

# Adaptation to Climate Change in Marginal Environments in West Asia and North Africa



Project activities include training farmers to work as facilitators in their community.



A main project objective is enhancing rural women's knowledge in marginal lands. Women in North Sinai were trained in on-farm forage production and utilization techniques, including milk processing and the hygienic and economic production of dairy products.

**Thematic Area:** Climate Change Impacts and Management

**Purpose:** Introduce resilient forage and crop production and management systems that are biologically suitable for use of saline and wastewater

**Geographic Scope:** West Asia and North Africa (WaNa)

**Timeline:** 2010 - 2015

**Funding Agencies:**

- International Fund for Agricultural Development (IFAD)
- Arab Fund for Economic & Social Development (AFESD)
- Islamic Development Bank (IDB)
- OPEC Fund For International Development (OFID)

**Partners:**

- National Agricultural Research System (NARS) in Egypt, Jordan, Oman, Palestine, Syria, Tunisia and Yemen

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West Asia and North Africa (WANA) is one of the most water-scarce areas of the world, yet agriculture in this region consumes over 75 percent of freshwater. Renewable water resources are nearly fully exploited and non-renewable water resources are being rapidly depleted. To meet the growing agricultural demands needed to sustain the livelihood of a large rural population, the region has relied heavily on ancient groundwater aquifers, municipal wastewater, and saline water resources. Most of these resources are affected to some extent by salinity. Even prime irrigated agricultural lands are suffering from increased salinization due to lack of suitable irrigation and drainage methods.

Recent changes in climate pattern, such as prolonged droughts, and extreme temperatures, as well as increased rainfall irregularity, intensity and distribution, have further negatively impacted the natural and agro-ecosystems in the region and increased the vulnerability of the people dependent on these resources for their livelihood. As the populations and economies of the region grow, the demand for food will increase and the water scarcity will worsen, resulting in further competition between the industrial, agricultural and domestic sectors.

The past decades saw an increasing number of farmers abandon their lands or face very low productivity. This is having dire social and economic consequences necessitating the development of alternative, more productive, and sustainable farming systems appropriate for the socio-economic and changing environmental conditions of the region.

## Activities and Outcomes

In response to these challenges, the International Center for Biosaline Agriculture (ICBA), along with partners from seven countries launched the Adaptation to Climate Change in Marginal Environments (ACCME) project aimed to introduce resilient forage and crop production and management systems that are biologically suitable for use of saline and wastewater, so as to bring back and increase productivity of such degraded and lost lands.

The project worked on diversifying crops and livestock by scaling up and disseminating appropriate high-yielding forage production packages. First a list of productive summer and winter annual



*Egyptian farmer presents his experience at a seminar which targeted wide scale participation, policy makers, NGO and administrators.*

and perennial forages/crops were identified for each country. Work then focused on building the capability of the national facilities for local seed production for scaling-up. Throughout the project, intensive work was carried out with the farmers to present these forage production packages and build up local farmer demand, plus ensure that farmers are able to multiply adapted crops like barley, sorghum, pearl millet and quinoa. Hence, farmers were able to advance seed production while also improving forage processing and storability which enhanced their income.

About 2000 farmers benefitted from ACCME scaling-up activities. Furthermore many of the project's demonstration sites became specialized centers for biosaline agriculture, ensuring long-term sustainability of the packages it promoted. Donor (IFAD, AFESD, OFID, IDB) support was crucial as it provided the resources needed to bring back degraded lands into production in the targeted regions.

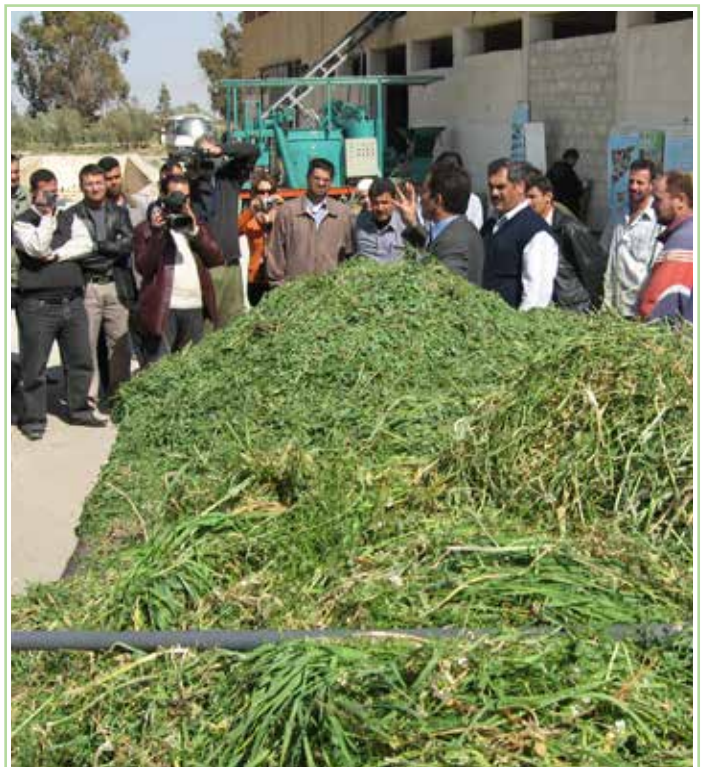
Through ensuring the collaboration and participation of local grass-roots groups, the project targeted resource-poor farmers and pastoralists whose livelihood depends on marginal quality land and water resources. These groups make up a high proportion of poor households in the targeted countries. In 2010, Farmer's Field Schools (FFS) were established in Egypt as a model to scale up to the other countries of the region. FFS are based upon the principles of adult education and experiential participatory learning in which hands-on training, coupled with real life demonstrations happens involving discussing real-life issues facing participants such as marginal quality water and land resources. Furthermore, farmers participated in the research, development, testing

and adaptation of salt-tolerant forages at the farm level to find solutions for themselves. By enhancing their skill and knowledge, farmers were able to intensify, diversify and expand farm enterprises leading to improved productivity, thus increasing their income and consequently reducing their vulnerability.

A prime component under ACCME was enhancing the skill and knowledge of poor rural women, as findings confirmed that due to the social constraints on women in the region, they have limited exposure to new knowledge and techniques. On the other hand, women in the region play a key role in farm labor and livestock husbandry, such as milk processing and cheese and yoghurt making. Since the project worked on improving forage availability, it enabled women to expand production of livestock products, resulting in higher household incomes. In addition, the project worked on helping the women to advance their milk processing skills to improve their dairy production and increase the value of their produce. The additional income from the livestock products women generate as a result of FFS directly contributes to improving poor household livelihood and women's status within the communities.

## Future Directions

ICBA will continue advocating for the use of more resilient agricultural systems appropriate in marginal conditions that improve livelihood of small-scale farmers dominant in marginal environments in WANA and globally. These systems are based on integrated forage-livestock feeding systems that can increase land and livestock productivity. The Farmers' Field Schools concept first tested in Egypt has proven to be a viable and effective extension model that should be expanded further in the WANA region.



*Demonstrating forage processes in Syria through the introduction and evaluation of forage species/genotypes.*