

Conservation & Sustainable Use of Dryland Agrobiodiversity in Lebanon

ISSUE 1
JULY 2003

Why Agrobiodiversity?



Agrobiodiversity is the variety and variability of animals, plants and microorganisms that are used

directly and indirectly in food and agriculture, and which results from the interaction between the environment, genetic resources and the management systems and practices used by people. Agrobiodiversity does not only consider genetic and agroecosystem diversity, but also the cultural diversity which influences human interactions at all levels. The importance of agrobiodiversity lies in its ability to provide humanity with an

abundance of goods and services from food, energy, materials and genes that protect the crops from pests and environmental stresses (drought, salinity, etc.). Hence, agrobiodiversity is important for both evolution and maintaining life sustaining systems of the biosphere and mainly the livelihoods of local communities. Agrobiodiversity, however, is being significantly reduced by certain human activities such as the adoption of

new varieties, land reclamation, and overgrazing; therefore, actions to preserve it from degradation become essential.



The Project on the "Conservation & Sustainable Use of Dryland Agrobiodiversity in the Near East"

The Near East region is a major center of plant genetic diversity and endemism in the world, where wheat, barley, chickpea, lentil and many valuable forage, rangeland species, and fruit tree species were first found and domesticated by farmers along the last 10,000 years. Indigenous and traditional crops in this region are exceptional for their resistance to diseases and adaptation to abiotic stresses. Thus they are valuable genetic sources for germplasm enhancement upon which global food security and agricultural development depend. Landraces and wild relatives of these crops are being quickly

degraded due to several factors among which their replacement by new high-yielding varieties or introduced species, overgrazing, land reclamation, urbanization and poor soil and water practices. The fragility of the predominant ecosystems could lead to irreversible loss of the most globally significant agrobiodiversity still remaining in this region.



In order to secure the sustainable development of

the Near East region as well as the global food security and production, it is necessary to ensure the continuous availability of agrobiodiversity in this region. Hence, the project on the "Conservation and Sustainable Use of Dryland Agrobiodiversity of the Near East" was brought forth.

The Project is being implemented as a regional project in Lebanon, Syria, Jordan & the Palestinian Authority.

It is funded by the Global Environment Facility (GEF) and managed through the United Nations Development Program (UNDP). It was launched in June 1999 and extends over a period of five years. The regional project is coordinated by the

International Center for Agricultural Research in Dry Areas (ICARDA) in cooperation with the International Plant Genetic Resources Institute (IPGRI) and the Arab Center for the Studies of Arid Zones & Dry Lands (ACSAD).

In this Issue

Why Agrobiodiversity?	1
The Project on Conservation & Sustainable Use of Agrobiodiversity in the Near East	1
The Agrobiodiversity Project in Lebanon	2
The Project Sites	3
The Target Crops	3
The Lebanese Agricultural Research Institute (LARI)	4
The Project Staff in Lebanon	4



The Agrobiodiversity Project in Lebanon

The Project on the “Conservation and Sustainable Use of Dryland Agrobiodiversity in Lebanon” is a component of the regional project and is executed by the Lebanese Agricultural Research Institute (LARI). The project aims at promoting the conservation and preservation of wild relatives and landraces of important agricultural species in Lebanon. It also aims at introducing the in-situ or on-farm conservation mechanisms for the conservation and sustainable use of agrobiodiversity, through the direct participation of the local farming and rural communities. The project is active in the drylands of the Baalbeck Caza, Bekaa valley, in three main sites, namely Ham/Maaraboun, Aarsal, and Nabha. These areas are experiencing a quick loss in their agrobiodiversity due to habitat conversion, adoption of new varieties, land reclamation, and overgrazing.

“The project aims at promoting the conservation and preservation of wild relatives and landraces of important agricultural species in Lebanon”

To reach the overall objective of the project, which is the preservation and conservation of agrobiodiversity in Lebanon, numerous outputs are expected, each one of them involves several activities. The following are the main outputs and their related activities that are undertaken by the project:

1- Causes of agrobiodiversity degradation of target crops better understood in Project sites:

Activities in this area include development of GIS database for the project sites and conduction of eco-botanical,

socio-economic and indigenous knowledge surveys.

2- National capacity in conservation and sustainable use of agro-biodiversity increased:

This involves organizing national and regional training courses and workshops for farmers, local communities and staff from the Lebanese agricultural and research institute; also the project is giving financial support to university students to conduct research studies related to agrobiodiversity.



3- Current land use improved:

The project is taking efforts to encourage the farmers to continue growing landraces and to promote the preservation of agrobiodiversity. Many different activities are undertaken such as improvement of landraces yield, water and soil conservation demonstrations, rangeland management demonstrations and establishment of wild fruit tree nurseries.



4- Relevant policies and legislation proposed for

consideration and adoption:

Studies are conducted by the project for the development of policy options supporting the conservation of local agrobiodiversity at the household level and for the domestication of ratified international agreements and conventions.

5- Public awareness on the importance of agrobiodiversity and its preservation is raised:

This is in the form of presentations, participation in exhibitions, interviews (newspapers, magazines, and TV), posters, leaflets, calendars, newsletters and website release. In addition, the project is developing a plan to include agrobiodiversity concepts in the Lebanese education curricula.

6- Alternative sources of income promoted:

This involves technically supporting local communities in many areas such as apiculture, exploitation of the potential uses of beneficial plants, wild fruits processing and eco-tourism.



The Project Sites

As previously mentioned, the Project is active in three main sites in the Caza of Baalbeck. The sites have been identified based on the presence and genetic diversity of target crops as well as their community characteristics.

The first site, *Aarsal*, is located in the northeastern area of the Bekaa, 180 Km from Beirut, with an altitude ranging from 1,400m to 2,600m. It is among the most arid areas in Lebanon. Its estimated area is 360 Km²; i.e. about 5% of Lebanon's overall area. Aarsal owns the largest herd of cattle (goat & sheep) in Lebanon. In addition, Aarsal has a wide variety of plants such as fruit



Overview of the village of Aarsal

trees (apricot, cherry), wheat, barley, etc. as well as plants with medicinal importance.

The second site includes the villages of *Ham* and *Maaraboun*, which are located at the foot of the western slope of the Lebanese Eastern mountain chains, south of Baalbeck, at an altitude ranging from 1,400m to 2,200m. This region is very rich in its flora, with plants adapted to dry conditions, particularly those with medicinal uses. The region is also known for apiculture. The variety of plants and trees in the region offers bees a special-smelling nectar for the production of a superior honey.

The third site is the village of *Nabha* located at the foot of the Lebanese Western mountain chain, connecting with the Bekaa valley west of Baalbeck, at an altitude ranging between 950m and 1,900m above sea level. Three surrounding



Overview of the village of Ham

villages, Al-Harfoush, Kalila, and Al-Kouddam, are considered geographically, environmentally, socially, and economically part of Nabha. The region of Nabha is known for its richness in edible and medicinal wild plants such as wild mint, wild rhubarb, and barberry, as well as wild fruit trees, such as almonds, plums, pistachio, pears, etc.

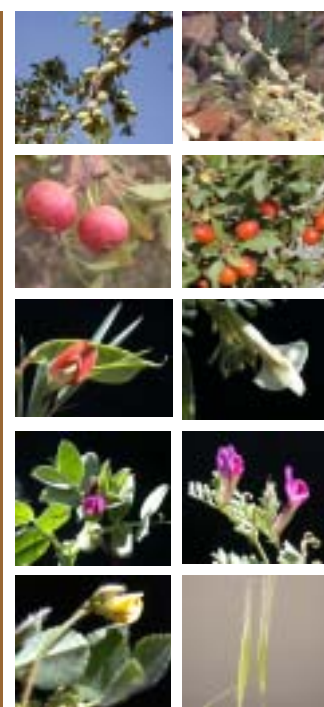


Overview of the village of Nabha

The Target Crops

The project is concentrating on several target crops (wild relatives and landraces/varieties) including wheat, barley, lentils, vetch, *Lathyrus*, medics, and clover, as well as apricots, cherries, almonds, plums, pears, pistachio, figs, and *Allium* species.

Target Crop	Species	Some Striking Facts
Wheat	Wild <i>Triticum</i> , <i>Aegilops</i> spp., landraces	Provides around 33% of global food
Barley	<i>Hordeum spontaneum</i> , landraces	Rich in dietary fibers
Lentil	Wild <i>Lens</i> ; landraces	Very high protein content
Vetch	Wild <i>Vicia</i>	Useful for forage, hay, silage, and green manure
Lathyrus	Wild <i>Lathyrus</i>	Drought resistant feed legume
Medics	Wild <i>Medicago</i>	Are forage & pasture legumes; used as cover crops
Clover	Wild <i>Trifolium</i>	Are useful honey plants
Apricots	Local varieties	Beneficial in the treatment of constipation due to high cellulose and pectin content
Cherries	Local varieties	High flavonoid antioxidants content
Almonds	Wild <i>Prunus</i> ; local varieties	Decreases blood cholesterol levels
Pears	Wild <i>Pyrus</i> ; local varieties	Among the high ranking fruits in fiber content
Pistachio	Wild <i>Pistacia</i>	Among the prime edible nuts
Figs	Local varieties	40% of the world production is sold as dried fruits
Allium	Wild <i>Allium</i> ; local varieties	Decreases blood cholesterol & prevents colon cancer



Some of the Target Crops



The Lebanese Agricultural Research Institute (LARI):

The Lebanese Agricultural Research Institute (LARI) is the national executing agency for the project on the “Conservation and Sustainable Use of Dryland Agrobiodiversity in Lebanon”. LARI was established in 1964 in Tel Amara (Bekaa Valley) as an autonomous public institution working under the supervision of the Minister of Agriculture. It has at its disposal eight experimental stations: Tel Amara, Tourbol, Kfardan, Kfarshakhna, Abdeh, Tyr, Fanar, & Lebaa, in an area of 280 hectares of agricultural land. The institute conducts applied and basic scientific research for the development and improvement of the agricultural sector in Lebanon. It particularly conducts research on the production of quality seeds, diagnosis of animal diseases, production of vaccines, food quality control, soil analysis, feed composition, plant protection, etc.

In an effort to ensure the sustainability of the Agrobiodiversity Conservation Project and the mainstreaming of its activities within LARI’s institutional set-up as well as in its research and development agenda, the Director General of LARI established the Agrobiodiversity Committee, composed of senior LARI researchers, to follow up on the project progress and provide necessary advice and technical support for its future sustainability. The committee assigned LARI staff counterparts who became actively involved in the implementation of the project activities under the guidance of the Project Manager. In addition, the Director General is foreseeing the establishment of a biodiversity unit within the planned new re-structuring of LARI.

Agricultural Research Institute,
Tel Amara Station,
Bekaa-Lebanon
P.O. Box: 287, Zahlé

Phone: 961 8 900037/45/57
Fax: 961 8 901729
Email: agrobio@cyberia.net.lb

The Project Staff in Lebanon

National Coordinator: Dr. Michel Afram

Project Manager: Dr. Raghed Assi

Administrative Assistant: Eng. Denise Dahrouj

Project Site Assistants: Eng. Salam Bsar
Eng. Najah Chamoun
Eng. Mohammed Monzer

Driver: Mr. Malek Yaghi

We're on the web!

www.lari.gov.lb/agrobio

*“A true conservationist
is a man who knows that
the world is not given by
his fathers,
but borrowed from his
children”.*

- John James Audubon, 1785 -
1851



The Lebanese Agricultural Research Institute, Tel Amara Station
Bekaa, Lebanon