ICARDA'S GENEBANK

RESOURCES & ACTIVITIES

A Vital Tool in Ensuring a Food-Secure Future for Dryland Communities

ICARDA

Science for Better Livelihoods in Dry Areas

Agrobiodiversity is one of the world's most precious resources for ensuring food security as climate change, globally diminishing natural resource base and rapidly growing population pose an unprecedented challenge to feed the future generations. Genebanks provide conservation of crop germplasm from the world over and make them available to crop scientists seeking to develop improved crop varieties with traits that can withstand stresses such as diseases, pests, salinity, drought and other harsh weather conditions. They can also serve in the rehabilitation of degraded farming systems and ecosystems.

ICARDA's Genebank

A UNIQUELY VALUABLE RESOURCE FOR DRYLANDS AGROBIODIVERSITY

ICARDA has been working for over 35 years in West Asia, North Africa and Central Asia regions which lie at the intersection of four major centers of origin or the "Vavilov centers" for crops of global importance such as wheat, barley, lentil, chickpea, faba bean, several forage and rangeland species, and fruit trees, making up the heart of drylands agrobiodiversity.

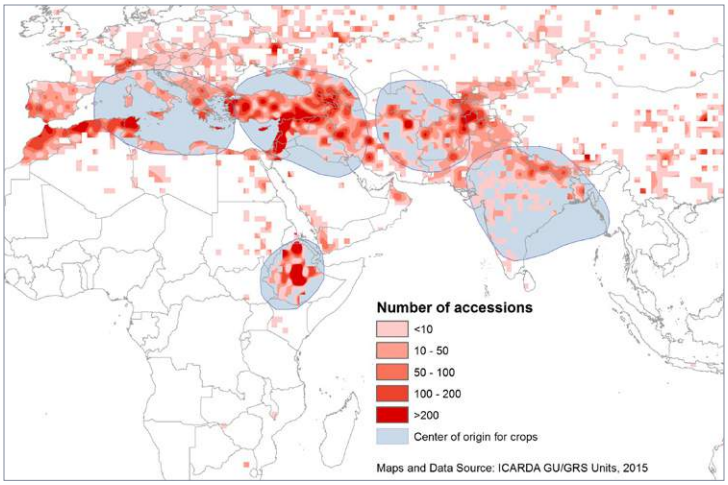
Preserving Drylands Agrobiodiversity

Drylands agrobiodiversity affects roughly 2.5 billion people living in dry areas, which cover over 40% of the world's land surface. Home to some of the poorest in the world, about one-third of this population depends on farming for their livelihood – these livelihoods are at grave risk from the alarming losses in agrobiodiversity, made worse by degradation of drylands ecosystems.

Some highlights of ICARDA's collection are as follows:

- Concentrated collection of crop landraces and their wild relatives with 65-97% collected from the major centers of their diversity
- Over 30,000 accessions gathered from more than 230 gene collection missions across 34 countries
- Unique collections of temperate forage legumes and range species, and wild relatives of cereals and food legumes
- More than 80% genetic resources characterized for morphological and agronomic traits, geo-referenced and assigned with environmental parameters in a database, accessible online through GENESYS as international public good
- A unique collection of 1380 strains of Rhizobium, a necessary resource for nitrogen fixation – a vital process for maintenance of life on earth

ICARDA's Genebank Holdings



- Holds rich collection of landraces & wild relatives from regions in the world established as the origin of crop domestication, such as the 'Fertile Crescent' extending from Nile Valley and Nile Delta to parts of Western Asia, North and East Africa, and the Central Asia and Caucasus region.
- Ranks in the top 10 among the 1750 genebanks globally for holdings of barley, faba bean, durum wheat, chickpeas, and lentils – ICARDA's mandated and major research crops.

Crop	Number of accessions
Cereals	
Aegilops	4,282
Barley	29,722
Wild Barley	2,239
Bread wheat	14,506
Durum wheat	19,797
Primitive wheat	913
Wild wheat	1,607
Hybrid wheat	50
Not mandate cereals	175
Sub-total	**73,791**
Forage legumes	
Grasspea	4,220
Pea	6,113
Vetch	6,229
Sub-total	**16,562**
Pasture legumes and range	
Medics	8,706
Forage and range	6,416
Clovers	5,152
Sub-total	**20,274**
Food Legumes	
Faba bean BPL	3,268
Faba bean	6,761
Chickpea	15,046
Lentil	11,877
Wild Chickpea	270
Wild Lentil	600
Sub-total	**37,822**
Grand total	**148,047**

ICARDA's Genebank Centers

- **Tel Hadya in Syria**, established in 1985 as part of ICARDA's headquarters, holds a total of 148,047 accessions, with 141,052 as active collection. Over 99% of the holdings are safely duplicated outside Syria and 80% in Svalbard Global Seed Vault in the Arctic for posterity.
- **Terbol in Lebanon and Rabat in Morocco,** established in 2012 with ICARDA's decentralization, provide for storage and genetic resource activities for all accessions acquired post 2012. Active and base collections continue to be maintained in Syria.

Genebank Activities & Worldwide Services

- Contributing to the assessment of status and trends in global agrobiodiversity and its threats
- Studying gaps in *ex-situ* and *in situ* conservation and collecting novel diversity
- Serving the needs of national and international breeding programs by distributing germplasm from ICARDA's genebanks with screened for requested traits
- Promoting *in situ* or on-farm conservation and management of dryland agrobiodiversity
- Strengthening NARS capacities through training and technical backstopping
- Supporting building of the Global System for Genetic Resources for Food and Agriculture

Supporting International & National Crop Improvement Programs

- Distributed accessions to over 45 countries – developed and advanced – for research
- Close to 400,000 accessions distributed by Tel Hadya genebank from 2005-2014, over 66,000 from 2012-2014 alone

Fast-Tracking Crop Research to Meet the Needs of Tomorrow

With current worldwide holdings of genetic materials in excess of 7 million accessions, the search for targeted genetic traits has been akin to looking for a needle in a haystack. 'FIGS' or Focused Identification of Germplasm Strategy, a pioneering application of mathematics developed by ICARDA's scientists in partnership with academia, is accelerating crop improvement research by enabling rapid mining of genebank for desired traits.

To learn more, visit: **figs.icarda.org**.

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ICARDA leads CGIAR global research program on Dryland Systems

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CGIAR
RESEARCH PROGRAM ON
Dryland Systems