agriculture University Rawalpindi, Precision and Analytics Lab, CAS, UAF, and Kubota Pakistan.

A. Auto Steering System
B. Depth Control Wheat Seed Drill
C. Drone Spraying & Seeding
D. Drone Mapping Multi-spectral and Thermal Sensors
E. Kubota Rice Harvester
F. Veris MSP3
G. 360 Soil Scan

Further, different handheld sensors were also displayed in the conference, like Greenseeker to measure the NDVI, Weedseeker to detect the weeds, LP-80 Canopy Analyzer, FLIR E6-XT with an infrared camera with extended temperature range, Atmos 41 weather station, and different data loggers to collect data online and offline.

FIELD DEMONSTRATION

TECHNICAL SESSION I:

1. Dr. Javed Ahmad, Chief Scientist, Wheat Research Institute (WEI), AARI, Faisalabad
2. Dr. Muhammad Imtiaz, Country representative of HarvestPlus, Pakistan
3. Dr. Thakur Parsad Tiwari, Country representative of CIMMYT Pakistan
4. Dr. Fiaz Ahmad, PSO, CDRI, NARC Islamabad
5. Dr. Sikander Khan Tanveer, NARC, Islamabad
6. Mr. Sajid Mahmood, Country representative ICI Pakistan Ltd.

TECHNICAL SESSION I. Climate Smart Wheat Breeding

Dr. Shahid Mansoor, NIBGE, HEC
Ms. Ruolin Bian, Ph.D candidate from Kansas State University, USA
Dr. Umara Sahar Rana, Assistant Professor, Department of PBG, UAF
Dr. Aziz-ur-Rehman, Wheat Breeder from AARI, Faisalabad
Dr. Juliya Abbasi, Lecturer, Allama Iqbal Open University, Islamabad

Mr. Zoraiz Jamil, Representative from a multinational company World Wide Scientific and Thermo Fisher Scientific.
Dr. Shoaib Rashid Saleem, Project Coordinator from the Center of Precision Agriculture, PMAS Arid Agriculture University, Rawalpindi

After completion of the session Dr. Kanwarpal S. Dhugga thanked all the participants for their presentation and research information.

1. Young scientists are indeed very competent and talented, they should not work in silos but in mutual cooperation with seed industry, farmers and fellow scientists.
2. Research should involve more complex models to explore variability in plant immunity for stresses under the climate change scenario.
3. Genetic gain in wheat can be obtained by exploiting hybrid vigor fixed by genome editing and advanced to varietal development through speed breeding.
4. Precision agriculture is the need of the day to monitor crop health, find plant phenotyping solutions, and gather ample amount of field observations.

TECHNICAL SESSION II. Wheat Biofortification

Dr. Babar Hussain, Assistant Professor from University of Central Punjab Lahore
Ms. Sadia Hakeem, PhD scholar from MNSUA Multan
Dr. Muhammad Asif, Postdoctoral Researcher from Sabanci University Istanbul
Dr. Anila Ulfat, IPFP fellow from Virtual University Rawalpindi
Mr. Tauqeer Abbas, Ph.D scholar from MNSUA, Multan
Mr. Hamid Ali and Zoraiz Jamil from Thermofisher Scientific and World Wide Scientific.

Recommendations

1. Search for novel QTL is helpful for development of stress tolerant wheat. Salt tolerance and micronutrient accumulations are somehow interlinked in case of wheat; however, molecular mechanisms are still unknown.
2. Elevated CO2 increases grain yield in wheat but reduces micronutrient concentrations in grain. Fertilizer application can retain the grain yield and micronutrients in grain under elevated CO2 and climate change scenario.
3. Elevated CO2 reduces the negative effects of drought by managing higher carbohydrate metabolic enzymes activities. In this regard, CO2 can be used to mitigate future climatic challenges, therefore, CO2 responsive genotypes should be promoted in breeding.
4. Wheat genotypes with combination of semi-erect to semi-droopy angle, moderate leaf rolling, and medium leaf groove retains high soil moisture and produce higher grain yield.
5. Integrated approaches for biofortification i.e., combining genetic, agronomic, and microbial biofortification could be a sustainable solution for food security and hidden hunger under changing climatic conditions.

TECHNICAL SESSION III. Wheat Value Addition

Dr. Azhar Abbas, Assistant Professor from UAF
Miss Rimsha Akhtar, PhD Candidate, Forman Christian College, Lahore
Dr. Muhammad Kashif Naeem, Scientific Officer, NIGAB, NARC
Miss Hira Shair, Senior Scientist, Ph.D. Scholar, Wheat Research Institute, Ayub Agriculture

Research Institute, Faisalabad.
Miss Samreen Mohsin, PhD Candidate, Forman Christian College, Lahore
Dr. Hassnain Shah, Social Sciences Division, PARC

Recommendations:

1. A proper mechanism for subsidy targeting farmers fertilizers/ inputs needs should be designed instead of complex system through dealers or industry.
2. Grain/Wheat Board/Commission to monitor production, input supply, coordination for better productivity.
3. Alternate source of herbicide resistance should be identified.
4. Transformation of atrazine degrading gene in wheat (trzN) is a better and stable solution.
5. Molecular markers based on superior alleles of associated signals will accelerate the marker-assisted breeding programs.
6. Hidden hunger is serious problem across the globe.
7. Fortificants, NaFeEDTA from iron and ZnSO4 among the zinc fortificants are suitable for fortification.
8. Vit B6 plays many crucial roles in human metabolism.
9. PDX1 gene augments vitamin B6 in transgenic wheat seeds and can be used to enhance seed vit B6 contents.

TECHNICAL SESSION IV. Wheat Production

In this session, researchers from Pakistani universities shared their findings on studies aimed at increasing per-acre yield and sustainable production, which is under threat due to climate change. The presenters shared the findings of studies on grain quality deterioration during storage, phosphorus efficiency genes in wheat germplasm, and the genetic potential of hexaploid and tetraploid wheat related to yield.

Dr. Urooj Anwar from the Institute of Animal and Dairy Sciences, UAF
Muhammad Uzair, Ph.D candidate from the department of Plant Breeding & Genetics, UAF
Dr. Shadab Shoukat, Assistant Professor from Lasbela University of Agriculture, Water and Marine Sciences, Balochistan
Sana-e-Mustafe, Ph.D candidate from UAF
Dr. Shabana Memon, Associate Professor from SAU, Tandojam

Recommendations:

1. There is a significant genetic variation in wheat germplasm for the resistance against abiotic stress, which should be exploited in breeding programs.
2. Durum wheat is becoming popular, and the demand is rising in Pakistan. Our research institutes should also give importance to the development of durum wheat varieties.
3. More research trials should be conducted in areas with high temperatures and low rainfall for more accurate estimation of heat and drought tolerance studies.
4. The conventional plant breeding tools are still applicable today, especially for those institutes which lack the latest equipment and funding.

CONCLUDING SESSION

Chair: Syed Hussain Jahania Gardezi

On 20th October closing session panelist group was Chaired by Syed Hussain Jahania Gardezi, Provincial Minister of Punjab for Agriculture, accompanied by Senator Engr Nauman Wazir Khattack, Mr. Asif Chaudhry Vice President International Program Washington State University, Prof. Dr. Qamar-ul-Zaman Vice Chancellor of PMAS-Arid Agricultural University, Rawalpindi and Prof. Dr. Iqrar Ahmed Khan, Vice Chancellor University of Agriculture Faisalabad.

Prof. Dr. Kulvinder Singh Gill gave overall view about the conference and said the conference theme was much focused, logistics were flawless, and involvement of young scientists was welcome sign of improvement in wheat crop. He further commented that based upon all the information and technology shared in conference it must not be stopped here but converted into practical decisions to boost wheat yield by providing in hand products to the farmers. He emphasized that it is imperative to take measures on scientific bases for agriculture uplift by developing agricultural practices on modern lines. The research should focus those people who are facing challenges such as limited water and rising temperature.

Dr. Kanwarpal S. Dhugga said he was very much impressed with the information, energy and confident response of young scientists/participants in delivering their knowledge and findings. He said that all scientific persons should put aside non-academical activities in professional work and focus on the farmers problems in real time and provide immediate solutions or side support remedies. He further suggested that use of genomic tools including marker assisted breeding and genomic selection should be encouraged for designing comprehensive selection strategies.

Muhammad Nawaz Khan, DG AARI Faisalabad, urged on conducting research involving aspects of climate change, as it is the most unpredictable factor which effected wheat yield. He said through this international conference, wherein scientists from all over the world took practical part in making coordinated efforts on important issues like climate change and global temperature rise. It will help in finding a way forward to solve climate change and other problems associated with it.

Dr. Khalid Aziz, Manager Rafhan Maize Products Co. insisted that quality seed is the need of the day to overcome deficient yield issues. High quality seed is essential for establishing productive stands of wheat and he pointed out the success story of maize hybrids. Seed should have a high germination percentage, be free of seed borne disease and should not contain any weed seed. He said producers should use certified seed that is true to variety, is clean and has a high germination percentage for crop.

Prof. Dr. Bushra Sadia concluded the technical session of Wheat value addition that she chaired. She said a commission/board should monitor wheat production, input supply and coordination for better productivity in future. A proper mechanism for subsidy targeting farmers and their fertilizers/input need is crucial instead of complex system working in the country. Moreover, alternate sources of herbicide tolerance should be identified through marker assisted breeding. This international conference is great initiative to brainstorm on such critical topics.

At the end Syed Hussain Jahanian Gardezi, Provincial Minister of Punjab for Agriculture, appreciated the efforts of University of Agriculture Faisalabad for conducting innovative research for wheat yield improvement. He said unfortunately due to climate change last year, the desired targets of wheat could not be achieved. However, he hopes that food self-sufficiency can be ensured by increasing wheat cultivation and production per acre in Punjab. He said it is inevitable to bring the latest agriculture technology to the doorstep of the farmers. He emphasized that is it the need of the hour to strengthen industry-academia ties and promote modern agriculture technology to solve the on-field problems of the farmers. He said that higher wheat productivity is the backbone of agriculture sector and scientists needs to pace up their efforts to increase per acre productivity for food security. He also thanked the foreign speakers who participated in the international wheat conference 2022 and shared their research findings with the participants.

Recommendations:

After thorough discussion and Q&A following recommendations were made in the closing session:

1. All teaching and research institutes of national and international status must coordinate with each other and make use of the expertise and technologies they own for the betterment of agriculture.
2. The research findings should not be merely a publication documentation but an outcome product deliverable in hand to farmers so that they can get advantage from it.
3. There should be public private sector partnership on combined use of finance to avoid wastage of time and resources on same activities at multiple locations .
4. Young wheat scientist's collaboration must widen in the research institutes, extension wing and private sector to promote innovations.
5. Hybrids must be promoted in wheat and tested on vast scale to break through stagnant yield barriers in wheat production.
6. Fertilizer input in wheat production technology should be replaced with alternative practices of fertilizer applications like biofertilizers, microbial activities, efficient gene transfers from wild species, etc.
7. Drastic use of urea and DAP should be limited by replacing it with other forms of fertilizers like SSP, nitrophos, potash, ammonium nitrate, etc.
8. Wheat varieties should be approved as zone specific varieties.
9. Climate and weather change should be monitored and area wise strategies to overcome its negative impacts should be quantified for short- and long-term strategies.

VOTE OF THANKS

At the end Prof. Dr. Zulfiqar Ali gave vote of thanks to honorable guests, keynote speakers, national and international scientists. He also appreciated the efforts of organizing committee and university leadership for support to organize the IWC, 2022. Dr. Zulfiqar Ali also thanked to the sponsors of the International Wheat Conference and with these worlds he concluded the closing session of the IWC, 2022.

STALLS OF THE PUBLIC AND PRIVATE COMPANIES

Title of the Event:	**International Education Expo-2022** **October 31- November 04, 2022**
Name of Organizer:	**Dr. M. Abubakkar, Assistant Professor, UAF Sub-Campus Burewala-Vehari**

Objectives

- Promotion of OBE (Outcome Based Education) for uplifting the quality of students produced by UAF (especially at UAF sub-campus Burewala).
- Capacity building of students and faculty by imparting them hands on training on various aspects and tactics of scientific writing and data presentation
- Motivating students to explore their hidden skills necessary to excel internationally.
- Provision of professional consultancy to students and faculty about different requirements (including language skills/ GRE etc.) of scholarship hunting.
- Providing international exposure to the students and faculty of under pervillaged areas of south Punjab (in-addition to UAF students)
- Training of students/faculty about how to effectively market themselves internationally by equipping them with latest academic tools and ideas.
- Serving as bridge between students/non PhD faculty and international universities for hunting prestigious scholarships
- Strengthening the collaboration with all the stakeholders involved in this education expo.
- Establishment of sustainable student facilitation facility with special reference to overseas scholarships at campus level (Associate DSA office).

The International Education Expo (IEE), 2022 laid bare the entangled threads of educational needs of regional students, who are lagging behind in terms of access to the most upgraded, modern and advanced ways of learning. In socio-cultural context of history of institution as a part of under-developed suburban area of Pakistan, it was the great learning experience for the community of Burewala in general and students of UAF Burewala Campus in particular. The students of local community will not remain at disadvantage just because of being the part of regional and marginalized community of the nation. The interaction with the global academia suggested opening further forums for enhancing the intellectual sensibility of the students by sharpening their natural caliber and mental aptitude. As a result of multiple on-line interactions, many academicians made a pledge to visit the institution in near future. The series of mega event will be proved as a touchstone in gauging the scale of eligibility of the regional students that they are no lesser in caliber than any international student. This step will further establish the academic grounding of the University of Agriculture Burewala Campus to prove its worth as substantial and valid institution for future interactions not just as a formality rather substantial measure would be taken to strengthen the place of institution at g/local level for sharing progressive academic space with the international educational community in order to build up the recognition of a local institution at higher level. It will promote authentic research in multiple inter-disciplinary fields, covering the vast panorama of intellectual academia ranging from natural, allied sciences to social sciences and arts and humanities.

Title of the Event:	**International Conference on Climate Change: Impacts & Solutions** **November 07-09, 2022**
Name of Organizer:	**Dr. Muhammad Sana Ullah, Associate Professor, Institute of Soil & Environmental Sciences, UAF**

Objectives

Institute of soil & Environmental Sciences, UAF was aimed at providing a vibrant and active platform for researchers, students, academia, and industries, to share their achievements and expertise skills related to climate change so that policies could be devised for climate change adaptation and mitigation strategies. The event provided an opportunity to discuss the issues related to climate change. The recommendations of the conference were shared on media and relevant stakeholders to sensitize the community regarding causes of climate change, adaptation of climate change and climate change mitigation strategies. During the conference and stakeholder workshop, National Climate Change Hub was initiated which will provide a platform to the researchers working on climate change to work together by sharing the facilities and to avoid repetition of the results

Recommendations

The conference recommendations are based on 8 plenary talks, 12 invited talks and 42 oral presentations. In addition, more than 50 poster presentations were also considered while finalizing these recommendations. The salient points of conference recommendations are:

- Soil carbon is a quantitative important reservoir, and its changes impact our climate.
- Carbon dioxide resulting from industrial activities is a major source of greenhouse gases (GHGs) emissions.
- Agriculture is among the major contributors to global warming – largely methane released

by livestock and rice farms, nitrous oxide from fertilized fields and carbon dioxide from deforestation to grow crops or raise livestock.

- Therefore, agricultural practices without compromising the environment, soil and water on Earth planet need to adopt sustainable ways.
- Agriculture is cause but can also be the part of solutions to mitigate and adopt climate change by its effects on soil.
- Pakistani soils are very poor in organic matter (~0.5%). It is very important to increase soil carbon to improve soil health and enhance carbon sequestration to mitigate climate change.
- For this purpose, we need to create positive carbon budget by including Biochar, Compost, Cover crops, Root biomass and crop residues in our agricultural practices.
- Soil C sequestration strategies include conservation tillage, soil amendments and improved crop rotation.
- The practices such as non-judicious use of fertilizers especially nitrogenous fertilizers and extensive tillage practices must be discouraged as these practices promote organic matter decomposition which ultimately results in GHGs) emissions and climate change.
- Due to increase in population, we must go for eco-intensification where strategy must be to produce more food from less land, per drop of water, per unit input of fertilizers (by enhancing fertilizer use efficiencies), per unit energy and per unit carbon emissions.
- Stubble retention provides a net C storage, and it also improves soil conditions (moisture retention and soil erosion), thereby reducing C loss and increasing biomass production. As burning of these crop stubbles can cause harm to environment (Smog issue) and negatively

affecting soil health.

- Extreme Climate events have the impact to decrease nitrogen use efficiency (NUE), increasing the nitrogen waste and limiting food production.
- In Pakistan, with passage of time, N inputs have been increased but NUE has decrease which is causing threat to food security. It required national policy to promote N fertilizers with higher use efficiencies. Along with food security, it will result in decreased losses and protected environment.
- It is need of the time, for food security, policies must be developed to increase cultivation area by utilizing marginal lands for crop production.
- It requires addressing the causes of land degradation which are biophysical processes driven by economic, social and political forces.
- It is very important to consider soil stewardship and human sufferings because when people are poverty stricken, desperate and starving, they pass on their sufferings to the land.
- Soil is like a bank account, and it is not possible to take more out of a soil without proper addition of organic material in soil. So, sustainable soil management is the engine of economy, and it requires the use of modern innovations built upon traditional knowledge.
- Soils could be the source or sink of GHGs so efficient management is required to mitigate climate change by following conservation agricultural practices.
- Potential of elite varieties can only be achieved when our soils are healthy and productive.
- It is very important to develop Healthy Soil Act, so that we can save our productive soils again urbanization and non-productive use and ultimately it will help in mitigating climate change too.
- In addition, impacts of climate change on animal production was also highlighted and it was suggested to do focused research on controlling spread of animal diseases due to change in climatic conditions.
- It was also emphasized that overcome fodder shortage, especially during season shifts.
- It is the time to decide and cut down non-judicious use of natural resources including Water, Crop land area, Fertilizers etc. and to enhance their use efficiencies because these loses are contributing towards GHGs emissions and climate change.
- It is very important to study site-specific processes involved in organic matter mineralization and GHGs emissions so that specific measure can be taken according to the geographical location and climate.
- It required a greater platform where Pakistani scientists working on climate change can collaborate and exchange their research facilities. For this purpose, during networking meeting on 1st day of the conference, National Climate Change Hub (NCCH) was established where 30 scientists from different universities endorsed this idea and it was decided to hunt mega funding so that conclusive work related to climate change can be achieved.
- This national climate change hub has mandated itself to pursue relevant ministries, policy makers and private sector for public-private partnership to work together for Climate change adaptation and mitigation.
-

Title of the Event:	**Training Workshop on Effective Pedagogical Strategies for Lecturers November 17-18, 2022**
Name of Organizer:	**Prof. Dr Zulfiqar Ali, Director, Quality Enhancement Cell, UAF**

Objectives

- Produce master trainers and trained manpower within the university for future regular trainings.
- Capacity building and training of newly recruited lecturers and assistant professors to polish and strengthen their teaching ability for improving quality of education.
- Brain storming of ideas to develop university's future strategical goals on education and research.
- Bringing long-term sustainability towards education and faculty development in university.

The training program on effective pedagogical skills was started at 9.30 am on 17 Nov 2022 with the recitation of Holy Quran at the Exhibition Center of the University of Agriculture Faisalabad. Dr Irshad Bibi, Deputy Director, QEC officially welcomed the international guest and trainer, Prof Dr Khuram Jahangir Sharif from Qatar University. The Director QEC, Prof Dr Zulfiqar Ali gave his opening remarks. Total 20 participants took part in the workshop as master trainers, who were from different departments/institutes and sub-campuses of the university.

Dr Khurram Jahangir started the training program at 10.00 am on first day with his presentation covering different key aspects on effective pedagogical skills. He also introduced new ways of creativity in learning and education methods by demonstrating and asking master trainees for a Lego-based vehicle invention project. Later he asked each group of participants to demonstrate and present their Lego vehicle project invention project and explain its features.

Discussion was the key feature of this whole training program where trainer was informally mixed up and raised some important discussion points as part of effective teaching methods. The participants and trainer took a tea break and hi-tea/lunch was served to all the participating faculty. The first day session eneded with productive discussions at 5.00 pm (Annexure-I for pictures).

On the second day (18-11-2022) of training program, Dr Khurram Jahangir started training session with 20 participants. He explained and discussed various new methods of mentoring, class teaching and promoted a participatory approach in class teaching for effective learning. He emphasized on having image-based creation and thinking and describing the content, which is substantially important for leaving an impact and make the learning process sustainable and long-term in memory. The training session was ended at 5 pm on second day. The Director QEC, Prof Dr Zulfiqar Ali said big thanks to Prof Dr Khurram Jahangir Sharif, all the participants and the QEC team to make this event highly successful. In the end, certificates were distributed to all the 20 master trainers in university by Dr Khurram Jahangir and Prof Dr Zulfiqar Ali. Dr Irshad Bibi also appreciated and said thanks to the Director QEC and Prof Dr Khurram from Qatar University to make this event productive and effective for the faculty (Annexure-I for pictures).

Twenty master trainers were trained within the university for future regular trainings. Capacity building and training of these 20 master trainers will polish and strengthen teaching ability young and newly recruited faculty. New ideas developed to target university's future strategical goals on education and research using advanced and modern teaching styles. This two days international training program on effective pedagogical skills had a great impact on university's strength in education and teaching by producing the twenty master trainers.

In next 4-5 months, these master trainers will be starting training sessions for their Faculties and on pedogoligical methods to improve university's capacity and strength in education and teaching.

Title of the Event:	**National Soybean Policy Dialogue to develop National Soybean Initiative February 02, 2023**
Name of Organizer:	**Dr. Zaheer Ahmad, Associate Professor, Department of PBG, UAF**

Objective

To discuss and finalize a strategy to overcome soybean crises and promote local production on a sustainable basis.

The Vice Chancellor apprised the house of the prevailing situation of soybean in the country, and its contribution to Pakistan's greater problems. At present, the country is importing close to $10 billion in essential items, off which agricultural commodities are the main imports. Two visibly high expenses on our import bill are our imports of edible oil and soybeans. The chief importer of soybean is the poultry feed industry which utilizes its high protein content – a rising population and an increased liking of poultry in the country has driven growth in this sector immensely. As of October 2022, soybean imports have taken a hit under the pretext of 'safety concerns' of consuming Genetically Modified (GM) based Soybean. The question of the safety of GM Soybean has been well documented and adequately addressed by numerous members of the scientific community. Not just GM soybean, but the safety of all GM based products in the market has been well established as fact.

Secretary General of Pakistan Poultry Association (PPA) contended that a macro-level strategy is needed for self-sufficiency in soybean production. Furthermore, we should task ourselves to become a soybean exporter. Furthermore, he also offered the PPA platform to negotiate with various trade stakeholders of soybean based in the United States to acquire GM High Yielding Varieties (HYV) from the US.

Members of the house rightly identified the growing challenge of malnutrition in the country. They suggested consumer awareness drives for GM crops and soybean cultivation. Members of the scientific community pointed out that herbicide resistance in soybean may only be achieved

through GM based transformation. Farmers pointed out that existing varieties of soybean in the country, such as NARC-21 are heavily susceptible to pest attacks, including whitefly and stem-borers.

The social sciences faculty of the university identified that despite corn being a lucrative crop, its production is in surplus which depresses the prices – there is a need for an alternative crop to compliment the system.

Chaudhry Najaf Rasool, Chief Executive of Animal Care, a feed industry, apprised the house of the market situation of soybean. Despite a price of Rs400/kg, there was a shortage of the crop in the market. He reiterated that there was a dire need to allow GM imports and their cultivation in Pakistan as it would offer a lifeline and address a long-term need of the feed industry.

The house identified a need for contract farming of soybean to address the demand of the feed and solvent extraction industries. Developing a sustainable seed system can ensure the development of contract farmers for soybean, therefore there is a need to ensure that a dedicated seed industry for soybean must not be monopolized.

The Vice Chancellor apprised the house that the university has signed a Material Transfer Agreement to acquire GM Soybean and its trials would begin soon in the country. He emphasized a need for a platform to codify the rules set in the Cartagena protocol in the country as it would create safety for breeders, farmers, the marketing and value-added industries.

A maize farmer, Mr. Shauzab Gardezi identified a viable growing window for hotter areas of the country in the south. He suggested cowing in August-September and harvesting by January, and subsequently sowing maize. Such a complimentary system would improve the ecology and economic of the farm.

Members of the house also discussed a machinery package for soybean.

Recommendations

- Develop a seed industry with all the stakeholders to establish a sustainable supply chain for domestic soybean cultivation.
- Demonstration plots with the collaboration of industry to be set-up across the country.
- Industry-Academia committee to coordinate activities of mutual interest.
- Allow the import of GM Soybean, especially Soy Meal in the short-term to ease poultry prices.
- Develop guidelines for the GM soybean import policy to meet the requirements of our poultry industry.
- Promoting local soybean production to become self-sufficient and reduce the import bill.

Title of the Event:	**International conference on Food Security Challenges and Opportunities in D8 Countries March 6-7, 2023**
Name of Organizer:	**Prof. Dr. Sultan Habibullah Khan, Director, CAS-AFS, UAF**

Objectives

- Inauguration of D-8 center at CAS-AFS, University of Agriculture Faisalabad.
- Showcase the research and development of activities going on at the University of Agriculture, Faisalabad to address the food security issues of the country to a diverse group of people coming from various national and international organization including D-8 member states.

Day 1 activities

Major activities on the Day I included keynote speeches, unveiling ceremony of the D8 plaque, group photo, roundtable interaction and the visit of the center facilities and labs. The session was moderated by Professor Dr Sultan Habibullah Khan, Director CAS-AFS. The chief guest (H.E. Isiaka Imam, D8 Secretary General) and the Guests of Honor (Ms Florence Rolle, FAO Country Representative, Prof. Rtd. Khalid Mehmood Khan, President Pakistan Academy of Sciences, Mr Bilal Shah, Director IC & ED, MOFA and Prof. Dr Iqrar Ahmad Khan, Vice Chancellor UAF)

In his keynote speech Prof. Dr Iqrar Ahmad Khan thanked the D-8 Organization for designating CAS-AFS as D8 Center. He comprehensively described the current state of food security, gigantic nature of challenges and the opportunities therein. He highlighted the need to focus on climate smart agriculture to sustainably meet the increasing food demands which also address climate change adversaries. He informed the audience about the ongoing research programs at CAS-AFS and across the various departments of UAF campus. He also shared his thoughts on the multifaceted aspects of One Health. He emphasized on the issue of malnutrition in Pakistan and mentioned about the recently established Pakistan Korea Nutrition Center (PKNC) project. He shared how the idea of hosting D8 food security research center at UAF initiated and gave the credit to Dr. Tariq Banuri (former chairman HEC). He emphasized the need of collaborative research among D8 countries to achieve the objective of food security.

Ms. Florence Rolle, FAO representative in Pakistan, agreed with the views of the Vice Chancellor Prof. Dr. Iqrar on Food Security. She shared that Food Security is not only about eating enough but also eating well. According to United Nations and FAO statistics, the number of hungry people around the world were decreasing till 2016 but it is on the rise again. She mentioned that we are not on track for achieving Sustainable Development Goal (SDG) 2 by 2030. All D8 countries are middle income countries where agriculture sector is needed to be central. She mentioned that Agriculture around the world is in transformational phase and being an academic and research organization, UAF should decide that what will be their transformation path. In this transformation, there are two key problems; climate change and the problem that farms are getting smaller. She mentioned three elements that could help in solving these problems. Number one is research and development. In Pakistan only 0.18% of the economy is being invested in R & D that is extremely low. She emphasized that if Pakistan will not invest now than there is a big chance to miss the train. She appreciated VC UAF for sending students in the field during last Rabi season. The second element is farmers' organizations. In Pakistan, there is weak organizational structure that can channel the availability of cheaper inputs and work on marketing structures. She gave an example of strong farmers' organization in the USA. The third element is a access to credit that is extremely low in Pakistan. She then emphasized the issue of malnutrition. According to FAO statistics, 16% of Pakistanis are malnourished. The stunting rate is around 40%. Children under 5 are not getting appropriate nutrition. Cost of healthy food is too high in Pakistan as well as in D8 countries as compared to developed world. Ms Florence Rolle spoke about various initiatives taken by FAO to ensure food security challenges and climate change. She assured that FAO will continue supporting the academic and research community in Pakistan and beyond.

Mr. Javaid Qureshi from Four-brothers Pakistan emphasized to focus on Food security as it is the most daunting challenge for today's Pakistan. He emphasized the need of high yield. He elaborated that agriculture production is too low to sustainably feed the population of Pakistan. A lot of work needs to be done to improve yields of crops like wheat, rice etc. He also stated that there is a lot of room to work on water utilization in the agricultural sector to reduce wastage of water. In current climate change scenario, we must promote cultivation of oil seed crops like soyabean. He talked about cotton as being a symbol of Pakistan's textile industry which also consumes very less water. He said we have good varieties and technology and just need to incorporate it in our system through a strong policy and good practices. He also talked about the industry academia linkages that is essential for the development of agriculture in Pakistan. Ms Maria Saleem congratulated the Center for Advanced Studies in Agriculture and Food Security

(CAS-AFS) and University of Agriculture for being a part of D8 consortium. She stated that CAS is a fantastic research center, and it will shine further as being a D8 designated research center for food security. She also informed the audience about the aims and objectives of Corteva to ensure food security across the globe.

She invited Bryce Sturges, Marketing director of Corteva to deal with multiple countries including D8 countries. Mr Sturges highlighted the importance of food supply to the consumers. He also talked about adoption and centralization of advancement in agriculture. He explained that the farmers have the resilience towards adaptation of new technologies. He also underlined the value of new policies to uplift agriculture sector. He narrated that more investment is needed in the agricultural sector in D8 countries.

Mr. Nasir Ullah Khan, represented Fatima Fertilizers Industries. He talked about International and regional food security. He presented a video to advertise the efforts and contributions of Fatima and Arif Habib group of industries. He also described the products of Fatima fertilizers like urea, calcium ammonium nitrate, nitrogen phosphate etc. He emphasized the importance of agricultural sector as 51 billion USD in GDP is added from agriculture in Pakistan. Still there is a lot more could be done in agricultural sector in Pakistan as we have 32% free cultivable land. Agriculture business investment could lead to many opportunities. New technologies and machine can bring revolution in Pakistan through precision agriculture.

Guest of Honor H.E. Ahmadu Babagana (Deputy High commissioner of Nigeria) firstly congratulated CAS as being the D8 designated center. Furthermore, he addressed the issues of food security and its sustainability. He spoke about small farmers, their income and to provide them subsidies. He emphasized to focus on technology development and inclusion of precision in agricultural practices. He highlighted the importance of technology in the rapidly changing climate and extreme weather events like floods.

He also explained the Nigeria's Food system Agenda to provide healthy and affordable food in a sustainable way.

The Guest of Honor from Ministry of foreign affairs "Mr. Bilal Akram Shah" (Director, IC & ED, MOFA) highlighted the importance of D8 platform to deal upcoming challenges of food security and economic growth. He talked about climate change, water usability in agriculture and farm size. His main point of emphasis was on international cooperation, especially in the area of research and development. He talked about combining energies in scientific research to tackle

the issues of D8 countries. In concluding his talk, he appreciated CAS-AFS as a great scientific platform to brought innovation in agriculture sector.

Prof. (Emeritus) Dr Khalid Mehmood Khan, President Pakistan Academy of Sciences highlighted the importance of institutional collaborations among D8 countries. He spoke about agricultural research and its new avenues. He stated that all D8 countries possess similar problems. He pointed out the worst events in D8 countries including the devastation of floods in Pakistan and earthquake destructions in Turkey. He emphasized on modernized agriculture in Pakistan and other D8 countries. He agreed with the statement of Dr. Iqrar Ahmad and Ms. Florence Rolle on the two aspects of food security i.e., quality and quantity.

Finally, the Chief Guest of the Inaugural Session H.E. Isiaka Abdulqadir Imam, Secretary General of D-8 Organization started his speech with a documentary about D8 countries showing how the D8 organization was formed, what are its objectives and how to make D8 more functional and collaborative. The documentary also covered information about OIC, United Nations, D8 Organization for Economic Cooperation, future payment method to local currencies in D8 countries, NPRI, SEZ, Formation of D8 designated airport (where Jinnah International Airport, Islamabad as one of them), CEFC, D8 International University in Iran, technology transfer and exchange programs in D8 countries etc. He congratulated the efforts of CAS-AFS as a research center and University of Agriculture Faisalabad for its role in food security. He described the fact that 7 billion is the world population while 1.1 billion population is from D8 countries i.e., 50 % of global population. He talked about plans how the D8 countries could become the economic powerhouse. He told the audience about the importance of youth in industry and agriculture. The inaugural session was followed by the unveiling ceremony of D8 Plaque.

Day II Activities

On the second day of the conference, profiling of the industry and the research organization was done in the morning session. The D8 delegate held one on one interaction on product displays installed at expo center by the participating organizations.

The following departments, institutes and private industry displayed their products:

- Department of Plant Breeding and Genetics, Faculty of Agriculture, UAF
- Institute of Horticultural Sciences, Faculty of Agriculture, UAF
- Center of Agricultural Biochemistry and Biotechnology (CABB):
- Department of Agronomy, Faculty of Agriculture, UAF
- Plant Pathology, Faculty of Agriculture, UAF

- Forestry Range and Wildlife Management, Faculty of Agriculture, UAF
- Institute of Agricultural Extension Education, Faculty of Social Sciences, UAF
- Faculty of Animal Sciences, UAF
- Faculty of Food sciences, UAF
- Faculty of Social Sciences, UAF
- Department of Biochemistry, Faculty of Sciences, UAF
- Department of Zoology, Faculty of Sciences, UAF
- Faculty of Engineering, UAF
- Nuclear Institute of Agriculture and Biology, Faisalabad
- AYUB Agricultural Research Institute, Faisalabad
- National Institute of Biotechnology and Genetic Engineering
- Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi
- Mian Nawaz Sharif University of Agriculture
- Ghazi Pure Food Pvt. Ltd
- Fatima Fertilizers
- Corteva Pvt. Ltd

Salient features of the conference were:

- D-8 countries comprising 1/7th (1.1 billion) population of the world, offer a huge market potential.
- A long-term strategy to improve the dismal food security situation in member state was discussed.
- Climate Smart Agriculture, Biotechnology, Precision Agriculture, Big Data and Cloud computing, One Health were identified as area of future collaboration.
- The low volume of trade between member states vis-à-vis their total trade in food items in particular was discussed and it was agreed to map the potential for trade between the members states.
- A huge scope for South-South cooperation was discussed in terms of agricultural research and access to input and produce markets.
- It was agreed to use D-8 forum to enhance student and faculty exchange particularly in area of food security and agriculture.
- It was agreed to take measures to give access of Pakistani businesses in member state markets.
- The strategy to capture halal food and organic food market was discussed considering the largely untapped potential in Pakistan.
- D8 Secretariate will align the relevant D8 institutes with CAS-AFS for developing collaborations.
- CAS-AFS will develop and submit the center's governing structure on the prescribed
- format in due course of time.
- The D8 will show the affiliate institutes on its website.

Title of the Event:	**International Conference of Chemistry, Materials & Technology March 15-16, 2023**
Name of Organizer:	**Dr. Nazish Jahan, Associate Professor, Department of Chemistry, UAF**

Objectives

- To share recently developed chemical technologies for improving life and solutions of problems in chemistry.
- To provide understanding of the design criteria for the development of environment friendly technologies in Pakistan for energy and sustainable environment for CO2 reduction.
- Understanding of pure and applied chemistry developments

International Conference of Chemistry, Materials & Technology (CMT-2023) was a unique podium to explore all the worldwide research and development in the fields of Organic Chemistry, Inorganic Chemistry, Physical Chemistry, Materials Chemistry, Analytical Chemistry, Green Chemistry, Theoretical Chemistry and Industrial Chemistry. The scope of the conference focused on academic and industrial interests. This two-days international conference was devoted to developing collaboration and networking among academicians, scientists, researchers from universities, research institutes and professionals from industry and chemical companies to enhance knowledge and exchange new ideas and technologies. It provided an opportunity to explore and discuss real challenges of existing society and explore chemical technologies for solutions of community problems.

Speakers delivered a wide range of talks in this two-days conference that explored the most recent academic findings, industry trends, and best practices in the field of chemistry. Participants of the conference had a great opportunity y to hear from renowned national and international speakers and engaged in stimulating discussions with fellow attendees. Throughout the conference, were various themes explored like physical chemistry and theoretical chemistry organic chemistry / natural products /pharmaceutical chemistry, inorganic chemistry, analytical and bio analytical chemistry ,nano science and materials chemistry, environmental and green chemistry, pure and applied chemistry technological advancement in chemistry, nutrition and food chemistry, agricultural chemistry including emerging technologies, innovative

methodologies, and current issues in the industry. The speakers covered a broad range of topics, including cutting-edge research, practical applications, and ethical considerations.
Many plenary lectures were organized, keynote lectures and presentations from international and national scientists. In addition to the main sessions, numerous networking opportunities, including alumni gathering, and poster sessions, lunches, tea, and Annual dinner were also planned. The main participants were:
Prof. Dr. Iqrar Ahmad Khan, Vice Chancellor, UAF
Prof. Dr. Jamil Anwar, Ex-Vice Chancellor, Garrison University, Lahore
Prof. Dr. Arshad Ali Project Director of National Incubation Centre Faisalabad
Prof. Dr. Ijaz Ahmed Bhatti, Department of Chemistry, UAF
Prof. Dr. Asghar Bajwa, Dean, Faculty of Sciences, UAF

Technical sessions

The Speakers include:
Dr. Jamal Naseer Alsabhai from the College of Agriculture and Marine Sciences at Sultan Qaboos University Muscat
Prof. Dr. M. Nadeem Akhtar, Department of Chemistry Ghazi University, D. G. Khan.
Prof. Dr. Jamil Anwar, Ex-Vice Chancellor, Garrison University, Lahore
Prof. İFFET İREM ÇANKAYA, Hacettepe University, Faculty of Pharmacy, Department of Pharmaceutical Botany, Ankara, Turkey
Prof. Dr. Shaukat Iqbal Malik, Department of BI & Biosciences Capital University of Sciences & Technology (CUST) Islamabad, Pakistan.
Dr. Mahwish University of Lahore, Lahore.
Dr. Ali Sharif Department of Pharmacology, Institute of Pharmacy, Lahore College for Women University
Dr. Muhammad Riaz Department of Basic and Applied Chemistry, Faculty of Science and Technology, University of Central Punjab, Lahore, Pakistan
Prof. Zaheer-ul-Haq-Qasmi from Dr. Panjwani Center for Molecular Medicines and Drug research, ICCBS, University of Karachi
Khalid AL Maqbali from Sultan Qaboos University Muscat, Oman
Dr. Murtaza Syed from National Centre of Excellence in Physical Chemistry, University of Peshawar
Prof. Dr. Muhammad Nadeem Akhtar
Co-Chair: Prof. Dr. Haq Nawaz Bhatti.
Dr. Adnan Mujahid, Associate Professor, School of Chemistry, University of the Punjab, Lahore
Dr. Muhammad Idrees Jilani, Department of Chemistry, University of Lahore
Dr. Ambreen Ashar, Department of Chemistry, Govt. College Women University, Faisalabad, Dr. Muhammad Shahid
Prof. Jan Nisar and Co-Chaired by Dr. Raziya Nadeem at New Senate Hall, UAF.
Dr. Bushra Akhtar from Department of Pharmacy, University of Agriculture Faisalabad

POSTER SESSION
Representing more than 150 presentations and more than 10 science models was divided into the following five tracks. Track 1: Physical, Theoretical and Material Chemistry was evaluated

by Prof. Zaheer ul Haq Qasmi and Prof. Dr. Jan Nisar, Track 2: Organic, Natural products and Pharmaceutical Chemistry was evaluated by Khalid Al Maqbali and Dr. Ali Shareef, Track 3: Inorganic, Analytical Environmental and Applied Chemistry was examined by Dr. Jamal Naseer Al Sabahai, Track 4: General CMT was accessed by Dr. Zahid Mushtaq and Dr. Umbreen Asher and Track 5: Science Model Competition was evaluated by Dr. Murtaza Saeed. Position winning students from each track were awarded shields, certificates, and cash prizes.

Outcome

- Trainees will be able to understand the use of recently developed chemical technologies to avoid issues like fossil fuels depletion, global warming and environmental pollution associated with the use of non-renewable energy.
- Trainees will also be able to understand Sustainable technologies like recent developments in zero emission fuel (H2)/Artificial photosynthesis, recent developments in waste-sourced biofuel production, biomimicry for sustainable fuels, electric automobiles, carbon capture, energy storage and artificial photosynthesis will provide the ideas to use renewable energy for power production and chemical storage of energy as they are the key elements to move to a low-carbon economy, sustainable society and to foster energy transition.
- Furthermore, techniques for air purification, technologies for water treatment, methodologies for pollution control, recent developments in CO2 reductions, environmental/seasonal variations in phytochemicals, control of soil, air, water, and food contaminants and environment friendly transport will provide the solution to trainees to provide insight into improving life.

Results of the Impact Assessment

- Attending conference sessions is an excellent way for professionals in a particular field to stay up to date on the latest research and trends, learn new skills, and network with others in their industry.
- The conference will develop collaboration and networking among academicians, scientists, researchers from universities, research institutes and professionals from industry and chemical companies to enhance knowledge and exchange new ideas and technologies.

Title of the Event:	**Two-day International Symposium on Recent Advances in Life Sciences March 17-18, 2023**
Name of Organizer:	**Dr. Muhammad Ali, Assistant Professor, Department of Biochemistry, UAF**

Detail of activities

The symposium was meant to aware the young researchers to have a true experience of accurate, efficient, and easy techniques to treat increasing ailments. Dr. Nohjin Park (California) gave a video presentation on the topic Immunotherapy in Cancer and Exalixis's clinical trials combining tyrosine kinase inhibitor with immune therapy in various cancers". Dr. Saima Siddiqi (Islamabad) gave presentation on the topic "Siddiqi Syndrome". Dr. Noreen Latif (CEMB, Lahore) gave lecture on the topic "Regeneration Medicine- Preclinical approach to rejuvenate worn out cartilage". Dr. Bushra Ijaz (CEMB, Lahore) also presented talk on the topic "Genomic approach against cancer". Prof. Yusuf Tutar (Turkey) gave video presentation on the topic "Blocking Signal Transduction in Cancer for Innovative Drug Design". Dr. Azhar Rasul (GCUF) gave talk on the topic "Tumor Metabolism- Novel and Selective Target for Cancer Therapy".

On day 2, Session was commenced at Iqbal Auditorium, UAF with poster presentations. In the concluding ceremony, Prof. Amer Jamil (Chairman) and Dr. Muhammad Ali (Focal Person) congratulated on successful completion of the symposium and thanked all the organizers and collaborators for giving their time for symposium. He also thanked EFS for providing funds, and the University for providing the space and permission to conduct the symposium.

Title of the Event:	**International Seminar cum Round Table Conference on More Crop per Drop May 08, 2023**
Name of Organizer:	**Dr. Asghar Ali, Associate Professor, Institute of Agricultural and Resource Economics, UAF**

Detail of activities

- To bring together scientists, research scholars and students on one platform to discuss and enhance the knowledge about recent developments and trends in the use of water saving technologies and high efficiency irrigation systems.
- To provide an opportunity of dialogue on water smart agriculture.
- To initiate interdisciplinary dialogues regarding the contemporary issues being confronted in water management and suitable interventions to improve the situation on.

Presenters

1. Mr. Mark Drew, UNISA, Australia
2. Mr. Shahid Hussain, Director, Agri Extension Sargodha Division
3. Dr. Muzamil Hussain, Director, Adaptive Research Station, Gujranwala
4. Mr. Asim Rafique, Deputy Director, OFWM, Faisalabad

ROUNDTABLE CONFERENCE On
"MORE CROP PER DROP OF WATER"

The International Roundtable Conference on "More Crop per Drop" was hosted by the Institute of Agricultural and Resource Economics. Conference took place on 8th May 2023 at 12 pm in the conference hall of ORIC, University of Agriculture Faisalabad.
Mr. Mark Drew from The University of South Australia Adelaide presided over the roundtable conference. Institute of Agricultural and Resource Economics and the University of Agriculture Faisalabad brought over 20 high-level participants, as Field experts, relevant stakeholders, and faculty members in the debate on water scarcity.

The main purpose of this event was to find points of mutual comprehension and a sense of alignment between members of faculty, field experts, relevant stakeholders, and members of the water community to discuss issues related to water scarcity and possible ways forward to ensure water availability members of faculty, field experts and key officials nationally. The status of current funding streams and how to access financial resources were discussed during the interactive session that updated participants on the current water saving program launched by government and its future goals.

Recommendations

- In order to successfully adopt water-saving technologies in Pakistan's rural areas, the agricultural community must remain united (or at least coordinated).
- The government and local authorities at the national, district, Tehsil, and Union Council levels must work together more closely to find solutions to the problem of water scarcity.
- Rapid depletion of water resources directly impacts the viability of agriculture that relies on a steady supply of water.
- Village-level water resource management and water-saving adaptation and mitigation decision making is greatly aided by enabling and empowering rural farmers.
- Capacity building through training and early participation in water activities is essential for agricultural extension field employees.
- The water experts must network with other policymakers to learn about other localities, gain firsthand knowledge of their difficulties, and ultimately persuade them to include water solutions in their spheres of authority.

Outcome of the Event:

- Interaction of the Australian scientist with UAF faculty, researchers and students
- Discussions for possible innovative water smart agriculture
- The event helped to identify new trends in irrigation management research and policy
- Enhancement in the linkages with University of South Australia, Adelaide for future collaborations.
- Created an opportunity for postgraduate students to hunt scholarships and post doctorate positions.
- Strength the collaboration with other government departments that help to explore the future avenues of research.

Title of the Event:	**4th International Colloquium Challenges and Opportunities of Maize Production May 08-10, 2023**
Name of Organizer:	**Dr. Muhammad Aslam, Associate Professor, Department of PBG, UAF**

Objectives

- Focus on the nutritional enrichment of maize with micronutrients to address the problem of food and nutritional security.
- Enhancement in the capability of maize researchers by teaching with latest field oriented techniques used for improvement in maize.
- Strengthening the collaboration with all the stakeholders involved in maize seed business.
- Increasing know how about latest techniques to strengthen diverse maize germplasm.
- Promotion of collaborative research for sharing of innovative achievements in the field of maize research.
- Planning for the enrichment of maize germplasm in the department of Plant Breeding and Genetics by importing maize nurseries from CIMMYT and other maize research institutes.
- To promote use of DH technology in maize hybrid seed system.

Proceedings

The event consisted of two technical sessions interactive session, and panel discussion. In the technical sessions the renowned scientist and speakers shared technical aspects of maize production.

1. The Honorable Chief Guest Prof. Dr. Muh ammad Sarwar Khan, Dean, Faculty of Agriculture, UAF.
2. Prof. Dr. Azeem Iqbal Khan, Chairman, Department of PBG, UAF.
3. Dr. Muhammad Aslam, Secretary Colloquium/Associate Professor, Department of PBG, UAF

4. Dr. B.M. Prasanna, Director, Global Maize Program, CIMMYT / Lead.
5. Prof. Dr. Iftikhar Ahmad Khan, Ex-Dean, Faculty of Agriculture, UAF.
6. Mr. Faisal Hayar, CEO, Khaksaar Crop Sciences Pvt. Ltd.
7. Dr. P.H. Zaidi, Principal Scientist, Global maize program, CIMMYT Intl., ICRISAT, Hyderabad, India.
8. Dr. Adburahman Beshir, Seed System Lead, South Asia Regional Office, CIMMYT, Nepal.
9. Dr. Le Quy Kha, Institute of Agricultural Sciences, Southern Vietnam.
10. Dr. Khalid Aziz, Senor Manager, Agribusiness, Rafhan Maize Products Co. Ltd. Ingrdion, Pakistan.
11. Dr. HongQiang Feng, Deputy Director, Office of Research Administration, Henan Academy of Agricultural Sciences, China.
12. Dr. Ibrar Ahmad, CEO, Alpha Genomics, Islamabad.
13. Mr. Nazar Iqbal, Director (Registration) FSC&RD, Islamabad.
14. Mr. Abdul Hayee, Regional Director, Punjab, FSC&RD, Islamabad
15. Mr. Sardar Babar Farid, CEO, Sardaar Model Farm.
16. Dr. Yousaf Aslam, Seed Twechnology Consultant.
17. Dr. Naila Shahid, Nation Centre of Excellence in Molecular Biology, University of the Punjab.
18. Mr. Muhammad Waseem Sarwar, Manager Testing Operation, Bayer Crop Science.

In the interactive session the participants, particularly postgraduate students working on maize, took part to learn from the learned maize researcher from industry and public sector institutions. Participants provided a good chance to discuss what was not discussed during the technical sessions due time constraints. All the stakeholders, showed good and interacted with each other and shared their experiences in a quite informal way.

Panel Discussion

This session was very energetic because of participation of public sector, private sector, higher learning institutions and maize seed industry. The main participants included Dr. Mozammil Hussain, National Coordinator (MSMF&OC), Dr. Khalid Aziz, Senior Manager, Agribusiness, Rafhan Maize Products Co. Ltd. Ingrdion, Pakistan, Mr. Abdul Hayee, Regional Director, Punjab, FSC&RD, Mr. Shafiq ur Rahman, Kissan Seed Corporation, and Dr. Anwar ul Haq, Director, Data Agro Limited chaired this discussion. There was representation from PARC, FSC&RD, public sector, maize wet milling and seed industry on the stage to discuss the matters for the betterment of all the stakeholders.

Outcomes

- Latest techniques being used in the seed industry and higher learning institutions were discussed in detail with their benefits and limitations. Maize scientists from all the stakeholder organizations were benefited and showed keen interest for their use in fields and laboratories.
- There is a need to double the maize seed/grain production in the coming years to meet the demand of maize grain and seed. Different management and genetic innovations were shared to boost the yield per unit area.
- For new collaboration and refresh the existing linkages, mutual discussion is the fastest and impactful way to communicate. All the maize stakeholders working as member maize working group at national level, always try to find out innovations for the betterment of maize crop. For this purpose, they travel to different scientific gathering and make different meetings to learn. These members work in collaboration with each other to benefit the others by sharing new achievements. The gatherings further increase their trust on each other and strengthen their relations as collaborators.
- There were good talks on integration of omics, DH technology, maize hybrid seed production, innovations in maize seed system and lesson for Pakistan etc. This sharing's further increase the thrust of the maize researchers and owners of the seed companies to establish these advanced set up in their own R&D.
- During informal discussion, seed industry made commitments to collaborate and support students working on maize with field oriented problems.
- Maize germplasm is the base for future breeding programs, International maize research organization participating in this colloquium can help by providing good germplasm and for this they made promise on help in kind basis.

Title of the Event:	**International Workshop on Calligraphy and Miniature May 08-09, 2023**
Name of Organizer:	**Dr. Fareha Ghaffar, Lecturer, Institute of Home Sciences, UAF**

Objectives

- To establish the cooperative linkages with KHANA-E-FARHANG IRAN Lahore.
- To avail the opportunity of direct guidance from internal Calligrapher and Miniaturist.
- To appreciate and learn about the masterpieces by the world known artist.
- To explore the contemporary world class Asian and Islamic art.

The event provided an opportunity to develop provide the awareness of relationship between visual art and mindfulness, interaction with world renowned artist and transfer of knowledge between Faculty of UAF and Irani artist t and Calligraphers. It also helped to project Institute of Home Science, UAF, organization of the event and engagement with the visual arts increases mindfulness.

The event vested

- Demonstration of master pieces of Iranian & Pakistani artist.
- Experience of Iranian calligraphy material and technique.
- Great experience of assessment through exploring a corporative culture having high standards.
- On the whole this event was endless result ranging from spiritual to artistic activities.

2.7 List of Foreign Visitors/Experts Invited

SN	Name of person invited & Institute/Country	Event/Date
1.	Prof. Dr. Kulvinder Singh Gill, Department of Crop and Soil Sciences, Washington State University, WA, USA	International Wheat Conference 2022 October 19 to 20, 2022 Organized by: Prof. Dr. Zulfiqar Ali, Department of PBG, UAF
2.	Kanwarpal S. Dhugga Principal Scientist and Head, Biotechnology, International Maize and Wheat Improvement Center, USA	
3.	Dr. Mohd Rizal Bin Razali, School of Chemical Sciences, Universiti Sains Malaysia, Malaysia	International Conference on "Interdisciplinary Research Innovations" October 26 to 28, 2022 Organized by: Dr. Anjum Zia, Principal, UAF Community College, PARS, UAF
4.	Dr. Mansoureh Nazari V. School of Pharmacy, University August 17, 1945, Jakarta, Indonesia	
5.	Dr. Aitazaz Farooque, Associate Dean, School of Climate Change and Adaptation, University of Prince Edward Island, Canada	International Symposium on "Data Science for Agriculture and Food Security" October 04, 2022 Organized by: Dr. Saqib Ali, Assistant Professor, Precision Agriculture and Analytics Lab, CAS-AFS, UAF
6.	Dr. Gurjit Singh, Assistant Professor, School of Mathematical and Computational Sciences, University of Prince Edward Island (UPEI), Canada	
7.	Ms. Tarandeep Randhawa, Software Developer at IBM Canada, University of Prince Edward Island (UPEI), Canada	
8.	Dr. Khurram Sharif, Department of Marketing & Management, School of Business and Economics, Qatar University, Doha.	Training Workshop on "Effective Pedagogical Strategies for Lecturers" November 17-18, 2022 Organized by: Prof. Dr. Zulfiqar Ali, Director, Quality Enhancement Cell, UAF
9.	Dr. Nancy J. Allen, UC-Davis, California, USA	Interactive workshop on "Develop Collaborations between UCD and UAF" March 02, 2023 Organized by: Prof. Dr. Sultan Habibullah Khan, Director, CAS-UAF

SN	Name of person invited & Institute/Country	Event/Date
10.	Dr. Jamal Naseer Alsabhai from the College of Agriculture and Marine Sciences at Sultan Qaboos University Muscat	First International Conference of Chemistry, Materials & Technology (CMT-2023) March 15-16, 2023 Organized by: Dr. Nazish Jahan, Associate Professor, Department of Chemistry, UAF
11.	Khalid AL Maqbali from Sultan Qaboos University Muscat, Oman	
12.	Prof. Hon-Ming Lam, Chinese University of Hong Kong	Role of Genomics for soybean adaptation in Pakistan 2nd May, 2023 Organized by: Dr. Hafiz Mamoon Rehman, Assistant Professor, CABB, UAF
13.	Prof. Ting Fung Chan, Chinese University of Hong Kong	
14.	Mr. Mark Drew, University of South Australia Adelaide	International Seminar Cum Round Table Conference on "More Crop per Drop" May 08, 2023 Organized by: Dr. Asghar Ali, Associate Professor, Institute of Agri. & Resource Economics, UAF
15.	Dr. B.M. Prasanna, Director, Global Maize Program, CIMMYT	4th International Colloquium "Challenges and Opportunities of Maize Production" On May 08-10, 2023 Organized by: Dr. Muhammad Aslam, Associate Professor, Department of PBG, UAF
16.	Dr. P.H. Zaidi, Principal Scientist, Global maize program, CIMMYT Intl., ICRISAT, Hyderabad, India	
17.	Dr. Adburahman Beshir, Seed System Lead, South Asia Regional Office, CIMMYT, Nepal	
18.	Dr. Le Quy Kha, Institure of Agricultural Sciences, Southern Vietnam	
19.	Dr. HongQiang Feng, Deputy Director, Office of Research Administration, Henan Academy of Agricultural Sciences, China	
20.	Dr. Emre Aksoy, department of Biological Sciences, Middle East Technical University, Turkey	
21.	Jafar Ronas, Irani Ambassador	International Workshop on Calligraphy and Miniature on May 08-09, 2023 Organized by: Dr. Fareha Ghaffar, Lecturer, Institute of Home Sciences, UAF

2.8 Report on University Retreat Program 2022

The Vice Chancellor/Chairman BoD, in pursuance to the decision of the BoD taken in its meeting held on 30.04.2010, approved to organize University Retreat Program (URP) under its Faculty Development Component for all faculty members/officers of UAF (BPS-17 and above), during February to May, 2022 for SWOT analysis and strategic planning. The Vice Chancellor/Chairman BoD further approved the following Committee with its TORs.

- Prof. Dr. Ijaz Ahmad Bhatti, Executive Director, EFS, UAF
- Prof. Dr. Aman Ullah Malik, Institute of Horticultural Sciences, UAF
- Dr. Rao Zahid Abbas, Associate Professor, Department of Parasitology, UAF
- Dr. Manzoom Akhtar, Director HR, UAF
- Dr. Babar Shahbaz, Director Academics, UAF/Coordinator University Retreat Program

ToRs

i. To finalize the retreat program template/purpose/activities/modus operandi.
ii. To suggest and finalize grouping of non-teaching/professional/administrative units and design separate template for them.
iii. To conduct plenary session to educate the Faculty members/officers of UAF about the purpose, planning, execution and documentation of the University Retreat Program.
iv. To review the reports submitted by Department/Institute/other Units and finalize the recommendations for further actions.

Most of the faculties/institutions/departments of UAF actively participated in the program. The program activities were mainly targeted on SWOT analysis and their respective role of different faculties/ Departments in UN Sustainability Goals.

Endowment Fund Secretariat provided financial support for smooth and effective conduct of the program. About 351 Faculty members/Administration staff participated in this activity and a total expenditure of Rs. 2.390 million was incurred on this program.

Retreat SOPs

1. The theme of the Retreat Program 2022 is "Role of the Agricultural Universities in SDGs realization".
2. The departments should plan their Retreat Program between 15th February to 31st May 2022 i.e all tours should be completed before 31st May, 2022.
3. Departments having small Nos. of Faculty/Employees may combine their tour with the consent of Dean/Director/PO concerned. Only regular Faculty members/Officers (BPS- 17 & above) are allowed to avail the Retreat Program.
4. The Faculty member/officer holding additional charge of different Departments may claim remuneration from one Department only.
5. Non-teaching Departments like Registrar, Treasurer, Controller, P&D, ORIC, ECD, Estate Management were also allowed. Even officers working in QEC, DFA&UA, working on full time basis may avail.
6. Use the vehicle requisition form of the motor pool and get approval of the concerned authority. Before proceeding on the tour, send the copy of the approved requisition form to Director Academics. Vehicle will be booked when touring officers list exceeds about 60 to 70% of the seating capacity.
7. Incharge motor pool will arrange vehicles on first come first served basis. The POL will be arranged by Incharge motor pool. He will also manage for cash required for toll taxes and extra POL if needed.

8. All the bills pertaining to POL will be submitted by Incharge motor pool, UAF to Endowment Fund Secretariat, UAF, duly verified by HOD/Touring Officer.
9. The bills of daily allowance of drivers and helpers along with toll taxes will be submitted by Incharge motor pool, UAF to Endowment Fund Secretariat, UAF, duly verified by HOD/Touring Officer. Daily allowance to driver's/bus conductor/bus cleaner will be paid at the following rates.
    i. For same day return @ Rs. 400/-
    ii. In case of one-night stay @ Rs. 800 + 400 = Rs. 1200/-
10. After completion of the tour, HOD/Touring Officer will compile a report after in-house discussion focusing on the role of the department in addressing specific SDGs 2030. It should highlight the gaps, potential solutions, new initiative and projects, collaborative opportunities and alignment with national strategies.
11. HOD/Touring Officer will submit a contingent bill for payment of lump sum remuneration @ Rs. 5,000/- each along with list of actual participants (faculty members/officers) through the Dean/PO concerned to the Director, Academics, UAF.
12. The expenses will be made under Faculty Development Component out of Profit Distribution Account 3019726421/NBP-UAF.

SN	Name of Department	No. of Person	Venue & Date
A. Faculty of Agriculture			
1.	Department of Agronomy, UAF	12	Neelum Valley, Azad Jammu and Kashmir-Pakistan February 24-26, 2022
2.	Institute of Horticulture Sciences, UAF	15	Katas Raj temple, Chakwal February 25-26, 2022
3.	Department of Forestry and Range Management, UAF	08	Forest Services Academy Ghoragali March 10-11, 2022
4.	Department of Entomology, UAF	18	Hilly Areas of Punjab and KP Provinces March 12, 2022
5.	Institute of Soil & Environmental Sciences, UAF	13	Salt Mine Khewara and Kallar Kahar, District Jhelum March 20, 2022
6.	Department of Plant Pathology, UAF	10	Swat Kalam and Malam Jabba May 13-16, 2022
B. Faculty of Agri. Engineering & Technology			
1.	Department of Irrigation and Drainage, UAF	10	Tarbela and Ghazi-Barotha March 3-4, 2022
2.	Department of Structures and Environmental Engineering, UAF	09	Swat March 17-18, 2022
3.	Department of Food Engineering, UAF	05	Kalam valley, Swat March 22-25, 2022
4.	Department of Fibre and Textile Technology, UAF	07	Temple Katas Raj, Khewera mines and Kalar Kahar May 30, 2022

SN	Name of Department	No. of Person	Venue & Date
C. Faculty of Veterinary Sciences			
1.		16	Abbottabad District March 01-02, 2022
D. Faculty of Food, Nutrition & Home Sciences			
1.	Institute of Home Sciences, UAF	11	Khanpur Dam March, 05, 2022
2.	National Institute of Food Science and Technology, UAF	24	Khabeki, District Khushab March 07-08, 2022
E. Faculty of Social Sciences			
1.	Institute of Agricultural Extension, Education and Rural Development (IAEERD) UAF	09	Abbottabad District in the Hazara region of eastern Khyber Pakhtunkhwa February 25, 2022
2.	Institute of Business Management Sciences, UAF	16	To visit Khan Pur dam March, 17-18, 2022
F. Faculty of Sciences			
1.	Department of Chemistry, UAF	17	Khabeki, District Khushab February 15-16, 2022
2.	Department of Physics, UAF	11	Kallar Kahar Lake & Murree Hill Station March 17-18, 2022
3.	Department of Zoology, Wildlife and Fisheries, UAF	08	Fisheries Complex Research Center and Army Museum, Lahore March 21, 2022
4.	Department of Humanities & Linguistics, UAF	12	Khewra salt mines, Katas Raj temples, Chakwal March 10, 2021
G. Administration			
1.	Treasurer office, UAF (22)	04	Swat Valley March 10-13, 2022
H. Directorate of Students Affairs, UAF		06	Khyber Pakhtunkhwa May 21-23, 2022
I. Department of Public Relations & Publication (PRP), UAF		35	Kaghan Valley April 09-11, 2022
J. Senior Tutor Office, UAF		14	Kalam Swat valley May 18-21, 2022
K. UAF Community College, PARS, UAF		15	Bahawalpur & Derawar Fort March 08-09, 2022
L. UAF Sub Campus TT Singh, UAF		13	Azad Kashmir March 24-26, 2022
M. UAF-Sub Campus Burewala		21	Bahawalpur Drawer Fort March 23, 2022
N. UAF Sub-Campus Depalpur, Okara		12	To visit Jehlum March 30

Pictorial View
















RETREAT HOUSE










2022/2/15


Section

3

Technology Transfer

3. Technology Transfer

This component provides an opportunity for the scientists to get financial support for transfer of technologies to the stakeholders. Endowment Fund Secretariat accepts proposals for technology transfer from all public entities which demonstrate needed research and development capabilities and financial responsibilities. The portfolio under this component consists of outreach projects, on campus, demonstration, organizing Farmers' Fairs/Exhibitions, Shows, outreach activities etc.

The technologies disseminated through these projects relate to Animal, Plants, Engineering and basic sciences.

3.1 Projects Initiated

SN	Title of the Project	Name of the PI	Duration	Budget (Million)
1.	Capacity building of small-scale farmers to enhance productivity and improve socioeconomic status through institutional outreach program	Prof. Dr. M. Qamar Bilal, Institute of Animal and Dairy Sciences, UAF	3 Years (01.11.22 To 31.10.25)	5.134
2.	Establishment of Low Fruit Fly Prevalence Zone (LFFPZ) at UAF-Main Campus	Dr. Muhammad Dildar Gogi, Associate Professor, Department of Entomology, University of Agriculture, Faisalabad	3 Years (01.11.22 To 31.10.25)	3.841
3.	Demonstration of Best Production Management Practices for Chickpea Production in Irrigated Areas	Dr Rana Muhammad Atif, Assistant Professor, PBG, UAF	3 Years (01.11.22 To 31.10.25)	2.966
4.	Tunnel Grower's Training of Integrated Disease Management: An Eco-Friendly Approach	Dr. Osama Bin Abdul Hafeez, Lecturer, UAF Sub-Campus, Burewala-Vehari	3 Years (01.11.22 To 31.10.25)	2.323

SN	Title of the Project	Name of the PI	Duration	Budget (Million)
5.	Promotion of Wheat Seed Production by Technology Transfer to Small Landholders' Farmers	Prof. Dr. Muhammad Arif, Department of Agronomy, the University of Agriculture, Peshawar.	3 Years (01.11.22 To 31.10.25)	5.196
6	Development of an Artificial Intelligence (AI) - Based Small-Scale Automated Citrus Grading Platform	Dr. Yaqoob Majeed, Assistant Professor, Department of Food Engineering, UAF	2 Years (01.11.22 To 31.10.24)	1.660
7.	Urban Food Gardening in Twin Cities: A Step Towards Fight Against Climate Change and Malnutrition	Prof. Dr. Muhammad Azam Khan, Department of Horticulture, PMAS-Arid Agriculture University, Rawalpindi	3 Years (01.11.22 To 31.10.25)	4.410

3.2 Ongoing Projects

SN	Title of the Project	Name of the PI	Duration	Budget (Million)
1.	Feeding Scavenging Chicken for Deficient Nutrients- Proven Strategy to Improve Growth and Production in Rural Chicken	Dr. Umar Farooq, Assistant Professor, UAF Sub Campus Toba Tek Singh.	2 Years (01.10.21 to 30.09.23)	1.417
2.	Popularization of home gardening in urban and peri urban areas of Punjab	PM: Prof. Dr. Muhammad Jalal Arif, PI:ZONE-1: Dr. Muhammad Muzammil Jahangir, PI:ZONE-2: Dr. Rashad Waseem Khan Qadri, PI:ZONE-3: Dr. Muhammad Atiq, PI:ZONE-4. Dr. Muhammad Dildar Gogi, UAF	3 Years (01.11.21 to 30.10.24)	8.035

SN	Title of the Project	Name of the PI	Duration	Budget (Million)
3.	Establishment of Grapes Germplasm Unit (GPU) for Technology Transfer	Prof. Dr. Muhammad Jafar Jaskani, UAF	3-years (15.04.19 to 14.04.022 Extended)	4.409
4.	Institutional Dynamism and Performance of Irrigation Systems aimed Climate, Demogramic and market Changes Cases from Pakistan	Dr. M. Asif Kamrean, Faculty of Social Sciences, UAF	1 Year 01.04.23 to 31.03.24	2.602

3.3 Projects Completed

SN	Title of the Project	Name of the PI	Duration	Budget (Million)
1.	Targeting Actions to Improve the Ornamental Plant Production System for Strengthening Floriculture Industry	Dr. Adnan Younis, Assistant Professor, I.H.S, UAF	3-years (01.09.19 to 31.08.22)	2.754
2.	Auger Hole Technology: An Economical Technique for the Reclamation of Dense Saline-Sodic Soils	Prof. Dr. Ghulam Murtaza, Institute of Soil & Environmental Sciences, UAF	3 Years (01.05.020 to 30.04.23)	3.542
3.	Establishment of Community Oriented Plant Disease Diagnostic Clinic at UAF Sub-Campus Burewala	Dr. Sohail Akhtar, Assistant Professor, UAF Sub-Campus, Burewala	3-years (15.04.19 to 14.04.022)	1.849
4.	Uplifting Monetary Conditions of Chilli Growers by Creating Awareness about Disease Problems and their Management	Dr. Nasir Ahmed, Assistant Professor, Department of Plant Pathology, UAF	3 Years (01.07.20 to 30.06.23)	1.476
5.	AgroChain - An Intelligent System to Track Down Counterfeit Agricultural Inputs using IoT & Blockchain Technology	Dr. Saqib Ali, Assistant Professor, Department of Computer Science, UAF	2 Years (01.11.20 to 30.10.22)	1.335

3.4 HIGHLIGHTS OF SOME SIGNIFICANT PROJECTS

Targeting Actions to Improve the Ornamental Plant Production System for Strengthening Floriculture Industry (Completed)

Dr. Adnan Younis

The ornamental nursery industry is a very delightful and exhilarating business in the country. The production of ornamental plants for profit has the potential of offering several individual and financial returns. Nevertheless, as with various other farming ventures that appear to be very simple on the surface, the ornamental nursery business is complicated and requires a great deal of expertise and skills not only in production system, but also in management of human resource and marketing. The ornamental nursery business is very diverse and needs careful planning. It is a business, and like any other business, the probability of success depends on planning, execution, fortitude, and good management practices. It is important to consider following task before starting this business:

- Develop a mission statement and business plan prior to start ornamental nursery. Then, estimate expenses and start-up costs to arrange financial resources.
- Select appropriate location for establishment of nursery and get the necessary business permissions and license to do business legally in the area.
- Procurement of planting materials and other necessary supplies to get business off the ground.

It is best to focus on production aspect (propagation, containers, field, Pots-N-Pots) when first having into the business consider acquiring liners till the business is running efficiently and only then consider supplying some of own liners, if thought to be advantageous. Marketing is an extremely important part of the nursery business and should be given equal status and attention to production. Marketing advertisements should start as the commitments have been made to run nursery business. There are three key fields in which nursery businessman compete: quality, price, and services. It is extremely challenging to contend with bigger nurseries on cost of production. Consequently, new competition must endeavor to produce better quality plants and provide good quality sale services.

Establishment of Community Oriented Plant Disease Diagnostic Clinic at UAF Sub-Campus Burewala (Completed)

Dr. Sohail Akhtar, sub-campus Burewala

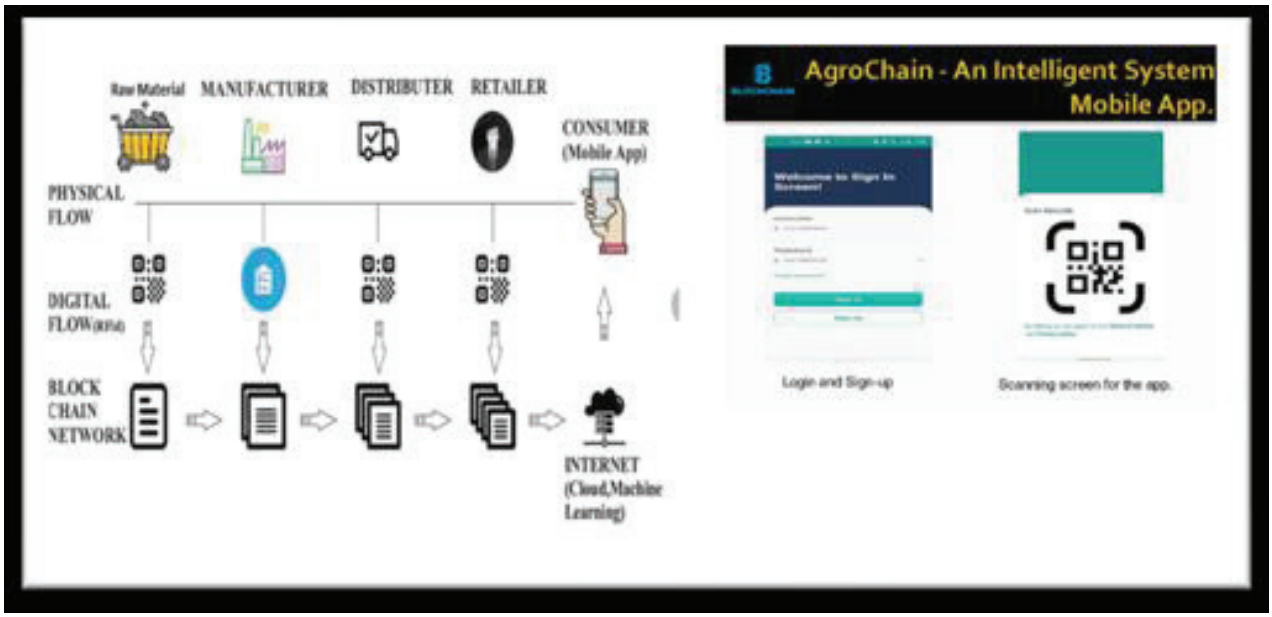
Plant diseases are the main concern for sustainable agriculture. Farmers face problems in crop production; firstly due to severe disease outbreaks, and secondly by improper diagnosis of the crop problem. In Pakistan, severe economic losses are attributed due to the inability of farmers to diagnose the disease at an early stage. So, it is important to firstly inculcate the signinficance of plant disease diagnosis to the farming community, and then to convince them for the right choice of control measures for any particular disease or problem.

Keeping in view the above scenario, several technology transfer activities were initiated and then continued for a period of three years. The project activities included the conduction of farmer days, volunteer students' trainings, diagnosis of the plant disease samples received from farmers in plant disease diagnostic clinic (PDDC) at UAF Sub-Campus Burewala, and the generation of disease reports comprising of diagnosis of the possible cause and suggested control measures.

Accurate disease diagnosis is a key to sustainable plant protection, and hence to production. Plant disease diagnosis is a bit tricky subject as compared to the insect pests' attack, so it needs proper identification from a reliable source. Plant pathology lab in the UAF Sub-Campus Burewala is serving as plant disease diagnostic clinic (PDDC) for the farming community. Its significance was conveyed to farmers by conducting farmer days at selected villages of tehsil Burewala. In response, farmers started sharing their field problems by sending their diseased plant samples for diagnosis. Samples were processed for identification of pathogens/factors responsible, and the reports alongwith control recommendations were shared to the farmers. The lab services are still continued for the farmers free of cost. It is needed to extend the project activities and develop a mechanism for better interaction with more number of farmers at a time.

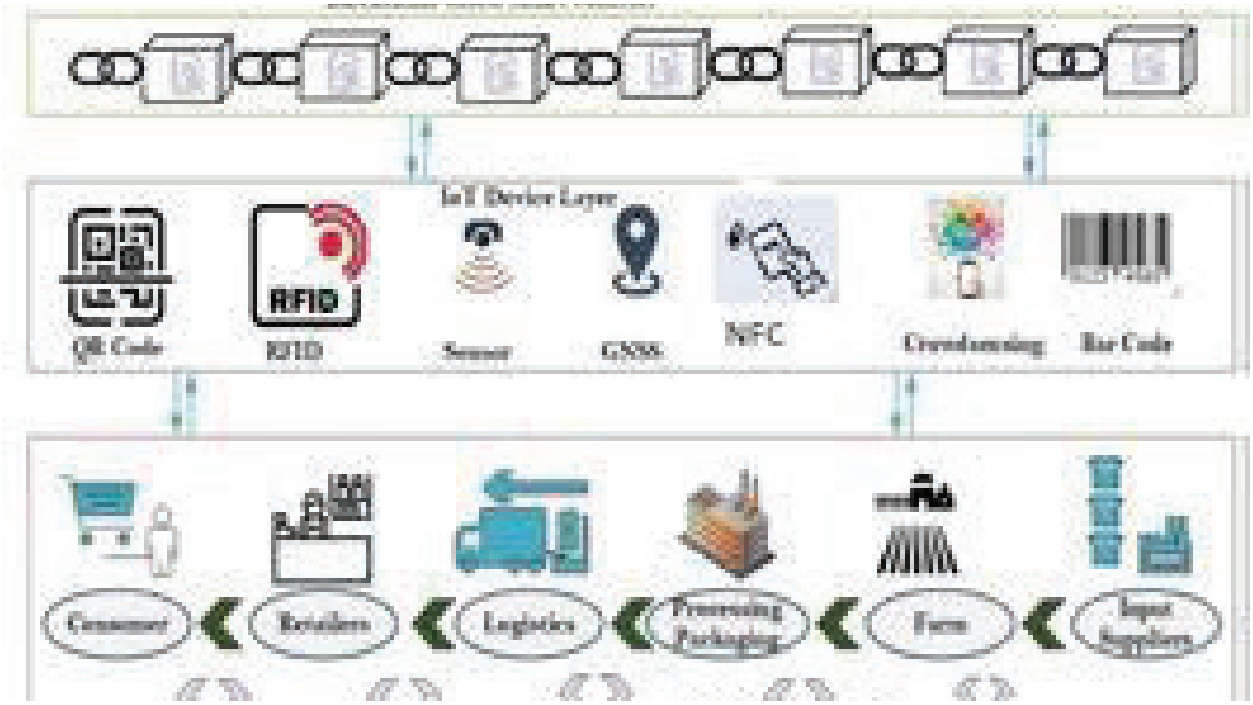
AgroChain - An Intelligent System to Track Down Counterfeit Agricultural Inputs using IoT & Blockchain Technology (Completed)

Dr. Saqib Ali



Over seventy percent of Pakistan's population living under US$2.25 per day is engaged in small-holder farming. Thus, improving productivity on smallholder farms is essential to reducing poverty rates and improving food security, as well as numerous other outcomes. High-quality agricultural inputs such as hybrid seeds, fertilizer, herbicides, pesticides, and other agrochemicals can enhance productivity, but their use in Pakistan remains puzzlingly low. Counterfeit, adulterated, or otherwise low-quality inputs may explain the puzzle: if farmers are unable to purchase high-quality inputs or are unsure that the inputs available to them are high quality (if they do not have precise beliefs), they may be less likely to invest. Fake fertilizers and agricultural chemicals are among the main reasons for low yields being recorded by farmers who are working on different types of soils (Wang et al., 2021). Today, we can see the influx of fake agrochemicals on the global market. A study conducted by Europol states that about 15% of agrochemical products sold in the world are counterfeit. Chemicals 24 come in many forms; they can be of poor quality and contain untested impurities or non-licensed active substances. Fake or nonapproved products may risk human health and the environment. In addition, such products cause economic damage and threaten the farmers' ability to produce sufficient quantities with less arable lands and provide safe, high-quality, and healthy food. The smart agriculture-based supply chain may play a vital role in agriculture chemical (Pesticides)' availability, safety, and quality. Two major factors in the agriculture chemical supply chain management, authenticity and traceability prove the products' validity and traceability. Previously agriculture products' supply chain management frameworks, the solution for both authenticity and traceability was not available simultaneously (Pranto et al., 2021). To address

these issues, a highly sophisticated solution named AgroChain has been developed. The AGROCHAIN (High-Value Agricultural Input Ownership/Authentication & Verification System using IoT & Blockchain Technology) is a smartphone app for detecting un-authorized /fake high-value agricultural inputs (i.e., hybrid seeds, fertilizer, herbicides, pesticides, and other agrochemicals, etc.). It is a cross-platform Real-time authentication and verification app for iOS and Android. It verifies whether the product is originally from the company or not. It uses NFC chips, QR codes, cloud computing, and blockchain technology. Highvalue agriculture input info provided by the company will be saved in the NFC chips in a secure format and then these chips will be embedded in the packaging (Uddin, 2021).



Further, the data is stored in the private blockchain comprised of the company, distributors, suppliers, retailers, and government agencies. The app detects the relative NFC chip on the product. If the chip is from the verified company, it shows product-saved information and if the internet is available, it further checks its status from the blockchain and gives user status feedback about the product otherwise, if the NFC chip is un-authorized it declares the product as unauthorized and alerts the user. This app is going to be implemented for the general public to spread awareness and help improve Agro. chemicals quality control(Shahid et al., 2020) . The app will also provide the user with his history. We will be performing data analysis using the data collected from this app i.e., analyzing which inputs are being used by most of the farmers in different areas. This analysis may help us to identify certain diseases being spread around different areas and prevent certain disease breakouts. This app is a platform that provides services to authenticate the items, so it doesn't contain any information about any product or any other thing (Saurabh & Dey, 2021). It reads the information from QR codes, BAR codes, and NFC chips and displays it to the user. For online authentication, it uses cloud processing and blockchain technology. Further, we can identify the sale and purchase of a specific item in a specific area and can identify the reasons.

Establishment of Grapes Germplasm Unit (GPU) for Technology Transfer (Ongoing)

Dr. Muhammad Jafar Jaskani

Grape is important fruit and its cultivation in Punjab is extending each year. However, the growers are struggling in finding suitable cultivars and management technologies under subtropical climate of Punjab. The establishment of GPU will serve to characterize cultivars, model vineyard for refining available technology under drip irrigation system and capacity building of growers regarding nursery and crop production, plant protection, harvesting and value addition. Grape germplasm unit will provide the extensive information about the available cultivars in Pakistan which are mostly brought from Europe, Japan and USA. It will also provide base for the training of farmers for production and management of vineyards. Grapes are rapidly growing in the southern Punjab for developing the area into grapes production zone. Recent developments in its production technology have made possible to grow this crop in Pothowar region on commercial scale.

A survey was conducted for the collection of grape germplasm. In this regard, Attock, BARI-Chakwal, and NARC-Islamabad research center was visited and collected the for-demonstration block. A demonstration block of vineyard was established at Horticultural Fruit Garden Sq. No. 32. Land was prepared for the plantation of grape plants. Almost 18 grape cultivars have been transplanted in the field. Trellis system (Y type) was designed for vineyard establishment in the orchard. Vineyard properly managed during different cultural practices to prolong the life of vineyard structure. For the control the termites attack Chlorpyriphos flooded into the vineyard field. Round up sprayed on the field during the optimum moisture condition before the transplanting of grape seedlings. After the start of proper growth, demonstration activities will be carried out in the season. Almost 16 Grape cultivars has been transplanted in the demonstration block at Experimental Fruit Research Garden, Saqure No.9 at Institute of Horticultural Sciences.

Popularization of home gardening in urban and peri urban areas of Punjab (ongoing)

PM: Prof. Dr. Muhammad Jalal Arif, ZONE-1: Dr. Muhammad Muzammil Jahangir, ZONE-2: Dr. Rashad Waseem Khan Qadri, ZONE-3: Dr. Muhammad Atiq, ZONE-4: Dr. Muhammad Dildar Gogi

For sustainable production of healthy vegetables by the stakeholders/masses involved in home gardening, production and protection technologies play very crucial role. The Integration of techniques/measures/ tools of production and protection system involve implementation of a vegetable production and protection consortium for home gardening to ensure food-safety and food-security in terms of healthy vegetables. The major insect pests management techniques/measures include the Tricho-cards, insect killer, nets and bags for netting and fruit-bagging, colored sticky-card/traps, light-reflecting ribbons, botanicals, baits and pheromones-traps. These techniques were selected and implemented in an integrated manner at different crop stages according to insect pest situation. Different home gardening techniques has been taught and demonstrated several times at Institute of Horticultural Sciences, University of Agriculture Faisalabad, as necessary teaching resources and qualified teaching staff is available in the Institute, However, a coordinated approach was developed to technology transfer of home gardening techniques for horticultural crop production at home grown scale. Optimized technology was transferred through training seminars/ workshops/community meetings for capacity building, awareness and community mobilization of stakeholders especially women through women association/clubs through print and electronic media awareness compaigns.

PM coordinated for scoping to select site for demo-plot at four zones [Zone-1 (Lahore & Okara), Zone-2 (Faisalabad), Zone-3 (Toba Tek Singh) & Zone-4 (Burewalal). Similalry, PM also coordinated in carrying out a survey for selection of 25 home gardeners at each Zone.

Production and protection protocols were demonstrated for selected winter vegetables, flowers and fruits for home gardening at selected sites/Demo-plot at four zones during the 1st

year of the project..

Community meeting were also organized at the sites of selected gardeners (25 selected gardeners) for awareness and capacity building. Community mobilization of stakeholders especially women about home gardening through print and electronic media awareness campaigns was also done.

The registered home gardeners including category of low income having no space and affluent families having space at their homes were facilitated by providing mushrooms grow kits as well asseeds/nursery of selected winter vegetables, flower and fruits. They were also mad familiar with technique of home gardening and roof-gardening. At the end of the winter season, the registered home gardeners were found very satisfied and they acknowledged vision of UAF and contribution of the team in familiarizing them with this healthy activity of home gardening at their homes. Following them, many more families/stakeholder showed interest in the home gardening and requested for help to establish home gardening.

3.5 University Outreach Program

The University outreach activities initiated as a project during 2010-11 was converted into a program with recurring budget under Technology Transfer Component. Under this program, faculty members submit a proposal for an activity ranging from one day to one week. Under outreach program, proposals may cover hands-on trainings, demonstrations, farmers/ gathering, exhibitions and lectures/seminars for the awareness/sensitization of the community. These Programs have received enormous response and have been highly admired. The outreach activities conducted 2022-23 are as under.

SN	Name & Department	Title of Event
1.	Dr. Adnan Younas, Associate Professor, Institute of Horticultural Sciences, UAF	3-D Landscape Designing Approaches for Entrepreneurial Development and Creating Employment Opportunities in UAF. On August 16-17, 2022
2.	Dr. Summer Abbas Naqvi Assistant Professor, Institute of Horticultural Sciences, UAF	Impact Assessment of the Agricultural Crops under Flood in South Punjab & Sindh. On September, 2022
3.	Prof. Dr. M. Asif Kamran Institute of Agricultural & Resource Economic, UAF	Rapid Appraisal and Economic Assessment of Flood Effected Cotton Zones in South Punjab and Sindh. on September, 2022
4.	Dr. Saqib Ali, Department of Computer Sciences, UAF	Rapid Assessment of Flood Impact in Selected Locations of Punjab & Sindh using Satellite Imagery. on September, 2022
5.	Dr. M. Saif-ur-Rehman, Institute of Animal & Dairy Sciences, UAF	Capacity Building of Cattle, Buffalo and Goat keepers for Good Management Practices for Profitable Farming in UAF. On November 02-04, 2022
6.	Prof. Dr. M. Sarwar Khan, Dean, Faculty of Agriculture, UAF	Wheat Campaign-2022 in Faisalabad, Gujranwala, Gujrat, Sahiwal, Lahore and Sargodha. On October 29 to November 06, 2022
7.	Prof. Dr. M. Asghar Bajwa, Dean, Faculty of Sciences, UAF	Wheat Campaign-2022 in Gujranwala. On October 29 to November 06, 2022
8.	Prof. Dr. M. Arshad, Dean, Faculty of Agr. Engg. & Tech., UAF	Wheat Campaign-2022 in Gujrat. On October 29 to November 06, 2022
9.	Prof. Dr. Sarfraz Hassan, Dean, Faculty of Social Sciences, UAF	Wheat Campaign-2022 in Sahiwal. On October 29 to November 06, 2022
10.	Prof. Dr. Abdul Khaliq, Chairman, Department of Agronomy, UAF	Wheat Campaign-2022 in Sargodha. On October 29 to November 06, 2022

SN	Title of the Project	Name of the PI
11.	Prof. Dr. Ghulam Murtaza, Director Soil & Environmental Sciences, UAF	Wheat Campaign -2022 in Faisalabad. On October 29 to November 06, 2022
12.	Prof. Dr. M. Jalal Arif, Principal Officer, PRP, UAF	Wheat Campaign-2022 in Faisalabad, Gujranwala, Gujrat, Sahiwal, Lahore and Sargodh. On October 29 to November 06, 2022
13.	Prof. Dr. Tariq Javed, Dean Faculty of Veterinary Sciences, UAF	Wheat Campaign-2022 in Lahore. On October 29 to November 06, 2022
14.	Dr. Haroon Zaman Khan, Director, Directorate of Farm, UAF	"Wheat Sowing Inauguration-2022 and Wheat Productivity Enhancement Campaign at Chak No.218-RB, Prokainwalla, Faisalabad" in Chak No-218 RB and UAF. On November 04-05, 2022
15.	Dr. Iftikhar Ahmad, Associate Professor, IHS, UAF	Demonstration of IHS Floriculture Technologies to Nurserymen and Floriculture Stakeholders at Annual Chrysanthemum Day in UAF. On December 15, 2022
16.	Dr. Adnan Younas, Institute of Horticultural Sciences, UAF	Demonstration of Floriculture and Landscape Elements for Exchange of Knowledge and Expertise Among Stakeholders in UAF. On March 06-07, 2023
17.	"Dr. Muhammad Saif-Ur-Rehman, Institute of Animal & Dairy Sciences, UAF.	Capacity Building of Buffalo Breeders for Food Security and Lively hood in UAF. On March 02, 2023
18.	Dr. Shoaib-Ur-Rehman, UAF Sub-Campus, Depalpur, Okara	National Potato Festival, 2023 in Sub-Campus Okara, Depalpur. On March 09-10, 2023
19.	Dr. Haroon Zaman Khan, Convener, Greyhound Race, UAF.	To Arrange Greyhound Race during Spring Festival-2023 in UAF. On March 03-05, 2023
20.	Prof. Dr. M. Jalal Arif, Principal Officer, PRP, UAF	To organize a tent pegging ceremony during Spring Festival-2023 in UAF. On March 05-07, 2023
21.	Ms. Hira Iftikhar, Institute of Home Sciences, UAF.	Sustainable Nutrition A Synergistic Approach to Achieve Food Security at Household Level at Govt. Girls College, Peoples Colony, FSD. On March 15 to 17, 2023

SN	Title of the Project	Name of the PI
22.	Ms. Alvina Haseeb, Institute of Home Sciences, UAF	Enhancement of Psychological Well-Being of School Going Children Through Various Counselling Techniques and Motivational Activities at Govt. Girls High School Housing Colony, Gojra. On March 13 to 16, 2023
23.	Ms. Aisha Mushtaq, Institute of Home Sciences, UAF	Sustainable Textiles an Integrated Rural Development Model. Hands on Training: Dyeing to Color Fabric and Batik (Wax-resist Dyeing) at Govt. Girls High School, 228/GB, Nardada, Samundri. On March 16 to 21, 2023
24.	Ms. Anum Asghar, Institute of Home Sciences, UAF	Hands on Training; an Effective and Economical Approach Towards Strengthening Women Empowerment in the Industrial Revolution at Govt. Vocational Training Institute for Women, Samanabad. On March 20 to 22, 2023
25.	Prof. Dr. Khalid Mushtaq, Institute of Agricultural and Resource Economics, UAF	Policy Dialogue of Economy Festival, ECONFEST at Alhamra Arts Centre, Lahore. On March 11, 2023
26.	Prof. Dr. Safdar Ali, Director Farm, UAF	Dissemination of Good Management Practices (GMPs) regarding Harvesting and Post-Harvest Care of Wheat and Different Crops in UAF. On April 27, 2023
27.	Ms. Sadaf Iqbal Khan, Institute of Home Sciences, UAF	A Qualitative Extended Awareness Activity of Re-Cycled and Re-Furnished Materials for Sustainable Domestic Use at Govt. Girls High School Noor-ul-Amin Colony, Faisalabad. On May 04-05, 202
28.	Dr. M. Saif-ur-Rehman, Associate Professor, Institute of Animal and Dairy Sciences, UAF	Capacity building of Goats breeders for milk production and fattening for beauty competition in UAF. On June 14, 2023

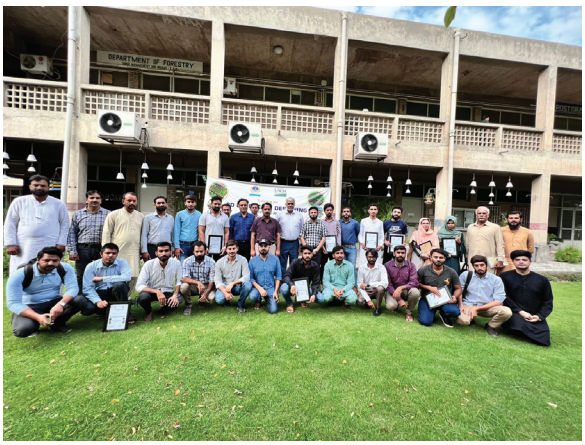
3.6 HIGHLIGHTS OF SOME OUTREACHER ACTIVITIES

Title of the Event:	**3D Landscape Designing Approaches for Entrepreneurial Development and Creating Employment Opportunities August 16-17, 2022**
Name of Organizer:	**Dr. Adnan Younis, Associate Professor, IHS, UAF**

The training was organized by IHS, UAF.

Outcomes

1. The training provided an opportunity to learn latest 3D software used for landscape designing.
2. The training brought together leading landscape professionals, and amateurs in the domain of interest from around the country to share their knowledge and experiences.
3. This training facilitated persons who had strong interest in Landscape design, and wished to embark on a satisfying career.
4. It was also of great benefit to self-employed landscape contractors and professional gardeners wishing to extend their services to include design.
5. This training assisted the participants to have all the knowledge and a great deal of practical experience to begin a career as a self-employed professional landscape designer.
6. The activity was of great value to students, amateurs, self-employed landscape contractors and professional landscapers who needed to extend their services in landscape business.
7. This activity imparted training of young professionals and established opportunities for entrepreneurs and young horticulturists to collaborate for future job possibilities.



Title of the Event: **Impact Assessment of the Agricultural Crops under Flood in South Punjab & Sindh September, 2022**

Name of Organizer: **Dr. Summer Abbas Naqvi, Assistant Professor, IHS, UAF**

This 7-days activity was conducted to visualize and report losses and to suggest strategies to avoid such losses in the future. The areas visited included

1. Visit to Ghotki

District Ghotki was the first stop over that included 5 tehsils (Ubaro, Daharki, Mirpur Mathelo, Ghotki and Khangarh). Most of the district Ghotki was affected by rainwater and it was found that about 60% of wheat cultivation will bed once. Cotton fields were damaged completely while sugarcane fields were affected around 25-30%. It is worth mentioning that rice was also affected due to standing water but still most of the areas had better rice cultivation. Visiting several tehsils of District Ghotki, it was observed that most of the seed is purchased through private seed companies and farmers need to buy it on hefty prices. It was also observed that lack of active drains resulted in creating standing water situations in the fields. For many years, the SCARP project was approved but none of the tube well are functional under the program today. Due to standing water, the fields will not be prepared for the future crops for next few months as the standing water is about 2 to 4 feet in many areas. Saim nala or drainage of Ghotki district should be opened. Only 1 saim nala is working in Ghotki out of 10.

Besides the seed prices, the farmers were also facing shortage of fertilizers and irrigation water. They don't have any equipment to drain the water out of their fields as the drains are blocked. The actual path of river was blocked due to encroachments, so the district is facing damages due to rainwater. It was observed that farmers were interested in cultivating Mott grass, Jantar, Napier Grass, and Sunflower in the coming months where the field is ready for cultivation. Some observations were also made for cultivating wheat as intercrop in some sugarcane fields to sustain the wheat productivity.

It was observed that sugarcane, cotton, banana, date palms, sorghum, maize fodders were affected and had 2-3 feet standing water in some fields. Stored wheat and cotton were damaged

due to rainwater and quality was deteriorated. Huge encroachments in the natural water ways resulted in blocked drains and caused damaged to agricultural crops.

The major concern for the region was the water drainage system that should be functional on urgent basis to minimize the future impacts of floods.

The livestock sector was badly hit due to diseases and shortage of fodders. Sugarcane in the area was rotted because of the standing water and was being sold as an alternative green fodder @300 per maunds for the livestock industry to cope with feed shortage. To solve the above-mentioned issues, following solutions are proposed.

- Agriculture sector loaning scheme may be redefined or modified.
- Standing water should be removed through improved drainage system.
- Wheat seed may be distributed for cultivation so cultivation may be initiated in affected areas after removal of standing water.
- Commercial banks loan should be waived.
- All inputs for cultivation should be subsidized including seed, fertilizer, implements etc.
- Fuel for machinery should be allocated for flood affected areas on subsidized rates so farmers can complete their cultivation.
- Fodder cultivation should be enhanced by introducing alternate forages that can withstand waterlogged conditions e.g. Mott grass, king grass.
- No governmental representative had reached the affected area for the rehabilitation except the University of Agriculture officials. Other government agencies like NDMA, PDMA should visit and access the situations before the flooding. Farmers of the region had helped each other on their own for rehabilitation.
- Documented approval is always there but no implementation on ground had been seen yet.
- In normal years, sugar mills should start functioning October 15 to process the cane. Such mills usually open after December 1, that delays the removal of cane form the field and planting wheat.

District Ghotki is the Cotton zone with 33 ginning mills, out of which only 23 are functional. The cotton arrives to these mills from several areas but due to rain, only one picking is done in most fields and most of the crop was affected after the first picking. It has affected the whole supply chain for cotton and affected the mills. For the next cropping season, seed of cotton will be challenge so the seed distribution should be planned in the flood affected areas.

2. Goth Dera Wahan and Sukkur Chamber of Commerce, Sukkur

The team interacted with the farming community and listed their issues due to flood. Most of this area was affected by rainwater from the nearby mountain range and had affected large areas of date palms. Sorghum planted in datepalm orchards were damaged. Few fields were drained and were planted with maize. It was interesting to see few fields of newly planted maize but mostly fodder crops affected sorghum. Jantar (Sesbania) was less affected.

The situation of dates market sukkur was assessed. Most of the infrastructure was damaged

and the produce was affected as well. Quality of produce was deteriorated and was mainly used as animal feed.



3. Sindh Chamber of Agriculture, Therhi

Representative from Sindh Chamber of Agriculture, Hafiz Abdul Aleem, welcomed the delegation from UAF and briefed about the impacts of flooding in District Khairpur union council Therhi. Most of the fields in the north were ready for planting wheat but on the south side, the situation was opposite. It was told that cotton was damaged by 80% along with Mango, banana, date palm and fodder crops. 70% area will not be cultivated by wheat. Most of the dates are damaged but there should be a mechanism of value adding to the product and improve the market.



4. Agriculture Extension Office, Khairpur

It was reported that dates were the first crop that was affected when rain started. The land needed to dry the dates as badly affected the standing water. The major emergency in the district is to remove the water out of the farmers fields especially from cotton, banana, date palm orchards and drying areas etc.

The major challenge to the district is the food security of wheat. 40% of cultivation may happen only if the water is drained soon from the fields. Tehsil Nara can accomplish the task while some of Gambut Tehsil and Sobhodero may be utilized for cultivation. Recently, the prices of seed are increased which has posed another pressure on farmers condition to purchase the seed. So, the seed and fertilizer should be subsidized.

5. Taj Farms and Shoaib Seed Corporation, Saleh Put

Taj farms is a progressive farm with about 1500 acres area and cultivatable area of around 900 acres. They cultivate date palms, bananas, maize as silage and wheat. Most of their area was affected due to flood. Newly planted date palm orchard, cotton fields were affected by standing water. Shoaib seed corporation is a seed distributor in the area and multiplies wheat seed.

6. Agriculture Extension Office, Kandiaro

Field survey were conducted by inquiring the farmers about the current situation of several crops. The area was affected with standing water about 5-6 feet in some areas and most cotton fields and banana orchards were affected. Wheat straw storage was affected due to standing rain water. It was demanded by the farmers that seed and fertilizer should be subsidized so they can plant their fields once the water is drained.

Title of the Event:	**Rapid Appraisal and Economic Assessment of Flood Affected Cotton Zone in South Punjab and Sindh September-December, 2022**
Name of Organizer:	**Prof. Dr. Muhammad Asif Kamran, Institute of Agri. Resource Economics, UAF**

Objectives of the event

- Field demonstration of Rapid Appraisal tools for data collection
- Economic impact of flood related losses in field crops
- Techniques for appraisal of critical input requirements in the flood affected areas
- Techniques to identify and evaluate alternate policy options for field crops in flood affected areas

Flood of 2022 created heavy destruction in general and particularly in cotton growing belt of Sindh and Punjab provinces. Rapid appraisal of flood incidence and damage estimation is essential for relief and rehabilitation mechanism. Considering limited capacity of local level government organizations and the community, an Outreach activity to build capacity and conduct the appraisal was conducted. The capacity to conduct rapid on-site and off-site appraisal will essentially help in the prioritization of various sectors for support and reconstruction along with laying foundations for future flood risk mitigation plans.

This Rapid appraisal was focused on economic especially the agricultural losses in Sindh and Southern Punjab. The key aspect of this activity along with other national and international assessment was acquiring the firsthand information for the affected farmers about their losses and then limitations and constrains for rehabilitation of agricultural farmlands and preparation for the next crops. A Rapid Soil survey techniques was shared with communities and a survey in the real time was conducted along with socio-economical appraisal targeting the

farmers to know the barriers and design the strategies and solution of the quick recovery and rehabilitation of these areas for next crop which is wheat. As proper cultivation of wheat is very important to avoid the food crisis in next year.

This rapid appraisal technique will help farmers and government officials to find out the issues using field survey in future as well. The consultation with the farmers and then community based solutions will help design rehabilitation options in future.

Sindh Province

Visit of Sindh province was conducted in two different intervals to share the assessment tools, gather data and to build over time assessment of the flood areas on 29-09-2022 to 05-10-2022. Districts of Ghotki, Khairpur, Sukkur and nowshehro Feroz were visited for the outreach activities.

As a first step, the team met the District Officer Agriculture Extension and his team to discuss the extent of losses, profile of the district and information about key agricultural resources in different tehsils. The ongoing efforts and data collection for flood damages was also discussed. In this exercise a biophysical context map of the Tehsils of the district Viz. Ubaro, Daharki, Mirpur Mathelo, Ghotki and Khangarh was developed with the Extension department. A semi-structured questionnaire was developed to conduct the survey. The questionnaire was used to gather information of selected sample on farm characteristics, farming options & strategies, rehabilitation related perceptions, and risks & opportunities options. Besides systematic data collection for a sample of respondents, PRA techniques like Transect walks and village resources mapping on charts was performed to co-create charts and assess village resources.

In the process of Rapid Appraisal with the community and focus groups meetings, findings and solutions were developed and deliberated. Visit of Chamber of commerce, Sukkur and dates market was conducted on day 3. The situation of market was assessed. The Chambers of Commerce team was involved in market analysis exercise and how the value chain of destroyed commodities will be affected from point of production to the export.

The team also visited Sindh Chamber of Agriculture and discussed the flood damages and conducted Rapid Appraisal exercise for different areas and overall damages due to floods. The issues of drainage infrastructure, post-disaster agricultural rehabilitation needs and options to mobilize resources at the district and the province level were discussed. The technologies to help the farmers and capital requirements and means were also discussed for the revival of the farming community.

The team visited growers and Extension offices to aware about the Rapid Appraisal toolkit and conduct an appraisal in presence of the extension staff. Data from farmers using the semi-structured questionnaire was also collected for further analysis.

South Punjab

In South Punjab, District Dera Ghazi Khan and Rajan Pur very badly affected by the floods. In Rajanpur district, the flood caused heavy damages in 2 different ways i.e. the torrential rainfall created crops submergence situation and the hill torrents devastated the crops. UAF team conducted its outreach activity and Rapid Appraisal capacity building and exercise in Lundi Saidaan and Chak Shikari areas. After the transect walk, a resource mapping exercised was conducted and historical analysis of flood events and community coping strategies was conducted. Though the flood of 2022 was a historical event, but the communities reported that the floods of relatively smaller magnitude are norm in these areas. Similarly, visit of Tehsil Fazil Pur (District Rajanpur) witnessed heavy damages to cotton crop and other livelihood assets due to incidental rainfall related damages and havoc created by the hill torrents. The team held meeting with the officials of the Extension Department and conducted Rapid Appraisal orientation and discussed methods of relative appraisal in field settings.
In Dera Ghazi Khan district, the outreach activity was conducted in Tehsil Taunsa Sharif and Tehsil Dera Ghazi Khan. Both Tehsils were heavily damaged by the floods. In Tehsil Taunsa Sharif, the damage was due to hill torrents, rains and also due to river serge. During the transect walk, old flood plains and paths were discussed and different new development like canals and roads obstructing the traditional flood plains were recorded. The communities took keen interest in development of resources maps. Data from Rajanpur and Dera Ghazi Khan district was collected on the semi structured questionnaire.

Outcome of the activity

- Rapid appraisal of the flood affected areas and identification of interventions for rehabilitation
- Development of questionnaire to collect data for rehabilitation of agricultural activities and data collection from more than 150 respondents for evidence based rehabilitation plan

Title of the Event: **Rapid Assessment of Flood Impact in Selected Locations of Punjab & Sindh using Satellite Imagery September, 2022**

Name of Organizer: **Dr. Saqib Ali, Department of Computer Science, UAF**

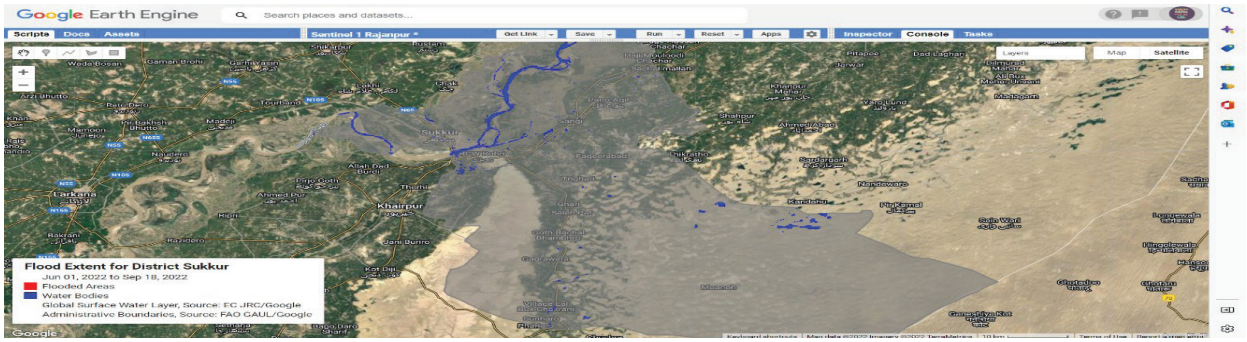
Objectives of the event

- To assess the extent of damage caused by floods in agricultural lands
- To address the flood damages using remote sensing techniques
- Way forward to cope with climate change and adaptation strategies

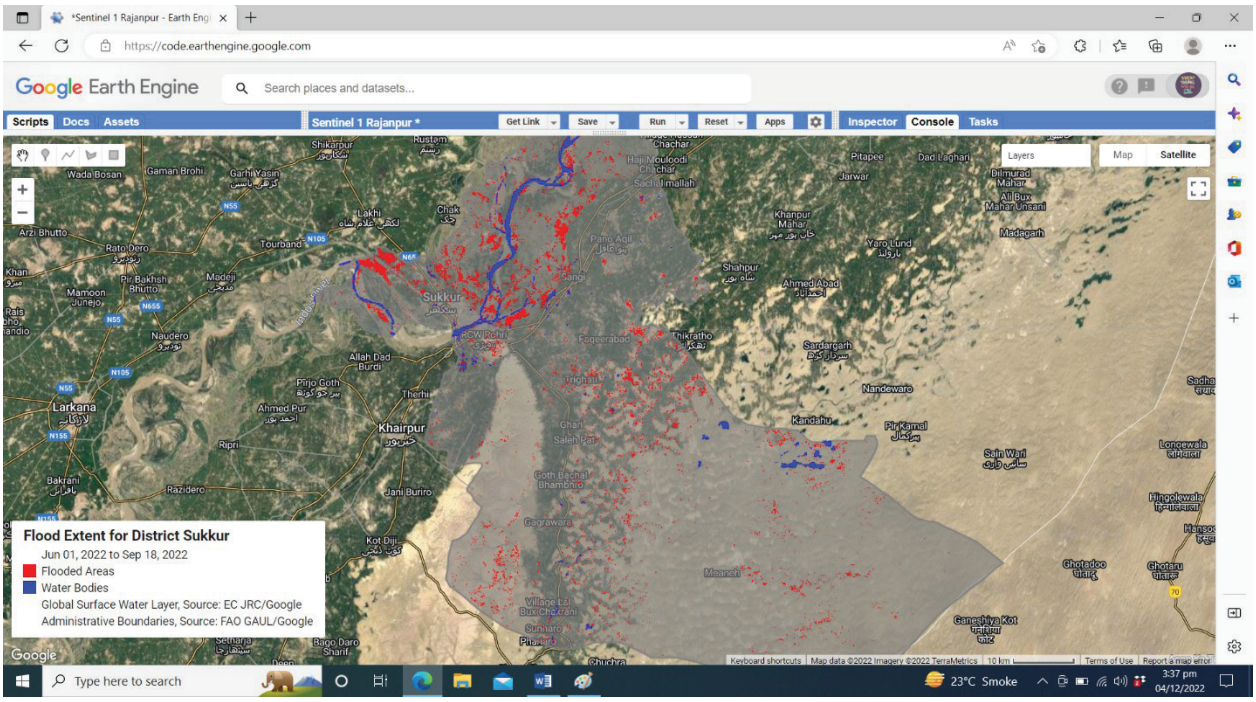
Floods and Heavy rainfall from 14 June to October 2022 in Pakistan have massively damaged the country's livelihood, infrastructure and crop lands in a very deleterious way. They have resulted in killing of 1,739 people, and caused 3.2 trillion and economic losses of 3.3 trillion. The immediate causes of a damage of the floods were heavier than usual monsoon rains and melting glaciers that followed a severe heat wave, both of which are linked to climate change. Problem at hand was to assess the extent of flood damage to the agricultural land by the flooding water through satellite imagery. The use of satellite data for agriculture is helping the agro community in befitted manner since many years. The team working at Precision Agriculture & Analytics Lab under the National Center In big Data & Cloud Computing proceeded to the flooded areas of South Punjab and Sindh with the aim to use remote sensing techniques for rapid assessment of damages.

They team visited flood affected areas of Sukkur-Sindh, fetched the geo-reference coordinates and applied the optical and radar satellite imagery technique to download the pre flood and post flood images to visually see the established water bodies in the reference area. The pre and post flood images were analyzed using different GIS software to provide meaningful output.

The picture of the satellite imagery of sukkur-Sindh before and after the invasion of flood is attached below:

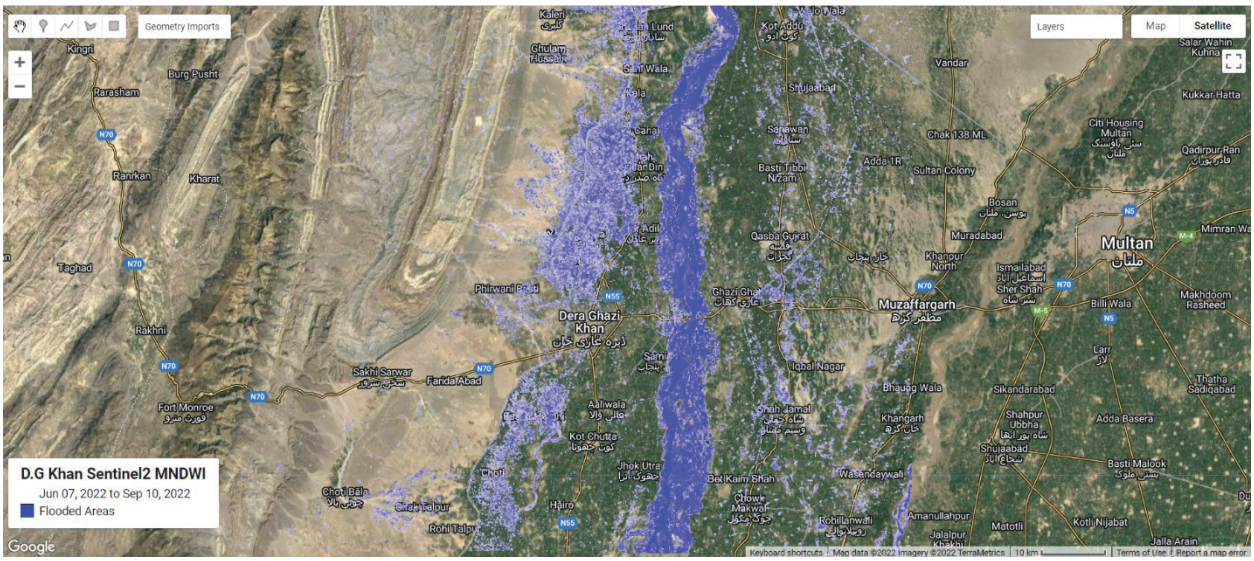


The picture-1 shows the permanent water bodies shaded blue in the area and water is only confined to its natural course before the flood



The Picture-2 shows that permanent water bodies are color marked blue and red color spread shows the water spread by flood on the surface i.e. agricultural land DERA GHAZI KHAN-PUNJAB

The picture-3 shows the permanent water bodies shaded blue in the area and water is only confined to its natural course before the flood.



The picture-4 shows that permanent water bodies are color marked blue and sharp blue color spread shows the water spread by flood on the surface i.e. agricultural and rangelands.

The extent of flood as captured by normalized difference water index (NDWI) and with the aid of change detection algorithms shows that Dera Ghazi Khan surrounding witnessed heavy flooding along with silt deposition in layers. The problem of silting affected the irrigation system, agricultural lands and standing crops with some layers up to 0.7 meter thickness.
The pictures of the rapid flood assessment activity are attached along with the link of the flood extent mapping interface assessable via link.

1. https://vakasahmad.users.earthengine.app/view/dg-khan
2. https://vakasahmad.users.earthengine.app/view/sukkur
3. https://vakasahmad.users.earthengine.app/view/rajanpur

Title of the Event: **Capacity Building of Buffalo Breeders for Food Security and Lively Hood in UAF**
March 02, 2023

Name of Organizer: **Dr. M. Saif-Ur-Rehman, Institute of Animal & Dairy Sciences, UAF**

A large number of locals thronged the University of Agriculture Faisalabad to have the delight of the colors of Buffalo Milk and Beauty Competition. It was a good opportunity for Faculty to have interactive session with buffalo keepers in order to improve their knowledge about husbandry practices and to educate them about good management practices. The participation of stakeholders in these events was good and certain issues were discussed in detail with farmers.

The following activities were performed in the outreach program:
Interactive Session with Buffalo farmers (Buffalo Breeders for Food Security & Livelihood)
The Nili-Ravi Buffalo breeders from different parts of the province participated in the event and also brought their best animals for milk and beauty competitions at University of Agriculture, Faisalabad. The animals were registered on their arrival by the registration committee and rules and regulations of the com petitions were handed over to the breeders in printed form to make the event fair and transparent.

Interactive session with Buffalo Breeders:
Buffalo is the main dairy animal in the country. Buffaloes are part of the traditional small mixed farming system integrated with crop production. Buffalo dairying is not quite commercial so the level of inputs is very low. Generally, animals are fed on crop residues with some additional forage/fodder grown for the purpose. Hay and silage making is a new concept. Concentrates are fed to those animals that are kept for the sale of milk. So, to address such issues there was need to have interactive session with buffalo breeders for their capacity building.

An interactive session with Buffalo breeders was held. The resource persons Prof. Dr. Muhammad Qamar Bilal (Dean FAH) and Dr. Muhammad Saif-ur-Rehman (Associate Professor, IADS), had a very good interactive session with the buffalo breeders and guide them about the breeding and selection of their animals on scientific lines for improved utilization and productivity. Prof. Dr. Muhammad Qamar Bilal also informed the breeders about good management practices to rear a healthy buffaloes especially from calf saving point of view. The farmers were get pleased to discuss their buffalo production issues with the scientific community of the University and appreciated to have this session with them to answer their certain problems.

The Vice Chancellor Prof. Dr. Iqrar Ahmad Khan (S.I) also visited the show and visited the animals along with the Prof. Dr. M. Sajjad Khan, Vice Chancellor Cholistan University of Veterinary and Animal Science, Bahawalpur and Syed Yawar Ali, Chairman Nestle Pakistan and appreciated the efforts of the FAH to organize this event. A seminar was also arranged by the FAH titled "Buffalo Production for Food Security and Livelihood" on the eve of world buffalo day. A number of participants from industry, UVAS, Lahore, L&DD Department Lahore, and some dignitaries from China and India (online) attended the seminar.

The Dean Faculty of Animal Husbandry Prof. Dr. Muhammad Qamar Bilal was the Chief Guest on the concluding session on March 02, 2023. The Chief Guest addressed the Breeders and participants of the event at UAF. He said, it is really a good opportunity for farmers to learn good management practices. He said that presenting animals in livestock shows bring pride and honor to the owner. Such shows have long been in vogue in the world. The beauty competition have played important role in development of breeds. They have been conducted, through the years, as a teaching tool to train young people in animal agriculture for judging competitions. These shows also serve as a yardstick for fellow breeders to develop their breeds. They are good platform for networking opportunities for educationists, researchers, extension workers and industry people. At the end the Chief Guest also appreciated the efforts of the organizers to make the event successful and distributed certificates among participants and shields to the resource persons and organizers.

Outcome

- Created awareness among livestock keepers and general public about unique genetic potentials and their attributes
- Training of farmers regarding recommended techniques for enhanced productivity and profitability
- Created awareness for raising of good male calves as sacrificial animals or for commercial purposes
- Helped in student teaching and practical demonstration of indigenous breeds of buffaloes.

Title of the Event:	**Demonstration of Floriculture and Landscape Elements for Exchange of Knowledge and Expertise among Stakeholders March 06-07, 2023**
Name of Organizer:	**Dr. M. Adnan Younis, Institute of Horticultural Sciences, UAF**

This activity was the part of Spring festival and was organized by Institute of Horticultural Sciences, UAF. The Vice Chancellor, Prof. Dr. Iqrar Ahmad Khan (SI) along with the members of D8 countries inaugurated the event.

Visitors showed interest in various technologies related to flowers, house plants and landscape elements displayed by different companies. Students and visitors asked questions to the stall holders related to their technologies and exhibits. This event helped to introduce modern concepts about planting material, equipment available and enabled the participants to collaborate with other organizations concerned with Floriculture and Landscape. Latest and advanced technologies for growing flowers to growers were practically demonstrated. Recent advancements in post-harvest management of floricultural products were also disseminated as well as demonstrated which were developed by various research organizations.

This activity also encouraged students, farmers, growers and nurserymen to present their talents and provide them an opportunity to look for new products, developments and technical background information in their relevant field. Various high profile delegates visited the event and highly appreciated the organizers.

Various organization from across country had displayed their products and technologies for knowledge sharing and technology transfer. Commercial Floriculture Lab, Institute of Horticultural Sciences also participated in this activity. They have a stall with various floral products (rose water, rose perfume, etc.), vegetable seeds, and different mushroom varieties. ARRI, one of the leading institutes working for the advancement and development of the agricultural sector in Punjab, also participated in this activity. ARRI showcased their impressive array of annual flowers in various arrangements. They well demonstrated the production technology of annual flower production. AARI presented 6 their collection of various ornamental flowers and plants to make this activity more colorful.

Gardening Wing Estate Management, UAF is responsible for developing a beautiful landscape, creating a relationship between university building and open spaces to create a powerful "sense of place". The department displayed beautiful collection of house plants. They have arranged their plants in aesthetically way. Visitors appreciate their efforts and workmanship.

Horti Club, a promising name in the landscape development and maintenance industry, took part in Flower and Landscape Expo 2023. Horti Club showcased their ornamental mulch collection, which was imported from the United States. It also displayed various ornamental potted plants and hardscape components of the landscape and made a significant contribution to making the Flower and Landscape Expo 2023 a memorable event.

Green Heaven Landscape, a privately owned plant nursery and landscape enterprise, has participated in Flower and Landscape Expo 2023. They demonstrated their collection of hardscape components, such as water fountains. They also showcased their one-of-a-kind collection of cacti and ornamental plants. 7 Display of hardscape elements and indoor plants at the event site 8 Saeed Nursey Farms, a top name in unique fruit plants and supplier in Toba Tech Sign. They displayed huge collection of exotic and local fruit plants. Visitors showed keen interest in their unique plants like finger lime, fig, cherry guava etc.

Millat Tractors also displayed collection of annual flowers at event site. They had variety of winter annual flowering plants.

Noori Irrigation, which provides irrigation services to various agricultural fields and the landscape sector, displayed their products and irrigation equipment and guided participants about various irrigation difficulties and their solutions.

YA Succulents displayed their unique collection of succulents and provided knowledge to participants about growth and care of different succulents. 9 Green Thumb a YouTube base channel providing information related to interior landscape as well as about the care and maintenance of different indoor plants participated in the event. On their stall displayed a vast collection unique cacti and different homemade hardscape interior elements.



Garden studio a landscape company also displayed an excellent hardscape monument. They are working with slogan "a great way to make extra space at home for your studio profession or hobby". They practically trained the students and interested participants in landscape profession and business.

Other firms/companies that have participated in this activity are:

- Banu Mukthar (Lahore)
- Breaks Tourism (Balakot, KPK)
- Green Zone Landscape (Faisalabad)
- Spurt International (Faisalabad)
- Madish Landscape

Students of Junior Lab. School took part in this event. They participated in flower arrangement competition and showcased their talent in different types of decorative arrangements.

Students of GCW University participated in Flower and Landscape Expo 2023. They have displayed their different types of decorative floral arrangements

Students of Legacy School participated in Flower and Landscape Expo 2023. They have displayed their different types of decorative floral arrangements

Dost Nursery Farms from Pottoki played an important role in making this event colorful and attractive. They have a display stall of different succulents and indoor houseplants. They also guided visitors about the care and maintenance of indoor house plants.

Outcome

This activity imparted awareness among researchers, general public, farmers, civil society and students about the importance of flowers and plants in human life. This event helped to introduce modern concepts about landscape designing, recent advances in flower production technology and post-harvest handling of flowers and also enabled the participants to collaborate with other organizations concerned with Floriculture and Landscape. Latest and advanced technologies for growing indoor plant and other annual flowers to growers were practically demonstrated. Recent advancements in packing and value addition of of floricultural products were also disseminated as well as demonstrated which were developed by various research organizations. This show also encouraged students, farmers, growers and nurserymen to present their talents and provide them an opportunity to look for new products, developments and technical background information in their relevant field.

Title of the Event: **Enhancement of Psychological Well-Being of School Going Children through Various Counseling Techniques and Motivational Activities**
March 13-16, 2023

Name of Organizer: **Ms. Alvina Haseeb, Institute of Home Sciences, UAF**

Objectives

Following were objectives of outreach activity

- To teach abilities to children to overcome their fear and problems
- To teach children about their career growth and social development.
- Examine associations between psychological well-being of school going children.
- Cognitive functioning affecting learning abilities of these children to overcome their direct problems.
- Focus on academic development, career growth and personal or social development.


The concept of well-being is based on the intellectual and moral abilities of the individual. In Pakistan, education remains one of the neglected fields that spend less than 2.5 percent of its gross national product on education. In 2014, many schools had good infrastructure, however, they lack quality of education. They didn't provide facilities to the children about the well-being and personality grooming that affect the intellectual. WHO estimated that approximately one in five young people under the age of 18 experiences some form of developmental, emotional or behavioral problem, and one in eight experiences a mental disorder, International studies show that youth physical activity has decreased over time, it is responsible for 6% of deaths globally – around 3.2 million deaths per year, including 2.6 million in low and middle income countries. Consequently, children and adolescents belonging to different socioeconomic, demographic groups are thought to be more "vulnerable" for disparities that will impact their health and well-being. Also mental illness has been estimated by 2020 to become a 15% of the global burden of disease. Thus, it is increasingly becoming a significant public health problem. Some of the leading mental health problems are depression, anxiety and eating disorders especially among the young individuals. The concept of adolescence as a distinct period of human development

is still fairly new in Pakistan. The Pakistan population Association reports that 65% of Pakistani households contain one or more adolescents. Among adolescents, physical activity is associated with benefits in the prevention and control of emotional distress, and improvement of self-esteem. The purpose of this outreach is to provide a broad picture of the psychological well-being of school going children and cognitive functions affecting learning abilities.

Activities

Human figure drawing test (HDF) and 16 Personality Questionnaire Test were used as a screening devices and as proxy measure of intellectual ability. HFD test are valued as time-efficient, non-verbal assessment tools that can be used to test children with limited time span and language difficulties. During 1st visit, initial screening of children was done and a lecture was provided to students about their personal self-care and personality grooming and some methods to overcome their fear and enhance self-confidence. Before the assessments started, the examiner explained the process and trained the assistants on the operational definition of characteristics of assessment tools. The students were provided with a pencil and blank sheet of paper and were told to make the best possible drawing of the whole figure. There was no specific time limit, but participants usually finished within 10 minutes. Drawing allows students to describe themselves by projecting their emotional characteristics through their picture drawings. The premise of projective drawing is that, when we asked to draw a human figure, their drawings reflects something about them. During 2nd visit the drawings were reviewed for specific content items such as represented as body parts and clothes. The features of the HFD were based on the koppitz emotional indicators, if one feature was present, the score was1, if absent, the score was 0. Feature evaluation was independently carried out by two psychology graduate students who completed professional drawing evaluation training.

Conclusion

Results of an assessment of 20 children should the depression and stress symptoms in their personalities. After assessment we guided them to overcome these conditions by breathing therapy and visualization.

Recommendations

- Development of semi-structured Programs to observe the student's intellectual abilities among peers and teachers.
- Their behavior and attitudes during transitions e.g. during breaks and one class to another.

Section

4

Researc & Development

4. RESEARCH & DEVELOPMENT

As a response to the Dengue outbreak in the country. The activities under this component were initiated in 2011. This involved the commencement of projects which are entirely centered on research and development regarding Dengue. These projects have been concluded, and the activities under this component have been broadened. Nevertheless, the funding available is limited and exclusively allocated to significant projects involving applied research.

4.1 Projects Initiated

SN	Title of the Project	Name of the PI	Duration	Budget (Rs) (Million)
1.	Development and Evaluation of Chitosan Based Nanocomposites for the Control of Aflatoxicosis in Poultry	Dr. Aisha Khatoon, Lecturer, Department of Pathology, FVS, UAF	3 Years (01.11.22 To 31.10.25)	2.861
2.	Tandem Structured Carbon Quantum Dots and Florescent Dyes for Efficient Semi-Transparent Agri-Photovoltaics	Dr. Javed Iqbal, Associate Professor, Department of Chemistry, UAF	3 Years (01.11.22 To 31.10.25)	4.104
3.	Integrated Pest Management of Guava Mealybugs, infesting Guava orchards in Sindh.	Dr. Shahjahan Rajput, Assistant Prof. Shaheed Z.A. Bhutto Agricultural College, Dokri, Larkana	3 Years (01.11.22 To 31.10.25)	2.634
4.	Surveillance of Arthropods and Arthropod-Borne Diseases of One Health Significance at the Host-Vector-Environment Interface at Various Agro-Geo Climatic Zones of Punjab, Pakistan	Dr. Muhammad Sohail Sajid, Associate Professor, Department of Parasitology, University of Agriculture, Faisalabad	3 Years (01.11.22 To 31.10.25)	3.867
5.	Evaluation of Iodized Oil Injection in the Treatment of Udder Fibrosis and Summer Hyperthermia in Dairy Animals	Dr. Imaad Rashid, Lecturer, Department of Clinical Medicine and Surgery, UAF	2 Years (01.11.22 To 31.10.24)	1.888

SN	Title of the Project	Name of the PI	Duration	Budget (Rs) (Million)
6.	Appraisal of Hispidulin in Downregulation of Hyperglycemia; a Novel Therapeutic Approach.	Dr. Wafa Majeed, Lecturer, Department of Pharmacy, UAF	2 Years (01.11.22 To 31.10.24)	2.563
7.	Development of a Biopesticide for the Management of Blackleg of Potato in Pakistan	Dr. Khalid Naveed, Assistant Professor, Department of Plant Pathology, University of Agriculture, Faisalabad Sub campus Depalpur, Okara.	3 Years (01.11.22 To 31.10.25)	1.375
8.	Field Evaluation for Commercialization of Herbicide-Tolerant (CABB-HTS) and Insect-Resistant (CABB-IRS) Transgenic Sugarcane	Prof. Dr. Muhammad Sarwar Khan, Centre of Agricultural Biochemistry & Biotechnology (CABB), UAF	3 Years (01.11.22 To 31.10.25)	6.569

4.2 Ongoing Project

SN	Title of the Project	Name of the PI	Duration	Budget (Rs) (Million)
1.	Domestication of wildly grown black raspberries for exploiting their nutritional and commercial potential under climatic conditions of Rawalakot, Azad Jammu and Kashmir	Dr. Mehdi Maqbool, Assistant Professor, Department of Horticulture, University of Poonch, Rawalakot, Azad Jammu and Kashmir	3 Years (01.10.21 to 30.09.24)	2.199

4.3 Projects Completed

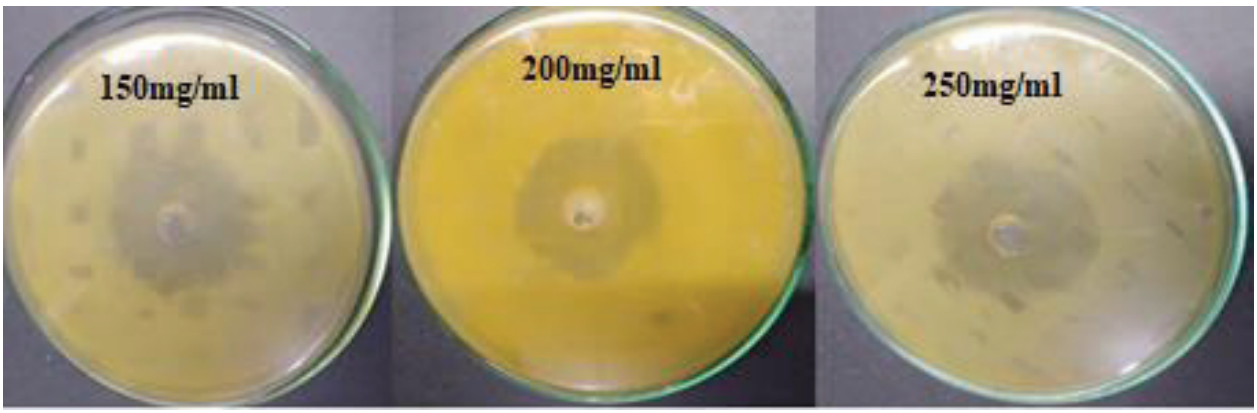
SN	Title of the Project	Name of the PI	Duration	Budget (Rs) (Million)
1.	Green Nano-Pesticides: A Novel Approach for Pest Control	Dr. Nazish Jahan, Assistant Professor Department of Chemistry, UAF	3-years (15.04.19 to 14.04.22)	1.981
2.	Study of Cellular Cannibalism (Entosis) in Tumors of Animal Origin	Dr. Syed Qasim Raza, Assistant Professor, University of Veterinary and Animal Sciences, Lahore	2 Years (01.10.20 to 30.09.22)	1.323
3.	Utilization of Vegetable Waste to Produce Antioxidants Enriched Poultry Meat and Eggs	Dr. Jibran Hussain, Assistant Professor, Department of Poultry Production, University of Veterinary & Animal Sciences, Lahore, Ravi Campus, Pattoki	2 Years (01.10.20 to 30.09.22)	1.179

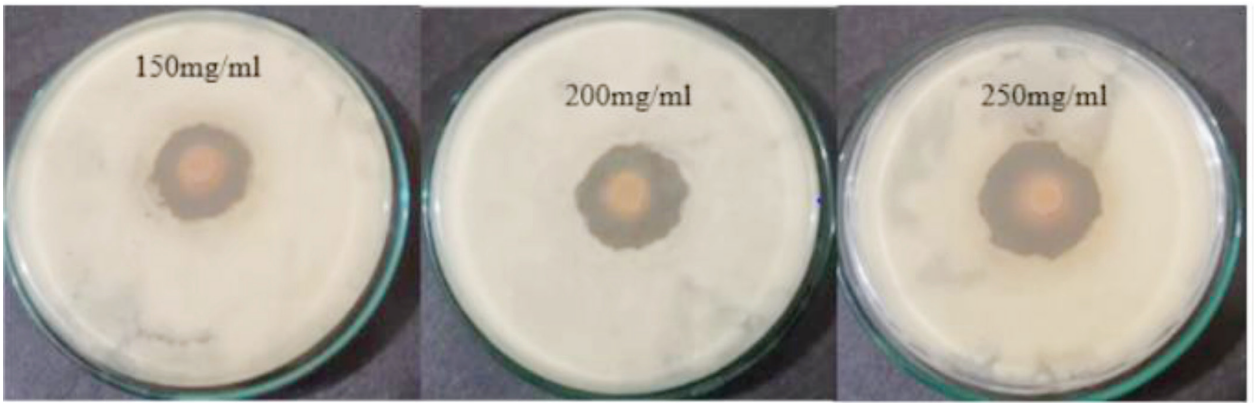
4.4 HIGHLIGHTS OF SOME SIGNIFICANT PROJECTS

GREEN NANO-PESTICIDES: A NOVEL APPROACH FOR PEST CONTROL (COMPLETED)

Dr. Nazish Jahan

Nanoformulation is an effective technique in industry because of its benefits to reduce the size of particles. It is a promising tool to enhance the solubility, dissolution rate and bioavailability of poorly water-soluble formulations. The objective of this project is to develop efficacious green nano biopesticides. To achieve this goal nano formulations in the form of nanosuspensions, based on plants extracts like A. indica, M. oleifera, C. colocynthis, E. globulus,S. aromaticum, Z. officinale and C. sinensis A. Sativum, L. inermis, C. limon, T. erecta, S. marinum C. indica, C. frutescenes etc. were prepared and their particle size was determine. Metal nano oxides like silver and ZnO are also very effective against pest so green synthesis of metal nano oxides were optimized and preprepared nano metal oxide were characterized. Results of particle size confirmed that all biopesticides and metal nanoparticles formulated sucessfully with nano meter size with in range of 35-200nm.Nano pesticides both in form of nanosuspensions and nano silver and ZnO oxides were tested against phytopathogenic strains of bacterial (Clavibacter michiganensis and Pseudomonas syringae) and fungal stains such as Aspergillus niger, Aspergillus flavus, and Aspergillus sojae, Fusarium oxysporum, and Rhizopus stolonifera. Antimicrobial potential was evaluated through well diffusion method and Th zone of inhibition was measured.





The finding of this study confirmed that nano formulations based plats and nano Silver and ZnO strongly inhibited the growth of tested bacterial and fungal strains. These strains are responsible for many diseases plants so these green nano biopesticides may use against disease caused by tested strains. Nanosization of plant extract and preparation of their formulations significantly enhance the potential of conventional of biopesticides.

STUDY OF CELLULAR CANNIBALISM (ENTOSIS) IN TUMORS OF ANIMAL ORIGIN (COMPLETED)

Dr. Syed Qasim Raza, UVAS

UTILIZATION OF VEGETABLE WASTE TO PRODUCE ANTIOXIDANTS ENRICHED POULTRY MEAT AND EGGS (COMPLETED)

Dr. Jibran Hussain, UVAS

Globally poultry is one of the largest food-producing industry. Commercial poultry birds are raised under highly sophisticated environment and fed fully nutrient formulated antimicrobial feed. So that's why industry facing higher cost of production that is the main concerns for the poultry producers. Besides, producers are just focused on the products production that has not only compromised the welfare but has also affected the other related traits like meat and egg quality. These things are diverting the consumer preference back towards the backyard poultry products because these are highly rich in nutrients. Naked Neck is one the most ideal breed for backyard poultry and also can an alternative to commercial high producing genotypes. Free-range rearing system is friendly to welfare traits; commonly used for backyard birds in Pakistan but extra rearing space and unformulated diet could be increased the cost of production. To meet consumer demand for backyard poultry products, industry is trying hard to find alternative ways to reduce the cost of production. Introduction of vegetable wastes in Naked Neck diet; may reduce the cost of production. However, there is a lack of significant information regarding the performance of the Naked Neck chickens fed vegetable waste reared under extensive systems. All vegetables (cabbage, spinach, lucerne) were grown in the university premises, used in experiment. Before offering to the birds; whole composition analysis was done including: proximate components along with selenium and other antioxidant contents. Cabbage being

a Selenium accumulator plant and has many health beneficial anti-oxidants such as phenolics, flavonoids, anti-cancerous and anti-microbial compounds. Selenium has a capacity to reduce the negative effect of free radicals which were produced under biochemical reaction in body. It is available into two forms; organic (selen-o-methionine) and inorganic (sodium selenite). It is essential for birds as well as human; it is a cofactor of glutathione peroxidase enzyme who provide the defense system. Therefore, the study was planned to evaluate the overall performance of Naked Neck chickens; total 600 birds were reared and maintained at Indigenous Chicken Genetic Resource Centre, UVAS-Lahore. These experimental birds were divided into 4 feeding treatments (a) control feed, (b) cabbage feed, (c) sodium selenite feed and (d) cabbage+ sodium selenite feed. Birds fed 25% formulated diet along with additives and grazing method was used to fulfill their 75% feed desire; grazing of spinach and lucerne. The level of selenium maintained at all experimental unit was 0.3mg/kg. During rearing phase growth related data was collected including feed intake, growth efficiency, livability and body weight. At 18th weeks of age, male birds were halal slaughtered and data regarding carcass traits (live weight, carcass, breast, thigh, wings, drumstick, neck, liver, heart, gizzard, intestinal and ribs and back weight, intestinal length), meat quality (pH, color, water holding capacity, cooking loss, shear force value) and meat physiochemical characteristics (proximate, minerals and vitamins profile and antioxidant status) were measured. During production, production performance (feed intake, egg production %, feed conversion ratio), egg quality traits (hatching traits, egg geometry, egg weight, specific gravity, shell thickness, Haugh unit score, yolk index) were measured and at 42 weeks; egg physiochemical characteristics (proximate, minerals and vitamins profile and antioxidant status) were measured. Collected data were statistically analyzed; found Naked Neck performed well regarding excellent production performance in terms of enhanced growth nn performance, carcass characteristics, meat & egg quality attributes, nutritional and physiochemical properties of meat and eggs, productive performance, hatching traits and antibody response when they fed cabbage feed under extensive system. Furthermore, cabbage being a Selenium accumulator plant abundant of total 23% organic selenium hence it can be used for selenium enrichment in chicken meat and eggs

DOMESTICATION OF WILDLY GROWN BLACK RASPBERRIES FOR EXPLOITING THEIR NUTRITIONAL AND COMMERCIAL POTENTIAL UNDER CLIMATIC CONDITIONS OF RAWALAKOT, AZAD JAMMU AND KASHMIR (ONGOING)

Dr. Mehdi Maqbool, AJK

GIn this project, wildly gorwn black raspberry plants have to be domesticated at Research Farm of University of Poonch Rawalakot, AJK. For this purpose, land has been prepared at Chotta Galla Farm, and clean and healthy balck raspberry plants have been transferred. Land was prepared using standard management practices and for soil analysis, samples were taken and the results showed that soil is suitable for growing wild black raspberry plants. After transferring black raspberry plants to the field, some of the plants died and some struggled to establish their roots which were replaced with other plants. However, so far the growth of black raspberry plants is quite satisfactory and they are performing very well under local coditions. At the time of transplanting, FYM was mixed with the soil in a ratio of 1:1 and immediately after transplating, the plants were provided water. As the winter season finished, the sprouting of new leaves started. Initially wild black raspberry plants were allowed to grow accoridng to a hedgerow system. However, a trellis system has been installed to train wild black raspberry plants. Rows to row distance was maintained at 10 feet while plant to plant distance was maintained at 3 feet. Trellising treatments consisted of hedgerow system (I-trellis) (control), V-trellis and single-sided shift trellis each having 10 wild black raspberry plants. For trellising system, 6.50 feet wooden sticks and aluminum wire were used. Well grown wild black raspberry plants were prunned and trained according to different trellising systems. For training purpose, the plants were tied with aluminum wire and the whole trellising structure was provided support to withstand strong winds or heavy rains. Moroever, the whole project area has been fenced using green net sheet and iron wire to protect it from the animals. To perform different activities, a PhD student has been appointed, who is involved in all the project activities.


Airstream
Washing area
Biochemical Testing

Section

5

Product Commercialization

5. PRODUCT COMMERCIALIZATION

EFS offers funding for researchers and scientists to commercialize innovative products or technologies that have been developed at UAF. Investors or entrepreneurs who are interested may partner with EFS to invest and establish companies focused on the commercialization of university products. Additionally, EFS has successfully accomplished significant projects under this component, such as the construction of a state-of-the-art Exhibition Centre worth Rs.16.04 million on the campus, and a Farm Market valued at Rs. 5.911 million. EFS is also supporting projects under this component aimed at commercialization of products.

5.1 Project Initiated

SN	Title of the Project	Name of the PI	Duration	Budget (Million)
1.	MD-TSPM: Thermal Stability Prediction Method for Cancer Associated I-motifs	Amen Shamim, Assistant Professor, Department of Computer Science, UAF	2 Years (01.11.22 To 31.10.24)	1.88

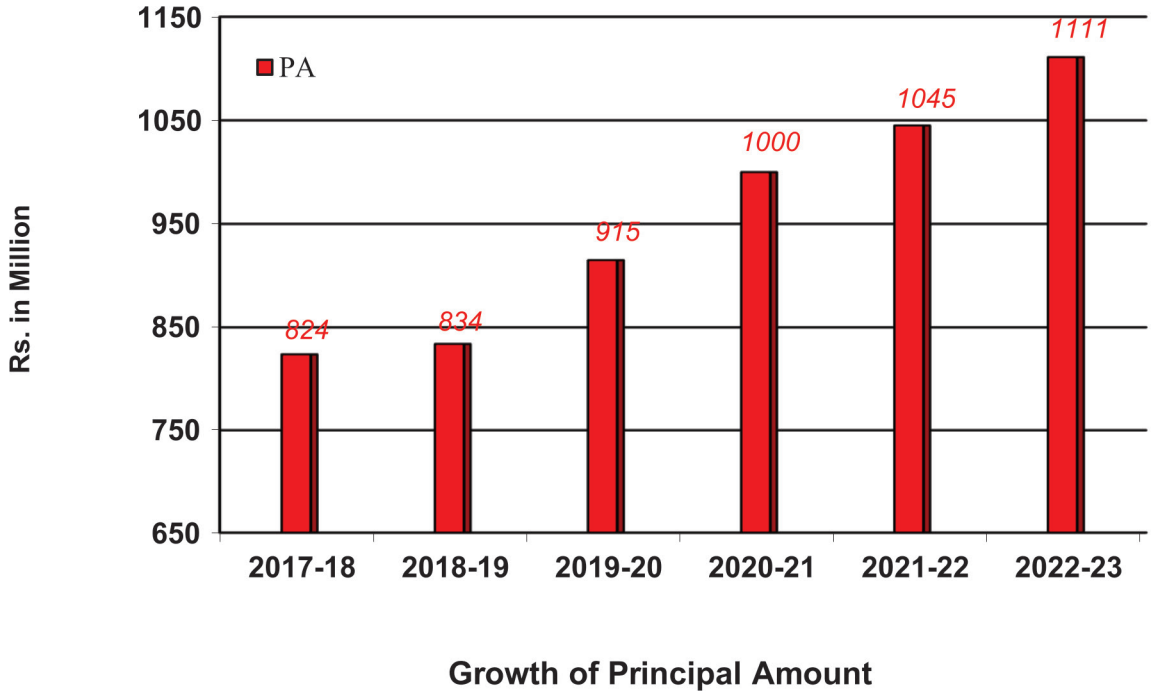
Section

6

Financial Report

6.1 Income from Investment

The Principal amount is invested in approved banks. A portion of its profit is retained for adding in the principal amount @ 15% of the profit to counter the impact of inflation/devaluation of rupee. The volume of principal amount invested during 2022-23 was Rs. 1111.00 million..



Growth of Principal Amount

6.2 Expenditure

The financial year 2022-23 closed with savings of Rs. 65.488 million. The Receipts and Expenditure for the year, 2022-23 are shown in Table-I. The detail of other receipts and component wise expenditure is given in Table-II.

TABLE-I

(Rupees in Million)

RECEIPTS	Actual
Opening Balance 1st July, 2022	62.527
Income from Investment 2022-23	50.039
Other Receipts *	15.789
Total Receipts	128.355
Transfer to Principal Amount (15% of the Income from investment)	13.000
Available for Allocations	**115.355**

*Rental Income from Exhibition Center, income from ongoing projects and unspent balance from completed projects.

TABLE-II
Component wise Expenditure during the year 2022-23

(Rupees in Million)

ALLOCATION / EXPENDITURE	Actual Expenditure
Faculty Development	16.820
Technology Transfer	17.027
Product Commercialization	1.961
Research & Development	8.329
Operation EFS	5.7301
Total Expenditure / Cash Outlay	**49.867**
Transfer to P.A	**13.000**
Closing Balance	**65.488**

Component wise Allocation and Expenditure 2022-23

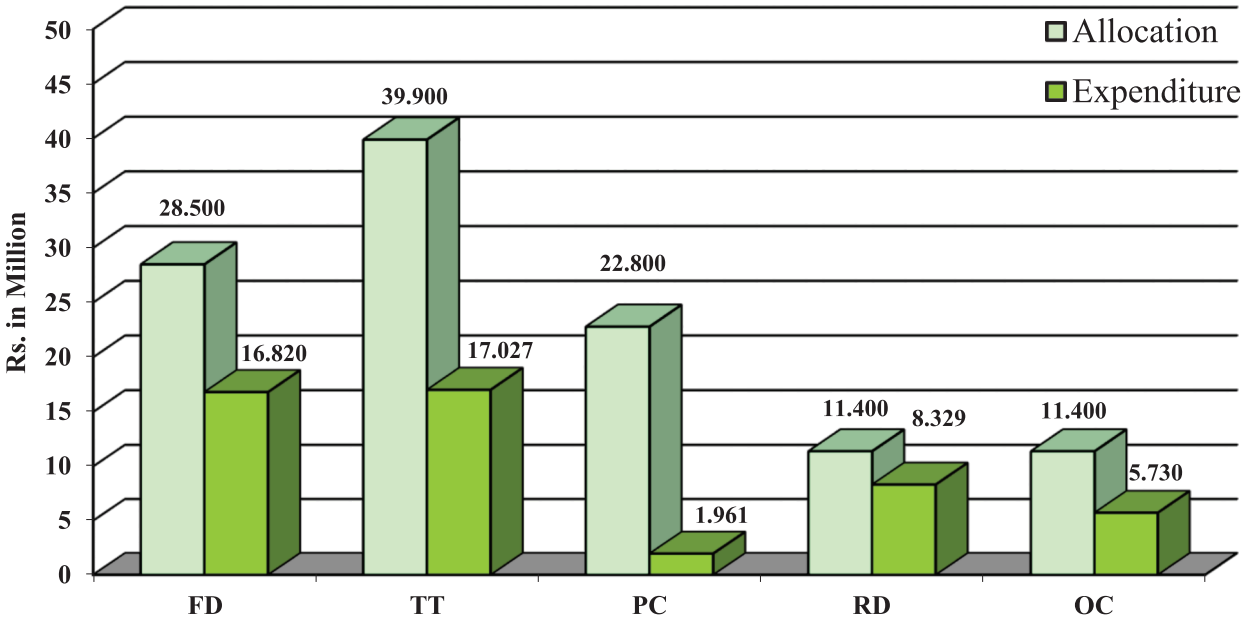


Figure 2: Component Wise Allocation & Expenditure

Endowment Fund Secretariat

6-Mian Road, UAF

+92-41-9201125
+92-41-920161-70 Ext. 3604, 3607

Email: efs@uaf.edu.pk
www.efsuaf.org