

**TUNISIA**  
**HERBAL AND MEDICINAL PLANTS PROJECT (HMPP)**

**Supervision Mission**  
**8-14 June 2003**

**Aide Memoire No. 2**

1. A mission, comprising Messrs. Scott Christiansen, International Program Leader and Mission Leader, U.S. Department of Agriculture, Agricultural Research Service (USDA-ARS), Ibrahim Shaqir, International Affairs Specialist, Middle East and North Africa (USDA-ARS), Philipp Simon, Research Plant Geneticist (USDA-ARS), and Joyce Foster, Research Chemist (USDA-ARS), visited southern Tunisia from 8-14 June 2003 to supervise the Herbal and Medicinal Plants Project (HMPP). Mr. Abdelkarim Sma, Agricultural Specialist from the U.S. Embassy in Tunis joined the mission at the beginning and end. He represented Regional Agricultural Attaché Carol M. (Merritt) Chesley (U.S Embassy, Rabat, Morocco – also serving Algeria and Tunisia).
2. The International Workshop on Medicinal and Aromatic Plants on 10 June 2003 was attended by approximately 150 participants, including Sadok Korbi, Secretary of State for Scientific Research, the Governor of Medénine Governorate, regional authorities from southern Tunisia, ICARDA, USDA/ARS and a cross-section of stakeholders from universities, national institutions, development agencies, non-governmental organizations, farmer unions, cooperatives, professional associations and private sector physicians, pharmacists, producers, laboratories and businesses concerned with essential oils, plant extracts, essences, cosmetics and pharmaceutical products.
3. During last year's Supervision Mission the project management requested that the project be operational from 1 March 2002 to 28 February 2004, which was approved by a letter dated 10 April 2002 signed by David Kincaid on behalf of Carol Kramer-LeBlanc, Director, Research and Scientific Exchanges Division, International Cooperation and Development, Foreign Agricultural Service (FAS) of the USDA. The project is now requesting a no cost extension of activities until 31 December 2004.
4. The mission worked closely on 11 June 2003 with Messrs. Mohamed Neffati, HMPP Manager and Director of Research and Training, (*Institut des Régions Arides* [IRA]), Hoceine Khatteli, Director General (IRA), Mohamed El-Mourid (Coordinator, International Center for Agricultural Research in the Dry Areas, North African Regional Program [ICARDA/NARP]), project team members and stakeholders to review progress to date (Appendix 1), plan upcoming project activities (Appendix 2), and suggest recommendations for future work.
5. The Project Steering Committee met on 12 June 2003 to assess (1) progress towards addressing the Steering Committee recommendations made during their first meeting on 28 December 2002; (2) conclusions from the International Workshop on Medicinal and Aromatic Plants, (3) project accomplishments over the past year (Appendix 1), (4) work plans for the coming year (Appendix 2) and (5) options and the suggested schedule for scaling up to a development project in 2005 (Appendix 3). The Steering Committee approved the plan of work and the next steps for project development.
6. Major recommendations of the Steering Committee (see member contacts in Appendix 5) were as follows:
  - The project was commended for its steady progress and achievements, its coordination and communication with stakeholders, the tripartite cooperation among IRA, USDA and ICARDA.
  - There was unanimity among the members of the Steering Committee to focus the activities of the project on three main species of interest within southern Tunisia. The choice of short-listed

species should be verified through socio-economic studies and economic return. The project should yield a focused research-development pilot project that demonstrates the innovative and economic potential of herbal and medicinal plants.

- A product chain approach should be implemented for the key species that takes into consideration conservation, sustainable field production, post harvest handling, transformation/processing, quality control, packaging, certification, regulation and marketing.
- The Steering Committee recommended that IRA take leadership in research on herbal and medicinal plants and to work through research networks to coordinate, disseminate and communicate the results from other stakeholders.
- It is suggested to seek out opportunities for regional collaboration where ICARDA and USDA take the lead.
- The Steering Committee encourages the linkages with the USDA, with the view to transfer technology, develop human resources and to establish joint ventures.

7. Some members of the mission traveled to Tunis from 12-14 June, visiting Dr. Mohamed El-Mourid and his staff at the ICARDA office who organized visits to the following institutes:

8. ***Institution de Recherche et d'Enseignement Supérieur Agricole (IRESA)*** - The mission met President Abdelaziz Mougou and briefed him on the findings of the mission and progress towards granting plant collection access permission. Dr. Mougou informed the mission that he is fully supportive of granting access for ARS; however, the Tunisian Under Secretary of Environment (Within the Ministry of Agriculture, Environment and Water Resources) is the responsible ministry for granting access for plant collection. Therefore, the permission will have to be granted by the Under Secretary of Environment; however, he does not anticipate any problems. Dr. Mougou stressed the beneficial exchange of expertise and scientists with USA and would like to see more collaborative projects. He is interested in developing a proposal on cactus in Tunisia in collaboration with USDA/ARS or U.S. universities.

9. ***Institut National de Recherche en Génie Rural, Eaux et Forêts (INRGREF)*** – The mission visited Director General Nejib Rejeb and discussed issues related to natural resource management and the potential to build up cooperation in the future. ARS, ICARDA, and INRGEF would like to cooperate in the following areas of mutual interest: treated wastewater and reuse in agriculture; water conservation and related technology; and water and soil salinity issues. INRGREF will develop two concept notes on the use of saline water and wastewater reuse and quality.

#### **10. Direction Générale de la Production Agricole (DGPA)**

The mission met with the Director of DGPA, Dr. Abderrazak Daaloul, and briefed him on the outcomes of the Steering Committee Meeting and the mission's findings. The meeting was also attended by Mr. Bouhdida Mohamed, Director of Diversification in DGPA, Ms. Ben Rejeb Afaf from the Ministry of Agriculture, Department of International Cooperation and Dr. El Mourid from ICARDA. Dr. Daaloul supported the idea of developing the next project in the south and linking the effort to three existing development projects. His directorate will be willing to contribute its support. A meeting will be called between DGPA, Directorate of Funding and Professional Organizations (in charge of the three projects in the south), IRA and ICARDA to agree on next steps to start the proposal for the next project. He also informed the mission that the medicinal and aromatic plants are strategic for Tunisia within the theme on diversification that is a priority in the 10<sup>th</sup> Plan of Tunisia. Dr. Daaloul expressed his interest in cooperating with ARS and ICARDA, and will submit a concept note for research on durum wheat resistance to pests and drought. Dr. Daaloul will send the concept note by email to Dr. El Mourid and Irahim Shaqir.

11. The mission is grateful to IRA, ICARDA and their staff in Medénine and Tunis, respectively for support and cooperation that permitted the mission to meet its goals in a short period of time. The aide-memoire reflects the background of the project, findings of the mission, and outlines jointly agreed upon next steps for implementation of activities designed to yield desired outputs.

12. **Project objectives:** The overall objective of the project is to improve livelihoods in rural areas through sustainable use, conservation, management, and marketing of herbal and medicinal plants in southern Tunisia. The project's specific objectives are to:

- (i) Conserve, manage, and sustainably use, both *in situ* and *ex situ*, medicinal, herbal and aromatic plants in arid and semi-arid areas;
- (ii) Institutionally strengthen collaborating partnerships to form a coalition of stakeholders, i.e. scientific research institutes, extension services, universities, NGOs, industry, etc. to add value to medicinal, herbal and aromatic plants through processing, chemical analysis and marketing;
- (iii) Improve public awareness of the importance of medicinal plants and build on traditional knowledge and cultural heritage;
- (iv) Prepare a national database on indigenous medicinal and herbal plants, starting with southern Tunisia, with a view to assess their use and status within key ecosystems.
- (v) Strengthen plant data base and disseminate research findings resulting from the project and progress in product development by a) development of a project website b) attendance of project scientists at national and international meetings, c) participation of project scientists in exchange visits and scientific capacity building efforts (e.g. graduate student and scientist postgraduate training) and d) publication of research results generated from the project in peer-reviewed scientific publications.

13. **Project description:** The HMPP will permit project participants to test and validate widely agreed-upon activities for commercialization and conservation of several key species, i.e. allium, caper, rosemary and artemisia and a longer list of 10 or so species that will be developed as "pipeline" or model species for future work. In addition to developing practical models of plant exploitation, the project will conduct an analysis of the herbal and medicinal plant sector and develop a consortium of stakeholders to define constraints and market opportunities. The current phase would last until the end of 2004 (if an extension from 1 Mar 2003 is granted) and be supported by U.S. owned Tunisian Dinars (PL480 Section 108-f); however, the effort is expected to continue as an independently funded development project lasting five years. Current and future project activities will be organized according to the following components:

14. **Component 1: Socioeconomic analyses.** The project will provide for a social, economic, and market analysis at the international, national and local level. The project team agreed to summarize existing information and analyze current consumption and use, farming systems and marketing channels for producing and selling herbal and medicinal plants. In addition, IRA scientists will assemble and present GIS layers to characterize the climate (temperature, precipitation), soils, topography, land tenure, demography and farming systems in the target areas selected for the project.

15. **Component 2: Genetic resources management.** (a) Collect and conserve herbal and medicinal plants by means of both *ex-situ* (short-term, long-term, black box) and *in-situ* methods for plant genetic resource conservation; (b) Develop a database modeled after the USDA-ARS Genetic Resource Information System (GRIN), and (c) Multiply and distribute plant materials that will enable them to be tested in practical systems of production and to be used by researchers, (d) Evaluate genetic diversity of selected herbal and medicinal plants in the region to establish a database for long term monitoring of diversity and genetic erosion. GIS layers will characterize the collection missions to date, including collection sites and frequency of the herbal and medicinal target species found within the relevant phyto-geographical zones. Tables 1 and 2 show relevant species of interest in Tunisia and the list of plants that will be treated more extensively by the project.

16. **Component 3: Institutional assessment and project partnership arrangements.** The project will include participation of partners for the following functions: (a) project management and research (IRA); (b) agricultural association(s) that represent farmers (UTAP); (c) extension agencies (CFRA, CRDA, IRA) (d) plant and food science institutions; (e) pharmacists and other health professionals from the university and private sector (f) marketers and exporters from the private sector; and (g) development agencies. Table 3 attempts to more objectively describe the relative level of involvement from stakeholders up to the present time.

17. **Component 4: Systems of production.** For each of the target species, from each of the land tenure categories (i.e. private, common and state lands) the project will provide for: (a) agronomic research and extension (bulletins, farm notes, *fiche techniques*); (b) extension 'packages' for product development and marketing of the target species (collaboration with food scientists, chemists, vegetable wholesalers for fresh or dry plant materials); and (c) conservation for each of the species (inventory, *in-situ* and *ex-situ* monitoring, collection, multiplication).

18. **Component 5: Training and regional cooperation.** The project will provide (a) training to meet project objectives, (b) country-to- country exchange of experience; (c) workshops focusing on special issues; and (d) coordination, planning and reporting meetings.

19. **Component 6: Project Management.** A Project Management Unit (PMU) will be established to provide for: (a) planning, implementation and reporting; (b) financial management; (c) coordination among the stakeholders (d) a periodic gathering of the Steering Committee members which will be composed of members from IRA (Director General and Project Manager), ICARDA (NARP Regional Coordinator), USDA (International Program Leader, Office of International Research Programs), and additional delegates from Tunisia (Appendix 5).

20. **Project cost and financing:** The total project cost is estimated at about USD \$250,000 (TD 371,500). Approximately half the funds remain as of 1 May 2003, distributed as follows: IRA – TD127,359; ICARDA – TD 50,781; ARS – TD 51,426. A budget reallocation will be requested to match the needs of the new plan of work, to be submitted separately through USDA-ARS to FAS-ICD-RSED by 1 July 2003. Throughout the cooperation, each project partner will attempt to bring additional resources to the project, which shall be brought to the attention of and approved by the Steering Committee.

21. **Next phase of the project:** A project will be prepared by linking to three development projects in southern Tunisia that will finance the production components of herbal and medicinal plants complemented by a request of USD\$5 million from GEF to address conservation, institution and capacity building, understanding of indigenous knowledge and elements of the national strategy for herbal and medicinal plants.

22. **List of acronyms:** Appendix 4

23. **Contacts and addresses:** Appendix 5.

**Table 1: Biodiversity in Tunisia: native and exotic plant species of relevance to production and conservation aspects of the project.**

- *Acacia raddiana*
- *Ajuga iva* (L.) Scherb.
- *Agropyrum repens*
- *Allium cepa* L.
- *Allium porrum* L.
- *Allium roseum* L.
- *Allium sativum* L.
- *Aloe vera* L.
- *Ammi visnaga* (L) Lam
- *Amygdalus communis*
- *Anacyclus clavatus* (Desf.) Pers.
- *Anagyris foetida* L.
- *Anethum graveolens* L.
- *Anthriscus silvestris* Hoffm.
- *Apium graveolens* L.
- *Arbutus unedo* L.
- *Arisarum vulgare* Targ - Tozz
- *Artemisia absinthium* L.
- *Artemisia herba alba* Asso.
- *Artemisia campestris* L.
- *Artemisia arborescens* L.
- *Artemisia vulgaris*
- *Arthrophytum schimittianum* (Opm) Maire et Weill.
- *Arthroputum scoparium* (Pom) Iljin
- *Arundo donax* L.
- *Asparagus officinalis* L.
- *Asphodelus microcarpus* Viv
- *Asteriscus pygmaeus* Coss
- *Astragalus armatus* Willd
- *Atractylis gummifer* L.
- *Atriplex halimus*
- *Avena sativa* L.
- *Beta vulgaris* L.
- *Borago officinalis*
- *Brassica napus* L.
- *Brassica oleracea* L.
- *Calendula arvensis* L.
- *Calycotme villosa* Link
- *Capparis spinosa* L.
- *Capsella bursa Pastoris*
- *Capsicum annuum* L.
- *Carthamus tinctorius* L.
- *Carum carvi* L.
- *Centaurea calcitrapa* L.
- *Centaureum umbellatum* (Gilib.) Beck
- *Ceratonia siliqua* L.
- *Chenopodium ambrosioides* L.
- *Chenopodium murale* L.
- *Cicer arietinum* L.
- *Cichorium inthybus* L.
- *Cinnamomum zeylanicum*
- *Citrullus colocynthus* (L.) Schrader
- *Citrus limon* L.
- *Citrus medica* var *vulgaris*
- *Cistus monspeliensis* L.
- *Citrus aurantium* var *amara*
- *Citrus paradisi* Macfad yen
- *Cleome arabica* L.
- *Clematis flammula* L.
- *Convolvulus arvensis*
- *Coriandrum sativum* L.
- *Crataegus azarolus* L. (Syn. : *Crataegus ruscinonensis* Gren. et Blanc)
- *Crataegus oxyacanthus* L.
- *Cucumis sativus* L.
- *Cucurbita pepo* L.
- *Cuminum cyminum* L.
- *Cupressus cypervirens*
- *Cydonia vulgaris* Persoon
- *Cynara cardunculus* L.
- *Cynara scolymus* L.
- *Cynodon dactylon* (L.) Pers
- *Cynomorium coccineum* L.
- *Cytinus hypocistis* L.
- *Datura metel* L.
- *Datura stramonium* L.
- *Daucus carota* L. ssp *sativus* (Hoffm) Arcangeli
- *Diploaxis harra* (Forsk.) Boiss
- *Ecbalium elaterium* (L.) Richard
- *Echinops spinosis* Tarra
- *Ephedra alata* ssp.
- *Erica arborea* L.
- *Erica multiflora* L.
- *Erigeron canadensis* L.
- *Erodium cicutarium* (L.) L'Hérit.
- *Ervum lens* L.
- *Eucalyptus globulus*
- *Euphorbia calyptrata* Coss. et DR
- *Euphorbia helioscopia* L.
- *Ferula communis* L.
- *Ficus carica* L
- *Foeniculum vulgare* Mill
- *Fumaria capreolata* L.
- *Fumaria officinalis*
- *Geranium robertianum* L.
- *Globularia alypum* L
- *Glycyrrhiza glabra* L
- *Heliantus annus* L
- *Hordeum vulgare* L.
- *Hypericum perforatum* L.
- *Hyoscyamus albus* L.
- *Jasminum fruticans*
- *Juglans regia* L.
- *Juncus* sp
- *Juniperus communis*
- *Juniperus oxycedrus* L.
- *Juniperus phoenicea* L.
- *Lactuca sativa* L.
- *Laurus nobilis* L.
- *Lavandula officinalis* L.
- *Lavandula multifida* L.
- *Lavandula Stoechas* L.
- *Lawsonia inermis* L.
- *Lepidium sativum* L.
- *Linum usitatissimum* L.
- *Lycium europaeum* L.
- *Malva sylvestris* L.
- *Mandragora autumnalis* Bertl
- *Marrubium vulgare* L.
- *Matricaria chamomilla*
- *Medicago sativa* L.
- *Melilotus officinalis* (L) Pallas
- *Melissa officinalis*
- *Mentha piperita*
- *Mentha pulegium*
- *Mentha rotundifolia* L.
- *Mentha spicata* L.
- *Mercurialis annua* L.
- *Mespilus germanica* L.
- *Myrtus communis* L.
- *Nerium oleander* L.
- *Nicotiana glauca* R.C Garham
- *Nigelle damascena*
- *Nigella Sativa* L.
- *Olea europaea* L.
- *Opuntia ficus-indica* (L.) Mill.
- *Orchis* L sp
- *Origanum glandulosum* Desf
- *Origanum majorana* L.
- *Ocimum basilicum* L.
- *Papaver rhoeas* L.
- *Parietaria officinalis* L.
- *Peganum harmala* L.
- *Pergularia tomentosa* L.
- *Periploca laevigata* Aiton
- *Petroselinum crispum* (Miller) A.W.Hill
- *Petroselinum sativum*
- *Petroselinum crispum* (Miller) A.W.Hill
- *Petroselinum sativum*
- *Pinpinella anisum* L.
- *Pinus halepensis* Miller

- Pinus pinaster Soland
- Pinus sylvestris
- Pistacia atlantica Desf
- Pistacia lentiscus L.
- Pistacia terebinthus L.
- Pituranthos scoparius Benthma - Hooker
- Plantago albicans L
- Polygonum equisetiforme sbith.sm
- Portulaca oleracea L.
- Prunus amygdalus batsh
- Prunus persica (L) batsh
- Pteridium aquilinum (L) khm
- Punica granatum L
- Quercus coccifera L
- Quercus ilex L.
- Quercus suber L
- Retama raetam webb
- Reseda alba L
- Rhamnus alaternus L.
- Rhus oxyacantha L.
- Rhus tripartitum(Ucria) D.C
- Ricinus communis L.
- Rosa canina L.
- Rosa gallica
- Rosmarinus officinalis L.
- Rubia tinctorium L.
- Rubus ulmifolius Schott
- Ruscus aculeatus L.
- Ruta chalepensis L.
- Ruta Montana L.
- Salvia officinalis
- Salvia sclarea
- Sambucus nigra L.
- Satureja montana
- Scorzonera undulata Vahl
- Sesamum indicum De Candolle
- Silybum marianum (L.) Gartner
- Smilax aspera L.
- Solanum nigrum L.
- Solanum sodomium L.
- Solanum tuberosum L.
- Sonchus oleraceus L.
- Suaeda mollis (Desf)
- Tamarix gallica L.
- Teucrium polium L.
- Thymelea microphylla Coss. et Dur.
- Thymus capitatus (L.) Hoffm. et Link.
- Thymus hirtus willd ssp algeriensis Boiss et Rout
- Thymus serpyllium
- Thymus vulgaris
- Trigonella foenum graecum L.
- Urginea maritima (L.) Bak
- Urtica dioica L.
- Urtica sp
- Vaccinum myrtullus L.
- Verbascum sinuatum L.
- Vicia faba L. (Syn. : Faba vulgaris Moench).
- Viola odorata
- Vitis vinifera L.
- Zea mays L.
- Ziziphus lotus (L.) Desf
- Zygophyllum cornutum Coss.

**Table 2: List of species with high priority for the project**

Scientific name	Research by IRA	Economic interest in the project zone: Matmata Mts.	National interest (export)
<i>Allium roseum L.</i>	x	x	
<i>Artemisia herba alba</i> Asso. (1)	x	x	x
<i>Artemisia campestris L.</i>	x		
<i>Capparis spinosa L.</i>	x	x	x
<i>Ephedra alata ssp.</i>	x		
<i>Globularia alypum L</i>	x		
<i>Juniperus phoenicea L.</i>	x	x	
<i>Laurus nobilis L.</i>			x
<i>Matricaria chamomilla</i>	x		
<i>Myrtus communis L.</i>			x
<i>Periploca laevigata Aiton</i>	x	x	
<i>Pistacia atlantica Desf</i>	x		
<i>Rhus tripartitum(Ucria) D.C</i>	x	x	
<i>Rosmarinus officinalis L.</i>	x	x	x
<i>Ruta chalepensis L.</i>		x	
<i>Thymus capitatus (L.) Hoffm. et Link.</i>	x	x	x
<i>Thymus vulgaris</i>	x	x	x

(1) Protected by national law because of its overexploitation and genetic erosion

**Table 3: Contribution of stakeholders in the project – Codes: (PM) Contribution to preparation of meetings; (I) Provided information or documentation; (AM) Attendance at meetings; (M) Participation on missions; (T) Contribution to training at IRA; (R) Conduct of research; (S) Studies of local, national and international projects on HMP; (C) Collection of germplasm.**

Partners		Type of activity							
		PM	I	AM	M	T	R	S	C
Faculties and Institutes of Research	FS Gafsa			X					
	FS Gabès			X		X			
	FS Monastir		X	X	X	X	X		
	FS Tunis			X		X			
	FP Monastir			X	X				
	FM Monastir								
	ESHE Chott Meriem	X		X					
	ESA Kef		X	X					
	INSAT			X		X	X		
	I SB Monastir			X					
	INAT	X	X	X		X	X		
	INRAT								
	INREGREF			X	X		X		X
	INRAP			X					
INRST									
Development Agencies	Central Offices	DGPA		X	X				X
		DGF		X	X				
		BNG			X				
		APIA							
		AVFA							
		ONAGRI							
	CEPEX		X						
	Regional Offices	CRDA			X				X
		CFRA			X				
Offices (ODS)				X					
NGOs	AJZ			X				X	
	ACRP Beni Khédache			X					
	ADD Beni Khédache			X					
	APB Beni Khédache			X				X	
	A M T Tataouine			X					
	ADPPCC Tamezret								
	ASNAPED Douiret			X					
	APM Hammem –Sousse								
	ASO Chénini								
Socio-professional Organisations	UTAP			X					
	Coopérative de néroli –Nabeul								
	GICA								
	Chambre Syndicale des producteurs d'huiles essentielles								
Donors	Banques (BNA)								
	Fond de promotion de l'emploi 21-21								
	Organismes internationaux (FIDA, Banque Mondiale, GEF...)								

<b>Industry, Labs and Private Sector Businesses</b>	IDEAL FOOD				X					
	KAMY									
	CERINA									
	Ajennet Tounes				X					
	AROMAT									
	SCHEDAN									
	KIPROFA									
SAPIA										
<b>Businessmen and Exporters</b>	Société internationale import export et commerce internationale				X					
	Société Bouselmi export									
<b>Pharmacists and Physicians</b>	AMOR Kamel				X					
	GODCHA Mohamed				X					
	SAIDI Salaheddine				X	X				
<b>Herbalists</b>				X					X	

## Appendix 1. List of Acronyms

**ACRP** *Association de Conservation et de Réhabilitation du patrimoine Beni Khédache*  
**ADD** *Association du Développement Durable de Beni Khédache*  
**ADPPCC** *Association du Développement et de la Protection du Patrimoine Culturel et Cultural de la région de Tamezret*  
**AJZ** *Association de Jeunes de Zammour*  
**AMT** *Association Mémoire de la Terre Tataouine*  
**APB** *Association de Préservation de la Biodiversité -Beni Khédache*  
**APIA** *Agence de Promotion des Investissements Agricoles*  
**APM** *Association de plantes médicinales à Hammem –Soussse*  
**ARS** *Agricultural Research Service (USDA)*  
**ASO** *Association de Sauvegarde de l'Oasis de Chénini*  
**ASNAPED** *Association Sauvegarde de la nature et de Protection de l'environnement à Douiret*  
**AVFA** *Agence de la Vulgarisation et de la Formation Agricoles*  
**BNA** *Banque Nationale Agricole*  
**BNG** *Banque Nationale de Gènes*  
**CEPEX** *Centre de Promotion d'Exportations*  
**CFRA** *Centre de formation et de Recyclage Agricole*  
**CRDA** *Commissariat Régionale de Développement Agricole*  
**DGF** *Direction Générale des Forêts*  
**DGPA** *Direction Générale de la Production Agricole*  
**ESA** *Ecole Supérieure d'Agriculture*  
**ESHE** *Ecole Supérieure d'Horticulture et d'Elevage*  
**FM** *Faculté de Médecine*  
**FP** *Faculté de pharmacie*  
**FS** *Faculté de sciences*  
**GEF** *Global Environment Facility*  
**GICA** *Groupement des Industries de Conserves Alimentaires*  
**GIS** *Geographic Information System*  
**GRIN** *Genetic Resource Information Network (USDA-ARS)*  
**HMPP** *Herbal and Medicinal Plants Project*  
**ICARDA** *International Center for Agricultural Research in the Dry Areas*  
**ICD** *International Cooperation and Development (USDA)*

**INAT** *Institut National Agronomique de Tunisie*  
**INRAP** *Institut National de Recherche et d'Analyses Physico-chimiques*  
**INRGREF** *Institut National de Recherche en Génie Rural, Eaux et Forêts*  
**INRAT** *Institut National de la Recherche Agronomique de Tunisie*  
**INRST** *Institut National de Recherche Scientifique et Technique*  
**INSAT** *Institut Supérieur des Sciences Appliqués et des Technologies*  
**IRA** *Institut des Régions Arides*  
**IRESA** *Institution de Recherche et d'Enseignement Supérieur Agricole*  
**ISB** *Institut Supérieur de Biotechnologie*  
**IUCN** *International Union for the Conservation of Nature*  
**MAERH** *Ministère de l'Agriculture, de l'Environnement et Ressources Hydrauliques*  
**MEDUSA** *Conservation and Sustainable Use of Wild Plants of the Mediterranean Region (Network)*  
**NAL** *National Agricultural Library*  
**NARP** *North Africa Regional Program (ICARDA)*  
**NPLG** *National Plant Germplasm Laboratory (USDA-ARS)*  
**ODS** *Office de Développement de Sud*  
**OIRP** *Office of International Research Programs (USDA-ARS)*  
**ONAGRI** *Observatoire Nationale de l'Agriculture*  
**ONG** *Organisations non gouvernementales*  
**PAD** *Project Appraisal Document*  
**PDF-A** *Project Development Facility Block A Grant (GEF)*  
**PMU** *Project Management Unit*  
**RSED** *Research and Scientific Exchange Division (USDA-FAS-ICD)*  
**TD** *Tunisian Dinars*  
**TOR** *Terms of Reference*  
**USD** *U.S. Dollars*  
**USDA** *United States Department of Agriculture*  
**UTAP** *Union Tunisienne pour l'Agriculture et la Pêche*

## Appendix 1: Assessment of last year's Next Steps

<b>Action</b>	<b>Comments</b>
1) Confirm short- and long-list of target species	Keep the existing list but open the list by taking into account the results of the national economic study and the socio-economic findings. Provide an updated list with global conservation needs (Tables 1 and 2) with a comment that the list will be modified/localized/regionalized based on inputs after circulation. Step 1: Table 2 will be distributed to stakeholders. Step 2: Decide on national priorities for the development project. Step 3: Implement actions in the GEF project.
2) Develop justification and 1 paragraph abstract for all stakeholders	The project has made good progress on assembling a national inventory of the sector. Table 3 documents the relative level of inputs to the project contributed by interested organizations (as information or research results).
3) Provide fiche techniques for the model plants	Rosemary and caper are completed; <i>Artemisia herba-alba</i> ; <i>Allium roseum</i> (limited information available); and <i>Juniperus phoenicia</i> will be completed by Nov 2003.
4) Visit relevant activities in the north of Tunisia	Project team visited universities (Le Kef, Monastir), private companies (Vergers de Ouzra), national research institutes (INAT, INRAT) and development agencies (DGF, DGPA).

5) Local studies	Fully accomplished; report by 15 Sep 2003; Glossy report by 15 Dec 2003. Create and submit a contribution to ICARDA's Caravan.
6) National studies	Fully accomplished and report received; Glossy report by 15 Dec 2003
7) International studies	Journal article combining the two reports above. Christiansen and Simon will help to organize a journal paper. International study: Shaqir to provide terms of reference for the international marketing study. El-Mourid will provide a relevant paper he is aware of from Jordan that will serve as an example.
8) Order capital equipment	Mitsubishi Pajero, laptop and projector purchased in 2002.
9) Submit request for a training course from ICARDA	IRA will submit a request through ICARDA-NARP. It is recommended that HMPP technicians/researchers spend 1-2 weeks at ICARDA/Syria to work with the GRU staff.
10) Prepare study tour to Jordan, Lebanon and Syria	Accomplished 17-26 Dec 2002; New request for regional counterparts from Morocco, Jordan, and Egypt to Tunisia in plan of work.
11) Summarize Tunisian projects with relevance to the HMPP	Accomplished for the current projects. The project team should now look retrospectively at what was done in the past. These abstracts will be used in the website.
12) Establish a website that describes the project	ICARDA's relevant unit has accepted the task, which will be accomplished by Nov 2003.
13) Collection and review of Tunisian and regional HMP literature	The team will investigate the IUCN project. When the regional study tour is organized, the team will ask visiting counterparts from Egypt, Morocco and Jordan to bring background information from their countries. Contact Hani Daraghmi from UNDP for progress in the Sinai project.
14) Plan and implement annual report, financial report and possible coordination meeting	Reports to date have been satisfactory but could be improved with more quantitative details. ICARDA-NARP will work with IRA to improve the content. Next annual report in Sep 2003; next progress report in Dec 2003. ICARDA to send budget rectification letter to ARS & FAS.
15) Provide contact information about existing relevant projects and activities in the region and beyond.	MEDUSA info provided by ICARDA; Neffati and El-Mourid will attend an upcoming meeting organized by EuroMed in Tunisia on herbal and medicinal plants. Phil Simon and Joyce Foster will provide contact information. International Society for Horticultural Science; Journal of Herbs and Spices.
16) Provide references on existing onion and garlic packages	Provided by Phil Simon during the mission.
17) Prepare USDA-FAS-ICD-RSED-SCRIP proposal(s)	Dropped last year; will reconsider this year if SCRIP has a relevant theme in its call for proposals, due 15 Dec 2003
18) Prepare Cochran Fellowship Proposal or Exchange visit proposal.	ARS to follow up with a request for 2 people each from Jordan, Egypt, Tunisia, Algeria, Morocco to visit HMP production, extraction and marketing concerns in the US

## Appendix 2: Work Plan Next Steps

<i>Action Schedule (2003/2004)</i>
<b>1. Socio-economic Component</b>
a. Socio-econ study to be completed by 15 Sep; translate into English by ICARDA by 15 Nov; publish the two reports as glossy documents Mar 2004; combine papers in an international journal (PS/SC)
b. The socio-economic study methodology from the survey in Matmata, Medénine and Tataouine will be reviewed and the questionnaire made more parsimonious. The shortened version will be transferred to as many additional regions as possible this year for replication by partner institutions under the supervision of IRA: CENTRAL: Sidi Bouzid, Kasserine, Le Kef; NORTHWEST: Jendouba; NORTHEAST: Nabeul
c. International market study: TORS to be provided by ARS to identify whether Tunisia has a comparative advantage for the target species (by 1 Jul 2003); ICARDA to hire a consultant and complete the study by 1 Nov 2003)
<b>2. Genetic resources management</b>
a. If the access permission for collection is granted then collection and conservation of <i>Allium/Daucus</i> will be conducted by IRA and ARS in April 2004
b. New varieties of rosemary will be introduced to the collection
c. <i>Fiche techniques</i> for 3 more of the short-listed species will be prepared this year
d. Propagation with CRDA Gabès of caper, thyme, rosemary, and others
e. Experimental lab testing of vegetative propagation for rosemary
f. Chemical analysis of active components for <i>Artemisia campestris</i> , <i>A. herba-alba</i> , <i>Allium roseum</i>
<b>3. Institutional Arrangements and Project Partnership Arrangements</b>
a. Complete the matrix on partnerships
b. Half page descriptions of institutions
c. Transfer survey methodology to institutions in new regions
<b>4. Systems of production</b>
a. <i>Fiche techniques</i> for 3 more plants, emphasizing the agronomic aspects of cultivation
b. Plant multiplication program with CRDA
c. Formulate extension package for the target species and borrow information on HMP available from IUCN's program in Egypt, Libya, Tunisia, Algeria and Morocco
d. Install a distillation demonstration unit with the Swiss
<b>5. Visits, training and regional cooperation</b>
a. Ramzi Mejdoub (IUCN counterpart) to share information from its regional HMP Project
b. Investigate potential for co-financing by IUCN
c. Contribute to the IUCN compendium and future meeting of the Committee of Experts
d. Invite Moroccans, Jordanians (from the GEF project on HMP) and Egyptians (from the UNDP project in the Sinai) to visit the project in Feb 2004
e. Project management to submit written training request to ICARDA for GIS, Genebank Management and Biotechnology Techniques (as soon as possible)
f. Visit to relevant labs in the USDA-ARS system (three persons to Oxford, MS, Beaver and Washington, DC for ten days in Sep 2003
g. Reinforce ARS visits to the project to develop scientist to scientist cooperation: organize the next visit for Oct 2003

<b>6. Project management</b>
a. Propose 10-month no-cost project extension to the end of 2004
b. Plan for a PDF-Block A overlap from in 2004
c. Next Technical Committee meeting in Dec 2003
d. Next Steering Committee meeting in Mar 2004
e. Annual Report Sep 2003
f. Progress Report Dec 2003
g. Financial Report in Sep and Dec 2003
h. Next Supervision Mission in Mar 2004

### Appendix 3: GEF/PDF-A next steps matrix.

<i>Action</i>	<i>By whom</i>	<i>Action Schedule</i>
Obtain Tunisian government acceptance to provide counterpart funding from existing projects	DG IRA, Project Manager and Team, DGPA, ICARDA	Jun 2003
Tunisian government to approach WB as the GEF executing agency	Ministry of Economic Development/International Cooperation	Jul 2003
Define the research and development actions that will be financed by Tunisia in a proposed GEF project and describe the suggested financial contribution of all partners (Table format)	DGPA/MOA; IRA; Project Team and ICARDA	Aug 2003
Enter the project into the GEF pipeline through Tunisian administration to GEF Focal Point to the GEF Secretariat.	DGPA/MOA	Sep 2003
Prepare Concept Note and apply for PDF-A Grant (\$50K)	Project Team with ICARDA and USDA	Jan 2004
GEF/PDF-A review of the socio-economic work	GEF Consultant, Project Manager, Team Leaders	Mar 2004
GEF/PDF-A review of the inventory and database of biodiversity	GEF Consultant, Project Manager, Team Leaders	Mar 2004
GEF/PDF-A review of farming systems adaptation	GEF Consultant, Project Manager, Team Leaders	Mar 2004
GEF/PDF-A review of institutional arrangements	GEF Consultant, Project Manager, Team Leaders	Mar 2004
GEF/PDF-A subject matter experts present their components at an external review	GEF, Tunisian Government, ICARDA, USDA, IRA DG, Project Manager and Team	Jun 2004
Conduct 5-day workshop for adjustments based on constructive criticisms by reviewers	Project Manager, Team Leaders, PAD Consultant	Jul 2004
Present draft final reports to Steering Committee, GEF and World Bank	Project Manager, Team Leaders, PAD Consultant	Aug 2004
Appoint an external Consultant to write the PAD	External Consultant	Sep 2004
Finalize draft PAD document and submit to GEF Council	External Consultant	Oct 2004

<b>Appendix 5: Contacts</b>	
<b>Ecole Supérieure D'Horticulture (ESH)</b>	
Messaoud Mars	Voice: +216-73-348544
4042 Chott-Mariem	Fax: +963-73-348691
Sousse, Tunisia	Email: messaoud.mars@laposte.net
<b>ICARDA</b>	
Mohamed El-Mourid	
ICARDA-NARP	Voice: +216-71-7107115
B.P. 435 El Menzah I	Fax: +963-71-707574
1004 Tunis, Tunisia	Email: icarda-tunis@cgiar.org
	Email: secretariat.icarda@email.ati.tn
<b>IUCN</b>	
Ramzi Mejdoub	Voice: +216-71-808030
North Africa Program Coordinator	Fax: +963-71-809310
Blvd. De l'environnement	Email: mejdoub.ramzi@topnet.tn
1080 Charguia I, Tunis, Tunisia	<a href="http://iucn.org/">http://iucn.org/</a>
<b>IRA</b>	
Hoceine Khatteli	Voice: +216-75-633-005
Route du Djorf km 22.5	Fax: +216-75-633-006
4119 Médenine, Tunisia	Email: houcine.khatteli@ira.rnrt.tn
<b>Mohamed Neffati</b>	
Route du Djorf km 22.5	Voice: +216-75-633-005
4119 Médenine, Tunisia	Fax: +216-75-633-006
	Email: neffati.mohamed@ira.rnrt.tn
<b>Mongi Sghaier</b>	
Route du Djorf km 22.5	Voice: +216-75-633-005
4119 Médenine, Tunisia	Fax: +216-75-633-006
	Email: s.mongi@ira.rnrt.tn
<b>IRESA</b>	
Abdelaziz Mougou	Voice: +216-71-802643
President	Fax: +216-71-784-447
30 Rue Alain Savary, 1082 Tunis, Tunisia	Email: a.mougou@iresa.agrinet.tn
<b>MINISTRY OF AGRICULTURE</b>	
Daaloul Abderrazak	Voice: +216-71-842296
Director General, Agricultural Production	Fax: +216-71-780246
30 Rue Alain Savary, 1002 Tunis, Tunisia	
<b>Ghoudi Zine El Abidine</b>	
Financement, Investissement et Organization Paysanne	Voice: +216-71-782474
30 Rue Alain Savary, 1002 Tunis, Tunisia	Fax: +216-71-796170
	Email: ghoudi-z@francite.com

<b>U.S. EMBASSY, TUNISIA</b>	
Sma Abdelkarim	Tel: +216-71-107486/107000
Agricultural Specialist	Fax: +216-71-107101
144 Avenue de la Liberte	Cell: +216-98-336930
1002 Tunis, Tunisia	Email: usemb.tunisag@planet.tn
<b>USDA-AGRICULTURAL RESEARCH SERVICE</b>	
Scott Christiansen, International Program Leader	Voice: +1-301-504-4868
5601 Sunnyside Ave., Room 4-1126	Fax: +1-301-504-4528
Beltsville, MD 20705-5141	Email: sac@ars.usda.gov
Joyce G. Foster, Research Chemist	Voice: +1-304-256-2809
USDA, ARS, Appalachian Farming Systems Research	Fax: +1-304-256-2921
1224 Airport Road	Email: jfoster@afsrc.ars.usda.gov
Beaver, WV 25813-9423	
Ibrahim Shaqir, International Affairs Specialist	Voice: +1-301-504-4522
5601 Sunnyside Ave., Room 4-1137	Fax: +1-301-504-4528
Beltsville, MD 20705-5141	Email: ims@ars.usda.gov
Philipp W. Simon	Voice: +1-608-264-5406
USDA, ARS, Vegetable Crops Research Unit	Fax: +1-608-262-4743
Dept. of Horticulture, University of Wisconsin	Email: psimon@facstaff.wisc.edu
1575 Linden Drive	website: www.hort.wisc.edu/usdavcru/
Madison, WI 53706	
<b>STEERING COMMITTEE</b>	
Ali Abaab	Voice: +216-71-795414
SERST	Fax: +216-71-796165
3 Rue Hooker de Litel	Email: ali.abaab@serst.rnrt.tn
1002 Belvédère, Tunis	
Belgacem Hanchi	Voice: +216-71-703161
Advisor, MAEHR	Fax: +216-71-702431
Centre Urbain Nord	Email: cc@mineat.gov.tn
1004 Tunis, Tunisia	
Mohamed Marrakchi, Director	Voice: +216-71-872600
Molecular Genetics, Immunology and Biotechnology Lab	Fax: +216-71-885480
Faculty of Sciences of Tunis	Email: Mohamed.marrakchi@fst.rnu.tn
Campus Universitaire, 2092 El Manar, Tunisia	
Mohamed Nejib Rejeb	Voice: +216-71-280039 / 718055
Director General, INRGREF	Fax: +216-71-717951
Rue Ahmed Karray	Email: Rejeb.Nejib@iresa.agrinet.tn
2080 Ariana, Tunis, Tunisia	