Working with Countries:
Building a Food-Secure Future Together

Climate-proofing villages in dryland countries
Villagers from Kadok at the foothills of Uzbekistan gather with ICARDA scientists to collectively assess the effects of climate change and develop adaptation strategies.
Partnering with countries through national research and extension systems (NARS) has been a cornerstone of ICARDA’s research-for-development initiatives. The approach has been allowing us to shape agendas that are responsive to countries’ needs and deliver impacts where needed the most – both at farm and at national levels.

ICARDA’s regional and country programs combine research with extensive capacity development to ensure development continuum. They work through a core partnership of international scientists, NARS, local research institutions and universities, with inputs from national policy- and other decision-makers.

Our partnership programs – six at a regional level and four at country level – cover over 40 dryland countries across Africa and Asia. Additionally, a new Highlands research partnership is in the works – with strategic sites in Iran, Morocco and Turkey – to address the unique production constraints of mountainous dry agroecosystems.

### ICARDA’s Agricultural Research-for-Development Partnerships

#### Regional Programs
- Nile Valley & Sub-Saharan Africa
- North Africa
- West Asia
- Arabian Peninsula
- Central Asia & Caucasus
- South Asia & China
- Highlands (emerging initiative)

#### Country Programs
Turkey, Iran, Afghanistan & Pakistan
HIGHLIGHTS FROM REGIONAL AND COUNTRY PARTNERSHIPS

In 2013, decentralization brought ICARDA closer to its partner countries, enhancing its support and reach to all its stakeholders. The achievements of the regional and country partnerships included scaling out successes, technology improvements and new initiatives.

*N Denotes program office location. For list of donors, see page 47.

Nile Valley & Sub-Saharan Africa Regional Program
Activities in: Egypt (Cairo*), Eritrea, Ethiopia and Sudan

The program is addressing the region’s challenges through innovations in irrigation technologies, improved wheat varieties, stronger wheat-legume cropping systems and more robust seed systems.

- The use of multi-crop raised bed machines adapted for small-scale farming, developed by ICARDA scientists, dramatically expanded from about 4,000 acres in 2010-11 to 55,000 acres in 2012-13 cropping season in Egypt, saving smallholder farmers irrigation water by 24% over traditional methods and increasing wheat yields by 34% on average (more on page 25).

- The wheat cultivars developed under ICARDA-Egypt Wheat Improvement Program made headway as they reached over 12 African countries through SARD-SC, the newly launched African initiative (more on page 20). The program is attracting scientists from the region and beyond.

- The wheat-legume cropping project successfully developed and demonstrated higher yield packages for faba and chickpeas for smallholders in the region. The substantial increase in faba bean yield is proving to be a promising development in Egypt with the ministry deciding on a national campaign to promote the technology for wider uptake (more on page 14).

- ICARDA’s seed systems initiative to bring certified seeds to more farmers noticeably increased the number of beneficiaries in Egypt by 117% from 2010/2011 season. In Sudan and in the Northern State, the spread of newly introduced high-performance wheat, Imam, and its recommended package increased dramatically as well, reaching 45-50% coverage in Gezira. Further, a new heat-tolerant and high-yield variety, Goumria 3, developed from ICARDA’s germplasm, was registered and nationally released to farmers.

A new agreement between ICARDA and Egypt’s Agricultural Genetic Engineering Research Institute is expanding their collaboration on crop improvement, to greater advantage of both Egypt and the larger region.

North Africa Regional Program
Activities in: Algeria, Libya, Mauritania, Morocco (Rabat*) and Tunisia

The program focuses its efforts along expanding conservation agriculture to address the severely constrained production systems in the region and promoting food legumes for its multiple benefits.

- An initiative, aiming for rapid adoption of conservation agriculture by smallholder farmers, developed and tested affordable zero-till seeding machinery in Morocco, Algeria and Tunisia, engaging local manufacturers and farmers in the process. It also conducted many trials with farmers on weed management, crop residue management and livestock feeding options (forage crops, alley-cropping and byproducts) to optimize the benefits from conservation agriculture.
The joint Morocco-India food legume initiative, launched in 2012, organized and started its activities in five regions in Morocco and seven states in India, working with smallholder farmers on testing and demonstrating improved varieties, creating village-based seed production systems, and evaluating options for adding value to food legume chain. With extensive participation of research institutions and universities in both countries, along with two CGIAR Centers – ICARDA and ICRISAT – this five-year initiative is aiming for holistic and mutual benefits for the two countries through the collaboration.

2013 also brought a further boost to the North Africa program as ICARDA signed an MoU establishing a research platform in Morocco, building on its longstanding partnership with Institut National de la Recherche Agronomique. The platform will leverage the region’s diverse soil and climate conditions to strengthen rainfed cereal-based agricultural systems for scaling out.

**West Asia Regional Program**

Activities in: Iraq, Jordan (Amman*), Lebanon, Palestine, Syria, and lowland Turkey

The program implements a range of activities in the region tailored to the needs of the target countries and national priorities.

- In Palestine, a push for gene conservation and crop improvement added 59 new wild relatives of wheat and barley to the nation’s collection through 10 joint gene collection missions; increased grain yields by 35% by improving populations through community selection process; and distributed 4.2 tons of newly introduced improved varieties and improved landraces to farmer community enterprises for seed multiplication (more on page 16).

- In Iraq, ICARDA vigorously implemented many activities through the HSAD initiative (more on page 17), such as introducing integrated pest management and international standards for tissue culture for date palm; enhancing capacities of staff, facilities and institutions in the production of certified wheat seed; and disseminating conservation agriculture practices and ZT seeders to rural communities in the Kurdish region.

- For marginal lands in Iraq and Jordan, improving productivity of integrated barley-livestock systems was a priority to help adapt smallholder communities to climate change. The initiative produced several characterization maps as part of a ‘climate change atlas.’ Further, the use of locally manufactured ZT seeders grew as a Jordanian company, part of ICARDA’s innovation partnership, manufactured and sold five machines. Artificial insemination for sheep was introduced in the target area and improved rams distributed to flock owners, promising large gains in productivity.

The ICARDA-Jordan’s collaboration took new shape as an agreement was signed with Jordan’s Higher Council of Science and Technology for research on rangeland management, a critical need for the country where more than 80% of the land is covered by marginal rangelands.
Arabian Peninsula Regional Program
Activities in: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates (Dubai*), Yemen

The program’s research and testing activities with farmers is directed toward maximizing land and water productivity – the two critical performance criteria in the region.

- An integrated soilless technology package, tested and validated by ICARDA’s scientists, is providing greater amount of “crop per drop,” substantially increasing incomes for pilot farmers. The results are encouraging Oman, Emirates, Qatar and Bahrain to offer financial incentives to nationally increase the uptake of these innovations (more on page 24).

- An indigenous forage crop, Buffel grass, was screened for 35% higher water productivity than the commonly grown Rhodes grass in the region. The program promoted replacing traditional grass with the more water-efficient Buffel grass, helping a growing number of farmers in Emirates to enjoy 51% savings in irrigation water.

- Further, activities continue to seek increases in productivity through optimizing fertilizer inputs, growing mixtures for soilless farming and adding new strategies like spineless cactus.

The program is now on track to scale out the technologies and measure impacts of the research through socio-economic analyses.

Central Asia & Caucasus Regional Program
Activities in: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan (Tashkent*)

The program works to improve rural livelihoods while promoting sustainable management of natural resources, important for the region’s fragile agroecosystems affected by soil and water salinity.

- Germplasm enhancement and crop improvement formed a major part of ICARDA’s activities in the region, some with exceptional results. Several new winter wheat varieties like Chumon, Ormon and Gozgon emerged virtually unscathed after a yellow rust outbreak in Tajikistan and Uzbekistan in the spring of 2013, while many leading commercial cultivars were seriously hit. Seed multiplication is now in progress under the joint initiative of ICARDA and CIMMYT.

- Two winter wheat varieties resistant to salinity and frost were identified in Turkmenistan after years of joint research with ICARDA. Further efforts are on in Uzbekistan to introduce non-conventional salt-tolerant crops such as pearl millet and sorghum into crop-livestock systems for better productivity, through a partnership of ICARDA with ICBA and ICRISAT.

- Conservation agriculture projects demonstrated practices and imparted training to farmers in Kazakhstan, Tajikistan, Uzbekistan and Azerbaijan to combat land degradation, a major goal of ICARDA’s work in the region.

- A women-centric initiative of ICARDA, integrating livestock productivity enhancement with value-added yarn products for export, concluded in Tajikistan and Kyrgyzstan in 2013 with significant outcomes — higher incomes for rural women and small livestock breeders, sustained impacts and a scalable value chain for the region (more on page 18).
South Asia & China Regional Program
Activities in: Bangladesh, Bhutan, China, India (New Delhi*) and Nepal

The rapidly expanding program has been innovating with existing farming practices for quick and high-value returns to increase nutrition and incomes for the millions of subsistence farmers in the region.

- The program’s introduction of intercropping of lentils in rice fallows is revolutionizing farm productivity in India, bringing nutrition, soil fertility and an additional US $450 on average per year into the pockets of smallholder farmers (more on page 15).  
- Another initiative disseminated improved varieties of lentil and grasspea, zero-tillage and relay cropping, and other production technologies to almost 5,000 farmers across some 367 villages through field days and trainings, boosting their incomes and food security.
- To combat malnutrition prevalent in rural Bangladesh, India and Nepal, the program introduced micronutrient-rich lentil through screening and breeding to select lentil cultivars with high levels of iron and zinc. The initiative received extension and is on track to promote the technology through fast-track seed multiplication and distribution (more on page 14).

A new agreement signed between India and ICARDA in December 2013 rolled out an extensive workplan, laying out a total of 14 research projects on crop improvement and natural resource management over the next three years. Further, the partnership with China received new impetus with the establishment of Center of Excellence for Dryland Agriculture – a research collaboration of Chinese Academy of Agricultural Sciences, ICARDA and ICRISAT – for improving productivity of drylands in China.

Turkey Country Program

The program’s historical focus on developing winter wheat germplasm for Central and West Asia, and North Africa region continued to deliver on crop improvement for cold agroecosystems and gained further ground with new initiatives.

- The program released three chickpea and four lentil high-yielding, disease resistant varieties in 2013. The new cultivars were promoted to farmers and extension staff through demonstrations and on-farm trials in three provinces, along with seed dissemination.
- As part of ICARDA’s international nursery distribution activities from Turkey, 652 sets of nurseries from four different crops and cereal pathology were disseminated to more than 50 countries around the world.
- The International Winter Wheat Improvement Program — a joint initiative of the Government of Turkey, ICARDA and CIMMYT – provided for active scientist exchange, as well as training of young scientists, in 2013. The ongoing initiative since 1986 has resulted in more than 40 improved wheat cultivars, which are now covering more than 2 million hectares in 12 countries.

A new agreement signed between Turkey and ICARDA is expanding the partnership to global reach. A Regional Cereal Rust Research Center will be launched in Izmir in 2014 to combat rusts diseases in the Central and West Asia and North Africa regions, where the disease is emerging as a serious threat to food security in a changing climate. Further, ICARDA’s winter barley breeding program was also relocated to Turkey and activities started in 2013.
**Iran Country Program**

The program is targeting research solutions to overcome arid conditions while leveraging the diverse agroecosystems of the country for greater productivity.

- In 2013, two improved forage crop varieties, selected from ICARDA’s vetch materials and developed in partnership with the Dryland Agricultural Research Institute of Iran, doubled their coverage area from 2012 when they were introduced. Improved food legume crops also expanded from 25 hectares in 2012 to about 50 hectares in 2013.
- Two new sustainable varieties of chickpea for autumn planting in cold rainfed conditions and winter wheat for supplementary irrigation in cold regions were released by ICARDA-Iran collaboration to increase productivity in the dry and cold terrain.
- The initiative for value-added processing and export of cashmere started implementation with a baseline characterization of production systems. Three cooperatives were set up for training women on producing handmade crafts, and progress was made along improving breeding and animal husbandry practices.

**Afghanistan Country Program**

The program is bringing community-driven agriculture development, engaging villagers, rural women, local officials and universities in a diverse range of activities from crop improvement to water management and animal husbandry (more on page 16).

- Five high-yielding wheat varieties, two barley and two chickpea improved varieties were released through ongoing collaboration.
- A Herbal Remedies Producers’ Association is opening new opportunities for rural households, particularly women, to increase their incomes.
- Farmers across the country are benefiting from distribution of technical bulletins informing on soil and watershed management and Atriplex production, a new forage introduced by ICARDA, backed by the Afghan Minister of Agriculture.
- The dairy goat project continued to increase its beneficiaries and added 295 new women recipients of 568 native Gujri breed goats in 2013 (more on page 19).

Encouraged by the success, two new research projects are due for launch in the first quarter of 2014, both focusing on improving livestock productivity.

**Pakistan Country Program**

The program is fostering natural resource management in degraded areas and providing support to country’s research activities toward improving local cotton production and quality for greater farmer incomes.

- The program established and organized 40 watershed demonstration sites throughout Pakistan to build capacity of farmers in water management techniques, alternate irrigation systems and other inexpensive water conservation measures. The activities are encouraging community interest in watershed rehabilitation, for example, a farmer developed 8000 microcatchments for growing fruit plants.

The program is providing management support and germplasm improvement expertise to the country’s initiative, funded by USDA, to develop disease-resistant cotton crops and strengthen the cotton value chain.