

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

**Project Identification Mission**  
**27-29 September 2003**

1. Drs. Scott Christiansen, International Program Leader, Steve Duke, Supervisory Plant Physiologist (both from the United States Department of Agriculture, Agricultural Research Service (USDA-ARS), and Ikhlas Khan, Assistant Director of the National Center for Natural Products Research at the University of Mississippi, visited the *Institut National de la Recherche Agronomique* (INRA), Rabat, Morocco from 27-29 September 2003 to discuss the possibility to cooperation in establishment of a Herbal and Medicinal Plants Project (HMPP).
2. The mission wishes to thank Drs. Hamid Narjisse, Director of INRA, Abdelmajid Idrissi, Deputy Director of INRA, and all the INRA staff for the well organized tours, meetings, hospitality and generosity. Appreciation is also extended to Dr. Mohamed El-Mourid, North African Regional Coordinator from the International Center for Agricultural Research in the Dry Areas (ICARDA) for organizing the visit and the numerous fruitful meetings.
3. On 28 Aug 2003 the U.S. visitors were hosted by Mr.El Hachemi Aouragh, Dr. Chaouki Al Faiz and Ms.Hamida El Hilali on a field tour to visit HMP activities in Khémisset and Oulmes. The mission would like to express its gratitude to the DPA and CT officers who set up contacts with the producers, which included a stops at *Société Bioland Maroc*, a French company that collects, distills and extracts essential oil from jasmine, laurel, acacia, caroub (*Ceratonia siliqua*) and rosemary. The visit to Oulmes provided an overview of the lavender cultivation that has spread to over 1200 ha in a fairly concentrated area. The visit provided a clear view of issues faced by both the farmers and the government agencies.
4. During the field trip, Drs. Christiansen and Al-Faiz discussed a first draft list of potential target plants for inclusion in the project (Table 1). INRA and its stakeholders should discuss and verify the plants that should be included.
5. On 29 Sep 2003, Drs. Christiansen, Duke, Khan and Mr. Aouragh visited the U.S. Agency for International Development (USAID) in Rabat to explain the purpose of the current mission to Morocco and to learn whether a project on herbal and medicinal plants might help to diversify agricultural production by developing alternatives and complementary choices to crops now under cultivation. In particular, wheat, which is subsidized at approximately twice the international market price, will be negatively impacted by import of cheaper grain sources if and when a Free Trade Agreement (FTA) is negotiated with the U.S. A new strategy will begin implementation on 1 Oct 2003 that will concentrate on negotiation and implementation of the FTA.
6. Discussions with Msrs. Richard Rousseau, Director, Department of Economic Growth and Jaouad Bahaji, Coordinator of the Development Program were informative and supportive. Mr. Rousseau explained current and planned business environment and business development issues that should help Morocco be better prepared to compete and trade in global markets. A 1995 USAID report on the HMP sector (608-0210-C-00-2044) was identified and Mr. Rousseau put the mission in touch with Mr. Don Humpal from Development Alternatives Inc. (DAI) who was the Team Leader when the report was prepared. He also suggested that Dr. Christiansen meet with Mr. John Thomas, an environmental officer who is returning to USAID/Washington in the coming weeks. Of particular interest is the new Moroccan Agricultural Strategy, which according to INRA, clearly indicates the intent of the government to domesticate herbal and medicinal plants and focus on adding value to HMP products.

7. The above group also paid a courtesy visit to representatives of the USDA at the U.S. Embassy. Ms. Merritt Chesley, Agricultural Attaché, USDA Foreign Agriculture Service (FAS) was informed of progress made in Tunisia and briefed on plans for a similar project in Morocco. Discussions concerning projects using proceeds of U.S. sales from Section 108 (d) agricultural commodities to Morocco were useful and the team will use the guidance to explore the possibility of submitting a proposal.

8. On the afternoon of 29 Sep 2003, Dr. Narjisse presided over a HMP workshop at INRA Headquarters that started with presentations by Drs. Christiansen, Khan and Duke and followed by presentations by Dr. Al Faiz, Mr. Aouragh and Dr. Ahmed Amri (an INRA employee currently seconded to ICARDA as the Coordinator for a United Nations Development Programme / Global Environment Facility project on agrobiodiversity in Jordan, Lebanon, Palestine and Syria). A smaller group convened after the workshop with Dr. Narjisse, which contributed significantly to the elaboration of next steps (Appendix 1).

9. The mission and project team reviewed a list of short-listed target species (Table 1) and elaborated a set of logical steps for a better understanding of natural product chemistry and quality of compounds contained in the plants. INRA could usefully develop the following for faster development of the target species:

- a comprehensive product marketing monograph,
- an agronomy bulletin,
- chemical profile by month,
- assessment of chemical quality analysis in cooperation with the private sector,
- exploration of bioactivity.

10. During the field tour to Oulmes on 28 Sep 2003, it was clear that Moroccan lavender farmers were not generally aware of the value of creating a standardized product for the market. A sustainable regular supply of plants possessing chemical compounds of a known quality enhances the probability of a long-term business relationship with buyers. There needs to be a discussion with industry as to what constitutes quality and the farmers need to organize themselves into cooperatives to eliminate or better negotiate with middle men for the price of their products. Provided with feed back from industry on plant extract samples, high quality compounds might be concentrated through selection of ecotypes or “chemotypes” in spaced plant nurseries. Due to climatic and genetic variation, herbal and medicinal plants possess considerable variation in chemical constituents. INRA can play a key role in assembling the target species, growing them in spaced plant nurseries and cooperating with partners in Morocco and the U.S. to characterize the chemical constituents. INRA can then offer the best plant materials and agronomic bulletins to supply farmers with the establishment, management, harvesting and post-harvest processing information.

11. It was agreed that INRA could lead a Moroccan team in development of a research / development project designed to support the HMP sector. It should assign a team to identify all relevant national projects in the HMP or related sectors. During the discussion at the workshop in 29 Sep 2003, it was mentioned that a GEF Medium Sized Project was already approved for Morocco; however, it was not possible to find evidence on the web for such a project on the GEF, UNDP or WB websites:

<http://www.gefonline.org/projectList.cfm>

[http://www.gefweb.org/Documents/Council\\_Documents/GEF\\_C21/inf.14.html](http://www.gefweb.org/Documents/Council_Documents/GEF_C21/inf.14.html)

[http://www.undp.org/spp/cty/NORTH\\_AFRICA\\_MIDDLE\\_EAST/MOROCCO/ov.htm](http://www.undp.org/spp/cty/NORTH_AFRICA_MIDDLE_EAST/MOROCCO/ov.htm)

[http://www-wds.worldbank.org/servlet/WDS\\_IBank\\_Servlet?rc=82545&ptype=advSrch&pcont=results&setID=3116777&psz=100&sortby=D&sortcat=D&pno=1](http://www-wds.worldbank.org/servlet/WDS_IBank_Servlet?rc=82545&ptype=advSrch&pcont=results&setID=3116777&psz=100&sortby=D&sortcat=D&pno=1)

It was thought that the aforementioned project was limited in geographical scope in a higher rainfall zone, concentrating on the Middle Atlas region. If the project exists, INRA should engage the project management of this new GEF project as soon as possible to define the comparative advantages of having another project that works in the semi-arid and arid zones. The above project is in association with UNDP while the currently discussed effort would be aligned with the new World Bank loan on Rainfed Agriculture (see websites below for a full description of the project).

(English) [http://www-wds.worldbank.org/servlet/WDS\\_IBank\\_Servlet?pcont=details&eid=000112742\\_20030521151920](http://www-wds.worldbank.org/servlet/WDS_IBank_Servlet?pcont=details&eid=000112742_20030521151920)

(French) [http://www-wds.worldbank.org/servlet/WDS\\_IBank\\_Servlet?pcont=details&eid=000012009\\_20030912131441](http://www-wds.worldbank.org/servlet/WDS_IBank_Servlet?pcont=details&eid=000012009_20030912131441)

12. It would be highly desirable to use a mechanism to quantify the participation and inputs of partners, both to document involvement during preparation of the project but also to make objective decisions on partnerships based on who provided input. Important indicators that might help to objectively choose partners based on performance include: financial inputs; contribution to preparation of meetings; contribution of information or documentation; attendance at meetings; participation on missions; contribution to training; conduct of research; studies of local, national and international projects on HMP; and collection of germplasm.

13. Dr. Christiansen recommended the involvement of ICARDA because of the desirability of linking GEF/HMP efforts in Morocco, Tunisia, Egypt and Jordan.

([http://www.gefweb.org/Documents/Project\\_Proposals\\_for\\_Endorsement/Egypt\\_-\\_Second\\_Matrouh\\_Resource\\_Mgt\\_Project.pdf](http://www.gefweb.org/Documents/Project_Proposals_for_Endorsement/Egypt_-_Second_Matrouh_Resource_Mgt_Project.pdf))

([http://www.gefweb.org/Documents/Project\\_Proposals\\_for\\_Endorsement/Jordan\\_-\\_Conservation\\_of\\_Medicinal\\_and\\_Herbal\\_Plants.pdf](http://www.gefweb.org/Documents/Project_Proposals_for_Endorsement/Jordan_-_Conservation_of_Medicinal_and_Herbal_Plants.pdf))

However, owing to its experiences with UNDP, ICARDA should contemplate the desirability of submitting its own proposal to GEF or the International Fund for Agricultural Development (IFAD) for a regional project. It is recommended that Dr. Abdelmajid Slama be contacted to seek support and guidance.

14. Drs. Khan and Duke recommended that the Moroccan authorities consider modifying the role of the National Biotechnology Laboratory to include work on natural product chemistry so that a complete set of modern instruments is available to serve interested institutions and universities. This idea has been profitably implemented in India, Singapore, Hong Kong, and China. Drs. Khan and Duke would be available to provide guidance on how this might be achieved.

15. **Contacts and addresses:** Appendix 3.

**Table 1: List of species with high priority for the project**

No.	Scientific name	Priority Class	Biodiversity Threatened	Industrial Interest
1	<i>Artemisia herba alba</i>	2	X	X
2	<i>Ceratonia siliqua</i>	3	--	X
3	<i>Laurus neobilis</i>	2	X	X
4	<i>Lavendula spp.</i>	2	X	X
5	<i>Mentha pulegium</i>	1	X	X
6	<i>Myrtus communis</i>	3	X	X
7	<i>Oreganum compactum</i>	3	X	X
8	<i>Oreganum elongatum</i>	1	X	X
9	<i>Rosmarinus officinalis</i>	2	X	X
10	<i>Thymus saturoides</i>	1	X	X
11	<i>Tanacetum annuum (Moroccan blue chamomile)</i>	1	--	X

Plant notes

- (1) Shrub threatened by overgrazing and over-harvesting for essential oils
- (2) Legume tree whose high value pods are eaten by animals or used by industry
- (3) Shrub used for essential oils and whose leaves are used for flavoring (bay leaves)
- (4) Shrub used in the production of essential oils for the perfume industry
- (5) Perennial herbaceous plant used for medicinal and aromatic purposes
- (6) Shrub used in the production of essential oils for cosmetics, soaps, shampoos and perfumes
- (7) Shrub used as a herb for cooking and for essential oil
- (8) Shrub called "Thym de Targuist" used in cooking; its essential oil has a high content of thymol
- (9) Shrub containing essential oils for cosmetics and medicines
- (10) Endemic shrub called "Thym doux Maroc" used for cooking and its essential oil
- (11) Endemic annual plant with unique blue essential oil; Morocco is the only country where produced, most of which is exported to the U.S.

## Appendix 1: New or reiterated Next Steps identified in the current mission.

<i>Action Schedule (2003/2004)</i>
<b>1. Socio-economic Component</b>
a. Organize farmers into cooperatives grouped around the selection of target species identified for the GEF project.
b. Product marketing documents are needed that include all aspects about target species (botanical information, plant geographic distribution, habit, marketing, pharmacology and pharmacognosy, traditional use, chemistry, wild versus cultivated forms, local/national/international market info, info to substantiate the that the plants are “generally regarded as safe”, info on mixtures/formulations.
c. INRA should contact Dr. Mongi Sghaier at IRA, Medéline to obtain a copy of the socio-economic survey and draft report on results from southern Tunisia.
<b>2. Genetic resources management</b>
a. Discuss and finalize the target species list for the project.
a. INRA should consider collection missions with USDA-ARS. If they are interested a request could be made to Dr. Christiansen, who will make the necessary inquiries with Dr. Ned Garvey at the USDA-ARS National Plant Germplasm Laboratory. If Morocco is willing to grant permission for such a collection, NPGS could schedule and allocate funds to cover the mission and limited agronomic grow-out activities in the future.
b. Create spaced plant nurseries with statistically sound (random and replicated layout for accessions) to serve as a basis for monthly sampling of plants marked “essential” in Table 1.
<b>3. Moroccan Partnership Arrangements</b>
a. The HMPP needs to identify institutional partners in the GEF project. The project document will need to specify what partners will do and what they will contribute as in-kind inputs, which will be summed for an estimation of the country counterpart contribution.
b. Linkages with IUCN should be investigated. Contact Ramzi Mejdoub (Appendix 3).
<b>4. Systems of production</b>
a. The mission suggested to adapt the Great Plains Framework for Agricultural Resource Management (GPFARM) for use in the HMPP, which could provide a tool to measure baseline farming systems productivity during preparation and validate impact from the GEF project during implementation. INRA should contact Dr. Christiansen if interested. <a href="http://infosys.ars.usda.gov/toccntnt.htm">http://infosys.ars.usda.gov/toccntnt.htm</a>
b. Start work on agronomy bulletins, incorporating relevant info from IUCN.
<b>5. Visits, training and regional cooperation</b>
a. Contact Dr. El-Mourid to nominate Moroccan participant for the upcoming HMP workshop involving Morocco, Tunisia, Egypt and Jordan in 2004 (organized by the project in Tunisia).
b. Dr. Christiansen to submit a Cochran Fellowship Program request on behalf of the Moroccans (2 GPFARM to Ft. Collins; 2 Natural Product Utilization to Oxford). Develop a schedule ASAP.
c. Drs. Khan and Duke would consider supporting the visit of an INRA staff member after receiving a short proposal outlining several specific research objectives and CVs of candidates from which to choose for the training. At this juncture INRA would need to find means to cover the international travel.
d. As soon as a decision to proceed with the project is made, INRA should invest in the development of a website. ICARDA could be approached to help as they helping to develop a website for the HMPP in Tunisia. The site should represent all project components (e.g. 1-6 in this table).
<b>6. Project management</b>
a. Review the GEF Next Steps Matrix with Moroccan decision makers to reach agreement on the Project Concept Note and leadership roles. This should include an investigation on whether Morocco has recently been approved for a Medium Sized Project and to discuss with project leaders to elaborate how Morocco will justify and/or reconcile two GEF projects.

**Appendix 2: GEF/PDF-B next steps. November 18, 2003 (Note: GEF Council Meeting Schedule - - 19-21 Nov 2003; 19-21 May 2004; 17-19 Nov 2004.)**

[http://gefweb.org/participants/Council/Meeting\\_Schedule/meeting\\_schedule.html](http://gefweb.org/participants/Council/Meeting_Schedule/meeting_schedule.html)

<i>Action</i>	<i>Schedule</i>
Obtain written documentation from the Government of Morocco (GOM) as evidence they will supply counterpart funding from existing projects	Dec 2003
Define the actions that will be financed by GOM in the proposed GEF project and describe the suggested financial contribution of all partners (Table format)	Feb 2004
Start work on an incremental cost analysis that will identify the GOM (production) and GEF (conservation) elements of the project.	Feb 2004
GOM to approach WB as the GEF executing agency by submitting a Concept Note and applying for PDF-B Grant (\$350K) through the GEF Focal Point to the GEF Secretariat.	Mar 2004
Prepare and implement a socio-economic survey of the target zones	Jun-Dec 2004
Prepare and review the inventory and database of biodiversity in Morocco	Jun-Dec 2004
Start work on GPFARM as a decision support tool to provide a baseline and a tool to monitor economic changes associated with introducing HMP to the farming system	Jun-Dec 2004
Hire an independent consultant to review and critique institutional arrangements	Nov-Dec 2004
National workshop to review work of the above teams	Jan 2005
Conduct 5-day workshop for adjustments based on criticisms from reviewers with consultant who will prepare the Project Appraisal Document (PAD)	Jan 2005
Present draft final reports to Steering Committee, GEF and World Bank	Jan 2005
Appoint an external Consultant to write the PAD	Jan-Mar 2004
Finalize draft PAD document and submit to GEF Council	Apr 2004

<b>Appendix 3: Contacts</b>	
<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>IFAD</b>	
Abdelmajid Slama, Director	Voice: +39-06-54592323
Near East and North Africa Division	Fax: N/A
107 via del Serafico	Email: a.slama@ifad.org
Rome, Italy	
<b>INRA</b>	
Chaouki Al-Faiz	Voice: +212-37-770955
INRA, Forage Program	Fax: +212-37-770049
B.P. 415	Email: xxxxxx@awamia.inra.org.ma
Rabat, Morocco	
El Hachmi Aouragh	Voice: +212-61-235006
INRA	Fax: +212-23-403209
B.P. 589	Email: arido@iam.net.com
Settat, Morocco	Email: aouragh35@yahoo.fr
Hamid Narjisse, Director of INRA	Voice: +212-37-770955
INRA, Av. de la Victoire	Fax: +212-37-770049
B.P. 415	Email: narjisse@awamia.inra.org.ma
Rabat, Morocco	
<b>IRA</b>	
Mongi Sghaier	Voice: +216-75-633-005
Route du Djorf km 22.5	Fax: +216-75-633-006
4119 Médenine, Tunisia	Email: s.mongi@ira.rnrt.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>UNIVERSITY OF MISSISSIPPI</b>	
Ikhlas Khan, Assistant Director NCNPR	Voice: +1-662-915-7821
P.O. Box 1848	Fax: +1-662-915-7989
The University of Mississippi School of Pharmacy	Email: ikhan@olemiss.edu
University, MS 38677-1848	
<b>USAID</b>	
Jaouad Bahaji	Voice: +212-37-632001 Ext 2317
Ambassade des Etats-Unis	Fax: +212-37-632012
10, Avenue Mehdi Ben Barka	Email: jbahaji@usaid.gov
B.P. 120 – Souissi	<a href="http://www.usembassy-morocco.org.ma">www.usembassy-morocco.org.ma</a>
Rabat, Maroc	

Richard Rousseau	Voice: +212-37-632001 Ext 2377
Ambassade des Etats-Unis	Fax: +212-37-632012
10, Avenue Mehdi Ben Barka	Email: rrousseau@usaid.gov
B.P. 120 – Souissi	www.usembassy-morocco.org.ma
Rabat, Maroc	
<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
Steve Duke, Supervisory Plant Physiologist	Voice: +1-662-915-1034
USDA, ARS, NPURU, Natural Products Center 1011	Fax: +1-662-915-1035
P.O. Box 8048	Email: sduke@olemiss.edu
University, MS 38677	
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