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ENVIRONMENTAL MANAGEMENT TRAINING FOR MEC PROGRAM COOPERATIVES/ASSOCIATIONS



DATE : APRIL 2013

MEC DOCUMENT 96

This document was produced by DAI for review by the United States Agency for International Development (USAID).

MOROCCO ECONOMIC COMPETITIVENESS

ENVIRONMENTAL MANAGEMENT TRAINING FOR MEC-SUPPORTED COOPERATIVES/ASSOCIATIONS

Submitted to USAID/Morocco, Bureau of Economic Growth – Assistance Objective
N° 3: Reduced Barriers to Trade and Investment

By DAI

Contract Number: EEM-I-00-07-00009-00; Mission Order: EEM-I-07-07-00009

The opinions expressed in this document are those of the author and do not necessarily reflect the view of the United States Agency for International Development (USAID) or the United States Government.

Morocco Economic Competitiveness Program

8, rue du Rif

Souissi

10 000 Rabat

Morocco

Tel: (212) 05 37 63 05 59

Fax: (212) 05 37 63 05 61

andrew.watson@dai.com

<http://www.mecprogram.ma>

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ACRONYMS

AMP	Aromatic and Medicinal Plants
EA	Environmental Assessment
EMP	Environmental Management Plan
HCEFLCD	Haut Commissariat aux Eaux et Forêts et à la Lutte Contre la Désertification (Moroccan Water, Forestry, and Desertification Control Service)
MEC	Morocco Economic Competitiveness Program
ND	Negative Determination
PEMP	Project Environmental Management Plan
PERSUAP	Pesticide Evaluation Report and Safe Use Action Plan
USAID	United States Agency for International Development
WHO	World Health Organization

SUMMARY

The training discussed in this report was designed to help program beneficiaries understand the basic principles of environmental management as defined by the MEC Program. To accomplish this, the trainer focused on the environmental review conducted and the environmental management plan developed as part of the program. The training was also based on a preliminary reconnaissance to assess the beneficiaries' experience and determination with regard to environmental management within their respective projects to pinpoint their environmental management training needs.

The training was targeted at MEC Program cooperatives/associations in the two areas served by the program, namely the Abda-Doukkala and Oriental regions. The participants in the training workshops were selected from among the members of the Boards of Directors of associations and cooperatives assisted by the program. The workshops were also attended by representatives of MEC Program partner organizations. Of a total of 165 participants, 17 (10%) were women and 40 (24%) were youths under the age of 36.

The subject areas covered differed from one workshop to another according to the activities of the target cooperative/association and based on the preliminary reconnaissance used to pinpoint the environmental management training needs of each cooperative/association. The training workshops dealt with the following general topics:

- MEC Program environmental review procedures for grant-funded projects;
- Status of the environmental review of each MEC Program grant-funded project;
- Awareness of the environmental impact of wastewater disposal and wastewater treatment options;
- Awareness of the environmental impact of improper waste management and good waste management practices;
- Awareness of the environmental impact of fertilizer and pesticide use and good practices for the application of these products;
- Environmental management plan for a dairy plant;
- Exercise for the development of an environmental management plan for the sustainable harvesting of aromatic and medicinal plants.

I. BACKGROUND

The objective of USAID's Morocco Economic Competitiveness (MEC) Program is to reduce barriers to trade and investment by:

- Supporting legislative and regulatory reforms designed to improve the business climate in Morocco;
- Optimizing the use of water resources and increasing productivity, competitiveness, and employment in the country's agricultural sector; and
- Supporting workforce development efforts to create a labor force capable of meeting the needs of a competitive economy.

Program activities are targeted at two areas of the country: the Oriental and Doukkala-Abda regions. The program itself is broken down into three components: (i) improving the economic climate in Morocco; (ii) sustainable use of water resources in agriculture; and (iii) workforce development.

The third program component (workforce development) is designed to equip workers in the agricultural sector with specific skills as a way to promote economic growth. Program activities under this component are designed to be conducted in close correlation with the other two program components. Activities geared to building the organizational capacity of NGOs served by the program are a prime example. Training workshops conducted as part of the program are designed to provide program beneficiaries with technical support and assistance, resulting in the better management of their projects.

The goal of the training discussed in this report was to help program beneficiaries understand the basic principles of environmental management as defined by the MEC Program. To accomplish this, the trainer focused on the environmental review conducted and the environmental management plan developed as part of the program. The environmental review identified four program activities with potential environmental effects, namely:

- The use of drip irrigation systems;
- Pesticide use in value chain activities for high-value local products;
- The recycling of treated wastewater for use in agriculture;
- Optimization of water use in the development of the agri-food industry.

The training was also based on a preliminary reconnaissance to assess the beneficiaries' experience and determination with regard to environmental management within their respective projects to pinpoint their environmental management training needs.

2. TRAINING PROGRAM

1.1 SCHEDULE

The training was targeted at MEC Program cooperatives/associations in the two program areas. It was conducted according to the following schedule:

Table 1: Training Schedule

Date	Activity	Location
October 31, 2012 through November 2, 2012	Meetings with the Al Azhar, Al Khadra, Ouled Youssef, Al Baraka, and El Wifak cooperatives to identify their training needs	Sebt Guezoula and Oualidia (Abda - Doukkala)
November 7, 2012	Training workshop for the Al Azhar and Al Khadra cooperatives	Sebt Guezoula (Abda – Doukkala)
November 8, 2012	Training workshop for the Ouled Youssef, Al Baraka, and El Wifak cooperatives	Oualidia (Abda – Doukkala)
March 7, 2013	Training workshop for the "Laayoune" and "Plan Maroc Vert" cooperatives	Berkane (Oriental)
March 8, 2013	Training workshop for the Colaimo cooperative	Oujda (Oriental)
	Training workshop for the Monlait cooperative	Berkane (Oriental)
March 9, 2013	Training workshop for the Beni Yaala cooperative	Jerada (Oriental)
March 10, 2013	Training workshop for the Intilaka water users association	Ain Beni Mathar (Oriental)
March 11, 2013	Training workshop for the Amal El Waha water users association	Figuig (Oriental)
March 12, 2013	Training workshop for the OFOQ cooperative	Talsint (Oriental)

I.2 PARTICIPANTS

The training was targeted at MEC Program cooperatives/associations in the two program areas, namely the Abda-Doukkala and Oriental regions. The following table shows the names, activities, and locations of the target cooperatives/associations.

Table 2: Cooperatives/Associations Receiving Training

Beneficiary	Type of Activity	Location	Region
Al Khadra Cooperative	Processing of capers	Sebt Guezoula	Abda-Doukkala
Azhar Cooperative	Processing of capers	Sebt Guezoula	
Ouled Youssef Cooperative	Milk collection center	Oualidia	
Baraka Cooperative	Milk collection center	Oualidia	
El Wifak Cooperative	Crop packing and packaging plant	Oualidia	
Monlait Cooperative	Processing of dairy products	Berkane	Oriental
<i>Association Plan Maroc Vert pour le Développement Agricole (the association known as the Morocco Green Plan for Agricultural Development)</i>	Drip irrigation	Berkane	
Laayoune Farmers Cooperative	Drip irrigation	Berkane	
COLAIMO Cooperative	Milk collection centers	Oujda	
Beni Yaala Cooperative	Processing of rosemary	Jerada	
Intilaka Irrigation Water Users Association	Drip irrigation	Ain Beni Mathar	
Amal El Waha Irrigation Water Users Association	Drip irrigation	Figuig	
Al Ofoq Cooperative	Processing of aromatic and medicinal plants	Talsint	

The participants in the training workshops were selected from among the members of the Boards of Directors of the associations and cooperatives listed in Table 2 above. The workshops were also attended by representatives of MEC Program partner organizations. The following table shows the number of participants in each of the nine workshops organized by the program.

Table 3: Number of Participants in the Training Workshops

Workshop	Date	Location	Target Cooperative/ Association	Number of participants	Women	Youths (<36 years of age)
1	11/7/2012	Centre Travaux Agricoles (CT 1602) [Farm Work Center 1602] - Sebti Guezoula	- Al Azhar Cooperative - Al Khadra Cooperative	23	0	7
2	11/8/2012	Auberge Oualidia Dream [Oualidia Dream Inn] - Oualidia	- Ouled Youssef Cooperative - Al Baraka Cooperative - El Wifak Cooperative	24	0	7
3	3/7/2013	“Morocco Green Plan” Association Headquarters (Berkane)	- Laayoune Cooperative - Association Plan Maroc Vert pour le Développement Agricole (Sahara)	25	0	1
4	3/8/2013 (AM)	Colaimo Cooperative Headquarters (Oujda)	Colaimo Cooperative	6	2	2
5	3/8/2013 (PM)	Monlait Cooperative Headquarters (Berkane)	Monlait Cooperative	11	1	5
6	3/9/2013	Beni Yaala Cooperative Headquarters (Jerada)	Beni Yaala Cooperative	18	1	4
7	3/10/2013	Dar Diafa (Ain Beni Mathar)	Intilaka Water Users Association	19	4	0
8	3/11/2013	Ecole Annahda [Annahda School] (Figuig)	Amal El Waha Water Users Association	19	2	4
9	3/12/2013	Dar Talib (Talsint)	Al Ofoq Cooperative	20	7	10
TOTAL				165	17	40

Thus, the training was dispensed to 165 participants, including 17 women (10%) and 40 youths (24%) under the age of 36.

3. DETAILED DESCRIPTION OF THE TRAINING CONTENT

The training workshops dealt with the following general topics:

- MEC Program environmental review procedures for grant-funded projects;
- Status of the environmental review of each MEC Program grant-funded project;
- Awareness of the environmental impact of wastewater disposal and wastewater treatment options;
- Awareness of the environmental impact of improper waste management and good waste management practices;
- Awareness of the environmental impact of fertilizer and pesticide use and good practices for the application of these products;
- Environmental management plan for a dairy plant;
- Exercise for the development of an environmental management plan for the sustainable harvesting of aromatic and medicinal plants.

The subject areas covered differed from one workshop to another according to the activities of the target cooperative/association and based on the preliminary reconnaissance used to pinpoint the environmental management training needs of each cooperative/association. The table on the next page shows the topics covered in each of the workshops.

Table 4: Topics Covered in the Training Workshops

Target Association or Cooperative	Activities of the Participating Cooperative or Association	Training Topics
Al Azhar (Sebt Guezoula)	Processing of capers	<ul style="list-style-type: none"> - MEC Program environmental review procedures for grant-funded projects; - Status of the MEC Program environmental review of each grant-funded project; - Awareness of the environmental impact of direct wastewater disposal and wastewater treatment options; - Awareness of the environmental impact of improper waste management and good waste management practices; - Awareness of the environmental impact of fertilizer and pesticide use and good practices for the application of these products; - Major MEC Program PERSUAP findings.
Al Khadra (Sebt Guezoula)		
Ouled Youssef (Oualidia)	Milk collection	
El Baraka (Oualidia)		
El Wifak (Oualidia)	Crop packing and packaging	
Laayoune (Berkane)	Drip irrigation	
Plan Maroc Vert (Berkane)		
Intilaka (Ain Beni Mathar)		
Amal El Waha (Figuig)		
Colaimo (Oujda)	Milk collection and processing	
Monlait (Berkane)		
Beni Yaala (Jerada)	Collection and processing of aromatic and medicinal plants	<ul style="list-style-type: none"> - MEC Program environmental review procedures for grant-funded projects; - Status of the MEC Program environmental review of the projects by the "Beni Yaala" and "Al Ofoq" Cooperatives;

Target Association or Cooperative	Activities of the Participating Cooperative or Association	Training Topics
Al Ofoq (Talsint)		<ul style="list-style-type: none"> - Awareness of the environmental impact of direct wastewater disposal, improper waste management, and fertilizer and pesticide use and good management practices; - Exercise for the development of an environmental management plan for the sustainable harvesting of aromatic and medicinal plants.

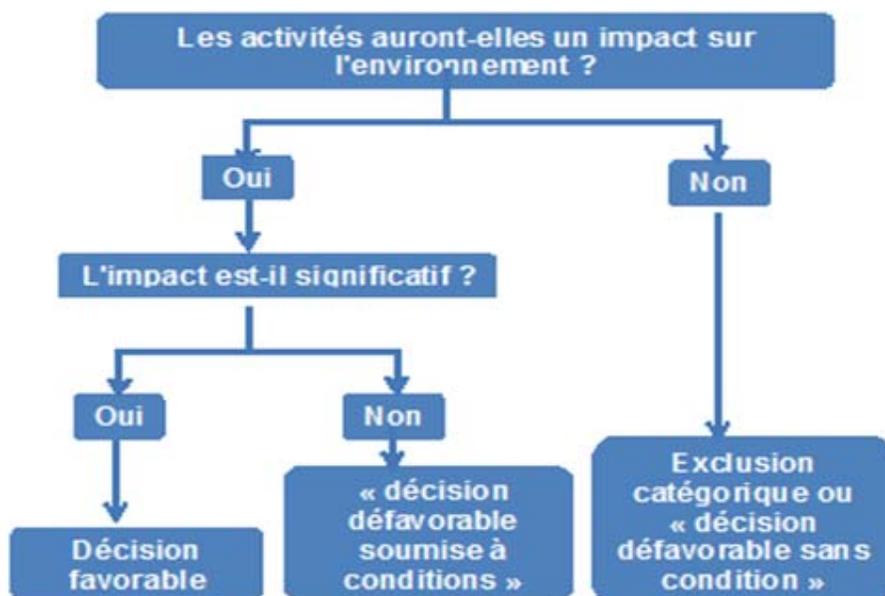
3.1 MEC PROGRAM ENVIRONMENTAL REVIEW PROCEDURES FOR GRANT-FUNDED PROJECTS

This training topic was designed to give participants an overview of the environmental review procedures to be used in assessing the potential environmental impacts of project activities. In fact, all grant applications are subject to an environmental review by MEC Program personnel based on a checklist furnished in one of the annexes of the program grants manual. The reviewer examines potential impacts on: (1) natural resources; (2) the ecosystem and biodiversity; (3) crop and forest production; and (4) community and social issues.

The reviewer’s examination of potential environmental impacts assumes the implementation of basic mitigation measures. This examination is used to make an environmental determination for each grant based on the following screening categories:

- Categorical exclusion and « negative determination without conditions »: provide a brief description of the authorized activities for USAID review and approval;
- « Negative determination with conditions »: draw up an environmental monitoring plan for the grant with environmental mitigation measures (PEMP);
- « Positive determination »: produce an environmental assessment (EA) meeting requirements under the USAID code of environmental procedures.

The following figure illustrates the environmental review process.



English translation: Will project activities have an environmental impact?

Yes	No
A major impact?	
Yes	No
Positive Determination	“Negative Determination With Conditions”
	Categorical Exclusion or “Negative Determination Without Conditions”

Figure 1: Environmental Determinations for Grant-Funded Projects

3.2 STATUS OF THE ENVIRONMENTAL REVIEW OF EACH MEC PROGRAM GRANT-FUNDED PROJECT

All grant-funded program activities are subject to the review process outlined above. Each grant application is examined against the checklist. The team draws up a PEMP for each grant award issued a « negative determination with conditions. ». So far, the MEC Program has not funded any activity issued a « positive determination. » Thus, no EA meeting USAID requirements under its code of environmental procedures has been produced as part of any project activities.

The following table shows the results of the environmental reviews of all grant-funded projects.

Table 5: Results of the Environmental Reviews of MEC Program Grants

Beneficiary	Date of the Environmental Review	Environmental Determination	PEMP
Al Khadra Cooperative	August 30, 2011	ND with conditions	Yes
Azhar Cooperative	August 30, 2011	ND with conditions	Yes
Baraka Cooperative	August 29, 2011	ND with conditions	Yes

El Wifak Cooperative	August 29, 2011	ND with conditions	Yes
Ouled Youssef Cooperative	August 29, 2011	ND without conditions	No impacts
<i>Association Plan Maroc Vert pour le Développement Agricole</i>	Sept. 14, 2011	ND with conditions	Yes
Laayoune Farmers Cooperative	Sept. 14, 2011	ND with conditions	Yes
COLAIMO	June 18, 2012	ND without conditions	No impacts
Monlait	May 24, 2012	ND without conditions	No impacts
Beni Yaala Zkara Cooperative	March 2, 2011	ND with conditions	Yes
Intilaka Water Users Association	March 2, 2012	ND with conditions	Yes
Amal El Waha Water Users Association	May 16, 2011	ND with conditions	Yes
Al Ofoq Cooperative	May 17, 2011	ND with conditions	Yes

Thus, each cooperative/association was familiarized with the provisions of the Project Environmental Management Plan (PEMP) for its project as outlined in the following series of tables.

Table 6: PEMP for the « Al Khadra » and « Al Azhar » Cooperatives

Environmental Determination: « Negative Determination With Conditions »		
Potential Problem	Mitigation Measure	Monitoring Requirement
Water pollution from wastewater effluents	Construction of an approved on-site wastewater treatment and disposal system or connection to the municipal sewerage system	Existence of an operational septic tank upon completion of the construction process or Connection to the public sewerage system
Human and wildlife poisoning and water pollution from the use of pesticides	Follow MEC Program PERSUAP recommendations, to be reviewed with program beneficiaries at the workshops and as part of field trips	Yearly determinations of the types and amounts of pesticide used and use of safety equipment in their application

Table 7: PEMP for the « Ouled Youssef » and « El Baraka » Cooperatives

Environmental Determination: « Negative Determination With Conditions »		
Potential Problem	Mitigation Measure	Monitoring Requirement
Water pollution from wastewater effluents	Construction of an approved on-site wastewater treatment and disposal system	Existence of an operational septic tank upon completion of the construction process

Table 8: PEMP for the « El Wifak » Cooperative

Environmental Determination: « Negative Determination With Conditions »		
Potential Problem	Mitigation Measure	Monitoring Requirement
Contamination of water sources and degradation of aquatic ecosystems due to improper waste management	Solid waste disposal in a dumpsite	Removal to the dumpsite
Human and wildlife poisoning and water pollution from the use of pesticides	Follow MEC Program PERSUAP recommendations, to be reviewed with program beneficiaries at the workshops and as part of field trips	Yearly determinations of the types and amounts of pesticide used and use of safety equipment in their application

Table 9: PEMP for the « Laayoune, » « Plan Maroc Vert pour le Développement Agricole, » « Intilaka, » and « Amal El Waha » Cooperatives

Environmental Determination: « Negative Determination With Conditions »		
Potential Problem	Mitigation Measure	Monitoring Requirement
Risk of excessive salination from the use of drip irrigation, increasing soil salinity	Regular leaching under low rainfall conditions	Yearly testing of soil salinity
Human and wildlife poisoning and water pollution from the use of pesticides	Follow MEC Program PERSUAP recommendations, to be reviewed with program beneficiaries at the workshops and as part of field trips	Yearly determinations of the types and amounts of pesticide used and use of safety equipment in their application

Table 10: PEMP for the « Beni Yaala » and « Al Ofoq » Cooperatives

Environmental Determination: « Negative Determination With Conditions »		
Potential Problem	Mitigation Measure	Monitoring Requirement
Overharvesting of aromatic and medicinal plants	Signature of a management agreement with the HCEFLCD	Compliance with the management agreement entered into with the HCEFLCD

3.3 AWARENESS OF THE ENVIRONMENTAL IMPACT OF WASTEWATER DISPOSAL AND WASTEWATER TREATMENT OPTIONS

To sensitize the participants to the environmental impact of improper wastewater disposal, the workshop examined the most striking risks posed by the direct discharge of wastewater into the environment and by exposure to this wastewater, such as:

- The presence of millions of harmful bacteria for humans and animals;
- The fact that these bacteria are the main causes of intestinal diseases, typhoid fever, and diarrheal diseases;
- The presence of large numbers of parasite eggs causing animal diseases which are subsequently transmitted to humans;
- The presence of toxins such as fungicides and certain phosphorus chloride compounds;
- Infiltration into groundwater used as a source of drinking water for humans and/or animals, etc.

Most of the participants live in rural areas without public sewerage systems where wastewater or sewage is discharged into the natural environment either directly or through a cesspool. Thus, the training workshops afforded a good opportunity for familiarizing them with inexpensive good sewage treatment practices such as the system illustrated in Figure 2 below.

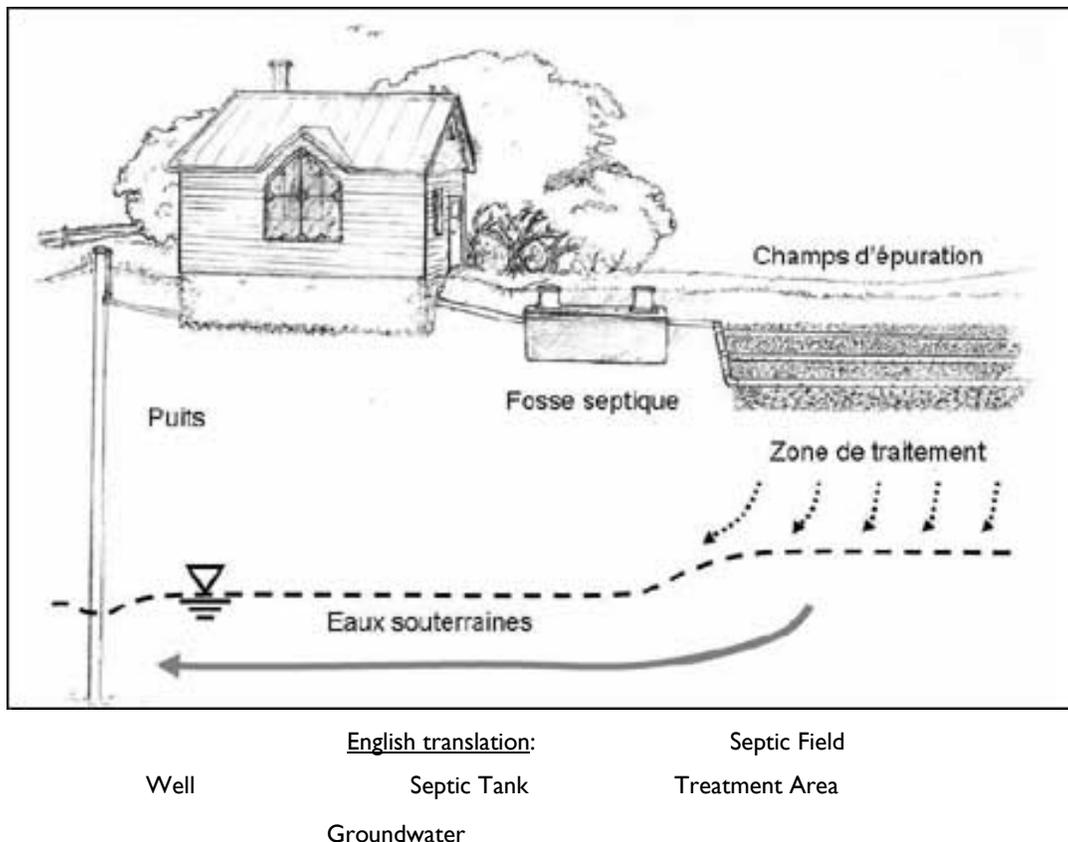


Figure 2: Schematic Diagram of a Rural Sewage Treatment System

3.4 AWARENESS OF THE ENVIRONMENTAL IMPACT OF IMPROPER WASTE MANAGEMENT AND GOOD WASTE MANAGEMENT PRACTICES

The participants were exposed to a series of striking photographs illustrating the effects of improper waste management to raise awareness of how activities resulting in random waste disposal are a form of poor citizenship.

There was also a discussion of examples of the adverse environmental effects of poor waste management such as:

- The infiltration of toxic waste leachate into groundwater used as a source of drinking water;
- The proliferation of insects harmful to human health;
- Bad odors;
- Degradation of the landscape due to the dumping of trash alongside homes and in natural rainwater collectors;

- The degradation of human health and environmental conditions (the prevalence of diseases caused by the dumping of wastes such as malaria, skin diseases, coughs, respiratory problems, etc.)

The participants were counseled and familiarized with good practices for improving the management of wastes from their various activities. Examples of good practices include:

- Disposing of wastes only in special sites earmarked specifically for such purpose;
- Sorting the different types of wastes (cardboard, plastic, scrap iron, etc.) Certain types of wastes have market value, etc.

As an exercise, the participants were asked to draw up an exhaustive list of the wastes produced by their activities and specify how they should best be managed.

3.5 AWARENESS OF THE ENVIRONMENTAL IMPACT OF FERTILIZER AND PESTICIDE USE AND GOOD PRACTICES FOR THE APPLICATION OF THESE PRODUCTS

The participants were familiarized with the environmental and human health effects of the use of pesticides, including:

- Various diseases such as certain types de cancers, infertility problems, growth problems, weakening of the immune system, etc.;
- Deaths from pesticide poisoning (according to the WHO, there are 220,000 deaths from pesticide poisoning every year);
- Pesticide contamination of surface water and groundwater;
- Declines in bee and other populations.

The mitigation measures and good practices for the handling and use of pesticides discussed with the participants were drawn from the PERSUAP (Pesticide Evaluation Report and Safe Use Action Plan) developed as part of the MEC Program. The participants were given a synopsis of the report's findings and recommendations, as outlined below:

- Good practices for the application of pesticides: use personal protection equipment (gloves, a respirator mask, a long-sleeved uniform washed on a regular basis, shoes, and goggles); follow the directions in the instruction pamphlet accompanying the product; completely cover particulate pesticides in the soil, particularly at the ends of rows; avoid beehives; refrain from applying pesticides in rainy and windy weather, etc.
- USAID list of banned pesticides: This list was distributed to the participants and includes all active ingredients in pesticides whose use is banned by USAID.

There was a similar discussion of the use of fertilizer in which the participants were familiarized with:

- Impacts of the improper and excessive use of fertilizer, including the contamination of surface water and groundwater, nitrate transmission to humans via the food chain, causing various diseases, etc.
- Good practices: Good practices for the application of fertilizer can be summed up in two words, namely amount and timing, both of which will vary according to the types of soils and plants in question.

3.6 ENVIRONMENTAL MANAGEMENT PLAN FOR A DAIRY PLANT

The discussion of this topic at the training workshops for the COLAIMO and MONLAIT cooperatives was designed to sensitize the participations to the importance of the environmental management plan for their plant and familiarize them with its content. Such a plan helps to significantly reduce the risk of environmental problems and to ensure the protection of natural resources. As a plant/project environmental management tool, the EMP basically contains:

- Facility operating standards;
- Strategies and measures designed to minimize environmental risks;
- Contingency plans for the handling of potential environmental problems; and
- Monitoring indicators for the environmental mitigation measures put in place.

The content for this training topic is outlined in Annex 2.

3.7 EXERCISE FOR THE DEVELOPMENT OF AN ENVIRONMENTAL MANAGEMENT PLAN FOR THE SUSTAINABLE HARVESTING OF AROMATIC AND MEDICINAL PLANTS

The purpose of this exercise was to show the representatives of the « Al Ofoq » and « Beni Yaala » cooperatives how to draw up an environmental management plan for the sustainable harvesting of AMPs. In fact, the growing market demand for AMPs could threaten these natural resources if they are not properly managed to ensure their regeneration. The training was designed to bolster the PEMP required by the MEC Program, which provides for the signature of an agreement with the HCEFLCD, the stewardship agency for these resources (see the section on the status of the PEMPs).

The trainer broke the participants up into groups and asked them to draft an environmental management plan based on the following outline:

- Regulatory requirements for the harvesting of AMPs, including necessary permits and authorizations;
- Induced effects of the harvesting of AMPs;
- Envisaged mitigating measures;
- Performance monitoring indicators for the mitigation measures.

4 . EVALUATION OF THE TRAINING

Each training workshop ended with an on-the-spot survey providing instant feedback on the participants' satisfaction with the training. It turned out that most participants were satisfied with the training content. They also expressed an awareness of the importance of environmental protection as part of their regular daily activities.

5 . CONCLUSIONS AND RECOMMENDATIONS

While environmental protection was not a priority for any of the cooperatives/associations taking part in the training program, the way in which this subject was addressed sparked the participants' interest. Given the differences in the extent of the participants' knowledge of environmental issues, the subject matter was tailored to each group of participants in order to best meet the training objectives. Based on observations made during the training sessions, the following actions are recommended to help program beneficiaries take ownership of and implement effective environmental management procedures for their respective activities:

- Organize field trips to help motivate the participants to apply the training content;
- Conduct an evaluation prior to the conclusion of the MEC Program to measure the training's impact on the activities of the participating cooperatives / associations, particularly as regards implementation of the PEMP's and good practices discussed at the workshops;;
- Consider requiring implementation of the PEMP as a condition precedent to the disbursement of grant funds.

6. ANNEXES

6.1 ANNEX I: SYNOPTIC TABLE OF TRAINING WORKSHOPS

Workshop	Date	Location	Target Cooperative/Association	Type of Activity	Training Topics
1	November 7, 2012	Farm Work Center (CT 1602) - Sebt Guezoula	Al Khadra Cooperative	Processing of capers	<ul style="list-style-type: none"> - MEC Program environmental review procedures for grant-funded projects; - Status of the MEC Program environmental review of each grant-funded project; - Awareness of the environmental impact of direct wastewater disposal and wastewater treatment options; - Awareness of the environmental impact of improper waste management and good waste management practices; - Awareness of the environmental impact of fertilizer and pesticide use and good practices for the application of these products; - Major MEC Program PERSUAP findings.
			Azhar Cooperative	Processing of capers	
2	November 8, 2012	Oualidia Dream Inn - Oualidia	Ouled Youssef Cooperative	Milk collection center	
			Baraka Cooperative	Milk collection center	
			El Wifak Cooperative	Crop packing and packaging plant	
3	March 7, 2013	Morocco Green Plan Association Headquarters (Berkane)	<i>Association Plan Maroc Vert pour le Développement Agricole</i>	Drip irrigation	
			Laayoune Farmers Cooperative	Drip irrigation	

Workshop	Date	Location	Target Cooperative/Association	Type of Activity	Training Topics
4	March 8, 2013	Colaimo Headquarters (Oujda)	COLAIMO Cooperative	Processing of dairy products	<ul style="list-style-type: none"> - MEC Program environmental review procedures for grant-funded projects; - Status of the environmental review of the projects by the "Colaimo" and "Monlait" cooperatives;
5	March 8, 2013	Monlait Headquarters (Berkane)	Monlait Cooperative	Processing of dairy products	<ul style="list-style-type: none"> - Environmental management plan for a dairy: <ul style="list-style-type: none"> – Environmental regulatory framework; – Environmental impacts of the dairy industry; – Environmental impact mitigation measures; – Monitoring indicators.
6	March 9, 2013	Beni Yaala Cooperative Headquarters (Jerada)	Beni Yaala Cooperative	Processing of rosemary	<ul style="list-style-type: none"> - MEC Program environmental review procedures for grant-funded projects; - Status of the MEC Program environmental review of the project by the "Beni Yaala" Cooperative; - Awareness of the environmental impact of direct wastewater disposal, improper waste management, and fertilizer and pesticide use and good management practices; - Exercise for the development of an environmental management plan for the sustainable harvesting of aromatic and medicinal plants.
7	March 10, 2013	Dar Diafa (Ain Beni Mathar)	Intilaka Irrigation Water Users Association	Drip irrigation	<ul style="list-style-type: none"> - MEC Program environmental review procedures for grant-funded projects; - Status of the MEC Program environmental review of the projects by the « Intilaka » and « Amal El Waha » water users associations; - Awareness of the environmental impact of direct wastewater disposal and wastewater treatment options;
8	March 11, 2013	Annahda School	Amal El Waha Irrigation Water Users Association	Drip irrigation	<ul style="list-style-type: none"> - Awareness of the environmental impact of improper waste management and good waste management practices; - Awareness of the environmental impact of fertilizer and pesticide use

Workshop	Date	Location	Target Cooperative/Association	Type of Activity	Training Topics
		(Figuig)			and good practices for the application of these products; - Major MEC Program PERSUAP findings.
9	March 12, 2013	Dar Talib (Talsint)	Al Ofoq Cooperative	Processing of aromatic and medicinal plants	<ul style="list-style-type: none"> - MEC Program environmental review procedures for grant-funded projects; - Status of the MEC Program environmental review of the project by the "Al Ofoq" cooperative; - Awareness of the environmental impact of direct wastewater disposal, improper waste management, and fertilizer and pesticide use and good management practices; - Exercise for the development of an environmental management plan for the sustainable harvesting of aromatic and medicinal plants.

6.2 ANNEX 2: ENVIRONMENTAL MANAGEMENT OF A DAIRY (ONE OF THE TOPICS COVERED BY THE TRAINING WORKSHOP FOR THE COLAIMO AND MONLAIT COOPERATIVES)



التربية البيئية لفائدة الجمعيات و التعاونيات المستفيدة من
برنامج التنافسية الاقتصادية (Programme MEC)

**Formation sur la gestion environnementale
COLAIMO/MONLAIT**
Redouan El Ouafi
8 mars 2013

Morocco Economic Competitiveness
MEC Program
Environmental Management Training
COLAIMO / MONLAIT
Redouan El Ouafi
March 8, 2013

La gestion environnementale

La gestion environnementale efficace d'une laiterie peut réduire de façon significative le risque de problèmes environnementaux et assurer la protection des ressources naturelles.

Le PGE est l'outil de la gestion environnementale d'une unité/projet. Il précise :

- les normes relatives au fonctionnement des installations,
- les stratégies et les mesures visant à minimiser les risques environnementaux,
- les plans d'urgence pour la gestion des problèmes environnementaux qui peuvent survenir.

Environmental Management

The efficient and effective environmental management of a dairy can significantly reduce the risk of environmental problems and ensure the protection of natural resources.

The EMP is a plant/project environmental management tool. It contains:

- operating standards for the facilities in question;
- strategies and measures designed to minimize environmental risks; and
- contingency plans for the handling of potential environmental problems.

MOROCCAN REGULATORY ENVIRONMENT

Regulatory framework: Water Act (Law 10-95)

Important instruments created by the Water Act:

- Permits: All dumping requires a permit.
- Fees: All dumping is subject to the payment of a fee.

MOROCCAN REGULATORY ENVIRONMENT

Calculation of fees

Calculation based on the standard (N): $N = 0.6 \text{ OM} + 0.15 \text{ MES} + 6.5 \text{ ML OM}$ (Oxidizable matter – Kg/year): $(2\text{BOD}_5 + \text{COD})/3$

Exercise: Calculate the pollution load (NUP) for COLAIMO and MONLAIT

MOROCCAN REGULATORY ENVIRONMENT

Implementing Regulations for Law 10-95

Current Decrees

- Decree No. 2-04-553 regulating dumping, run-off, discharges, and direct or indirect deposits in surface or ground water

Current Orders

- Specific limits for wastes from:
 - pulp, paper, and cardboard manufacturers (2006);
 - sugar mills (2006);
 - cement plants (2009);
 - hot-dip galvanization processes in surface treatment plants (2010).
- Fees
 - Rates and pollution units (2006)

MOROCCAN REGULATORY ENVIRONMENT

Fees payable under the Joint Order Setting Rates for Wastewater Dumping Fees and Defining the Pollution Unit

Year	2013	2014	2015	2016 and thereafter
Dirhams/ kg NUP	0.30	0.50	0.50	0.70

MOROCCAN REGULATORY ENVIRONMENT

Proposed Orders on:

- General limits for liquid wastes
- Specific limits for liquid wastes from:
 - Oil refineries
 - Yeast manufacturers
 - Olive oil extraction processes in oil mills
 - Dairies
 - Sodium and chloride manufacturing processes
 - Pigments and dyes
 - Alcohol distilleries
 - Fruit and vegetable canning plants

ENVIRONMENTAL IMPACTS OF THE DAIRY INDUSTRY

- The main problem in the dairy industry is water-related. More specifically, the water needs to be decontaminated before being discharged into the natural environment. This treatment produces sludge, which must also be dealt with appropriately.
- There is minimal noise pollution from certain types of cold storage equipment or drying towers for example.
- Dairies have no particular impact on air and soil pollution.
- The main waste-related problems have to do with the sludge produced by water treatment stations and the reduction of wastes from packaging materials for finished products.

MOROCCAN REGULATORY ENVIRONMENT

General Limits for Liquid Wastes

Variable	General limits (direct)	General limits (indirect)
Temperature (Centigrade)	30 degrees	35 degrees
pH	6.5 – 9	6.5 – 9
MES (mg/l)	50	600
BOD5 (mg/l)	100	500
COD (mg/l)	500	1000
Nitrogen (mg/l)	30	30
Total phosphorus (mg/l)	10	20

GOOD WATER MANAGEMENT PRACTICES

Reducing pollution at the source:

- Separate clean water: The separation of clean water that does not require decontamination (rainwater for example) from wastewater is an essential pre-requisite for the implementation of a water treatment system. Clean water can be released directly into the natural environment or the rainwater collection system.
- Optimize cleaning performance: Implement best practices for the cleaning of facilities and optimize the management of on-site cleaning systems.
- Reduce losses of milk, dairy products and byproducts (from excessive spills, leaks, shutdowns of production lines, and modifications of production processes). Non-compliant milk should not be dumped to prevent it affecting treatment system performance.

GOOD WATER MANAGEMENT PRACTICES

Other measures:

- Effluent management systems should not be built in flood-prone areas.
- Effluent storage areas should be designed to divert non-contaminated run-off.
- Chemical storage areas should be constructed on a water-tight base material to protect groundwater from pollution.
- Pollutant spills should be cleaned up immediately (implementation of contingency plans).
- Worker training and consciousness-raising are important and can help reduce water consumption and the amount of pollutant discharges: do not leave faucets open unnecessarily, install automatic cut-off devices; consider dry solid waste recycling before rinsing

GOOD WASTE MANAGEMENT PRACTICES

- Separate solid wastes and non-compliant products for recycling and the manufacturing of marketable products and by-products (i.e. butterfat, cheeses, animal feed, soap, or other industrial products);
- Optimize filling and packaging equipment to prevent losses of products and packaging materials;
- Optimize the design of packaging materials to reduce the volume of wastes (i.e. use recycled products and reduce the thickness of containers without compromising compliance with food safety standards).

GOOD WASTE MANAGEMENT PRACTICES

- Separate solid wastes and non-compliant products for recycling and the manufacturing of marketable products and by-products (i.e. butterfat, cheeses, animal feed, soap, or other industrial products);
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- Optimize the design of packaging materials to reduce the volume of wastes (i.e. use recycled products and reduce the thickness of containers without compromising compliance with food safety standards).

MONITORING INDICATORS

- Institute environmental impact monitoring programs for all activities with potentially significant environmental impacts under normal or unusual operating conditions. Environmental impact monitoring activities should be based on direct or indirect indicators of emissions, effluents, and resource use such as the following:
 - Amount of water used;
 - Amount of energy used;
 - Quantity and quality of liquid wastes;
 - Quantity and quality of solid wastes.
- Monitoring activities should be conducted regularly enough to furnish representative data on the variables under examination by personnel with necessary training for such purpose.
- The data produced by monitoring activities should be analyzed and studied at regular intervals and compared against operating standards to help facilitate the implementation of any necessary remedial measures.

MONITORING INDICATORS

Selected operational indicators in the Nordic countries (Source: World Bank)

Water consumption and volume of liquid wastes

Inputs per product unit	Unit	In Europe ^a	In Sweden ^b	In Denmark ^b	In Finland ^b	In Norway ^b	Standard
Water							
Regular and acidified milk	...* l of processed milk		0.96-2.8	0.60-0.97	1.2-2.9	4.1	1.0-1.5
Cheeses and whey	...* l of processed milk		2.0-2.5	1.2-1.7	2.0-3.1	2.5-3.8	1.4-2.0
Powdered milk, cheeses, or liquid products	...* l of processed milk		1.7-4.0	0.69-1.9	1.4-4.6	4.6-6.3	0.8-1.7
Ice cream	...* kg of ice cream						4.0-5.0
Wastewater discharge							
Regular and acidified milk	...* l of processed milk		0.6-2.5	0.83-0.94	1.2-2.4	2.6	0.9-1.4
Cheeses and whey	...* l of processed milk		1.4-2.0	0.77-1.4	1.5-3.2	3.2	1.2-1.8
Powdered milk, cheeses, or liquid products	...* l of processed milk		1.2-4.3	0.75-1.5	1.8-3.9	2.0-3.3	0.8-1.5
Ice cream	...* kg of ice cream		2.7-4.4		5.6	3.0-7.8	2.7-4.0

a. European Dairy Association, cited by the EC (2006).

b. Nordic Council of Ministers (2001). The figures in parentheses show the number of plants in the sample.

c. Nordic Council of Ministers (2001).

* Translator's Note: The first couple of characters in the French text are virtually illegible. The figures in the table are also barely legible and, thus, may not be completely accurate.

MONITORING INDICATORS

Selected operational indicators in the Nordic countries (Source: World Bank)

Energy

Inputs per product unit	Unit	In Europe ^a	In Sweden ^b	In Denmark ^b	In Finland ^b	In Norway ^b	Standard
Energy							
Regular and acidified milk	kWh/l of processed milk	0.09-1.11	0.11-0.34	0.07-0.09	0.16-0.28	0.45	0.1-0.2
Cheeses and whey	kWh/l of processed milk	0.06-2.08	0.15-0.34	0.12-0.18	0.27-0.82	0.21	0.2-0.3
Powdered milk, cheeses, or liquid products	kWh/l of processed milk	0.85-6.47	0.18-0.65	0.30-0.71	0.28-0.92	0.29-0.34	0.3-0.4
Ice cream	kWh/kg of ice cream			0.75-1.6			

a. European Dairy Association, cited by the EC (2006).

b. Nordic Council of Ministers (2001). The figures in parentheses show the number of plants in the sample.

c. Nordic Council of Ministers (2001).

* Translator's Note: The figures in the table are barely legible and, thus, may not be completely accurate.

MONITORING INDICATORS

Selected operational indicators in the Nordic countries (Source: World Bank)

Wastes

Products	Total Solid Wastes (kg/1000 l)
Regular milk and acidified products	1.7-14 ^a
Cheeses, whey, and powdered milk	0.5-10 ^b
Ice cream	35-58 ^c

^a Based on data for 13 plants

^b Based on data for 17 plants

^c Based on data for 4 plants

Source: Nordic Council of Ministers (2001)

6.3 ANNEX 3: PHOTO SPREAD OF THE TRAINING WORKSHOPS

English translation of photo captions:

Page 33:

Training workshop held on November 7, 2012 in Sebt Guezoula for the « Al Khadra » and « Al Azhar » cooperatives (top)

Training workshop held on November 8, 2012 in Oualidia for the « Ouled Youssef, » « El Baraka, » and « El Wifak » cooperatives (bottom)

Page 34:

Training workshop held on March 7, 2013 in Berkane for the « Plan Maroc Vert pour le Développement Agricole » and « Laayoune » cooperatives (top)

Training workshop held on March 8, 2013 in Berkane for the « Monlait » cooperative (bottom)

Page 35:

Training workshop held on March 9, 2013 in Jerada for the « Beni Yaala » cooperative (top)

Training workshop held on March 10, 2013 in Ain Beni Mathar for the Intilaka water users association (bottom)

Page 36:

Training workshop held on March 11, 2013 in Figuig for the « Amal El Waha » water users association (top)

Training workshop held on March 12, 2013 in Talsint for the « Al Ofoq » cooperative (bottom)



Formation tenue le 7 novembre 2012 à Sebt Guezoula au profit des coopératives « Al Khadra » et « Al Azhar »



Formation tenue le 8 novembre 2012 à Oualidia au profit des coopératives « Ouled Youssef », « El Baraka » et « El Wifak »



Formation tenue à Berkane le 7 mars 2013 au profit des coopératives « Plan Maroc Vert pour le Développement Agricole » et « Laayoune »



Formation tenue à Berkane le 8 mars 2013 au profit de la coopérative Monlait



Formation tenue à Jerada le 9 mars 2013 au profit de la coopérative « Benî Yacla »



Formation tenue le 10 mars 2013 à Ain Beni Mathar au profit de l'association Inūlaka



Formation tenue à Figuig le 11 mars 2013 au profit de l'association « Amal El Waha »



Formation tenue à Talsint le 12 mars 2013 au profit de la coopérative Al Ofoq