

Post-conflict rebuilding of food & agricultural systems

Agricultural know-how, technologies and capacity development sustain peace-building and rural livelihoods



For 40 years, ICARDA has worked with drylands countries to improve the performance of their national agricultural systems. This includes expertise in rebuilding agricultural systems after conflict. Today, ICARDA runs research for development activities in Afghanistan, Iraq, Palestine, Syria, and Yemen.

The center's post conflict know-how directly supports Norway's development priorities – specifically in the areas of work in fragile states, peace building; combating climate change; and ensuring lasting food and nutrition security.

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Agricultural know-how and technologies to sustain peace-building and rural livelihoods

Today's conflicts in Iraq, Syria, Palestine, Yemen and other drylands countries are taking a heavy toll on people's lives. We can prepare now for the peace-building phase by planning agricultural reconstruction strategies.

As countries emerge from conflict or recover from natural disasters, a priority is to rapidly rebuild a well-functioning agricultural system. This is probably the first action needed to ensure lasting peace and social stability.

The effect of conflict on agricultural systems includes: destroyed crops and food stores; weakened national seed production and distribution systems; damaged equipment; and degraded national plant genetic resources.

With four decades of support to drylands countries to improve food and nutrition security, ICARDA has gained unique expertise in rebuilding national systems.

These experiences provide a framework for post conflict rebuilding. ICARDA offers expertise, services and technology packages, that cover all aspects of rebuilding agriculture, including:

- Re-establishing lost national crop heritage
- Providing higher yielding and nutritive crops to the national system
- Rapid introduction of seed supply and multiplication, building national and community-based seed distribution networks.
- Creating and rehabilitating national food crop genebanks
- Capacity building to put in place new water saving farming practices
- Support for the creation of new agricultural production areas and value chains that bring new income streams to local communities.
- Building the capacity of national centers for research and innovation

Past results, future actions

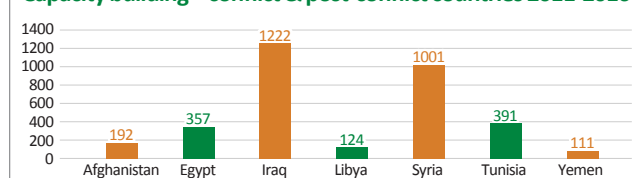
Afghanistan

Rural development and agricultural value chains

The partnership with Afghanistan has pilot tested and put into action a number of agricultural value chains. These include greenhouse production of off-season and high yielding vegetable crops, local production by women's cooperatives of herb oils for high-value domestic and export markets, livestock production for meat, dairy products – for household food security and sale in local markets.

Agricultural mechanization is a key to increasing production and income in the country. But it will only succeed if supported by local markets and services that produce, market and repair machines and tools (seeders, threshers, plows, etc.). ICARDA supports the government in creating an Afghan private sector for mechanization, by running specialized technical training. Farmers, and government officials travel to India to learn first-hand from their counterparts how these markets and services can best function.

Capacity building – conflict & post-conflict countries 2011-2016



Income and small enterprise opportunities for women

ICARDA supported local partners to train some 6500 women in small enterprise creation, kitchen gardening, farming practices, sheep and goat production, and quality seed multiplication.

Other benefits to rural communities:

- New employment opportunities for more than 1900 rural women from activities such as goat keeping and selling medicinal products
- Improved national capacity for higher productivity as 1600 farmers, extension workers and researchers (1058 of them women) learned about cereal and food legume production, watershed management, solar energy, crop plant nurseries.
- Rebuilding of the national genebank

Syria

Since 1977, the ICARDA-Syria partnership has helped the country evolve from a net wheat importer to self-sufficiency and exporter. As the current Syrian situation evolves, similar support will be instrumental in supporting the rebuilding of the country's agricultural fabric and local income opportunities. This includes options for farm-to-market value chains (livestock and dairy products, food legumes, wool and fiber production) that have been tested in other drylands countries and are ready for scaling-up.

Iraq

The partnership with Iraq has focused on assessing the challenges the country faces to bring more productivity and investment to support national agricultural development.

Value chain assessment

A range of value chains were tested, and recommendations made for future development and diversification of Iraq's agricultural sector. These include improving productivity of wheat and date palm, and introduction of new crops to diversify the agricultural system.

Salinity management

Salinity is a chronic problem for Iraqi agriculture. It threatens the livelihoods of rural communities across the country. Some 75% of the total irrigated area (2million hectares) is moderately saline. Farmers of saline soils use only 30% of their land for cropping and are achieving 50% of the expected yields. The national productivity loss is estimated at \$300 million per year.

Pathways from post-conflict to development



The multi-partner Iraq Salinity Initiative was facilitated by ICARDA with some 200 researchers from Iraq and international research centers, and Iraqi policy makers. It proposes solutions and an investment plan to rejuvenate production on salt-affected lands.

Boosting date palm production

This work focuses on approaches to boost date palm production and farmer income by shifting from chemical pesticides to bio-pesticides, for increased profits and environmental benefits. The studies estimate that farmers' income can be increased \$60 million nationwide if date palm producers shifted from chemical control to bio-pesticides for Dubas Bugs.

Conservation Agriculture

Iraq ran trials on conservation agriculture (zero tillage) in several regions, through on-farm research and capacity building. Here, the innovation was to stimulate creation of local markets for manufacturing and repair of zero till seeders. An important constraint to wide adoption is the cost and suitability of seeders from other locations. South American and Australian seeders are too expensive and not suited to use by Iraqi farmers.

This initiative resulted in the creation of the Conservation Agriculture Research Center at the University of Mosul in 2013. When the current conflict is over, the conservation agriculture initiative needs to be revived to support scaling-up of these practices across the country.

Climate smart systems - boosting crop-livestock production

Crop-livestock systems, help rural communities combat climate change. ICARDA has worked with government agencies and communities to improve the performance of sheep and goat breeding, production of value added dairy and wool products in villages, and improving barley production – a crop used for feed, that thrives in a harsh dryland environment.

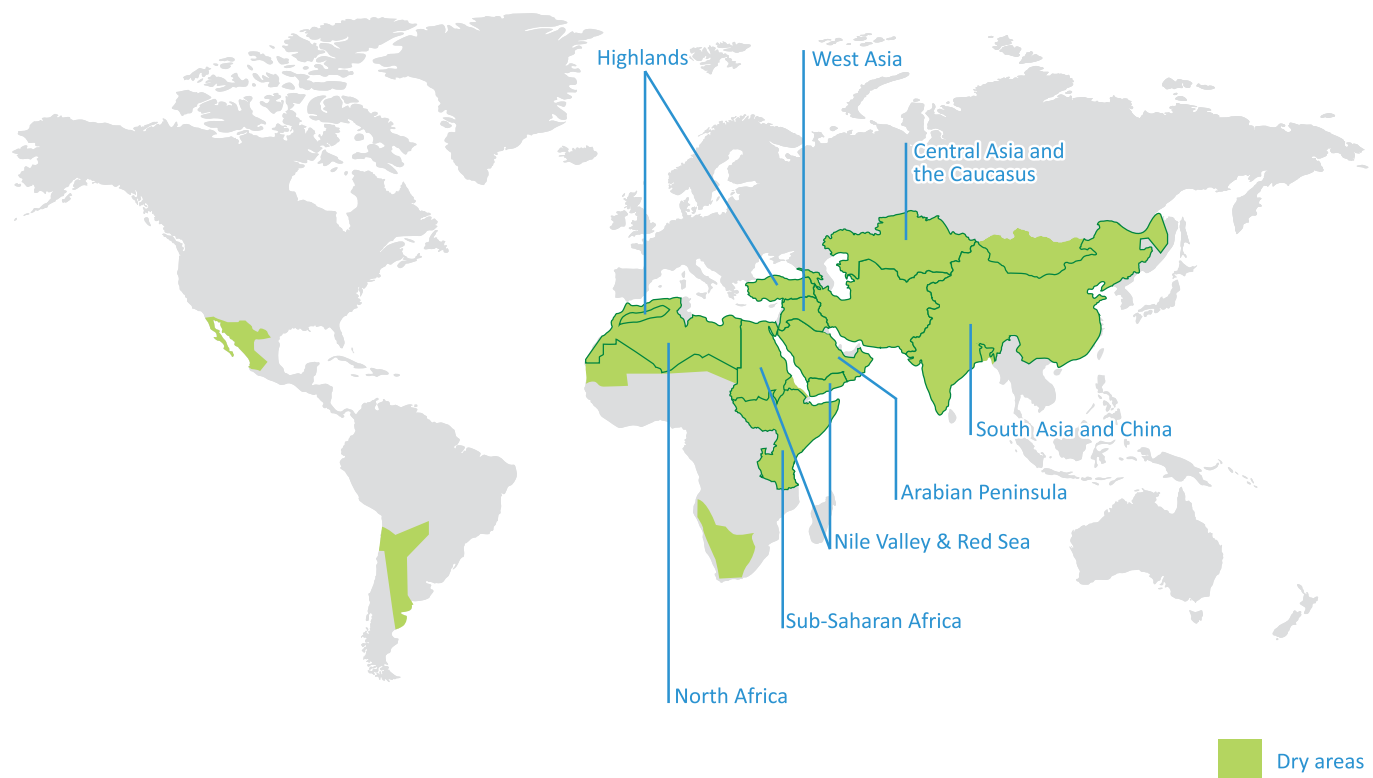
Improved wheat varieties demonstrated 20-40% increases in farmer trials.

Palestine

Cooperation with Palestine over two decades has focused on building a national agricultural research system and strengthening the capacity of research and extension activities, targeting the introduction of new technologies to increase farmer income.

- Strengthening of crop genetic resources including support for creation of the national genebank.
- Introduction of improved wheat varieties that generate \$750/ton; up from \$500/ton for traditional varieties.
- Approaches to grey/wastewater irrigation, adding \$200-600 per season to household incomes.
- Protected agriculture, that raises farmers' incomes by \$800-1200

Norway priorities	ICARDA expertise: post-conflict/rural development	Target outcome
Agriculture and food security/Climate-smart agriculture Increased agricultural productivity and income for the farmers. Greater resilience to future climate change impacts. Conservation agriculture	Portfolio of climate-smart packages : Drought/heat/cold tolerant high-yields in wheat, durum wheat, chickpea, lentil, faba bean. Tested approaches: Land/water/salinity management, conservation agriculture local markets for local equipment. Tested value chain packages for drylands production. Capacity development.	Protection and resilience against changing climate patterns 50-100% yield increases Reduced energy cost for farming New income streams from crop diversification, sheep/goat production. Water savings in rural communities Conserve soil moisture content Crop tolerance and resistance to drought and disease
Biodiversity and genetic resources	ICARDA drylands genebank 154,000 types of drylands crops held in trust. Nurseries of crop genetic resources. FIGS artificial intelligence tool for genebank mining.	Rebuild depleted national systems Reconstruct/rehabilitate genebanks Provide new high-yielding varieties Crops that resist water and heat stresses
Support to regional processes	An active member and host of regional agricultural research networks: Central Asia, West Asia, North Africa. Regional program for cooperation between national genebanks.	Transfer of technologies and know-how to national networks, research centers, extension partners, NGOs. Regulators frameworks, country dialogue for rural development
Research Reduce rural poverty, improve food security, enhance health, nutrition, sustainable resource use.	Tested technologies, practices and value chain packages. Research for development continuum. Scaling-up of new approaches (crop-livestock; food legumes)	Research with national partners Transfer knowhow to national systems – technologists + practices. New high nutrition crops + livestock Institutional capacity developed
Right to Food Authorities ensure families access to adequate and safe food Increased employment for growth, increased productivity in agriculture	Tested technologies, practices and value chain packages. Gender analysis Empowerment of women Capacity development	Increased yield and improved food security Improved nutrition New income opportunities for communities + large-scale production Women empowered through new income opportunities and skill building



About ICARDA

Established in 1977, the International Center for Agricultural Research in the Dry Areas (ICARDA) is one of 15 centers supported by the CGIAR. ICARDA's mission is to improve the welfare of poor people through research and training in dry areas of the developing world, by increasing the production, productivity and nutritional quality of food, while preserving and enhancing the natural resource base.

ICARDA serves the entire developing world for the improvement of lentil, barley and faba bean; all dry-area developing countries for the improvement of on-farm water-use efficiency, rangeland and small-ruminant production; and the West and Central Asia and North Africa (CWANA) region for the improvement of bread and durum wheats, chickpea, pasture and forage legumes, and farming systems.

ICARDA's research provides global benefits of poverty alleviation through productivity improvements integrated with sustainable natural-resource management practices. ICARDA meets this challenge through research, training, and dissemination of information in partnership with the national, regional and international agricultural research and development systems.