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Pakistan Society for Horticultural Science®

HORTIMAG

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Felicitations to Prof. Dr. Muhammad Jafar Jaskani on assuming charge as Director, Institute of Horticultural Sciences, University of Agriculture, Faisalabad

PSHS felicitates Prof. Dr. Muhammad Jafar Jaskani on assuming charge as Director, Institute of Horticultural Sciences, UAF, on June 01, 2022 and believe that Institute will be benefitted from his vision and expertise to transform from subsistence to modern day Horticulture. PSHS extends full cooperation and moral support in his plans to improve academics, research and community service. Congratulations and Best wishes.

Congratulations to Prof. Dr. Muhammad Nafees on his promotion and assuming charge as Chairman, Department of Horticulture, IUB, Bahawalpur

PSHS and Hortimag team congratulates Dr. Muhammad Nafees, on his promotion to the rank of Professor in the Department of Horticultural Sciences, Faculty of Agriculture and Environment, The Islamia University of Bahawalpur and assuming charge as Chairman Horticulture, IUB. We are sure that University would be benefitted from his vast experience. We wish him good luck for his future endeavors. Cheers!

Felicitations to Prof. Dr. Aman Ullah Malik on Superannuation

Prof. Dr. Aman Ullah Malik, Dean, Faculty of Agriculture and Director, Institute of Horticultural Sciences, UAF retired on May 31, 2022 after successfully completed his tenure. Dr. Malik has a lot of technologies and innovations in Post-harvest Horticulture on his credit and has produced high quality graduates who are currently serving at various esteemed organizations within the country and abroad as well. PSHS and Hortimag team wishes him good health and best of luck for his future endeavors.

Congratulations to Prof. Dr. Muhammad Akbar Anjum on Superannuation

Prof. Dr. Muhammad Akbar Anjum, Chairman Department of Horticulture, BZU Multan, also successfully completed his tenure and retired on February 28, 2022. He has also been president of PSHS as well as Chief Editor, Journal of Horticultural Science and Technology. Moreover, he has many significant contributions in developing horticulture in BZU Multan. PSHS and Hortimag team wishes him good health and best of luck for his future endeavors.

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Congratulations to Newly Elected General Body of PSHS

Hortimag editorial board heartily felicitates the newly elected cabinet of PSHS fro 2022-23 and hope that young team will leave no stone unturned for uplifting the society and horticultural community.

President	**Dr. Tanveer Ahmad,** Associate Professor/Chairman, Department of Horticulture, Muhammad Nawaz Shareef University of Agriculture, Multan
Vice President (Punjab)	**Dr. Zahoor Hussain,** Associate Professor/Chairperson, Department of Horticulture, Ghazi University, Dera Ghazi Khan
Vice President (Baluchistan)	**Dr. Ahmad Jan,** Agriculture Officer, Agriculture Department, Government of Balochistan, Quetta
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Joint Secretary	**Dr. Hafiz Nazar Faried,** Assistant Professor, Department of Horticulture, Muhammad Nawaz Shareef University of Agriculture, Multan
Industry Focal Person	**Mr. M. Irfan Nawaz,** Head Agronomy Division, Jafer Brothers, Lahore
Overseas Coordinators	**Dr. Muhammad Adnan Shahid,** Assistant Professor, North Florida Research and Education Center, USA **Dr. Muhammad Sohail Mazhar,** Director Plant Industries, Stuart Park, Northern Territory, Australia **Dr. Faisal Hayat,** Post-Doctoral Researcher, Zhongkai University of Agriculture and Engineering, Guangzhou, Guangdong, 510225, China **Mr. Mujahid Raza,** Quality Inspector, ISB Company, Hamburg, Germany
Student Councillors	To be announced later by each Vice President

Congratulations to Prof. Dr. Muhammad Aamir Nawaz on assuming charge as Chairman, Department of Horticulture, BZU, Multan

PSHS and Hortimag Team congratulates Dr. Muhammad Aamir Nawaz, on assuming charge as Chairman Horticulture, BZU Multan on March 01, 2022. We are sure that University would be benefitted from his vast experience. We wish him good luck for his future endeavors.

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PSHS Organized "International Horticulture Conference 2022" in Collaboration with Department of Horticulture, Gomal University, Dera Ismail Khan

Pakistan Society for Horticultural Science (PSHS) in collaboration with the Department of Horticulture, Faculty of Agriculture, Gomal University, Dera Ismail Khan (D.I. Khan), Khyber Pakhtunkhwa, Pakistan, successfully organized the "International Horticulture

Conference 2022 (IHC-2022)" during May 17–19, 2022. This was the first-ever International Horticulture Conference in Khyber Pakhtunkhwa, particularly at Gomal University, D.I. Khan. The conference was organized in a hybrid mode (i.e., both physical and online).

The conference was attended by 270 participants. Among these 45.6% were faculty members and scientists, 53.7% were students, and 0.7% were industry personnel. Around 76.9% of participants physically attended the conference, whereas 23.1% attended the conference via online mode. Around 161 abstracts were submitted to the conference, out of which 55 abstracts were selected for oral presentations and 49 were found suitable for scientific posters by the IHC-2022 Scientific Committee comprising of national experts across the academic institutions of Pakistan international as well as a team of renowned international experts including Dr. Paul C. Struik (Professor, Crop Physiology, Centre for Crop Systems Analysis, Wageningen University, The Netherlands), Dr. Şahane Funda Arslanoğlu (Associate Professor, University of Ondokuz Mayis, Turkey), Dr. Murat Deveci (Associate Professor, Namık Kemal University, Turkey), Dr. Fatih Öner (Associate Professor, Ordu University, Turkey), and Dr. Sujata Upadhyay (Assistant Professor, Department of Horticulture, Sikkim University, India).

The conference presenters delivered presentations in six technical sessions covering a wide array of key horticultural research disciplines including plant physiology and ecology, in vivo and in vitro plant propagation, growing media and nursery management, genotype-by-environment (G×E) interaction, fruit and vegetable production and quality, and post-harvest physiology and management. Several international experts also presented their keynote lectures during the conference. Among these included Dr. Gerrit Hoogenboom (Professor and Preeminent Scholar, University of Florida, USA), Dr. Holger Meinke (Strategic Research Professor for Global Food Sustainability, Research Division, University of Tasmania, Australia), Dr. Jean W. H. Yong (Professor, Swedish University of Agricultural Sciences, Sweden), Dr. Mehmet Emin Çalışkan (Professor, Niğde Ömer Halisdemir Üniversitesi, Turkey), Dr. Adel Ahmed Abul-Soad (Professor, Agricultural Research Centre, Egypt), Dr. Sujata Upadhyay (Assistant Professor, Department of Horticulture, Sikkim University, India), and Mr. Afzal Khalid Chughtai (Technical Manager, Rapido Pest Control, Doha, Qatar). Besides, a number of national keynote speakers also presented their work duirng the conference. These included Mr. Fazli Wahab (Director Agriculture Research, Merged Areas, Khyber Pakhtunkhwa, Pakistan), Dr. Muhammad Jafar Jaskani (Professor and Director, Institute of Horticultural Sciences, University of Agriculture, Faisalabad), Dr. Ghulam Sarwar Markhand (Meritorious Professor and Ex-Director, Date Palm Research Institute, Shah Abdul Latif University, Khairpur, Sindh, Pakistan), and Dr. Raheel Anwar (Associate Professor/IT Secretary (PSHS), Institute of Horticultural Sciences, University of Agriculture, Faisalabad). Several companies took a keen interest in the conference and ensured their presence through stalls and seminars.

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Day 1 of the conference was marked by the inauguration session, opening ceremony of stalls, group photo, technical sessions, and keynote talks by national and international experts. The mega event was inaugurated by the chief guest of the event, Prof. Dr. Iftikhar Ahmad (Tamgha-e-Imtiaz), Vice-Chancellor of Gomal University, D.I. Khan, Pakistan. During the inaugural session, Prof. Dr. Muhammad Saleem Jilani, President of PSHS welcomed all the participants attending the conference both physically and online. The day ended with the successful organization of "Annual General Body Meeting", where the PSHS new general body was constituted

and the venue for the next year's International Horticulture Conference was decided.

Day 2 of the conference was marked by several activities, including technical sessions, poster presentations, keynote talks by national as well as international experts, and a concluding ceremony. During the concluding session, Dr. Muhammad Sohail Khan, the conference coordinator and Assistant Professor, Department of Horticulture, Faculty of Agriculture, Gomal University, D.I. Khan, Pakistan presented the overview and recommendations of the IHC-2022.

Afterward, awards and shields were distributed among the top three best poster awardees and keynote speakers, respectively.

The final day 3 of the conference was marked by a field day activity at Germ Plasm Unit (GPU)-Tropical, followed by a visit to the Agriculture Research Institute (ARI), Ratta Kulachi, D.I.Khan. All the participants enjoyed and appreciated the field day activity at GPU as well research exposure visit at ARI, D.I. Khan. At the end, the President PSHS thanked Mr. Abdul Qayum Khan, Director, ARI, D.I. Khan, for hosting the whole event as a concluding part of the IHC-2022.

IHC-2022 Recommendations

1) Technology-relevant interventions such as IPM, and resource use efficiency production technology must be adopted to enhance the yield production in horticultural crops.
2) Almost 70% cost of production in potato cultivation is due to the import of quality seed-tuber from technologically advanced countries like the Netherlands. Hence, indigenous seed-tuber production technology must be developed within Pakistan. In this respect, assessing the interactive response of genotype and physiological status of mother-tubers need special attention.
3) The contamination of food crops with heavy metal toxicity poses serious effects on human health. In this respect, mitigation approaches including incorporating chemicals like melatonin have huge applications.
4) Huge scope exists for conservation and production of nutritionally important but underutilized horticultural species such as flax, ajwain, aloe vera, golden shower, moringa, bauhinia, nigella, basil etc.

5) Food security and safety have been becoming a challenge for the sprawling population and changing climatic scenarios. Hence, alternate crop production systems (e.g., soilless cultivation) need to evaluate and standardize as per the local scenario.
6) Salinity is a universal stressor that hampers the normal metabolism of plants and thus limits the quality and quantity of produce. Chemicals like spermidine can play a vital role in plant growth and development, and stress endurance phenomenon and thus can be useful to hasten the defence system of plants under saline conditions.
7) Water stress is a significant abiotic stress that restricts the development and effectiveness of plants in semi-arid and arid areas. Hence, different approaches must be devised for screening water stress tolerant genotypes of horticultural crops.
8) New propagation approaches are promising in ensuring nutrient use efficiency in vegetable crops. Therefore, the use of pumpkin rootstock can reduce fertilizer use and the cost involved in it.
9) Micropropagation of turmeric paves way for disease-free healthy plant material with an increased metabolic profile.
10) Different indigenous sources of biostimulants must be explored to ensure improved and sustainable production and propagation technology of horticultural crops.
11) It is highly desirable to develop a cheaper and sustainable growing media sources for ensuring the better rooting as well as establishment of lemon (cv. Singhar) via stem cuttings.
12) The use of garden soil for containerized plant cultivation does not support sustainable floral production due to weeds and soil-borne diseases. Hence, substrate mix by incorporating coco-coir in combination with rice hulls ash and sugarcane pressmud is crucial to develop uniform and high-quality saplings of ornamentals.
13) Various training and seminars for the conservation of *Pinus gerardiana* (Chilgoza Pine) forests will enhance the livelihood of local people and will help the national revenue on a sustained basis.
14) Germplasm is a valuable natural resource that provides knowledge about the genetic composition of a plant species, therefore, crucial for conserving plant diversity.
15) Crop growth simulation models can make it possible to explore the impact of new genotypes or plant species and the contribution of individual physiological traits on yield by simulating genotypes under any defined environmental scenarios as well as a range of management options.
16) Various approaches must be developed to reduce post-harvest losses of horticultural produce in Pakistan and to increase their shelf-life and our exports. A few examples include the application of oxalic acid, short-term ultrasound treatment, and packaging materials (acrylic boxes).
17) Pakistan still has not established an advanced date fruit sector and is not getting the rightful price of its product. Hence, date fruit processing and preservation units, standardized packaging and preservation, and the establishment of modern marketing system facilities need serious attention.

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Institute of Horticultural Sciences, UAF, in Collaboration with PSHS Organized 2nd International Workshop on Diversification, Value Addition and Supply Chain Management of Floriculture Industry

March 24-25, 2022 was marked by 2nd International Workshop on Diversification, Value Addition and Supply Chain Management of Floriculture Industry at Institute of Horticultural Sciences, University of Agriculture, Faisalabad. The workshop, which was result of extreme endeavor of organizing team

marked triumph being the 2nd international floriculture workshop in the country having world renowned floriculture experts from USA, Netherlands, Greece, UAE and Japan. Being the 2nd of its kind and with efforts of advertising team, it gained nationwide popularity. Faculty members from majority of Agricultural Universities in Pakistan, floriculture entrepreneurs, industry people, growers, nurserymen, post and undergrad horticultural students as well as faculty members of UAF participated in the workshop, making a total of above 100 participants. It was conducted in hybrid mode with around 100 participants in person along with >50 online participants from Pakistan, Germany, Australia etc.

On March, 24, 2022, all distinguished guests were welcomed to the UAF by Prof. Dr. Aman Ullah Malik (Director, Institute of Horticultural Sciences), Prof. Dr. M. Jafar Jaskani (Chief Hall Warden and Professor of Horticulture) and Dr. Iftikhar Ahmad (Associate Prof., Floriculture/ Secretary Workshop), while inauguration of the workshop was done by Prof. Dr. Iqrar Ahmad Khan (S.I., Order des palmes academiques), Vice Chancellor, UAF. On the arrival of chief guest, inaugural session was started with recitation of a few verses from Holy Quran followed by Naat. Dr. Iftikhar Ahmad highlighted the background, significance and objectives of the workshop breifly. Afterwards, Prof. Dr. Aman Ullah Malik presented welcome note and current floriculture scenario and appraised the efforts of the organizing committee. Keynote address was made by Mr. Dirk Hogervorst (CEO, East African Magical Farms, Netherlands), in which he took the audience to a virtual tour of global floriculture industries and modern innovative technologies being used by floriculture industry. In the inaugural address, reverend Vice Chancellor, Prof. Dr. Iqrar Ahmad Khan (S.I.) highly appreciated the idea of organizing the workshop and bridging gaps between academia and industry to work collaboratively for the promotion of Floriculture in Pakistan. He also emphasized on branding of floriculture products for earning more and he highly apprised the development of indigenous soilless

substrate 'UAF-Gro' by Dr. Iftikhar Ahmad and his team. After his address, he officially launched the UAF-Gro along with Mr. Dirk Hogervorst, Dr. Aman Ullah Malik, Dr. Rana M. Alsam Khan and Dr. Iftikhar Ahmad and distributed its bags to the flower growers and nurserymen from Pattoki, Lahore, Faisalabad and Gilgit Baltistan, who were participating in the workshop. Afterwards, Dr. Iftikhar Ahmad, Organizing secretary, explained about different technologies and products developed by his team for commercialization.

Afterwards, the chief guest, honorable minister for Agriculture Punjab, Mr. Syed Hussain Jahania Gerdezi, expressed his views about the workshop and emphasized on enhancing our floricultural exports to get good share in global markets. He stated that floriculture industry is going in right direction and

there is huge demand for new floral crops worth millions of foreign exchange. He also emphasised to conduct such workshops for farmers for better seed production and flower nursery/seedling production. Dr. Iftikhar Ahmad also highlighted two major problems of floriculture industry that hinders its growth, (1). Quarantine issues for import and export at airport, and (2) Import of artificial flowers from China. Honorable Minister assured that he will talk to his team to sort out these issues for helping flower growers and stakeholders. At the end of inaugural session, Prof. Dr. Muhammad Jafar Jaskani (Professor of Horticulture) thanked the chief guest, guest of honor, International and national resource persons for travelling from all across country and oversees particularly Mr. Dirk from Netherlands to participate in the workshop. He also thanked participants, organizers as well as sponsors for sponsoring different events of the workshop, which was followed by group photo of the participants in front of Landscape Studio of the institute and inauguration of commercial floriculture laboratory recently developed by Dr. Iftikhar Ahmad at IHS, UAF.

Then in technical sessions, 14 talks were presented on broad range of floricultural topics, by Mr. Dirk Hogervorst, CEO, EMF, Netherlands, Prof. Dr. John M. Dole, NC State Univ., USA, Mr. Ghulam Ullah Saqib, DDA from Gilgit Baltistan, Pakistan, Dr. Tanveer Fatima from Sindh Agriculture University, Tandojam, Sindh, Pakistan, Mr. Muhammad Behzad Rafiq from Zarkhaiz Farm, Lahore, Pakistan, Mr. Jan De Wit, CEO, Bulb Production Company, Netherlands, Mr. Muhammad Irfan Nawaz, Manager Agronomy, Jaffer HEIS, Lahore, Pakistan, Mr. Roshan Ahmed Khan Niazi, Golf Superintendent, Royal palm Golf & Country Club, Lahore, Pakistan, Mr. M usman Khan Afridi, Director Astroturf, Peshawar, Pakistan, Mr. Genya Takeda, Sakata Seed Corporation, Japan, Dr. Anastasios Darras, Greece, Mr. Muneeb Ahmad, Supply chain expert, UAE, Muhammad Abdul Salam Khan, Directorate of Floriculture (T&R), Lahore, Pakistan and Mr. Nasir Ahmad Virk, Director Plant Quarantine Department, Lahore, Pakistan. At the end of technical sessions of day 1, souvenir/ certificate distribution ceremony of the workshop was held on the same day in the evening. Certificates, shields and souvenirs were presented to the resource persons of the workshop. At the end, conclusions and recommendations of the workshop were shared by Dr. Iftikhar Ahmad with the hope of excellent work in floriculture Industry in future.

Day 2 of workshop was an Industry Tour Day. Participants along with foreign guests set off for the trip lead by Dr. Iftikhar Ahmad. First the selected registered participants visited Al-Imran Nursery, Pattoki, Cut Rose Floriculture Farm near Nizampura, Gulshan e Waqar Nursery, Pattoki, who are pioneer in local topiary and pseudobonsai preparation. Afterwards, Sunrise Seed Company and their greenhouse were visited, where everyone felt gummed to the place at the gaze of variety of different palms and potted plant mass scale nursery production.

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Establishment of Model Farms Project, Department of Agriculture, Government of Punjab in Collaboration with University of Agriculture, Faisalabad, Organized Training Workshops on "Innovative Floriculture Production Techniques" at Pattoki (March 25-28, 2022), Lahore (March 29-31, 2022) and Rawalpindi (April 01, 2022)

A series of floriculture training workshops were conducted by EMPF in collaboration with UAF at different locations in Punjab to uplift the flower production and nurserymen businesses from their current situation to those standards required for quality plant production for local and export markets.

The training workshops were designed by the trainers (Mr. Dirk Hogervorst from Netherlands along with Dr. Iftikhar Ahmad from UAF) in consultation with the organizers in order to address core issues and those areas of the flower production and nursery business, which require serious attention. Workshops started with how to set up a well-organized floriculture business and what different pre-requisites need to be kept in mind while starting a new business. After business planning, infrastructure development and greenhouse structures suitable for different operations were discussed and explained how to build various structures and how climate can be controlled within those structures. Further the problems associated with the use of local soils for floriculture were discussed and advantages of soiless substrates over local soils were highlighted. The idea and informations of cultivation of various new cut flowers in Pakistan having high local and export market demand were also shared with nursery growers and stakeholders. Modern fertilizer and irrigation systems were explained to participants followed by human resource management, innovations in plant propagation, value addition, postharvest handling, international marketing standards and quarantine requirements and insect pest and disease management in flower crops & nurseries. All training sessions had group discussions and interactive sessions to make the training program fruitful. Moreover, all training information was translated in Urdu too in local perspectives for better and easy understanding of flower growers & nurserymen. Training programs also had visits to local flower farms, flower markets and nursery areas where trainers pointed out various issues and provided suggestions to the trainees via practical demonstration. These workshops were gratefully appreciated by the growers and stakeholders who joined these trainings and requested the organizers to increase frequency of such training workshops to develop our floriculture industry on modern lines.

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Department of Horticulture, PMAS Arid Agriculture University, Rawalpindi in Collaboration with PSHS Organized an International Conference on Urban Horticulture: Global Scenario and Local Prospects

Two days international conference titled "Urban Horticulture: Global Scenario and Local Prospects" was organized by Department of Horticulture, PMAS-Arid Agriculture University, Rawalpindi, on 23 & 24 June, 2022 funded by ORIC, PMAS-AAUR. The aim of this conference was to develop an understanding among students and other stakeholders regarding the development of urban horticulture in Pakistan with the core objectives to evaluate current status of urban horticulture in Pakistan and to explore opportunities and develop inter-academia linkages. Prof. Dr. Qamar-Uz-Zaman (Vice Chancellor PMAS-AAUR), was the chief Guest in the inauguration session. The keynote speaker, Prof. Dr. Linda Chalker-Scott from Washington State University, USA highlighted that promotion of urban horticulture is crucial to meet food needs and tackle rising inflation. The Vice Chancellor Prof. Dr. Qamar-Uz-Zaman while talking to the participants emphasized that the COVID-19 pandemic has recently exposed that fragility of food supply chain which created a dire need to give focus on development of local food security system in the urban areas which can only possible by the promotion of urban horticulture. Leading experts on urban horticulture from USA, Egypt, United Kingdom, Malaysia, Saudi Arabia and different national organization from Pakistan participated and shared their views on promotion of urban horticulture in this conference. Experts from different institution in Pakistan vowed to develop the path for successful implementation of much needed aspect in urban life. Prof. Dr. Azam Khan, Chairman, Department of Horticulture, PMAS-AAUR also told participants about the development of "Urban Horticulture" course in curriculum for students of Horticulture at PMAS-AAUR. The conference was a success in terms of developing inter academia and industry collaborations and raising the awareness on a very important and much needed aspect in urban life.

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Establishment of Orchard Based on Micro-Irrigation System Using Undulated Barren Land at The Islamia University of Bahawalpur

Establishment of orchard based on micro-Irrigation system using undulated barren land at The Islamia University of Bahawalpur is a running project which aims at using this land for the cultivation of fruits without disturbing the topography of the existing barren land and to conduct research and experimentation on fruits under desert conditions. Total area allocated under this project is 25 acers of undulated barren land. Said area is now covered with Date palm, Mandrin, Sweet lime, Lemon, Grape fruit, Early Fruiter, Mosambi, Persimmon, Ber, Fig, Guava, Peach and Pears.




Setup of Cut-flower and Vegetable Production, Research and Training Cell,Department of Horticultural Sciences, FA&E, IUB

Cut-Flower and Vegetable Production, Research and Training Cell, The Islamia University of Bahawalpur is fully opted production and research facility of the institute, which has recently been established on 25 acres of land inside the varsity. This facility is producing very good quality vegetables and flowers to be sold to increase university reserves. We are very proud to organize and conduct below given training programs for students, farmers and community alike.

1. Training Workshop on "Kitchen Gardening"
2. Training Workshop on "Cultivation of Flowers and Vegetables Under Combined Stresses"
3. Special Training Workshop on "Winter Cut-Flower Production and Care" for Officers of WWF.
4. Training Workshop on "Winter Cut-Flower Production and Care"
5. Training Workshop on "Production of Fruits and Vegetables under Rising Temperatures and Smart Irrigation Management to Mitigate Effects of Extreme Heat"

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COVID-19 Impact on Floriculture Industry

Muhammad Asif, Naveed Ahmad and Iftikhar Ahmad
Institute of Horticultural Sciences, University of Agriculture, Faisalabad-38040, Pakistan

Floriculture, a rapidly flourishing commercial horticultural enterprise, mainly encompasses production, handling and marketing of ornamentals including but not limited to cut flowers, cut foliages, loose flowers, bedding plants and turfgrasses. It also includes flower seed and bulb production, required for cut flowers and bedding plant production. The Netherlands has the world's largest floriculture market, 'Flora Holland', which deals with cut flowers, potted plants and cut foliages. The Dutch floriculture account for more than 50% of the international floral trade and was one of the most affected agricultural sectors by COVID-19 Pandemic. After Netherlands, Latin American (Ecuador and Columbia) and African flower producing countries (Kenya and Ethiopia) were most effected and thousands of workers lost their jobs during pandemic. All flowers were wasted because there was no local demand of cut flowers in these countries, during 2020-21.

Overall, COVID-19 limited the floriculture business. As noted above, to stabilize the floriculture industry, the Dutch government has announced a package of worth 600 million Euro for floriculture growers. Under this program, while the 30% of production loss will be borne by growers and remaining 70% of loss will be compensated by the government.

European Union is amongst the larger growers but is also trader and consumer of cut flowers and potted plants. The worth of the total floriculture industry is estimated to be €20 billion, which is 44% of the global floriculture and potted plant production. The main European flower producing countries are the Netherlands, Germany, France, Italy and Spain, which according to one estimate to have lost around 4 billion Euro since the spread of the COVID-19. Two African countries viz., Kenya and Ethiopia are also important growers of cut flowers, particularly cut roses and carnations.

Kenya is one of the biggest producers of cut flowers. About 70% of the cut flowers produced here are shipped to European countries, which are usually auctioned through Flora Holland auction and other platforms in Holland. It should also be keep in mind that the COVID-19 started from 20th March 2020, this was the beginning of the spring season, when most of the turnover was achieved for this business. Due to COVID-19 restrictions, shops were closed and the people were unable to leave their houses, therefore, there was zero demand of flowers in the market.

Europe's floriculture industry has been hit the hardest by the COVID-19, which accounts for the largest share of the global trade in floriculture as a whole. Potted plant business was more affected followed by cut flowers and bulb production. Contrary to Europe, cut flower sector of Pakistan was more affected than potted plants.

Local consumption of flowers was declined and exports were also declined due to lockdowns and curfews. Despite all the negative effects of COVID-19 on the floriculture industry, there has been a positive impact. That is the increase in online sales of floriculture products. According to a survey by the International Floriculture Association (AIPH), online sales of floral products have increased by 81% since the COVID-19 started because restrictions and fear have reduced people leaving their homes.

The United States and Canada are the countries where more than 80% of flowers are imported for domestic use. The major suppliers of flowers to the United States and Canada are Colombia and Ecuador. Due to the COVID-19, the export of flowers from these countries was completely stopped, due to which millions of people who used to work on farms in these countries lost their jobs. Consequently, thousands of florist shops in the United States and Canada were closed due to unavailability of flowers, affected millions of employees.

COVID-19 created the situation which bound people to remain in their houses. They had to remain for more than 90% of their time in the homes and in the residential areas need much care to both the quality of the air they breathe. To keep the indoor environment clean, home gardening is the best option.

Therefore, huge number of people bought potted plants to their homes during pandemic, and popularity of herbal plants also increased during the outbreak. After COVID-19, there was increasing trend of home gardening which helped to fulfil the demand of fruits and vegetables, which was also effect by outbreak of this Pandemic.

The first wave of COVID-19 in Pakistan started from mid-March. There was a complete lockdown from 20th March. Events and gatherings were completely banned. Luckily flower consumption season was near to end when pandemic hit Pakistan. However, large quantities of flowers were lost in the field and farmers were unable to market them and government also did not provide any loss compensation to floriculture sector.

The flowers that farmers lost in the field included cut roses, gladiolus, marigold and chrysanthemums. Due to the reduction in summer celebrations, the consumption of flowers was reduced, therefore, overall loss was also reduced. With the onset of winter, the demand for flowers increases but by that time the lockdown was over and the industry was restored. But due to uncertain situation, flowers were planted on a small area by farmers during last winter. Therefore, due to low production, the market rate remained high and the farmers were able to earn reasonable profits.

Furthermore, some of growers, when realized the possible effects of COVID-19, they started online marketing along with producing seeds and bulbs/corms for next year plantation. This not only lowered the losses level and opened new avenues for lowering production cost and saving germplasm during pandemic.

There is a good demand of Topiary plants in Pakistan. Previously, they were imported from China and Thailand. Due to the COVID-19 and ban on import by Plant Quarantine department, their import was stopped, due to which the local people showed their interest in the preparation of topiaries. Many types of topiaries sold in the market are now prepared locally which has reduced import bill.

Bottom line, COVID-19 had some positive impacts on floriculture industry of Pakistan as skill improvement and local production of topiary started in Pakistan which was rare in the past before COVID-19. Furthermore, online sale of flowers and potted plants started in Pakistan. In addition, trend of home gardening increases many fold in urban and rural areas of Pakistan. If we look globally, new routes for transportation of flowers were discovered to avoid the restrictions imposed due to COVID-19 in different countries. Demand for plants has increased significantly, especially of houseplants.

IHS-UAF Retreat Tour 2022

A 2-Day retreat tour was conducted by IHS on February 25-26, 2022, to Katas Raj temple, which is a historic place in District Chakwal, Kalar Kahar lake, Kenhaiti Gardens, situated at 2h drive from Kalar Kahar and Khabeki lake in Soan Valley. During this tour, team not only had fun filled activities but also brainstorming session to improve Horticulture in the potohar region utilizing its mild Mediterranean climate. Moreover, fruitful discussion and observation was made on how the quality of research (particularly Ph.D. research) and teaching (particularly practical sessions) can be further improved at IHS and how can we make our product (graduates) well equipped with knowledge and skills which are required by the industry locally as well as overseas. Members also did hiking, boating, BBQ and biking along with enjoying folk music and photography at Khabeki lake.At the end of this wonderful retreat tour, team left back with lots of memories to cherish. Thank you UAF administration for providing this wonderful opportunity to spend quality time away from daily office chores.

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Value-Chain Management of Minor Fruits

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There are about 35 different types of fruits being cultivated in Pakistan. Majority of them are categorized as minor fruits due to their small production areas. However, their nutritive and economic value are not minor in nature. Grapes, mulberry, jamun, pomegranate, litchi, falsa and ber etc. are prominent among them. The major causes for their reduced cultivation are perishability, limited R&D support and less consumer awareness. Accordingly, a project was designed and funded by HEC under NRPU grant (5933) for highlighting the role of these minor fruits as food security as well as value chain management of them. The research and development activities were carried out that include commercial and lab scale research on critical monitoring of existing supply chains, documenting the key supply chain issues, quantification and characterization of postharvest losses, nutritive profiling, and development activities such as interventions in supply chains, developing value added products, capacity building/trainings of minor fruit crops.


Grapes


Mulberry


Jamun


Pomegranate


Lychee


Phalsa


Ber

Minor fruits of Pakistan

Value addition

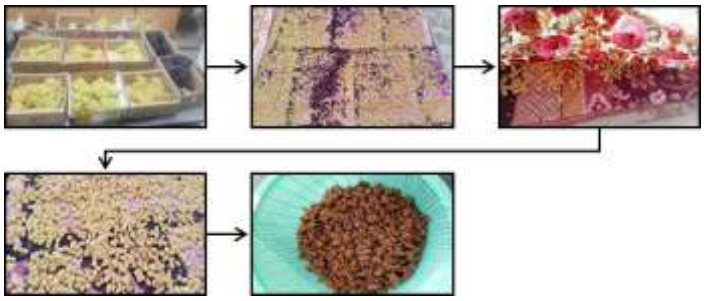
The number of value-added products has been developed from these minor fruits i.e., jamun leather, jamun popsicles, jamun drink, falsa popsicles and drink, mulberry jam, leather, grapes raisins. The market survey regarding these developed value-added products covering the aspects of sensory response and response of consumer product price, labelling and packing showed the good response.


Leather


Jam


Squashes


Popsicles


Flow chart of various steps for preparation of Raisins

Quantification of postharvest losses and interventions for their management

Various interventions have been introduced to reduce the postharvest losses of minor fruits. These interventions include application of various ripening

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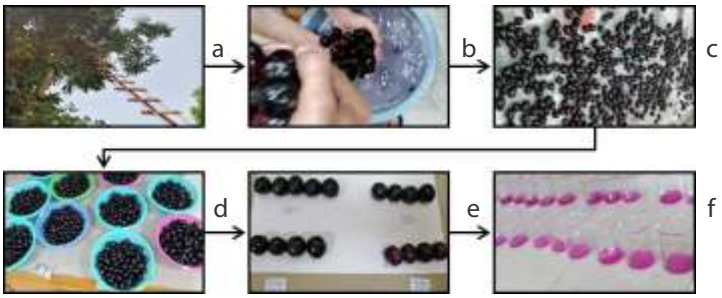
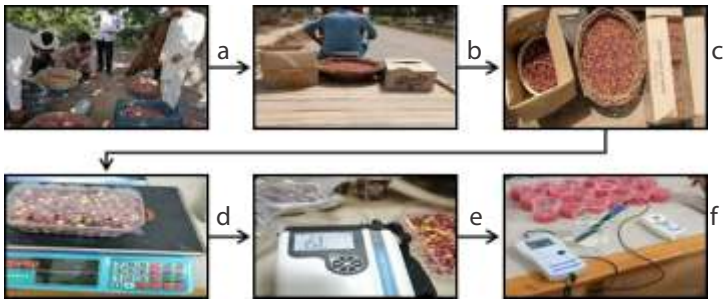
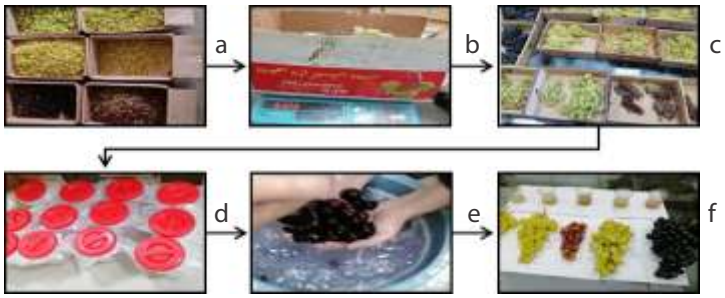
delaying chemicals (oxalic acid, quinic acid, salicylic acid and methyl jasmonates) that help in extending the shelf life, and introduction of modified packing in comparison to the conventional packing in various fruit. The quantification of postharvest fruit quality losses in various steps of fresh fruit supply chain has also been carried out and the effect of direct and indirect fruit transportation was also evaluated. The impact of abovementioned interventions indicates that fruit handled through these interventions showed relatively less fruit weight loss, less perishability, better cosmetic look and improved biochemical fruit quality than fruit handled without these interventions.



Harvesting of jaman fruit (a), Dipping in different organic acid concentrations (b), Drying (c), Placing in plastic plastics (d), Shelf-life study (e), Physico chemical analysis (f).



Harvesting of falsa fruit (a), Transportation (b), Different packing's (c), Weight Loss (d), Analysis at shelf (e), Physico chemical analysis (f).



Different varieties of grapes (a), Weighing of boxes (b), Placement at shelf (c), Evaluation of gaseous exchange (d), Dipping in organic acid solutions (e), Physico chemical analysis (f).

Fig Dehydration: A Revolutionary Approach

Muhammad Nawaz Khan, Allah Bakhsh, Sahar Rashid, Maryam Nasir
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Fig (*Ficus carica* L.) belongs to the family Moraceae having 1400 species and 40 genera. Fig cultivation finds its roots since dawn of civilization. Even in Holy Quran it has been mentioned many times and "Sorah Teen" is named after it. It is widely cultivated in the Mediterranean region, where the fig plant population has been grown since its domestication. It is worth mentioning that it is one of the oldest species domesticated by humans. In the Middle East and the Mediterranean region, fig has been included in the diet since ancient times and is considered as a symbol of health. Figs are an excellent source of vitamins, dietary fiber and minerals. Fruit is free of cholesterol and fat and comprise of high number of amino acids, rich in vitamins B1, B2 and C and minerals. Like other fruit species, fig contains sugars and organic acids that influences its quality. Dried fig contains relatively high amounts of crude fibers (5.8%, w/w), higher than those of all other common fruits. More than 28% of the fiber is of soluble type, which has been shown to aid in the control of blood sugar, blood cholesterol and in weight loss. Dried fig also contains one of the highest concentrations of polyphenols among the commonly consumed fruits and beverages. The fruits, roots, and leaves have been used in traditional medicine to treat gastrointestinal (colic, indigestion, in appetence, diarrhea), respiratory (sore throat, coughing, bronchial diseases) and cardiovascular diseases in addition to their use as anti-inflammatory and anti-spasmodic drugs.

Table: Nutritional Composition of Raw and Dried Fig per 100 g

Composition	Raw figs	Dried figs
Calories	74 kcal	249 kcal
Protein	0.75 g	3.3 g
Lipids	0.3 g	0.93 g
Dietary fiber	2.9 g	9.8 g
Sugar	16.26 g	47.92 g
Calcium	35 mg	162 mg
Iron	0.37 mg	2.03 mg
Magnesium	17 mg	68 mg
Potassium	232 mg	680 mg
Vit C	2 mg	1.2 mg
Beta carotene	85 mcg	6 mcg
Vit K	4.7 mcg	15.6 mcg

Source: United States Department of Agriculture

Worldwide 1,051,795 tonnes of fig is produced per year. The top five fig producing countries around the world are mentioned in Table 2.

Table 2: Top Fig Producing Countries of the World

Sr. No.	Countries	Area (ha)	Production (tons)
1.	**Turkey**	49.987	305.450
2.	**Egypt**	27.918	167.622
3.	**Algeria**	42.248	131.798
4.	**Iran**	53.101	70.178
5.	**Morocco**	58.306	59.881

The major exporters of fig dried/fresh were Turkey ($299M), Afghanistan ($135M), Austria ($22.9M), Germany ($22.4M), and Spain ($22.2M). However, fig is considered as a minor fruit crop in Pakistan. Its share in international market is inconsequential. In Pakistan fig is produced on an area of 90 ha with an annual production of 423 tonnes that is just 0.01% of the total area and has minimal production share i.e., almost 0.006% of total fruit production (Statistics, 2017-18). Dried fig comprises of about 90% of the world production. However, approximately 40% of the whole fig crop is sold as dried fruit, produced mainly in Turkey. In Pakistan most of the dried fruit is imported from Afghanistan.

Fig is highly perishable, which limits its storage time for long periods. In order to expand the potential markets, most of the production is used for drying. Figs are climacteric fruits and are slightly sensitive to ethylene action on stimulating softening and decay severity, especially if kept at 5 °C or higher temperatures. Drying extends the shelf life of surplus production that cannot be sold or consumed immediately. Drying has many advantages for food quality with decreasing water activity, reducing microbiological activity and minimizing physical and chemical changes. Drying is by far the most popular and effective way of processing/preservation of figs known from prehistoric times. Important advantages of this method are its low cost and the fact that the obtained product does not depend on refrigeration.

In Pakistan fig is being cultivated as minor crop due to lack of awareness regarding its nutritional value and proper processing technologies. As it has better adaptability to local climatic conditions so significant economic returns can be harvested from fresh, dried and processed fig. Pakistan is one of the importer of dried fig which causes economic loss to the economy. Huge quantum of dried figs which is a burden on our national economy. Present scenario creates a dire need for standardization of an appropriate technology where figs can be processed and stored for longer period.

To lay foundation for fig drying and its processing an innovative methodology was adapted at Horticultural Research Institute, Ayub Agricultural Research Institute, Faisalabad. The fresh fruit was harvested from research area at proper mature stage. After harvesting the fruits were brought to laboratory for processing/drying. Firstly, the selected fruits were washed with distilled water for removal of any extraneous matter adhering to the fruits. After washing the fruits were graded according to the size and the fruits having cracks, injuries and infection were discarded. The selected fruits were blanched in sugar solution (20%) for 1 minute. The blanched figs were dipped in preservative solution consist of potassium metabisulphate @ 0.75 g/L for 30 minutes. Butter paper sheets were spread on the stainless steel trays (2 x 1.5 ft) and treated fruits were placed on it.

Almost 90-100 fruits were placed in one tray. The fruits were subjected to three different conditions for dehydration in order to check which is more economically feasible. The fig fruits were divided into three equal samples and each sample consist of three trays. One sample was placed in the glass house under solar radiation having temperature 50±5°C and humidity 50-60%. Second sample was placed directly under the solar radiation and third sample was put in electric hot air dryer having temperature 52±2°C. The samples were observed daily and fruits were rotated to ensure uniform drying. It was observed that figs were dehydrated for 48 hours, 72 hours and 36 hours in glass house, direct sunlight and electric hot air dryer, respectively. After drying the fruits were pressed with the help of local wooden presser to attain proper shape. Then fruits were conditioned/acclimatized for 1-2 hours. Fruits were then packed in airtight polythene bags. The outcomes of our findings was that the fruits dried for two days under glass house have better quality as compared to others. They appeared to be more attractive and having good taste. The dehydrated fruits can be stored up to 4 months. After that the quality start deteriorating and it became unfit for consumption. The dehydrated figs open a new window towards the stability of horticultural crops. Better processed dried fig will fetch higher income from markets that will improve the economy of Pakistan. Pakistani dry figs can fulfill the domestic requirement of the country and ultimately it will save the foreign exchange.

Washing of fig

Blanching in 20% sugar solution

Drying in trays

Dehydrated figs

Pictorial view of steps followed for dehydration of fig.

Pollination Parentage and Effective Pollination Period in Fruit Crops

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To feed an ever-increasing human population, fruit breeders are constantly under pressure to enhance and sustain food supply by employing novel breeding techniques and introducing minor crops that provide a source of nutrition, well adapted to marginal areas, and resistant to abiotic and biotic stress. Fruit set and quality are influenced by two major processes: pollination and subsequent fertilization. To attain economically optimal yields, it is essential that approximately 5-8% of flowers must set into fruits. Several plants and pollinators on their own or in combination, can reduce pollination and fertilization success throughout the blooming phase, limiting fruit set. Furthermore, in many circumstances, a lack of flowering time synchronization between pollinating and pollinated cultivars is caused by fluctuating environmental conditions and the interest to expand fruit crops to new production sites with different climatic conditions. With the advent of multiple novel cultivars with unknown pollination requirements in most fruit crops, pollination management is becoming increasingly important.

Apparently, little is known about the pollination requirements for cultivars of the most widely grown fruit crops in Pakistan. As a result, it is essential to have information on pollination requirements of cultivars, with a focus on the reproductive process, each cultivar's self-(in)compatibility, inter-incompatibility S-alleles and incompatibility groups, and external factors affecting the flowering and pollination.

Because most fruit crops are self-incompatible and require cross-pollination with genetically compatible and viable pollen to fertilize the ovules, it will be necessary to continue determining the self-(in)compatibility and inter-incompatibility relationships of the new releases. Self-incompatibility (SI) is induced by a genetic system GSI and is regulated by multi-alleles on a single S-locus.

More than three-quarters of the world's primary food crops rely on cross-pollination for optimal production; thus, cross-pollination is critical for producing enough food. For many fruit crops (mangoes, apples, Japanese plums, olives, guava, and grapes), cross-pollination increases fruit set, yield, fruit size, sugar contents, and seed number when compared to self-pollination. Other attributes including oil composition and sugar are also enhanced by cross pollination through a phenomenon known as xenia. The higher frequency of developing seeds from more efficient pollination by superior pollen-parents is frequently linked to xenic effects on fruits i.e. pecan nuts, guava, citrus, pistachio nuts, avocado, and loquat etc. There is minimal data comparing different cross-pollen sources in Pakistani fruit crops. The limiting levels of cross-pollination might have a significant influence on human nutrition. However, adequate cross-pollination with compatible pollen is a fundamental need for fertilization, and it is essential to evaluate pollination efficiency and pollen parent influence in fruit crops to maximize fruit set.

In addition, floral receptivity is a determining factor in the fertilization of a few fruit crops. The effective pollination period (EPP) may be employed to assess the flower longevity and detect limiting variables by calculating the EPP parameters (stigmatic receptivity, pollen tube development rate, and ovule longevity). The sequential pollination and evaluation of the first or final fruit set is an alternative to the indirect technique, which involves microscopic observations to determine EPP parameters. The emasculation, isolation and successive cross-pollination of flowers are all part of this direct method. Although this method saves time, yet it does not give information about the constraining variables. The difference between ovule longevity and the time necessary for the pollen tube to reach the ovules is used to compute EPP in different varieties of apricot (*Prunus armeniaca* L.), apple (*Pyrus malus* L.), pear (*Pyrus communis* L.), sweet cherry (*Prunus cerasus* L.), sour cherry (*Prunus cerasus* L.), olive (*Olea europaea* L.) and kiwifruit (Actinidia ssp.). This focuses on identifying EPPs for Pakistani fruit crops. However, due to variations in climatic conditions during bloom, data from research trials with substantially varying weather conditions cannot be easily compared with data from other growing areas. Therefore, it is essential to analyze EPP and the possible parentage influence on pollen tube growth rate in fruit crops under fluctuating climatic conditions of Pakistan.

Liquid Nanoclay: A Technology to Make Desert Bloom

Ayesha Manzoor, Muhammad Saqib Naveed, Sharmin Ashraf, Dr. Sairah Syed
Barani Agriculture Research Institute, Chakwal

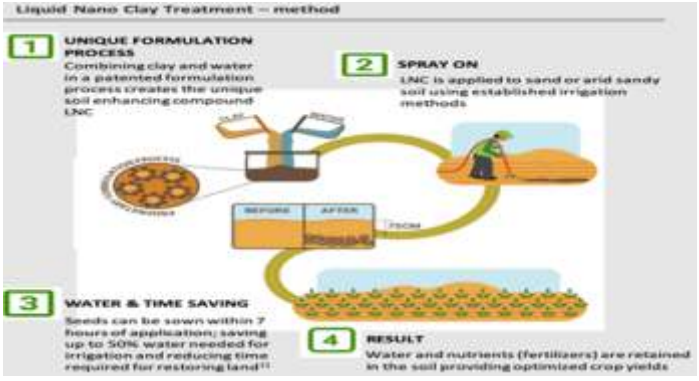
Desertification

Desertification specifically the loss of fertile arable land, is a phenomenon that poses a major threat to global food production, particularly in the developing world. About 12 million hectares of arable land is lost due to erosion each year, and it is estimated that land degradation in the next 25 years has the potential to reduce global food production by up to 12% (UNCCD. The combined impact of climate change, drought, overgrazing, unsustainable freshwater use and other human activities further accelerates the degradation of water-scarce regions in the world. Consequently, the soils in those regions become less fertile and less able to support crops, livestock and wildlife. In addition, drylands cover around 40% of the Earths land surface and are home to around 2 billion people. Thus, desertification will have a huge impact on our planet. Moreover, the sandy soil is worthless for agricultural applications and requires cumbersome treatments to reach a valuable state.

A recent report from the Economics of Land Degradation Initiative claimed that it's a problem costing the world as much as US$10.6 tn every year – approximately 17% of global gross domestic product. In order to reduce water consumption and add value to worthless soil, a Norwegian company called Desert Control develops a technology that not only saves land from degrading further, but it actually transforms arid, poor-quality soil into nutrient-rich, food-growing soil. As sandy soil doesn't retain water and nutrients; they run right through it and end up in the groundwater below. Desert Control developed a substance called Liquid Nanoclay (LNC), which coats sand particles with a layer of clay 1.5 nanometers thick.

Liquid Nanoclay (LNC):

Liquid Nanoclay is a mixture of water and clay that is mixed in a patented process and used to transform sandy desert soil into fertile ground. The mixing process splits the clay particles into individual flakes and adds air bubbles on both sides of the flakes. The individual clay flakes bind to the surface of the sand particles with a Van der Waals binding, significantly increasing the ability of the soil to hold water and nutrients. The mixture is then sprayed directly onto affected land using existing irrigation methods and eventually creates spongy, hollow structures that retain water about 40-60 cm underground – the typical depth of plant root. This layer stops water from evaporating and ensures optimal growing conditions for plants. This requires around 40 liters of water and 1 kg of clay per square meter. This treatment gives sand particles a nanostructured clay coating; completely changing their physical properties and allowing them to bind water.



Comparison with traditional system:

Using clay to improve soils is nothing new – farmers have been doing so for thousands of years. However, adding thick, heavy clay into soil has historically been very labour-intensive and disruptive to underground ecosystems. Furthermore, ploughing, excavating and turning the soil also comes at an environmental cost as sequestered carbon is exposed to oxygen and so is lost into the atmosphere as carbon dioxide.

The process of transforming sandy soil into fertile land can take 7-15 years. In comparison, LNC takes just seven hours to saturate into the land. In this technology, clay is broken down to a nanoparticle level and transformed into a liquid substances that can sprayed easily onto land. Farmers need a sufficient quantity of clay, and traditionally they use heavy machinery to mix clay into the soil. In LNC, the usage of clay is 10 times less compared with traditional system, therefore, is much effective to boot.

Advantages:

LNC will allow plants to grow in areas it used to be unfeasible for them to survive.

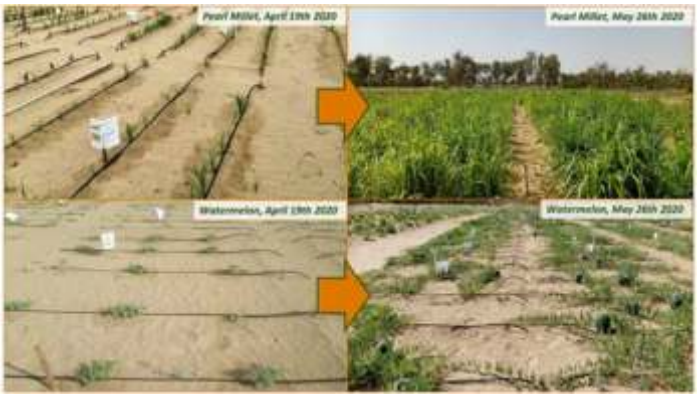
- LNC produces yield four times greater than untreated land, using the same amount of seeds and fertilizer.
- Reduces water usage by 50-65% compared to current irrigation norms.
- LNC acts as catalyst for mycorrhizal fungi when nourishment is available. These fungi help improve plant growth and ultimately yield.
- Turning desert to green land lowers the surface temperature around 15°C and reduces CO2 emissions by 15-25 tons per hectare.
- LNC can turn arid land into arable land in just seven hours.
- The process is organic in nature as it does not involve any chemical agents.
- The treated land is also shielded from the loss of soil by wind effects.
- The mixture made on site from natural materials is applied to land in the same way as regular irrigation, making it an easy and accessible solution for farmers around the world.

- LNC can be further applied in reforestation projects to reclaim degraded and desertified land, climate impact projects and commercial greenery that require irrigation in areas with sandy soil.

Application in different countries:

Desert Control has tested LNC in China, Egypt, Pakistan and the UAE, and results showed 30-50% increase in water and fertilizer retention, reducing the need for irrigation and increasing yields. In Egypt field test, white peppers were planted in test fields treated with LNC gave an additional two months of harvest, compared to the fields that were untreated. Following the initial harvest, the plants were then left without irrigation over winter and spring. The original crop was found to be in such good condition that could be used for another season.

A field test near Abu Dhabi yielded cauliflowers and carrots that were 108% higher than those in the control area. Similarly field tests in Egypt documented a four-fold increase in the yield of wheat. Most recently, LNC was used to grow watermelon, pearl millet, and zucchini in the desert outside Dubai.



Cost

LNC costs $2 to $5 per square meter, whereas, the cost of treatment per hectare is US$4,800 and requires a 15-20% retreatment after 4-5 years if the land is tilled. If the soil is untilled, the treatment lasts for longer. This cost is far more than many farmers can afford. However, there are also still some uncertainties around whether the treatment impacts the broader ecosystem in any negative ways.

Professor Zora Singh has been elected as a fellow of American Society for Horticultural Science

Professor Zora Singh has been elected as a Fellow of the American Society for Horticultural Science (ASHS) in the 59th Annual Class of Fellows in the 119th Annual Conference of ASHS held in Chicago July 30-August 3, 2022. He has been awarded this prestigious accolade in recognition of his outstanding contributions to the science, profession, and industry of horticulture at state, national, and international levels. This is a great honour for Zora Singh, Foundation Professor of Horticultural Science at the School of Science, Edith Cowan University, Joondalup, Western Australia. Professor Singh has trained and mentored more than five dozen Ph.D., M.Phil. and M.Sc. students and 32 international scientists. He has authored/co-authored more than 406 research publications and bestowed several international and national research and teaching awards.

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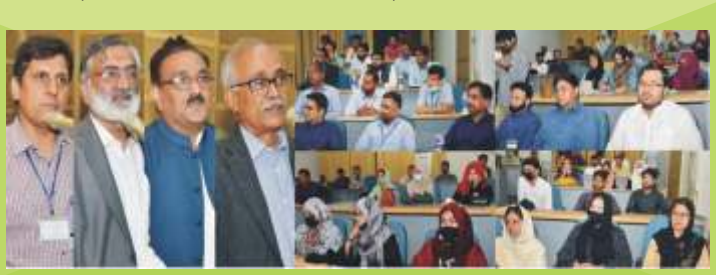
پھولوں کی بعد از برداشت نگہداشت بہت غیر پیشہ ورانہ طریقے سے کی جاتی ہے۔ تینوں منڈیوں میں ایک بھی ایسی دوکان ایسی نہیں پائی گئی جہاں پھولوں کی تروتازگی برقرار رکھنے والے کسی کیمیائی محلول (Preservatives) کا استعمال کیا جاتا ہو۔ مزید برآں ان منڈیوں میں سرد ذخیرہ اندوزی کی سہولت بھی موجود نہیں ہے جس کے باعث بعد از برداشت نگہداشت کے دوران نقصانات بہت زیادہ ہوتے ہیں اور پھول بیچنے کے قابل نہیں رہتے۔ لہذا جہاں نئے پھولوں کی پیداواری ٹیکنالوجی سے کاشتکاروں کو روشناس کروانے کی ضرورت ہے وہیں پھولوں کا کاروبار کرنے والے گل فروش حضرات کی تربیت کی بھی اشد ضرورت ہے تاکہ ان نئے پھولوں سے نا صرف زیادہ منافع کمایا جاسکے اور صارفین ان پھولوں سے لمبے عرصہ کے لیے محظوظ ہوسکیں۔

اِن منڈیوں میں ضروری اقدامات کے ذریعے بعد از برداشت نقصانات کو کم کیا جاسکتا ہے جیسا کہ کولڈ سٹوریج سسٹم کی فراہمی سے بعد از برداشت نقصانات کو کم کیا جاسکتا ہے۔ علاوہ ازیں پھولوں کی تروتازگی برقرار رکھنے والے کیمیائی محلول استعمال کر کے لمبے عرصے کے لیے پھولوں کو تروتازہ رکھا جاسکتا ہے۔ خیبر پختونخواہ، گلگت بلتستان اور خیبر پختونخواہ میں موسم گرما کے دوران کافی رقبے پر پھول کاشت کیے جاتے ہیں جنہیں زیادہ تر لاہور کے قریب سگیاں منڈی میں لایا جاتا ہے جو کہ اسلام آباد کی نسبت دور ہے۔ لہذا اسلام آباد میں ایک ایسی منڈی ہونی چاہیے جو جدید سہولیات سے آراستہ ہو اور مذکورہ بالا علاقوں سے کاشتکار پھول لا کر خود فروخت کرسکیں اور جسے جدید سہولیات کی دستیابی کے باعث مستقبل میں سی پیک (CPEC) کے ساتھ منسلک کیا جاسکے۔ علاوہ ازیں ان منڈیوں میں پھولوں کی قیمتوں کے تعین کا ریگولیٹری نظام بھی موجود ہونا چاہیے تاکہ لوگوں کو مناسب قیمتوں میں عمدہ کوالٹی پھولوں کا حصول ممکن ہوسکے۔ ہول سیل منڈی کے قیام سے آس پاس کے علاقوں کو بھی پھولوں کی ترسیل و فراہمی کو فروغ دیا جاسکتا ہے جو وطنِ عزیز میں پھولوں کی صنعت کے فروغ کے لیے ایک سنگِ میل ثابت ہوسکتا ہے۔

پوسٹ ہارویسٹ تربیتی ورکشاپ

انسٹیٹیوٹ آف ہارٹیکلچرل سائنسز، زرعی یونیورسٹی فیصل آباد

ملک میں زرعی شعبے میں پھلوں اور سبزیوں کو 30 سے 40 فی صد پوسٹ ہارویسٹ نقصانات کا سامنا ہے جس سے کسان کے لئے منافع بخش زراعت کے ساتھ ساتھ زرعی خود کفالت کی راہ میں مشکلات حائل ہیں جن پر قابو پانے کے لئے سائنسدانوں کو پوسٹ ہارویسٹ ٹیکنالوجی متعارف کروانا ہوگی۔ ان خیالات کا اظہار زرعی یونیورسٹی کے وائس چانسلر ڈاکٹر اقرار احمد خاں نے انسٹی ٹیوٹ آف ہارٹیکلچرل سائنسز کے زیر اہتمام ہارٹیکلچرل مینجمنٹ ورکشاپ کے افتتاحی سیشن سے بطور مہمان خصوصی اپنے خطاب کے دوران کیا۔ انہوں نے کہا کہ ہم ابھی تک پھلوں اور سبزیوں کی ہارویسٹنگ کیلئے روایتی اور فرسودہ طریقہ جات اپنائے ہوئے ہیں جس کی وجہ سے زمین پر چوٹ لگنے اور درختوں اور پودوں سے مناسب انداز سے نہ توڑنے کی وجہ سے بڑی مقدار میں پیداوار ضائع کر بیٹھتے ہیں جس سے کسان کے ساتھ ساتھ ملکی اقتصادیات کو بھاری نقصان اٹھانا پڑ رہا ہے۔ ڈاکٹر اقرار احمد خاں نے کہا کہ کسانوں کیلئے سستی اور قابل عمل جدید زرعی ٹیکنالوجی کی تیاری کے بغیر انہیں نئی جدتوں سے آراستہ نہیں کیا جاسکتا۔ ڈائریکٹر جنرل ایوب زرعی تحقیقاتی ادارہ فیصل آباد محمد نواز خان نے کہا کہ ان کا ادارہ پوسٹ ہارویسٹ نقصانات کو کم سے کم شرح تک لانے کے لئے عملی اقدامات برائے کار لا رہا ہے جسے یونیورسٹی اور زرعی توسیعی شعبے کی مدد سے عام کسان کی دہلیز تک منتقل کرنے پر توجہ دی جائیگی۔ ڈین کلیہء زراعت، ڈاکٹر امان اللہ ملک نے کہا کہ یونیورسٹی کی پوسٹ ہارویسٹ لیب ملک بھر کے کسانوں اور تحقیقی اداروں کی افرادی قوت کو جدید ٹیکنالوجیز کی تربیت کے لئے مسلسل مصروف عمل ہے تاکہ اس مسئلے پر جلد سے جلد قابو پایا جاسکے۔ ڈاکٹر راحیل انور نے کہا کہ مناسب طریقے سے ہارویسٹ نہ کرنے سے پھلوں اور سبزیوں کی کوالٹی میں کمی آجاتی ہے جس کی وجہ سے ان کی برآمدات متاثر ہوتی ہے۔



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اسلام آباد کی پھول منڈیوں کے رجحانات

ڈاکٹر افتخار احمد، نوید احمد (انسٹیٹیوٹ آف ہارٹیکلچرل سائنسز، زرعی یونیورسٹی فیصل آباد)

اسلام آباد پاکستان کا دارلخلافہ ہے جس کی آبادی گیارہ لاکھ سے زائد ہے۔ یہ ایک خوبصورت شہر ہے جہاں تمام بڑے سرکاری اور نیم سرکاری اداروں کے دفاتر موجود ہیں۔ اس کے علاوہ تمام ممالک کے سفارتخانے اور بڑے بڑے ہوٹلز بھی موجود ہیں۔ لہذا روزانہ کی بنیاد پر نہ صرف تقریبات منعقد ہوتی رہتی ہیں بلکہ دفاتر کی زیبائش کے لیے بھی کثیر تعداد میں پھول درکار ہوتے ہیں۔ علاوہ ازیں یہاں کے باسیوں کی قوت خرید کافی بہتر ہے لہذا یہاں نہ صرف متنوع پھولوں کو پسند کیا جاتا ہے بلکہ لوگ اپنی پسند کے مہنگے پھول بھی بخوشی خرید لیتے ہیں۔ تاہم اسلام آباد کے قرب وجوار میں بڑے پیمانے پر تراشیدہ پھول کاشت نہیں کیے جاتے لہذا یہاں پھولوں کی مقامی طلب کو پورا کرنے کے لیے پنجاب، خیبر پختونخواہ اور آزاد کشمیر سے پھول ترسیل کیے جاتے ہیں۔

اسلام آباد کی حدود میں پھولوں کی تین بڑی پرچون منڈیاں ہیں جو کہ ایف 6، ایف 7 اور ایف 10 مراکز میں واقع ہیں۔ یہ منڈیاں سی ڈی اے کی جانب سے تیار کردہ ہیں جہاں مختلف گل فروشوں کو کاروبار کے لیے کرائے پر دوکانیں دی جاتی ہیں۔ ایف 6 مرکز میں 12، ایف 7 میں 10 اور ایف 10 میں دوکانوں کی کل تعداد 14 ہے۔ اگر کوالٹی کے لحاظ سے دیکھا جائے تو ایف 6 مارکیٹ میں سب سے عمدہ کوالٹی کے پھول اور گلدستے دستیاب ہوتے ہیں لہذا یہاں قیمت بھی زیادہ ہوتی ہے۔ باقی منڈیوں کی نسبت ایف 6 (سپر مارکیٹ) میں زیادہ اقسام اور رنگوں میں پھول دستیاب ہوتے ہیں۔

اِن منڈیوں میں دستیاب پھولوں میں گلاب، لِلی، گلائل (گلیڈی اولس)، گلِ شبو (ٹیوب روز)، جپسوفلا، گلِ داؤدی، زیبائشی سورج مکھی، چائینہ آسٹر اور سٹاک وغیرہ دستیاب ہوتے ہیں۔ اسلام آباد کی منڈیوں میں گزشتہ دو تین سالوں کے دوران شامل ہونے والے پھولوں میں زیبائشی سورج مکھی، سٹاک، چائینہ آسٹر اور لیزی اینتھس شامل ہیں۔ سورج مکھی مارچ تا اکتوبر دستیاب ہوتا ہے اور صارفین اسے کافی پسند کر رہے ہیں جبکہ سٹاک اور چائینہ آسٹر فروری تا اپریل کے دوران مختلف دلکش رنگوں میں دستیاب ہوتے ہیں۔ لیزی اینتھس کے پھول اپریل تا جون منڈیوں میں دستیاب ہوتے ہیں۔ یہ پھول سال کے دس مہینے منڈیوں کی نا صرف مانگ کو پورا کر رہے ہیں بلکہ پھولوں کے شوقین حضرات کو انکے پسندیدہ رنگوں کے متنوع پھولوں کی ارزاں قیمت پر فراہمی کو بھی یقینی بنا رہے ہیں۔ لیزی اینتھس بھی کئی رنگوں میں دستیابی اور خوبصورت پھولوں کے باعث منڈیوں میں پسندیدگی کی نگاہ سے دیکھا جاتا ہے۔ لیزی اینتھس کی پیداواری ٹیکنالوجی کو مزید بہتر بنا کر پھولوں کی کوالٹی کو بہتر بنایا جا سکتا ہے اور ایک پودے سے کئی پھول حاصل کیے جا سکتے ہیں۔ ان نئے پھولوں کو متعارف کرانے سے قبل منڈیوں میں عام طور پر گلاب، گیندا، گلائل (گلیڈی اولس) اور گل شبو (ٹیوب روز) وغیرہ منڈیوں میں دستیاب ہوتے تھے جبکہ ان نئے پھولوں کی دستیابی سے نا صرف پھولوں کے شوقین خواتین وحضرات کو ان کے پسندیدہ رنگوں کے پھول دستیاب ہو رہے ہیں بلکہ کاشتکاروں، گلبانوں اور گُل فروشوں کی آمدن میں بھی خاطر خواہ اضافہ ہوا ہے جو مقامی سطح پر پھولوں کی پیداوار بڑھنے کا موجب بھی ہے اور ملکی زرِمبادلہ کی بچت میں بھی معاون ثابت ہوا ہے۔

اگر پھولوں بلحاظ رنگ دیکھا جائے تو صارف سرخ، گلابی، جامنی اور سفید رنگ کو زیادہ پسند کرتے ہیں۔ پیلے رنگ کے پھولوں کی طلب منڈیوں میں نہایت کم ہے لہذا اس رنگ کے پھولوں کی قیمت بھی کم ہے۔ گلیڈی اولس اور ٹیوب روز کے پھولوں کو مصنوعی رنگ بھی دیا جاتا ہے۔ اگرچہ ایسا کرنے سے ان کی مارکیٹ ویلیو میں اضافہ ہو جاتا ہے لیکن یہ عمل پھولوں کی کوالٹی کو خراب کر دیتا ہے اور پھول جلد مُرجھا جاتے ہیں۔ مزید برآں نئے تراشیدہ پھولوں کے منڈیوں میں آنے سے اصلی رنگوں میں اسی کوالٹی کے پھول دستیاب ہونا شروع ہو ہیں جو پھولوں کے رنگنے کے ناپسندیدہ عمل میں بھی کمی کا باعث بن رہے ہیں۔

گلاب اور گلائل سب سے زیادہ استعمال ہونے والے پھول ہیں۔ لِلی کی کافی اچھی طلب ہے تاہم یہ مہنگا ہونے کے باعث کم استعمال ہوتا ہے۔ موسم گرما میں گلِ شبو بھی دستیاب رہتا ہے جس کے پھول خوشبودار ہوتے ہیں۔ رنگ کی طرح خوشبو بھی ایک اہم معیار ہے جسے مقامی منڈیوں پسند کیا جاتا ہے۔ اِن منڈیوں میں دستیاب مقامی تراشیدہ گلاب کی کوالٹی گلاب کی درآمد شدہ اقسام میں مقابلے میں نہایت کم ہوتی ہے۔ علاوہ ازیں امپورٹڈ گلاب کئی رنگوں میں اور عمدہ پیکنگ میں دستیاب ہوتا ہے جبکہ مقامی گلاب کی مختلف رنگوں میں دستیابی بھی کم ہے اور کم کوالٹی پھول بھی ایک ہی گچھے میں پائے جاتے ہیں۔

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