Syria-Jordan-Lebanon-Palestinian Authority
GEF/UNDP/ICARDA/IPGRI/ACSAD

Dryland Agrobio

Conservation and Sustainable Use of Dryland Agrobiodiversity
Funded by GEF/UNDP

حفظ التنوع الحيوي الزراعي واستخدامه المستدام في الأراضي الجافة

No. 8-9 January–June 2002

First Arab workshop on international agreements and domestic biodiversity policy and legislation

Biodiversity—agrobiodiversity in particular—in the Arab world has global and regional significance calling for urgent measures to preserve it and sustain its use. In light of recent developments concerning conventions and agreements related to the conservation of biodiversity and plant genetic resources, there is a need to review national legislation and policies to accommodate the key elements of international agreements, especially those related to access to genetic resources, benefit sharing, empowerment of local communities, and intellectual property rights. The GEF–UNDP project on dryland agrobiodiversity in West Asia has been working for the last three years toward the introduction of reforms in the existing national policies and legislation in Jordan, Lebanon, the Palestinian Authority and Syria, and to enhance regional collaboration. Under the auspices of the Technical Secretariat of the Council of Arab Ministers Responsible for Environment Affairs (CAMRE), the GEF–UNDP dryland agrobiodiversity project (RAB/97/G32), coordinated by the International Center for Agricultural Research in the Dry Areas (ICARDA), organized jointly with the Arab Center for Studies of the Arid Zones and Dry Lands (ACSAD) and in collaboration with the International Plant Genetic Resources Institute (IPGRI), the Arab Organization for Agricultural Development (AOAD), UNDP–Regional Office for West Asia and FAO, the first Arab workshop on "the implications of international agreements on the development of national policies and legislation related to biodiversity conservation" was held at the Arab League headquarters in Cairo in 28-30 May 2002. The workshop was organized to promote:

- Better understanding of the international conventions and agreements related to biodiversity conservation;
- Sharing with other Arab countries and other projects the experience gained within the GEF–UNDP dryland agrobiodiversity project;
- Discussion about ways for establishing or reforming national policies and legislation related to agrobiodiversity conservation and sustainable use;
- Discussion about ways to enhance and strengthen Arab collaboration and coordination.

The participants included:

Participants in the first Arab workshop on international agreements and domestic biodiversity policy and legislation, Cairo, Egypt.

- National managers and coordinators of the GEF–UNDP project components and national policy consultants;
- The Convention of Biological Diversity (CBD) national focal persons from 9 Arab countries (Jordan, Lebanon, Syria, Iraq, Oman, Saudia Arabia, Egypt, Sudan, Palestinian Authority);
- Representatives of GEF projects in Algeria, Morocco, and Tunisia;
- Representatives from the Arab League, GEF–UNDP, ICARDA, ACSAD, IPGRI, FAO, UNEP–ROWA, AOAD, CEDARE, and other organizations; and
- Six invited key speakers;

Five working sessions were organized during the three days of the workshop: 1) presentation and discussion of key elements of international conventions; 2) benefit sharing and empowerment of local communities; 3) ways to establish national policies and legislation on plant genetic resources and agrobiodiversity conservation; 4) experiences of different projects in developing appropriate policies, and country reports on implementing different conventions and in developing national biodiversity policies and legislation; and 5) global conventions and key aspects to consider in bilateral agreements for access and exchange of plant genetic resources, and ways to enhance coordination and collaboration among the Arab countries.

Dr. Ahmed Amri, the project's Regional Coordinator, talked about the importance of dryland agrobiodiversity and presented the strategy adopted by the project for promoting *in situ* conservation of dryland agrobiodiversity, emphasizing the need for reforming national policies and legislations, and the need for better coordination among the Arab countries. Dr. Hani Daraghma presented the efforts of the Global Environment Facility (GEF) to support actions on global environmental concerns (water, climate change, etc.), including the preservation of the biodiversity in general and dryland agrobiodiversity in particular. Dr. Mohammed Abidou, invited speaker, presented the key elements of the CBD. Dr. Jose Esquinas, invited speaker from FAO, reported on the historic genesis and key and innovative elements of the International Treaty for Plant Genetic Resources for Food and Agriculture (farmers rights, list of species in the multilateral transfer agreement, obligations of users). He stressed the importance of the Arab countries being among the first signatories of this convention to ensure good representation of the Arab countries at the first meeting of its Governing Body, crucial for taking decisions on financial matters and benefit-sharing issues. Dr. Susan Bragdon, IPGRI invited expert, made two presentations: the first on key elements of other international agreements related to plant genetic resources and intellectual property rights (WTO–TRIPS, UPOV), the second on the objectives, strategy, and achievements of the IPGRI global *in situ* conservation project.

Dr. Ismail Abdelgelil presented, based on Egyptian experience, key elements to consider in developing a national genebank and in developing bilateral agreements. Dr. Ahmed Herzenni presented ways to re-empower communities, through recognition of their active role, increasing their autonomy, and establishment of agreements for joint management between states and local communities. Dr. Abdelmoneim Abouzeid and Dr. Eid M. A. Mageed talked about the approach for the development of an Arab network on policy and legal issues related to conservation of biodiversity and plant genetic resources. Dr. Eid presented the mission of the Arab Biodiversity Network, to be proposed (easy exchange of information, germplasm, innovations and expertise; protection of property rights and formulation of common positions), and the prerequisites for its establishment (ratification of related international conventions, modification of local law and legislation according to the proposed Model Law and including intellectual property rights, the creation of a competent national authority, the availability of a 'critical mass' and the empowerment of NGOs and local communities, along with increased public awareness.

Dr. Mustapha Darfaoui presented the status of biodiversity in the Arab countries and the activities of AOAD related the the management and sustainable use of biodiversity. Mr. Addu Ghassem Al-Assiri (UNEP–ROWA and coordinator of SRAP/UNCCD presented the activities of UNEP in West Asia and summarized the actions taken by the countries in the region toward the conservation and sustainable use of biodiversity. Ms. Elsa Sattout, IUCN, presented the organizational structure of the Biodiversity Thematic Centre for West/Central Asia and North Africa and its activities to disseminate and support national

strategies; prepare countries' delegates for participation in the conference of Parties and Subsidiary Body for Scientific and Technical Advisory Meetings; ensure the information exchange; provide a list of biodiversity experts; and coordinate capacity building coordination with other IUCN Thematic Centres.

The third session was devoted to sharing the experience of the GEF–UNDP agrobiodiversity project in establishing policies and legislation on agrobiodiversity and plant genetic resources and information on other GEF supported projects. Dr. Wafa Khoury presented the study framework developed by the project to help in the development of national policies and legislation. Dr. Amer Jabarin presented some of the achievements and lessons learned so far from the project (creation of national agrobiodiversity committees or programs, the increasing use of target species in reforestation efforts, the completion of a review of national policies and international agreements, the on-going process of reforming education policy (curricula) to incorporate conservation issues and socioeconomic studies, needed to associate monetary values with social and cultural benefits of local agrobiodiversity (direct use value, indirect use value, option value, non-use value, etc.). Ms. Lamia Mansour presented the activities of the project on conservation of wetlands and coastal areas in the Mediterranean region (MedWet Coast) aimed at enhancing coordination and development of appropriate policies and land use for better preservation and sustainable of the biodiversity in 13 natural ecosystems in six countries. Mr. Mohamed Houmeymid presented the objectives and activities of the high Atlas Mountain project on conservation of biodiversity through promoting flock mobility (transhumance and nomadism). Dr. Noureddine Nasr presented the strategy and objectives of the GEF-funded project on Date Palm in the Maghreb region coordinated by IPGRI. Both projects are concerned with the development appropriate policies in consultation with local communities.

In the fourth session, county reports on the status of biodiversity and the development of national strategies and action plans were presented by the CBD focal persons from Egypt, Jordan, Lebanon, Oman, Saudi Arabia, Sudan, Syria, and representatives from Iraq and the Palestinian Authority.

The fifth session was organized in two concurrent groups. The first discussed the elements to consider in the development of bilateral agreements. The second discussed ways to strengthen Arab collaboration. The recommendations of the two groups were presented and discussed during the plenary session and included in the final recommendations of the workshop.

Before the closing session, Ms. Sophie De-Caen, UNDP Deputy Resident Representative in Cairo, provided training to GEF project managers and coordinators on the monitoring and evaluation requirements and procedures of UNDP projects. This was highly appreciated.

During the closing session, the representatives of the Arab League (Dr. Nadera), of GEF (Dr. Daraghma), of ACSAD (Dr. Gouda) and of ICARDA (Dr. Valkoun) thanked all the participating institutions and centers and the invited speakers for sharing their experience and the participants from various countries and projects for making this workshop a success. Mr. Abdallah Lahlouh, on behalf of all participants, thanked the organizers of this important workshop, the first of its kind in the Arab world. He expressed the hope that more such meetings on biodiversity will be held. All participants agreed that the workshop achieved its objectives in creating better understanding of the key international agreements, in initiating collaboration among Arab countries and among GEF projects, and in making important recommendations to the Arab League to create a mechanism enhancing the collaboration and coordination among the Arab countries to preserve and sustainably use biodiversity.

Recommendations of the workshop

- Establish an Arab strategy and policy for the conservation and sustainable use of biodiversity based on national strategies, and develop mechanisms for implementation and financing;
- Create an Arab network for the exchange of information, genetic resources and expertise, and create an Arab integrated program for the conservation and sustainable use of genetic resources, including the establishment of an Arab genebank for plant and animal genetic resources;
- Assign responsibility to a technical body of the Arab League to study and follow all international environment and biodiversity agreements and

conventions, in collaboration with the Arab, regional and international organizations, to ensure active and effective participation of the Arab region in technical meetings and the Conference of Parties;

- Advise and ask the Arab countries to sign and ratify quickly the International Treaty for Plant Genetic Resources for Food and Agriculture;
- Conduct a comprehensive study on the state of biodiversity in the Arab World and an economic assessment in collaboration with Arab, regional and international organizations working in the region, and other experts in the region;
- Develop mechanisms for the access and exchange of genetic resources under bilateral agreements, considering the benefits of training, exchange of information, transfer of technologies, joint studies and publication; and including a fixed duration short enough to allow continuous review and calculation of economic benefits based on global benefits;
- Activate the role of Arab, regional and international organizations, research centers, and universities in areas related to conservation and sustainable use of biodiversity and stress the importance of building strong collaboration among all national institutions;
- Work to benefit from traditional expertise and knowledge of local communities and document their property rights to ensure their role in sustaining development;
- Stress the role of decision makers, media, and local NGOs in increasing public awareness about the importance of supporting efforts promoting the conservation and sustainable use of genetic resources and biodiversity, especially the introduction of biodiversity conservation at all levels of education systems, including graduate studies, and the possible creation of an Arab specialized institute;
- Develop a mechanism of coordination among all environment conventions related to biodiversity conservation for better use of available resources. Participation of national biodiversity focal persons in the meetings and activities of the committee of the desertification program should be supported;
- The Arab League should organize a workshop in the first half of 2003 to discuss the feasibility study looking into the creation of an Arab genebank in collaboration with Arab, regional and international organizations;
- Organize a coordination meeting to study the training and capacity building needs of the Arab countries in the area of conservation and sustainable use of biodiversity. (The participants extend their appreciation to the National Council for Protection of Biodiversity in Saudi Arabia for its willingness to host the meeting);
- The organizing institutions of this workshop should coordinate and collaborate on the implementation of the above recommendations.

Keeping the cradle of agriculture safe for the future

The "Conservation and Sustainable Use of Dryland Agrobiodiversity" project in Jordan, Lebanon, Syria and the Palestinian Authority is a groundbreaking effort to restore crop diversity in the region that gave birth to agriculture. Food production worldwide depends on many of the crops and trees that were first domesticated in this region thousands of years ago.

The Global Environmental Facility of the United Nations Development program (GEF-UNDP) committed US$8.1 million to support this project and the conservation of dryland agrobiodiversity. National agricultural research systems are integral to this effort and each formed its own local components of the project. The International Plant Genetics Research Institute CWANA offices and the Damascus based Arab Center for Studies of the Arid Zones and Dry Lands contribute scientific resources and expertise, and the International Center for Agricultural Research in the Dry Areas (ICARDA) contributes both expertise and regional coordination.

The agrobiodiversity project focuses on 16 targeted cereal, forage and horticultural crops of worldwide importance, along with their wild relatives. These include wheat, barley, clover, olive, pistachio, and fig. Collaborators in each country identified two target areas for in-depth study, one for dry areas and one

for areas with more water. At all sites, local farmers contribute their acquired knowledge and skills toward conserving and managing plant diversity.

Example of natural habitat for conservation of plant genetic resources.

The regional environment is harsh, and is home to a wide array of pests and pathogens of these crops. Locally adapted varies tend to be drought and heat tolerant and tend to tolerate or resist diseases and insects. These traits, first catalogued by germplasm collectors for the Vavilov Institute, the U.S. Department of Agriculture and the Nordic Genebank, have proven their value to plant breeders worldwide.

Degradation of natural habitats in Bireen, Syria.

While saving seed samples in genebanks is important, this project takes sustainability a step further by utilizing integrated natural resource management principles. Integrated resource management makes use of a multifaceted approach that engages both scientists and farm families in a way that fits their agroecology. For example, in areas with poor or thin soils, fruit production can be improved by grafting improved fruit tree varieties onto wild seedlings that are adapted to local conditions. This practice saves water and makes better use of poor soils. The local varieties are preserved, *in situ*, and become a source of income for farmers who produce the seedlings.

Each of the four member countries is working both independently and in partnership to implement the goals of the project. Syria's Directorate of Scientific Agricultural Research has given high priority to reforestation and rangeland rehabilitation using native species. At Sweida, one of the target sites, farmers are comfortable working with local landraces, saying that they provide a much more reliable source of income than the apple orchards that were promoted some years ago.

Farmers grow various important local species.

Lebanese project coordinators have been working with four villages on the slopes of the Beqaa Valley. Several projects are in place to improve the livelihoods of the people in these remote villages. One village that relies on raising sheep for market is working with rangeland experts to boost the productivity of their pastures and manage grazing more effectively. Other villages are exploring alternative practices, such as beekeeping and ecotourism to improve economic productivity and develop new markets for their community.

In the Palestinian Authority, the project has been working with the Ministry of Agriculture and the UNDP Program of Assistance to Palestinian People (UNDP/PAPP) to establish water-harvesting systems. Making more effective use of limited rainfall is an important focus for the whole region, utilizing techniques engineered to suit their geography. Farmer workshops and environmental clubs have been created by the project to increase public awareness.

In Jordan at Ajloun, where water scarcity is the primary concern, farmers began cultivating indigenous medicinal plants alongside water-harvesting structures, thus boosting their income and safeguarding the local plant diversity. The project also worked with a national NGO, the Jordanian Environment Society, and the Municipality of Amman to create a field genebank of old fruit trees threatened by urbanization. Olives, almonds, apples, figs, pomegranate and carob, and their wild relatives, grow alongside underused species, such as azarola cherry and sumac. The collection will protect these important resources and provide a source of seedlings to be used in municipal landscape management.

All of the regional project components are working closely with national forestry programs to enhance the use of indigenous species in their reforestation efforts. With the help of international experts, nation-

al policies are reviewed to accommodate international conventions and to empower local communities that are the main custodians of dryland agrobiodiversity.

Impact assessment on land degradation and biodiversity in West Asia

By J. Valkoun, E. De-Pauw and A. Amri, ICARDA

Introduction

The West Asia region occupies an area of nearly 4 million km^2. All West Asian countries are located in the arid and semi-arid zones characterized by high evaporation rates and low, erratic and unpredictable rainfall occurring during the winter months. Seventy percent of the area receives less than 100 mm of annual rainfall and less than 10 per cent receives more than 300 mm. Among the many environmental concerns, land degradation and the loss of biodiversity are of major importance. However, the primary cause of environmental degradation is the rapidly growing human population, which has increased five-fold since 1950 in most countries of the region. This increasing population pressure has led to extensive degradation of natural resources in general and plant biodiversity (UNEP, 2001). This article provides background information on issues related to land degradation and plant agrobiodiversity erosion in West Asia.

Land degradation on the western slope of the West Bank.

Land Degradation in West Asia

A consistent barrier to addressing land degradation in its various forms is the lack of reliable data. The Food and Agriculture Organization of the United Nations (FAO–UN), in a review of land degradation in South Asia (1994) noted that estimates concerning the extent of degradation varied by as much as 100%, due to failure to define the degree of degradation that is being assessed and lack of reliable surveys.

Agroecological characterization can contribute important information to land degradation assessments, either actual or potential, by developing and then linking multi-scale agroecology frameworks to indicators of land degradation. Information from remote sensing (RS) can provide important indicators of land degradation by comparing images for two periods to detect temporal changes in land use or land cover changes, and associated characteristics, such as water or wind erosion, forest and range degradation, salinization, and water-logging. However, field visits using a participatory agroecological approach with local farmers remains the best way of understanding what is happening at particular sites. It allows scientists better assessments and evaluations of micro-level variations in soils, slopes, hydrological properties, land cover and other land attributes, and historical changes.

The major forms of environmental degradation in West Asia are:

- *Land degradation* — the decline in quality of natural land resources, commonly caused by improper use of the land by humans (ISSS, 1996), and expressing itself in a decline in productivity and biodiversity of the land-use systems.

- *Desertification* — defined by UNEP as degradation in arid, semi-arid, and sub-humid areas resulting from adverse human impact.

Due to rapidly growing populations, land degradation in West Asia is characterized by natural habitat destruction, cultivation of rangelands and marginal lands, overgrazing and deforestation, all aggravated by successive and severe droughts.

Urbanization has led to diminution of the per capita availability of cultivated land from 0.34 ha in 1975 to

0.19 ha in 1995 (FAOSTAT, 1997). Rangelands occupy about 150 million ha or 38% of the total area of the region.

Traditionally, nomadic tribes developed a number of sustainable forms of rangeland protection, such as the Hema system. This system set aside sectors of rangeland to be reserved for periods of stress. These traditional grazing systems have been difficult to sustain since the 1950s when new land use laws designated rangeland as public property, and because of plowing of rangelands for cereal cultivation.

Land degradation has come to be understood as a major problem and desertification has affected large areas of rangelands. The following data documents the key issues affecting land in West Asia (UNEP, 2001):

- Overgrazing and fuel gathering led to deterioration of more than 36 million ha of rangeland in Jordan, Iraq, and Syria.
- Wind erosion affects 28.1% of the total area, mainly in GCC countries, Iraq and Syria.
- Water erosion affects large areas in all Mashreq countries and Saudi Arabia, including more than 1 million ha in Syria and up to 21% of Iraq. Annual soil loss due to water erosion amounts to 200 t/ha in the mountainous areas of Jordan and on deforested slopes in Syria.
- Poor irrigation techniques have resulted in salinization, alkalization, and nutrient depletion across large areas. The percentage of irrigated land salinized by irrigation is estimated to be 33.6% in Bahrain, 3.5% in Jordan, 85.5% in Kuwait and 5.9% in Syria.
- Fertile agricultural land around major cities has been lost to urbanization, industrial establishments, and transportation infrastructure.
- Land degradation is expected to continue unless countries undertake more mitigation measures.

The most widespread form of land degradation in the region is the degradation of vegetation. Major parts of the region were previously covered by forests, which have mostly disappeared. Overgrazing has led to a loss of species richness and the disappearance of wild

Overgrazing on the Eastern slopes in Hebron, West Bank.

relatives of major crops and forage species indigenous to this region and a shift to unpalatable species accompanied by severe soil erosion. The rehabilitation of these rangelands will be difficult or impossible. Continuous cultivation of steppe (semi-arid) areas rapidly exhausts the limited stock of organic matter, which leads to deterioration of soil structure.

Biodiversity in West Asia

The number of recorded plant species in West Asian ecosystems ranges from 234 in Kuwait to about 3000 in Lebanon and Syria. The most economically valuable portion of overall plant diversity is that which supplies the world's food. Of the estimated 250,000 species of flowering plants, only about 3000 are regarded as a food source. Some also provide forage or herbage for wild and domesticated animals.

Of the estimated 200 plant species domesticated, only 15–20 species are of major economic importance (Harlan 1992). Interestingly, most of the major food crops originated in dry lands with distinct seasonality of the climate. Their centers of primary diversity, which include crop wild progenitors and relatives, are located in dry temperate zones or subtropics (Hawkes 1983), including West Asian countries.

It is widely recognized that wild crop progenitors and relatives accumulated a rich reservoir of genes for adaptation and survival in their harsh natural environment. Many useful genes have already been transferred from the wild crop gene pool to cultivated species, especially those related to biotic and abi-

otic stress tolerance. In the future, this rich genetic diversity might be indispensable for breeding crops that are adapted to specific climatic changes. In spite of recent advances in biotechnology, making gene transfer between unrelated organisms possible, the wild progenitors and closely related species of the primary gene pool (Harlan and de Wett, 1970) are still, and will remain for the next few decades, the most feasible wild source of genes for conventional breeding programs. Preservation of these genetic resources ensures rich material for future agricultural development.

Along with the increasing land and biodiversity degradation in West Asia, the Near Eastern gene pool of crop origins and diversity is also threatened. In Palestine, more than 900 species are threatened. Consequently, a number of collection missions have been conducted in West Asia, particularly in the last quarter of the 20th Century.

The International Center for Agricultural Research in the Dry Areas (ICARDA) collaborates with national programs to collect and conserve *ex situ* collections of crop wild relatives and landraces. Currently, ICARDA holds 129,000 accessions of cereal, legume and rangeland species in its *ex situ* gene bank. Of these, almost 19,000 accessions are of West Asian origin, and more than 12,000 (65%) were collected by ICARDA.

Land reclamation is expanding over forest areas in Ajloun, Jordan.

In addition to providing genes for crop improvement, these large collections of indigenous West Asian germplasm may be used for restoration of degraded or lost natural populations and ecosystems. However, the *ex situ* conservation of genetic resources has its limitations, especially regarding wild species (Frankel 1978; Plucknett et al. 1987). Therefore, *in situ* conservation in the original habitat, is recommended for wild species, including crop progenitors (Ingram and Williams 1984).

A holistic approach to *in situ* conservation

There is a grave risk that much of the biological diversity of West Asia, upon which global agricultural production is based, will be lost unless a holistic approach is developed for the conservation of land, water, and genetic resources. Any conservation strategy that is adopted must focus on sustainable and profitable agricultural production. Germplasm collection should continue with renewed urgency in severely endangered environments and special protection must be sought for endangered habitats of particular importance. Local communities must be inspired to protect the soil, water, flora and fauna for their own self interest, as well as the interests of their children, for generations to come.

The holistic approach recognizes that West Asian ecosystems have been, and remain, subject to immense human interference over millennia. Human communities must realize that they are major components of the ecosystems that they inhabit and use for agriculture. Long-term improvements in the management of natural resources can be achieved only with the consent and active participation of users, who need to recognize that the changes, while they might entail sacrifice or inputs, are ultimately in their benefit.

Large exclusionary 'reserves' to conserve biodiversity are unlikely to be popular where land is so scarce and poverty is so prevalent. Active management might be needed to preserve some species and this management will have to come from farmers who know the land. Consequently, existing traditional and multiple land uses and the livelihoods that they provide must be taken into consideration. Working with farmers to build niches for the maintenance of biodiversity will allow conservation to take place while allowing sustainable use of the land.

The UNDP–GEF supported dryland agrobiodiversity project is working toward the development of a 'bot-

tom-up' approach to *in situ* conservation. After assessing the degree of degradation locally, the project is working with communities to demonstrate the benefits of water, soil, and plant management technologies. Rangeland rehabilitation, water harvesting, reforestation with native species, and seed cleaning are just a few of the new methods available to farmers through outreach and training.

Moving from farmers to communities to work at the scale of watersheds and landscapes presents its own unique challenges. Appropriate policies and legislation must be developed that will enhance biodiversity while positively affecting local economies. Value-added technologies, alternative income sources, loans, and temporary subsidies might provide bridges to sustainability and the enrichment of agrobiodiversity.

This multifaceted approach will build and enhance both *ex situ* and *in situ* germplasm collections, use those collections for rehabilitating degraded natural habitats, and create new businesses for multiplication of landraces for local agricultural operations. Strips of suitable habitats can be selected for managed, *in situ* conservation of threatened species, and public awareness activities will generate support for projects and programs. Indigenous knowledge of cultivated species, wild relatives, native vegetation, and traditional agricultural practices will be preserved and used to contribute to the overall success of the project. Through training, workshops, and technical backstopping, a national expertise can be developed that is both sustainable and profitable.

Conclusions

While efforts to sustain West Asian agrobiodiversity are gaining momentum through national and international stakeholders, land degradation, and loss of biodiversity are difficult trends to reverse. Without prompt and comprehensive intervention, the losses might even accelerate.

New technologies, such as GIS and remote sensing, are enabling efficient and accurate assessment of the land. This new data allows better decisions to be made on timing, location, and priorities for conservation efforts. Growing public awareness of environmental issues at all levels of society could make it easier to adopt and implement environmentally friendly policies and measures.

The complexity of environmental issues and human development calls for a holistic approach involving the participation of diverse stakeholders, scientists, farmers, and local communities. Policies developed at the Earth Summit in Rio in 1992 (Chapters 8 to 15 of Agenda 21), over a decade ago, might finally see accelerated implementation, to the benefit of local and global welfare.

References

FAO. 1994. Land degradation in South Asia: its severity causes and effects upon the people. FAO World Soil Resources Report 78, 100 pp. FAO/UNDP/UNEP.

FAOSTAT. 1997. FAOSTAT Statistics Database. FAO, Rome, Italy. http: //www.fao.org

Frankel, O. 1978. Conservation of crop genetic resources and their wild relatives: an overview. Pp. 123-149 in Conservation and Agriculture (J.G. Hawkes, ed.), Duckworth, London, U.K.

Harlan, J.R. 1992. Crops and man. Am. Soc. Of Agron. Inc. Madison, Wisconsin, U.S.A., 284 pp.

Harlan, J.R. and J.M.J. de Wett. 1970. Toward a rational classification of cultivated plants. Taxon 20: 513-514.

Hawkes, J.G. 1983. The diversity of crop plants. Harvard University Press, Cambridge, Massachusetts and London, U.K. 184 pp.

Plucknett, D.L., N.J.H. Smith, J.T. Williams and N. Murthi Anishetty. 1987. Gene banks and the world's food. Princeton University Press, Princeton, New Jersey, 247 pp.

Roberts, B. 1992. Land Care Manual. University of New South Wales Press, ISBN 086840053X

UNEP. 2001. GEO-2000. Global Environment Outlook. http: /www.grid.unep.ch/ geo2000/english/index.htm

West, J.G., C.L. McIntyre and R. Appels. 1988. Evolution and systematic relationships in the Triticeae (Poaceae). Pl. Syst. Evol. 160: 1-20.

World Bank. 1998. World Development Indicators 1998 CD-ROM. Development Data Group, World Bank, Washington DC, USA

World Resources Institute. 1997. World Resources 1996-97 Database. World Resources Institute, Washington DC, USA

WRI. 2001. World Resource Institute. Facts and Figures: Environmental Data Tables. http://www.wri.org/facts/data-tables.html

Hints for building public awareness

(extracted from a report by Dr. Jeremy Cherfas, Science Writer, Public Awareness, IPGRI)

Left: Some of the public awareness materials distributed by the project.

Botom: Agrobiodiverity fair in Muwaqqar, Jordan.

It is crucial to realize that in a project dealing with promotion of agrobiodiversity conservation, public awareness serves two distinct purposes. One is to make available information about the project itself; its partners, its strategy, funding, so on. The other vastly more valuable purpose is to promote the project's goals and achievements. Project implementers should consider the following recommendations in their efforts to raise public awareness:

While care must be taken to not misinform, it is almost always necessary to simplify when preparing material for the general public. Colleagues ought to understand the need for simplification, and this might require specific training or contracting specialized expertise, but the project should always retain editorial control.

Contact with farmers should be a continuing exercise in public awareness. At every meeting, information is exchanged. The project team imparts information about the conservation and sustainable use of agrobiodiversity, at the same time, villagers are transmitting to the project team what they know and have experienced, with the same outcome. A central meeting place should be available with electrical power for different presentations.

The distinction between training and public awareness is sometimes very fine. For example, a project to train beekeepers has helped them to appreciate the need for high standards in the honey they produce, thus raising awareness about the need for good marketing. Training efforts might require monitoring and feedback, to ensure that the lessons given have been learned. Although farmers have been trained in techniques for water harvesting, they might not be applying the techniques effectively. An important element of training consists of very basic capacity building. For example, villagers need to know how to implement the elements of civil society structures: how to set up NGOs, producer associations and cooperatives, which can then act as conduits through which the project can deliver benefits. Once the structures are in place villagers might need further training, for example in proposal writing, conflict resolution and so on. This is not really part of public awareness although it might need to be addressed elsewhere within the project.

The agrobiodiversity project has taken part in a number of exhibitions and displays at agricultural fairs. This approach engages visitors and gives project staff the chance to answer questions and raise public awareness, while allowing farmers to market their products. Perhaps the public could be used to judge the merits of different recipes, or processing details. The question of value-added products and food processing must be considered in more detail. A partnership with an external NGO, a university research department, or an entrepreneur could be pursued to assess the nutritional value of the products, or the impact of different forms of processing and different recipes on nutritional value. This would be of direct help in the marketing of the products, and would also provide excellent stories for use in public awareness efforts.

The project has taken care to collect indigenous knowledge about medicinal plants. Information about what the plants are used for, and the ways in which remedies are prepared, could be a powerful resource for public awareness. However, there is a danger in making medical recommendations directly. The project should make every effort to ensure that it is not seen to endorse any particular claims for efficacy or safety.

The project calendar was an outstanding success. It was distributed to donors, embassies, schools, ministries, ecotour-tour operators, etc. The project goals could be enhanced by adding a suitable strapline onto each page of future calendars. I strongly urge the components to continue to produce a calendar and to maintain the very high standards set by this first effort. It would also be useful to investigate the possibility of making a version downloadable via the Internet.

The Lebanese component has produced an excellent slide show, which has already been shown to invited guests at the American University of Beirut, to general acclaim. In an activity such as this, the purpose is to open the audience's eyes to what is out there on their land; its value, and its importance, locally and globally. I urge everyone to consider creating sub-shows or new shows that focus on specific aspects of the conservation and sustainable use of dryland agrobiodiversity. Scripted MS Powerpoint presentations could be derived from this material, which could be distributed to teachers and other resource people. Such a script should give due acknowledgement to the project's organization in a brief introduction while devoting most of its effort to the real subject of the show. The production of professional photographs would result in a wealth of images being available for use in local, national and regional outputs, on the web, and probably even globally.

Possible subjects for media and messages are outlined below.

- figs: the tree of the poor
- water-harvesting and rainfed crops
- ancient technologies brought up to date
- a long-term view: beyond today's harvest to the needs of tomorrow's farmers
- ecotour-tourism: the birthplace of agriculture, archaeology of agriculture
- bees: pollinators and sources of income
- medicinal plants: folk remedies require plants and knowledge to be saved
- wild fruits: their use in the landscape, as food, as rootstocks.

These stories should be written by the public awareness contractor, based on input from the project staff and discussions with them.

It is important to distinguish displays, which may include a poster but are essentially intended to be part of an exhibit of some kind, from posters, which are intended to be distributed. The display information should be brief and simply stated. Designs should be clean and uncluttered. Since full-size posters are difficult and expensive to distribute, a series of smaller mini-posters might suffice. These are easily transported to schools and meetings and useful for exhibitions and shows. Small posters are more likely to be used by individual members of the public. Topics could be chosen from among those listed above.

NGOs constitute an audience for the project's public awareness activities and this could lead to additional opportunities for partnerships. Some NGOs will have the flexibility to adopt new approaches, guided by the project. Others might have funds and be looking for the chance to support good projects. In both cases, the project should remain aware that the public awareness priorities of NGO partners might differ from those of the project. The issue of giving credit is sure to arise. I strongly recommend that public awareness and the question of credit be addressed in any letters of understanding between the project and NGO partners. These must clearly set out responsibilities and duties with regard to public awareness activities and credit.

Ministries, institutions, donors, NGOs, media, and other interested parties should be familiar with the work of the project and continuously informed about progress through a regular informative newsletter that would represent a clear and easy input to the regional newsletter series. A single A4 sheet would

suffice. This need contain no more than one lead story, one smaller supplementary story, and perhaps a calendar of upcoming events associated with the project. It could be distributed by e-mail, which incurs very little cost. The project web site should include a facility for any reader to sign up to receive the newsletter by e-mail.

Brochures and leaflets about the project sites and target species, in Arabic and English, should be produced and used within the communities.

The project has made considerable strides in its efforts to introduce the subject of agrobiological diversity into the school curricula within the study sites and more generally. The training of teachers and modification of curricula are both long-term activities. Given the limited lifespan of the project, a form of school competition (drawing competition, compiling a portfolio on local plant diversity, etc.) could be undertaken by groups of children. In order to motivate teachers and schools, consider incentives beyond just prizes for the children. Perhaps books for a school library and/or for the teachers of the winning children. A celebrity among the judging panel would also be very helpful. Schools will be a ready audience for slide shows, particularly those with environmental clubs.

While documentary films should be produced at the regional level, TV spots should receive higher priority. Concentrate on one or more of four key ideas: cultural heritage (birthplace of wheat), landraces, water harvesting, or wild fruit trees.

In developing partnerships with other NGOs, their goals and the project goals should be strongly aligned. A written agreement, perhaps developed with a mutually agreed upon independent arbitrator, should be considered to forestall the possibility of conflict.

Reinforcing informal seed increase in Palestine

By Mr. Younis Sbeih and Ms. Buthaina Mzayed

Dryland ecological systems in Palestine, like anywhere else in the world, are known for within-species diversity rather than for species richness. The species present in these ecosystems contain diverse populations with adaptation to specific niches making them valuable sources of genes for adaptation to harsh environments.

A farmer collects heads of a wheat landrace in the West Bank.

According to Zohary (1966) and Feinbrun-Dothan (1978), over 4000 species are recorded in the Flora Palestina, of which approximately 2500 species are expected to exist in the Palestinian Territories.

In the last 30 years, major political, urban, economic, and other human mismanagement practices have dominated the region. The influence of these factors on biodiversity has been destructive, especially in the sense that geographical and habitat range have become narrower and that many species are becoming rare and endangered, with over 900 species under threat.

The deteriorating political situation and the droughts in the last three seasons have exhausted farmers' sources of landrace seeds that were previously collected from the farmers' own fields, or exchanged or bought from neighboring farmers. The seeds of landraces are usually interchanged within the same community rather than externally introduced. As a result, most of the farmers in Palestine planting newly developed varieties obtained through local traders usually buy these seeds from Israeli markets. These varieties are not performing well under dry conditions and in the absence of inputs.

The informal seed exchange system played an important role in the distribution of local varieties of cereals (wheat and barley) and legume species (vetch and lentils) and in promoting the conservation of local agrobiodiversity. The informal system fulfilled a farmer's seed requirements. However, as this system broke down, it was replaced by the formal seed supply system, which favored the distribution of newly released varieties that might or might not be suited to the agroecology or farming practices of this region.

The agrobiodiversity project is seeking to solve this problem by establishing community seed banks that are organized, owned, and managed by the local communities themselves. In the first year, the project collected seeds of different local varieties for the purpose of seed multiplication, while at the same time, some seeds were returned to farmers' fields as part of a seed "back-up plan."

Pursuing this system, the project initiated an "informal seed exchange" by covering part of the cost of seeds for the next year and by training local communities on methods of plant selection, seed cleaning and seed storage, in addition to organizing a local seed fair highlighting local varieties.

Based on the socioeconomic study conducted by the project in the selected project target sites, local farmers are satisfied with traditional seeds, or "landraces," since they contain genetic properties such as drought tolerance and pest resistance and quality attributes desired by local communities. These genetic traits have evolved on farm due to diverse topography, climate and soil conditions, and following selection by farmers.

As a consequence, the farmers' seed bank and community seed exchange have been initiated by the project as the most suitable solution to avoid the loss of landraces, which are still preferred over the improved varieties by most of farmers and the women in the communities surveyed. During the last season, the project distributed more than 35 tonnes of seeds of wheat, barley, lentils, and vetch. The harvest will be sold mainly as seed to other farmers.

Major activities of the project (January-June 2002) Regional Component

- Dr. Ahmed Amri, project Regional Coordinator, gave two seminars to more than 60 researchers and extension agents in Morocco on strategies for promoting *in situ* conservation of agrobiodiversity and ways to reconcile genetic manipulation and conservation of local agrobiodiversity. Officials expressed an interest in having a similar project for North Africa. He participated in a workshop organized by IPGRI on global *in situ* conservation, sharing lessons learned from the dryland agrobiodiversity project and helping plan a second phase of the *in situ* Project Component implemented in Morocco. This experience was also shared in the production of two new project proposals: the rehabilitation of rangelands in Nebek, Syria, and the medicinal and herbal plants in Jordan.

- Dr. J.P. Srivastava and Dr. P. Akelilu from the World Bank were briefed by Dr. Amri and Dr. Khoury on the project strategy and activities during their visit to Jordan, Lebanon and Syria. Dr. Akelilu expressed the need to benefit from the GEF–UNDP agrobiodiversity project in the development of new projects to be supported by the World Bank.

Members of the World Bank delegation talk with community members in in Aarsal.

- The "Participatory Plant Breeding and Conservation of Agrobiodiversity" regional training course was held 17-20 March at the ICARDA–Amman office in collaboration with GEF–UNDP. Dr. Ceccarelli led the course and the field visit to barley trials conducted with farmers in Ramta region. Dr. Amri lectured on aspects of agrobiodiversity conservation and genetic manipulation of landraces. A total of 14 participants benefited from the course.

H.E. the Minister of Agriculture, Prof. Dr. Mahmoud Duwayri, calls for the use of target species.

- Dr. Amri participated at Zarka University in the second Jordanian Environment Workshop held by the Jordanian Geologists Association. He present-

ed with Dr. Ajlouni a paper on "the importance of conservation of agrobiodiversity in sustainable use of natural resources." He delivered a lecture on habitat degradation and species loss in West Asia during the ICARDA/IGBP/IDPC workshop on agriculture, environment and human welfare in West Asia and North Africa, held at ICARDA headquarters. Dr. Wafa Khoury and Dr. Ahmed Amri attended the ESCWA/World Bank capacity building workshop on rural development in the Middle East, held in Beirut on 3-6 June 2002 and presented a paper on the "Role of dryland agrobiodiversity in enhancing the livelihood of rural communities."

- Dr. Amri and Dr. Ajlouni accompanied H.E. the Minister of Agriculture, Dr. Mahmoud Duwayri, during his visit to Dana reserve and Tafila region. HE the Minister recommended that all reforestation efforts in the region focus on the use of indigenous species. The National Project Component will provide technical backstopping.

Participants in the training course on Participatory Plant Breeding interact with farmers in Jordan.

- The 5th Project Managers Consultation meeting was held in Amman on 16-18 March 2002 to discuss topics to be evaluated at national and regional levels prior to the mid-term evaluation of the project progress. A visit to Wahadneh project site at Ajloun was conducted to see the field trials of local varieties. At the Wahadneh site, the group joined the Jordanian team in planting 120 old olive trees and 700 thyme plants that are used by the local community as cash crops.

- The Regional Component organized the 3rd policy and legislation thematic meeting to discuss progress in implementing the project activities and the joint contributions to the policy workshop to be held in Cairo. The participants included the project Managers, the national policy and legislation consultants and international experts from IPGRI, IFPRI, and ICARDA. The recommendations are reported in the minutes of the meeting.

- The Regional Coordinator and ICARDA–GRU staff (Mr. Shehadeh, Dr. Humeid and Mr. Hamran) co-conducted a seven-day collection of target species' seed in Jordan with the NCARTT genetic resources unit. Two hundred and forty samples of cereals and legumes were collected.

- Two representatives from the Geneva UNTV/Azimuth unit visited all of the national and regional project components during the period 11-28 May 2002 to prepare a documentary film on the importance of agrobiodiversity in West Asia and the project activities promoting conservation *in situ* and sustainable use. The team visited ICARDA headquarters and genetic resources unit, and most of the project sites. They documented the support of key project stakeholders including collaborating farmers and their Excellencies, the Ministers of Agriculture in Jordan, Palestine, and Syria.

- The second regional traveling workshop was held (25 June-3 July) with project staff and farmers from the Syrian (8) and Jordanian (5) components. The participants, accompanied by Mr. Shehadeh, visited the project sites in Jordan, Syria, and Lebanon and visited Dana reserve in Jordan and interacted with project team and local communities.

Participants in the second regional traveling workshop visit Muwaqqar project site in Jordan.

Jordanian Component

- A biodiversity unit has been created at the Forestry Department in Jordan with the duties of promoting the use of indigenous species in reforestation efforts, revising and suggesting adequate policies and legislations, promoting cooperation with national and international parties dealing

with biodiversity, preparing public awareness programs for local communities, and increasing the national capacity of the Forestry staff by establishing training programs in agrobiodiversity conservation and sustainable use.

- A workshop on the importance of biodiversity and conservation was conducted in the Muwaqqar target area. About 30 persons attended the workshop from different local communities including: farmers, decision makers, and the Agriculture Directorate in Muwaqqar. Participants were introduced to the way to apply for GEF small grants.

- The project conducted an advanced workshop on plant tissue culture for 10 agricultural engineers from NCARTT and the Forestry Department. The project has equipped the Molecular Laboratory at NCARTT with the necessary equipment: centrifuge, photo lab, vacuum pump, and vertical electrophoresis.

- A training course on pruning of stonefruits and vines in Ajloun target area was provided to more than 20 farmers from each of three sites in Ajloun. Another course on management of natural habitats was conducted at Muwaqqar for the benefit of 12 farmers and 4 extension agents. Continued training on dairy production, processing and pickling was provided to more than 40 women from Ajloun area. Twenty women from the Charity Society in Ajloun participated in a course on cultivation, propagation, and processing of medicinal and herbal plants.

A woman from Ajloun who was helped by the project tends her medicinal and herbal plants.

- A training course on plant taxonomy and identification of target species was coordinated by project management in cooperation with Yarmouk University, 15-20 June 2002. Eleven participants from NCARTT and two from Syria participated in the workshop, which was delivered by taxonomists Dr. A. Oqlah and Dr. Jamal Laham from Yarmouk University. Dr. Ahmed Amri provided a lecture on *in situ* conservation and the project strategy.

- Cuttings from old fig, olive, and almond trees were collected from the landscape of Amman Greater Municipality. The plants are threatened by urbanization. They are to be planted in the JES land at Tareq area in Tabarbour.

- The project participated in the fourth national environmental campaign for 2002 entitled "Green and Clean Jordan by the Hands of its Children," launched by Agriculture Directorate. The Governor of Ajloun attended the campaign, which was conducted at Shtafaina natural forest in Ajloun. More than 150 male and female students from Ajloun schools participated. The project donated 150 caps in addition to 100 barrels for collecting waste.

- 270 female and 170 male school students from Muwaqqar interacted with the project team on the importance of conserving local agrobiodiversity and the role of schools and young people in promoting conservation. Among the students' suggestions: conducting an exhibition for the students' paintings on the concept of agrobiodiversity; writing articles or conducting research about agrobiodiversity; addressing agrobiodiversity issues through the morning broadcast in schools; planting school gardens with native plants; participating in clean-up and tree planting campaigns; holding contests on conserving agrobiodiversity (painting contest, writing stories, writing articles, taking photographs of the Badia's plants). Another workshop for teachers was conducted at Ajloun promoting the role environmental clubs can play in promoting conservation.

- The project, in cooperation with Ms Dina Freihat and the women's committee at Rajeb-Ajloun, established a nursery for targeted species of fruit trees on her land. Ms Freihat had been trained in nursery establishment and is well qualified to participate in this activity.

- The project Manager participated in the 4th technical conference of the Arab Agricultural Engineers

Union held at Jerusalem Hotel in Amman. He presented a paper entitled "Biodiversity: Status and Prospects" using case studies from Jordan. Dr. M. Ajlouni presented the best practices and lessons learned from the agrobiodiversity project in the workshop for Africa and North Africa/Middle East regions, organized at the Center for Environmental Studies and Research, Sultan Qaboos University, Sultanate of Oman; The primary purpose of the workshop is to bring together various stakeholders in NENA region and help in identifying issues and topics important for the regions in the field of conservation and sustainable use of globally significant biodiversity in arid and semi-arid zones. He also presented a paper on the importance of conserving dryland agrobiodiversity during the second Jordanian environmental conference entitled "Environmental Culture and Sustainable Development" held in Amman, 1-3 April 2002.

- The project manager and assistant participated in two training courses on the environmental impact of fire for the Forestry Department by presenting two lectures addressing the impact of fire on biodiversity. The first was on 9 June in Irbid Agricultural Directorate, and the other was at Dana Natural Reserve in Tafillah.

- Two Master's students completed their studies on "Morphological Characterization and Seed Germination of Wild Almond in Jordan," and the "Analysis of Genetic Diversity of Wild Barley (*Hordeum spontaneum* C. Koch) populations in Northern Jordan (Ajloun area) Using DNA-Based Markers (AFLP and RAPD)."

- Dr. Ajlouni participated in a training module testing workshop on "Law and Policy of Relevance to Plant Genetic Resource Management" held in Nairobi during the period 24-28 July 2002. The module was aimed toward those who have practical management and/or policy-making responsibilities for plant genetic resources. The course assisted participants in becoming more knowledgeable, confident, sensitive and effective actors in the field of plant genetic resources management. The workshop included an extensive section on the International Treaty on Plant Genetic Resources for Food and Agriculture, as well as a section on the Convention on Biological Diversity. The focus was not so much on the political issues that underlie existing laws, agreements and policies, but on how these can be understood, implemented and shaped. The module encouraged participation and provides hands-on, problem-solving experiences and exercises.

- The project participated in "the Economic and Social effects of Desertification" scientific day organized by the Jordanian Society for Desertification Control. This event was held at the University of Jordan on 25 June 2002. On behalf of the project manager, the agrobiodiversity coordinator at NCARTT presented a project overview and delivered a presentation on agrobiodiversity highlighting the economic and social impact of implementing the project's activities. Posters and brochures of the project were also presented.

Lebanese Component

- The agrobiodiversity project Manager and site assistant attended a national seminar on the development of ecotourism in Lebanon, held in Beirut. The aim of the workshop was to set a national action plan for the development of ecotourism in Lebanon through the participation of stakeholders from the different ministries, private sector, projects/programs, local and national NGOs, ecotour operators, etc. The workshop supported the interaction of the various stakeholders and exposed them to other activities taking place in other regions. The potential of ecotour-tourism in the agrobiodiversity project target areas and its benefits for indigenous crops and cultural heritage were discussed.

- Training on capacity building in community-based work and the management of NGOs was conducted for 24 participants (5 women) in Arsaal, and 25 participants (14 women) from Nabha, Ham, and Maaraboun. The course was very interactive and included methodologies for priority setting, common decision-making, conflict resolution, and development of proposals. The agrobiodiversity project organized a national training course on plant taxonomy for seven LARI staff and five from universities and NGOs with the help of the international expert Dr. Musselman.

- More meetings were held in the communities of Aarsal, Nabha-Kalile, Ham and Maaraboun, that

included the elderly, shepherds, farmers, and women to document their knowledge and use of local flora. The photo database developed by the project was used as a reference for the identification and naming of the plants by the local participants.

- Three MSc. students supported by the project graduated. Their respective theses discussed the evaluation of wheat landraces from target areas, the assessment of possible uses of three native wild fruit trees and on the relationship between the physical environment and the distribution of wild relatives of cereals in the Northern Bekaa drylands.

- On 20 March 2002, a photo presentation on the project target areas, communities and biodiversity was presented at the American University of Beirut by the national consultant establishing a digital photo base for the project. The photo presentation was attended by over 250 people from various ministries, business and private sector, banks, media, professors, students, and the ecotour-tourism sector. The presentation introduced remote target areas of the project, unknown to many Lebanese, through geography, people, and plant biodiversity in order to raise interest in future development plans and ecotourism in these areas.

- The project Manager invited ecotour operators to visit the project target site of Ham. Accompanied by the Mukhtar and the project manager, the ecotour-tour operators visited different sites in the area, recording all possible future activities including: hiking, trekking, caving, mountain biking, climbing, horse and donkey riding, and snowshoeing. Afterwards, they discussed the benefits of ecotour-tourism in the area and what they would need to contribute to its success. The first ecotourism trip to the project site in Ham took place on the weekend of 4-5 May 2002. The ecotour operators "Wild Expeditions" organized this two-days visit to Ham in cooperation with the project and the Mukhtar of the village. The tour was attended by 11 participants who hiked in the area with a local guide, camped within the village and tasted the typical foods provided locally. The visitors were very pleased and promised to repeat their visit. This ecotour provided the project with an estimate of the possible financial benefit that could arise from such trips and allowed the project to test the reaction of the local communities to the foreigners visiting their village.

- A one-day workshop on "The effect of land tenure issues on the natural resources management in Lebanon" was organized by the agrobiodiversity project in cooperation with the Environment and Sustainable Development Unit (ESDU) at the American University of Beirut on 14 May 2002. The workshop took place at the Tel Amara station of the Lebanese Agriculture Research Institute (LARI) and was attended by representatives of the various communities where the project is active (Mukhtars, Municipality members NGOs, etc) as well as representatives of the various ministries (Agriculture and Environment) and public institutions (CDR, Green Plan, etc.). The invited speakers were Dr. Tidiane Ngaido (IFPRI), Dr. Ben Norton (ICARDA), and a representative of the Land Tenure Department (Ministry of Interior) and Urban Planning (Ministry of Finance) as well as a representative of the Rural Development Association in Aarsal. Issues discusses were the status and problems related to land tenure and natural resources management in Lebanon, the role of the communities and community associations, and the plans of the government.

- A one-day visit was organized by LARI and the agrobiodiversity project for potential donors and officials from the Ministries on June 8 to LARI premises in Tel Amara Station, Bekaa and to one of the project sites. The objective of this activity was to introduce the different LARI stations, departments, projects and activities to the visitors and to initiate interest in the agrobiodiversity project local communities with the aim of leveraging external funds to support the project activities in these communities. The event was attended by over 100 participants with several representatives of UNDP, embassies, ministries and other officials, universities, relevant active programs and projects, scientists and several members of the local communities. The Director General of LARI welcome the visitors and introduced LARI (history, mission, vision, various departments, activities, etc.) then they were able to visit the fields and laboratories and make an open-air tour on several information posters prepared by the various departments and projects. Local food, beverages and music was provided and local foods and hand-woven carpets from the local community in Aarsal were sold. The visitors then proceeded to the village of Ham where they visited a site of importance to agrobiodiversity conservation and

met at the Mukhtar's home to discuss the needs of the local communities.

Donors and officials from different ministries visited Ham.

- Two experts from ACSAD (Mr. Usama Sammouneh and Mr. Rafik Rayyes) visited Lebanon for a period of three days with the aim of supporting the project team and LARI in the identification and nomenclature of local apricot and cherry varieties. They visited the various project sites as well as other areas in the Bekaa to identify the varieties planted there, to which the farmers have given many confusing local names and the origins of which are unknown. Other visits are anticipated in July for further identification of the varieties.

- Ms. Jessica Barnes joined the agrobiodiversity project team in Lebanon as an intern for a period of two months as part of requirements for an MSc. in Environmental Management at the School of Forestry and Environmental Studies, Yale University. She will be working with the project on analyzing the status, threats, and potential of agrobiodiversity in the target areas based on all the reports and data collected until present and using GIS tools.

- The Lebanese Agriculture Research Institute welcomed its new appointed Director General, Dr. Michel Afram, who officially assumed office on 14 February 2002. The national project team, Ms. Dima Khatib, and Dr. Amri visited Dr. Afram and presented the progress in implementing the project activities. Dr. Afram, as the new national coordinator of the project, expressed his optimism and enthusiasm about making a difference in the future contribution of LARI to sustaining the project activities and goal.

Palestinian Component

- The project team with national experts were interviewed by local and national TV on agrobiodiversity in Palestine and the actions to be undertaken to reduce its degradation and to benefit more local communities. In its efforts to increase public awareness, the project has distributed hats, T-shirts and calendars to students, farmers, decisions-makers, and others.

- The project staff conducted a training course on "Agrobiodiversity Conservation in Palestine" for 30 newly graduated agricultural engineers and 8 staff of the Ministry of Agriculture from the project target area. The training course was conducted at Al-Zababdeh Training Center in the period 28-31 January 2002 and focused on theoretical and applied measures to promote *in situ* conservation of dryland agrobiodiversity. A training course on apiculture started in cooperation with PARC and the MoA in Al-Daheria for the benefit of 15 new beekeepers collaborating with the project.

- With close supervision of the project staff, students from the agrobiodiversity clubs in the project target areas produced different drawings showing traditional agricultural practices and a regular monthly wall newsletter containing different articles and drawings related to the conservation of agrobiodiversity as seen by students themselves. In addition, two workshops were conducted targeting women in the project target sites (Sa'ir and Daheria) to show and enhance the role of women in the conservation of agrobiodiversity in Palestine.

- The Palestinian Hydrology Group (PHG) is contracted to provide expertise in water harvesting techniques for rehabilitation of natural habitats. Farmers in Tayaseer will be provided with five cisterns. The funds for the cisterns were allocated from the "land development project" implement-

ed by UNDP/PAPP and executed by the Ministry of Agriculture.

- The project distributed about 1200 seedlings of targeted fruit trees to be planted by collaborating farmers in Sa'eer and Daheria. The project has provided cuttings of major fruit tree landraces to two private nurseries and to the MOA nursery.

- As a source of income, the project, in close cooperation and coordination with MoA through the Directorate General of Extension and Rural Development, distributed around 60,000 thyme, 6,000 sSilvia, and 12,000 chamomile seedlings to around 120 women farmers for cultivation in the project target sites.

Seedlings of medicinal plants were distributed by the project component to women farmers for cultivation.

- Beit Jala Mayor, during a meeting with the project team, promised to contribute to the efforts of the project to preserve old olive trees.

Syrian Component

- The project distributed more than 60,000 seedlings of landraces and wild fruit trees to collaborating farmers in Lattakia and Sweida. It also provided substantial amounts of seeds and cuttings to government and private nurseries for multiplication and distribution.

Government nurseries are multiplying huge numbers of seedlings of trageted species.

- A training course for 30 education instructors was carried out in cooperation with the Education Directorate, 23-30 April 2002, entitled "Importance of education in conservation of agro-biodiversity." This course was followed by lectures by project staff to more than 300 elementary school students in three project sites about their role in conserving local agrobiodiversity.

- A seminar on the importance of agrobiodiversity, conservation methods and the role of government and NGOs was provided to 34 persons representing different government services.

School children are interested in learning more about agrobiodiversity.

- Spreading pheromone traps in cooperating farmers' fields (10 farmers at each location), in order to study the phonology of Drosophilla fly and control methods.

- His Excellency the Minister of Agriculture agreed to contract ICARDA to conduct the GIS analysis of land use and biodiversity.

توصيات ورشة العمل العربية حول "الاتفاقيات الدولية وانعكاساتها على السياسات والتشريعات الوطنية المتعلقة بالتنوع الحيوي"

تحت رعاية الأمانة العامة لجامعة الدول العربية، نظّم المشروع الاقليمي لحفظ التنوع الحيوي الزراعي واستخدامه المستدام في غرب آسيا (UNDP/GEF) والمركز العربي لدراسات المناطق الجافة والأراضي القاحلة (ACSAD) بمشاركة المركز الدولي للبحوث الزراعية في المناطق الجافة (ICARDA) والمعهد الدولي للمصادر الوراثية النباتية (IPGRI) وكل من UNEP-ROWA (المكتب الإقليمي لغربي آسيا) ومنظمة الأغذية والزراعة للأمم المتحدة (FAO)، ورشة عمل في القاهرة، بمصر خلال الفترة مابين 28-30 أيار/مايو 2002 حول "الاتفاقيات الدولية وانعكاساتها على السياسات والتشريعات الوطنية المتعلّقة بالتنوع الحيوي".

وقد شارك في هذه الورشة شخصاً ممثّلون عن المنظمات الدولية والاقليمية السابقة الذكر، كما شارك فيها منظمات وممثلون عن الدول العربية مصر، والسودان، وسورية، والأردن، ولبنان، والسعودية، وعُمان، والعراق، وفلسطين ومنسقين وطنيين لمشاريع مرفق البيئة العالمي في كلٍّ من المغرب والجزائر وتونس.


المشاركون في حلقة العمل حول الاتفاقيات الدولية وانعكاساتها على السياسات

وعقب العروض والمناقشات التي تناولت دعم التنسيق العربي في مجال حفظ التنوع الحيوي واستخدامه المستدام، توصّل المشاركون إلى التوصيات التالية:

1 وضع استراتيجية وسياسة عربية لحفظ وصيانة واستخدام المصادر الوراثية انطلاقاً من الاستراتيجيات الوطنية ووضع آليات تنفيذها وإيجاد آلية للتمويل.

2 إنشاء شبكة عربية لتبادل المعلومات والأصول الوراثية وإنشاء برنامج عربي متكامل لحفظ وصيانة واستخدام المصادر الوراثية يشمل البنك العربي للمورثات.

3 إجراء تقييم اقتصادي ودراسة شاملة للوضع الراهن للتنوع الحيوي في العالم العربي بالاستعانة بالمنظمات الإقليمية والدولية العاملة في المنطقة والخبراء الممثلين للدول العربية.

4 تكليف جهة فنيّة عربيّة تابعة للجامعة العربية بدراسة ومتابعة كافة الاتفاقيات الدولية المتعلقة بالبيئة والتنوع الحيوي وذلك بالتنسيق مع المنظمات الإقليمية والدولية فيما يتعلق بتنسيق المشاركة العربية في الاجتماعات الفنيّة ومؤتمرات الأطراف.

5 حث الدول العربية على الإسراع في توقيع وتصديق المعاهدة الدولية للمصادر الوراثية النباتية للتغذية والزراعة وذلك خلال الاجتماع القادم بروما يوم 10 حزيران 2002.

6 تعزيز الاستفادة من الخبرات والمعرفة التقليدية للمجتمعات المحلية وتوثيق حقوق التراث لها لدعم دورها في تحقيق التنمية المستدامة.

7 التأكيد على دور صانعي القرار والإعلام والمنظمات المدنية في رفع سويّة الوعي الجماهيري بأهمية دعم أنشطة حفظ وصيانة واستخدام المصادر الوراثية وضمان استدامتها وعلى أهمية ادخال التنوع الحيوي في جميع مراحل التعليم بما فيها تعزيز الدراسات الجامعية في هذا المجال والسعي لانشاء معهد عربي متخصص.

8 تفعيل دور المنظمات العربية والدولية ومراكز البحوث والجامعات في مجال حفظ وصيانة التنوع الحيوي وضمان استدامته والتشديد على أهمية التنسيق بين المؤسسات الوطنية ذات الصلة لتوثيق التعاون فيما بينها.

9 تطوير آلية لتبادل المعلومات وتداول المصادر الوراثية بخصوص الاتفاقيات الثنائية باستخدام الآليات المتاحة والأخذ بعين الاعتبار الفوائد المرجوّة من فرص تدريب، وتبادل المعلومات، ونقل التقانات الحديثة، والمشاركة في اختيار مواضيع البحوث، وفي حقوق نشر نتائجها على أن تكون المدة الزمنية للاتفاق الثنائي قصيرة بما يُتيح إجراء المراجعة بصورة مستمرة على أن تحسب المنافع الاقتصادية على أساس اجمالي المنفعة.

10 ايجاد صيغة تنسيق بين الاتفاقيات البيئية فيما يتعلق بأنشطة حفظ وصيانة التنوع البيولوجي لترشيد الجهود والموارد وذلك بدعم مشاركة المنسقين الوطنيين في أعمال وفعاليات لجنة تسيير برنامج مكافحة التصحر وزيادة الرقعة الخضراء والدعم البيئي.

11 عقد ورشة عمل في النصف الأول من عام 2003 لمناقشة دراسة الجدوى في إنشاء بنك عربي للأصول الوراثية النباتية يشارك في تنظيمها الأمانة العامة لجامعة الدول العربية والمنظمات الاقليمية والدولية.

12 عقد اجتماع تنسيقي لدراسة الحاجة إلى التدريب وتأهيل الكوادر العربية في مجال حفظ وصيانة التنوع الحيوي. ويوجه المشاركون الشكر للهيئة الوطنية لحماية الحياة الفطرية بالمملكة العربية السعودية على الدعوة الكريمة للاستضافة هذا الاجتماع.

Published quarterly by the International Center for Agricultural Research in the Dry Areas.
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