



نزرع للغد

ICBA

AGRICULTURE FOR TOMORROW



International Center for Biosaline Agriculture

Who we are

The International Center for Biosaline Agriculture (ICBA) is an international, non-profit agricultural research center. It works towards achieving food, nutrition and water security in saline and marginal environments around the world by improving sustainable agricultural production.

ICBA is one of only a few international research organizations in the world that work on natural resources management systems that address agricultural challenges in marginal environments.

Since its establishment in 1999, the Center has implemented programs in more than 30 countries spanning from Gambia in West Africa to Tajikistan in Central Asia in partnership with national, regional and international organizations.

Finding solutions to food, nutrition and water security challenges

As climate change poses serious risks to socioeconomic stability, biodiversity and sustainable development worldwide, some regions, particularly the Middle East and North Africa, are already facing more extreme weather events like drought. In the light of these challenges, ICBA has joined forces with a wide range of national, regional and international partners to develop adaptation and mitigation solutions and strategies for marginal environments. The Center's efforts focus on generating data to help policy- and decision-making on agricultural production and food security; introducing resilient crops in marginal environments; rehabilitation of degraded lands; and use of non-conventional water resources for irrigation.

Research innovations:

- Assessment of natural resources in marginal environments
- Climate change impacts and management
- Crop productivity and diversification
- Aquaculture and bioenergy
- Policies for resilience

VISION

To be the global Center of Excellence for innovative agriculture in saline and marginal environments

MISSION

To work in partnership to deliver agricultural and water scarcity solutions in marginal environments



Climate-resilient crops and biodiversity

ICBA screens, identifies, and develops nutritious salt-, heat- and drought-tolerant crop varieties. Today the Center has a unique collection of over 13,000 accessions of 225 species with proven or potential salt tolerance from 134 countries. The Center leads a global initiative on quinoa to make it a crop of choice for marginal environments. This initiative has been implemented in the UAE, Yemen, Egypt, Jordan, Oman, Uzbekistan, Tajikistan, and Kyrgyzstan since 2006. To date ICBA has developed four high-yielding lines of quinoa that are ready for cultivation in the UAE and other countries.

Furthermore, ICBA's research in the UAE has shown that it is feasible to grow salt-tolerant forages using highly saline water. Alternative forages will help to increase farmers' income, save more fresh water and use saline water for irrigation.

Since its establishment, ICBA has also led research to enhance the resilience and productivity of date palm varieties in the Arabian Peninsula. Researchers have studied how salinity affects date palm production and how mycorrhizae can help date palms alleviate stress associated with salinity and drought through various physiological and biochemical mechanisms.

Use of non-conventional water resources

ICBA carries out research into the effective use of non-conventional water resources such as saline water, treated wastewater, industrial water, produced water from mining, brine from desalination units, agricultural drainage water and seawater. Scientists at the Center have been evaluating the potential of using seawater to grow *Salicornia* in coastal zones, particularly the Arabian Peninsula, for biofuel. They collaborate with Masdar Institute and King Abdullah University of Science and Technology in this field. They also study the costs and benefits of using highly concentrated brine from desalination plants in Integrated Aqua-Agriculture Systems.



Climate change impact management

As part of its drought management initiative in the MENA region, ICBA has been collaborating with the National Drought Mitigation Center at the University of Nebraska - Lincoln, the United Nations Food and Agriculture Organization (FAO) and other partners to develop an advanced system to provide climate, water resources, and crop data. The Center has been generating data for Jordan, Iraq, Lebanon, Morocco, Palestine, Tunisia, and Yemen, with plans to cover the whole of the region. This data will help policymakers to develop more efficient strategies to ensure water and food security in the region.

Protected agriculture

ICBA works on developing new water- and energy-saving greenhouses and net houses suited to the MENA region. Net houses at ICBA help to save up to 80% of water and reduce energy consumption by up to 30 times. Scientists conduct research on a new generation of greenhouse which will help to save up to 90% of water and up to 70% of energy.



Rehabilitation of degraded lands

ICBA works to restore and efficiently use degraded lands. The Center has developed a variety of methods of bio-remediation to bring salt-affected lands back into agricultural use. This is achieved through cultivating salt-tolerant perennial forage grasses and shrubs that can rehabilitate soil. Growing these plants will help to improve soil properties, increase water use efficiency, enhance agro-biodiversity and improve small-scale farmers' incomes.

Scientists work to gather and generate data on soil properties. They also study how to improve agricultural soil properties using soil amendments to enhance water and nutrient use efficiency for crop production in marginal conditions.

Looking to the future

Over the years, ICBA has built a unique base of knowledge and innovation for sustainable agricultural production and development in marginal environments around the world. Through its research and innovation initiatives, the Center contributes to achieving the UN Sustainable Development Goals 1, 2, 6, 7, 13, 15 and 17 as defined in Transforming Our World: the 2030 Agenda for Sustainable Development.

Thanks to continued support from national, regional and international partners, the Center is now strategically positioned to address present and future global food, nutrition and water security challenges. The Center's focus on applied research means it is well placed to serve the needs of resource-poor farmers and offer them practical solutions to such problems as water shortage, salinity and drought.

Capacity building

As ICBA looks to the future, it will dedicate more efforts to capacity building and knowledge sharing among farmers, researchers and agri-businesses. Resource-poor farmers are at the heart of all ICBA's efforts. Thousands of farmers have already benefited from ICBA's capacity-building programs in different regions. As a result, they have improved their knowledge, skills and incomes. The Center will continue to help them learn more and adapt better to climate change.



Young scientists

ICBA is committed to developing research and leadership skills of young scientists and postgraduate students from around the world through fellowship programs. The Center offers young scientists, in particular those from the MENA region, opportunities to carry out research on assessment of natural resources in marginal environments; climate change impacts and management; crop productivity and diversification; aquaculture and bioenergy; and policies for resilience

As ICBA continues to expand its programs, it aims to offer more opportunities for young Arab women scientists to build the next generation of women leaders in agricultural research and academia.

Technology incubator

ICBA aims to set up a platform to provide technical assistance for innovative ideas and technologies and facilitate their access to wider markets. Its purpose is to help local communities raise their agricultural productivity; reduce risks and vulnerabilities; and enhance environmental sustainability. To this end, the Center aims to establish a technology incubator and work more closely with private-sector partners, especially agri-businesses, to turn innovative technologies from applied research into business opportunities.





As ICBA implements its strategy for 2013-2023, it will continue to work towards establishing itself as a global knowledge hub on sustainable agriculture and food, water and nutrition security.

ICBA is committed to making sure that its knowledge and innovations are freely available to everyone, today and tomorrow, for the benefit of all people, but especially the poor and vulnerable living in marginal environments around the world.

www.biosaline.org
