

Training Workshop

Assessment, mapping and utilization of agricultural crops in saline-affected areas in Azerbaijan



Date: 19-23 December 2022

Venue: Conference Hall of Genetic Resources Institute, Ministry of Science and Education of Republic of Azerbaijan, Azadliq Ave 155, AZ1106, Baku, Azerbaijan

Highlights

Azerbaijan Republic is the largest (with a total land surface area of 86,6 thousand km²) and most populous country (with a population of more than 10.0 million) in the Southern Caucasus. The country has a rich diversity of soil and climatic conditions supported with diversity of plant genetic resources. Approximately 4,500 species of vascular plants have been recorded in the country, of which 210 are considered endemic to Azerbaijan. This represents around 65% of the floral diversity of the Caucasus region. Azerbaijan is also considered to be a center of origin for a number of globally important food crops.

The conservation, comprehensive study and effective utilization of the available biodiversity is one of the most important challenges facing humanity in combating hunger and poverty. The genetic resources of crops and agricultural plants and their wild ancestors play a particularly important role in addressing this problem. These resources are the main sources for improving crops and increasing productivity. Azerbaijan has achieved great success for many years in collecting, cultivation and use of plants and has created hundreds of varieties of main food crops.

Soil salinization has accelerated in Azerbaijan considerably over the past few years. 6 million of the 10 million population of Azerbaijan live in areas partially affected by salinization and desertification. Sixty per cent of the country area consists of subtropical areas prone to desertification, and the Mil plain, located in the Kur-Araz lowland, is one of the most intensive areas of desertification with about 30 percent of the 2.3 million hectares of soil affected by salinity. According to agricultural experts a large part of the country's cultivable soils can be affected by salinity in the future if decisive measures are not taken to counter this problem.

The International Center for Biosaline Agriculture (ICBA), in collaboration with the Ministry of Science and Education of the Republic of Azerbaijan and the AgroDev LLC in Azerbaijan, is organizing a five-day training on "Assessment, mapping and utilization of agricultural crops in saline-affected areas in Azerbaijan" in Baku, Azerbaijan from 19 to 23 December 2022 .

The objective of the training is targeting 25 new generation experts in Azerbaijan on assessment and mapping of salinity-affected agricultural areas and evaluation of globally important agricultural crops to salinity stress.

By the end of the training, participants will be able to:

1. Understand characterization of salt-affected soils.
2. Develop and apply suitable land reclamation strategies in degraded lands.
3. Develop and implement irrigation management strategies in degraded lands.
4. Select and utilize various food and feed crops suitable for weather and land conditions in Azerbaijan.

Organizer

International Center for Biosaline Agriculture (ICBA), Dubai, United Arab Emirates

Ministry of Science and Education of the Republic of Azerbaijan

AgroDev LLC, Azerbaijan

Islamic Development Bank, Saudi Arabia

Trainers

Dr. Ahmed H. El-Naggar, Soil Management Scientist, ICBA, UAE

Dr. Asad Sarwar Qureshi, Senior Scientist – Water and Irrigation Management, ICBA, UAE

Dr. R. K. Singh, Program Leader on Crop Diversification and Genetics, Principal Scientist - Plant Breeding

Coordinators

Dr. Aziz A. Karimov, Head of the regional office for Central Asia and South Caucasus, ICBA, Uzbekistan

Mr. Ghazi Al-Jabri, Capacity Development Specialist, ICBA, UAE

The International Center for Biosaline Agriculture (ICBA) is a unique applied agricultural research center with a focus on marginal areas where an estimated 1.7 billion people live. It identifies, tests and introduces resource-efficient, climate-smart crops and technologies that are best suited to different regions affected by salinity, water scarcity and drought. Through its work, ICBA helps to improve food security and livelihoods for some of the poorest rural communities around the world.

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Agenda

Monday 19 December

14:00 - 15:00 Registration

15:00 - 16:00 **Opening Session**

- Welcome speech, **Dr. Zeynal Akparov**, General Director of the Ministry of Science and Education of the Republic of Azerbaijan
- Welcome note, **Dr. Charbel Tarraf**, Chief Operations and Development, ICBA, UAE
- Welcome note, **Mr. Elvin Nabiye**v, Director of AgroDev LLC, Azerbaijan
- Presentation on the research of the International Center for Biosaline Agriculture
- Introduction of trainers and participants
- Group photo

16:00 - 16:30 Coffee break

Tuesday 20 December

09:00 - 09:30 **Session 1:** *Presentation by Azerbaijan partners on agriculture issues in their country*

09:30 - 10:45 **Session 2:** *Importance of Water Management in Irrigated Agriculture*, **Dr. Asad Sarwar Qureshi**, Senior Scientist – Water and Irrigation Management

10:45 - 11:00 Coffee break

11:00 - 12:00 **Session 3:** *Characterization and Properties of saline soils and their management*, **Dr. Ahmed H. El-Naggar**, Soil Management Scientist

12:00 - 13:00 **Session 4:** *Fundamentals of Plant Breeding*, **Dr. R. K. Singh**, Program Leader on Crop Diversification and Genetics, Principal Scientist - Plant Breeding

13:00 - 14:00 Lunch break

14:00 - 16:00 **Session 5:** *Irrigation for Salinity Management*, **Dr. Asad Sarwar Qureshi**, Senior Scientist – Water and Irrigation Management

Wednesday 21 December

09:00 - 10:30 **Session 6:** *Soil ecosystem and nutrient cycling*, **Dr. Ahmed H. El-Naggar**, Soil Management Scientist

10:30 - 11:00 Coffee break

11:00 - 13:00 **Session 7:** *Breeding methods for crops (self- and cross-pollinated crops)*, **Dr. R. K. Singh**, Program Leader on Crop Diversification and Genetics, Principal Scientist - Plant Breeding

13:00 - 14:00 Lunch break

14:00 - 16:00 **Session 8:** *Improving Water Use Efficiency in Marginal Environments*, **Dr. Asad Sarwar Qureshi**, Senior Scientist – Water and Irrigation Management

Thursday 22 December

09:00 - 10:30 **Session 9:** *Breeding work at ICBA for marginal environments*, **Dr. R. K. Singh**, Program Leader on Crop Diversification and Genetics, Principal Scientist - Plant Breeding

10:30 - 11:00 Coffee break

11:00 - 13:00 **Session 10:** *Calculations of Leaching requirements*, **Dr. Asad Sarwar Qureshi**, Senior Scientist – Water and Irrigation Management

13:00 - 14:00 Lunch break

14:00 - 16:00 **Session 11:** *Hands-on exercise (Sampling- preparation-measurements)*, **Dr. Ahmed H. El-Naggar**, Soil Management Scientist

Friday 23 December

09:00 - 10:30 **Session 12:** *Using amendments for the Rehabilitation of degraded soils*, **Dr. Ahmed H. El-Naggar**, Soil Management Scientist

10:30 - 11:00 Coffee break

11:00 - 13:00 **Session 13:** *Principles of quality seed production*, **Dr. R. K. Singh**, Program Leader on Crop Diversification and Genetics, Principal Scientist - Plant Breeding

13:00 - 14:00 Lunch break

14:00 - 15:00 Evaluation of the training

15:00 - 16:00 Distribution of certificates and closing

Trainers

Dr. Ahmed H. El-Naggar, Soil Management Scientist

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Dr. Ahmed H. El-Naggar is Soil Management Scientist within Sustainable Natural Resources Management Section at ICBA. Before joining ICBA in October 2018, he had worked as an associate professor of soil sciences at Ain Shams University, Egypt, and at the Soils Department at King Saud University, Riyadh, Saudi Arabia, where he had held the position of Assistant Professor of Environmental Soil Chemistry for eight years.

During his career, Dr. Ahmed El-Naggar has led or been involved in many research projects to enhance the recycling and management of different types of waste. This includes nutrient management of natural resources and their optimum use in agriculture. His research focuses on biomass of organic origin as a potential sustainable source for nutrients in agricultural systems and improving soil and water as valuable natural resources.

He holds a Ph.D. in Soil Sciences and Environmental Management from the Faculty of Life Sciences, University of Copenhagen, Denmark. He has published more than 20 research publications in peer-reviewed journals, book chapters and conference proceedings.



Dr. Asad Sarwar Qureshi, Senior Scientist - Water and Irrigation Management

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Dr. Asad Sarwar Qureshi is Senior Scientist in Irrigation and Water Management at ICBA. Before joining the Center in 2014, he had worked at the International Water Management Institute (IWMI) and International Maize and Wheat Improvement Center (CIMMYT) in different scientific and management capacities in Pakistan, Iran, Iraq, Central Asia, and Bangladesh. He has served as country head of the IWMI offices in Pakistan, Iran and Central Asia. He was engaged with USAID, World Wildlife Fund, the International Union for Conservation of Nature and Water and Power Development Authority (WAPDA) of Pakistan as a consultant for different assignments related to water resources and environmental management.



He has about 30 years of experience in action research for finding agronomic and engineering solutions to mitigate incipient water logging and salinity problems of the irrigated areas and development of conservation strategies for the water-scarce regions of the Middle East, South Asia, Africa and Central Asia. He has managed projects covering irrigation and water management, drought coping strategies, conjunctive management of different quality waters, rehabilitation and management of salt-affected and waterlogged soils, groundwater management, climate change and adaptation, impact assessment of irrigation infrastructure development, water user associations and wastewater management.

He holds a Ph.D. degree in water resources management from Wageningen University, the Netherlands. He is author of more than 100 scientific publications.

Dr. R. K. Singh, Program Leader on Crop Diversification and Genetics, Principal Scientist - Plant Breeding

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Dr. R.K. Singh is Head of Crop Diversification and Genetics Section. He joined ICBA in November 2018. He leads research teams studying such crops as quinoa, barley, mustard, safflower; trees such as date palm; and halophytes like Salicornia and Suaeda, among others.

He started his career in 1986 as a scientist at the Agricultural Research Services of the Central Soil Salinity Research Institute (the Indian Council of Agricultural Research) in Karnal, India. He had risen through the ranks to become a principal scientist.

In 2005 he moved to the International Rice Research Institute (IRRI) as a rice breeder for salt-affected areas. He had worked in different capacities at IRRI until 2018.

Between 2009 and 2012 he had served as IRRI's Regional Plant Breeding Coordinator for Eastern and Southern Africa based in Tanzania. In that role, he coordinated rice breeding activities in Uganda, Kenya, Tanzania, Rwanda, Burundi and Mozambique.

From 2012 to 2016, he had worked at IRRI's headquarters as a rice breeder for problem soils and rainfed lowlands of South-East Asia, including Myanmar, Thailand, Laos, Cambodia, Vietnam, Indonesia and the Philippines.

In 2016-2018 he had led the trait development team at IRRI focusing on salinity, heat and problem soils.

In his past roles, Dr. R.K. Singh led the teams which developed and released several salt-tolerant rice varieties, including basmati rice, in India.

He holds a Ph.D. in Plant Breeding from G. B. Pant University of Agriculture and Technology, Pantnagar, India.

He has published more than 75 research papers in international peer-reviewed journals and over 15 book chapters.

