



USAID
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LAC-IEE-05-29

ENVIRONMENTAL THRESHOLD DECISION

Country: El Salvador

Activity Title: Displaced Children and Orphans
(Advancing Development Cooperation Opportunities in the Hemisphere SO)

Activity Number: 598-0464

Life of Project: FY 2005 – FY 2007

Life of Project Funding: \$150,000

IEE Prepared by: Daniel Sanchez-Bustamante

Recommended Threshold Decision: Categorical Exclusion and Negative Determination with Conditions

Bureau Threshold Decision: Concurs with recommendation

Comments:

Pursuant to the following sections of 22 CFR 216.2(c)(2):

- (i) Education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment (**such as construction of facilities, etc.**);

a **Categorical Exclusion** is issued to Component 1 (Education/vocational training) of this activity.

A Negative Determination with conditions is issued to Component 2 (Productive projects) of this activity, including all conditions stipulated in the attached IEE and referenced documents.

_____Date_____

Victor H. Bullen
Bureau Environmental Officer
Bureau for Latin America & the Caribbean

Copy to: Mark Silverman, Mission Director,
USAID/El Salvador

Copy to: Bradley Carr, MEO, USAID/El Salvador
Daniel Sanchez-Bustamante, FFP
Officer, USAID/El Salvador

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Environmental Advisor,
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Copy to: David Jessee, LAC/CAM
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Copy to: IEE File

Attachment: IEE

File: P:\LAC.RSD.PUB\RSDPUB\EES\Reg 216\IEE\IEE05\IEE05-29.ETD(EL SA – Displaced Children).doc

Environmental Compliance Facesheet

Activity: 598-0464 Displaced Children and Orphans

Strategic Objective: 598-021 Advancing Development Cooperation Opportunities in the Hemisphere

Grantee: Association of Religious Tertiary Carmelites of Saint Theresa of Jesus

Location: Santa Tecla, El Salvador

Life of Activity: FY 2005 – FY 2007

Funding: \$150,000

IEE prepared by: Daniel Sanchez-Bustamante Date: August 9, 2005
Regional Food for Peace Officer

Environmental Media and/or Human Health Potentially Impacted:

air ___ water soil biodiversity ___ human health other ___ none ___

Environmental Actions Recommended:

1. Categorical Exclusion(s)
2. Initial Environmental Examination
- Negative Determination:* no significant adverse effects expected regarding the proposed activities, which are well defined over life of activity. IEE prepared: _____
without conditions (no special mitigation measures needed; normal good practice will be used) _____
 with conditions (special mitigation measures specified to prevent unintended impact) _____
- _____ *Positive Determination:* IEE confirms potential for significant adverse effect of one or more activities. Appropriate environmental review needed.
- _____ *Deferral:* one or more elements not yet sufficiently defined to perform environmental analysis; activities will not be implemented until amended IEE is approved.

Summary of Findings:

USAID is supporting a project aimed at protecting and caring for displaced children and orphans at the *Hogar Divina Providencia* as recommended by the U.S. Senate in its Foreign Operations, Export Financing, and Related Programs Appropriation Bill, 2005. This project consists of two components: (1) education/vocational training that will

provide greater opportunities for the children; and (2) productive activities that contribute to the orphanage’s self-sustainability. The budget for the entire project is \$150,000.

Component (1) qualifies for a categorical exclusion, under Sections 216.2(c)(1)(i) the action does not have an effect on the natural or physical environment and 216.2(c)(2)(i) education, technical assistance or training programs except to the extent such programs include activities directly affecting the environment (such as construction of facilities), of 22 CFR.

Component (2) qualifies for a negative determination with conditions per 22 CFR 216.3(a)(2) and 216.3(b)(1).

USAID APPROVAL OF ENVIRONMENTAL ACTION(S) RECOMMENDED:

Clearance:

Mission Environmental Officer: _____
Bradley Carr Date

Mission Director: _____
Mark Silverman Date

Concurrence:

Bureau Environmental Officer: _____
Approved Date

Disapproved Date

Initial Environmental Examination

Project Data:

Activity: Improving Children’s Lives at the Divina Providencia Orphanage
Grantee: Association of Religious Tertiary Carmelites of Saint Theresa of Jesus
Location: Santa Tecla, El Salvador

1. Background and Activity Description

1.1 Background

The Hogar Divina Providencia is part of the Association of Religious Sisters of the Tertiary Carmelites of Santa Teresa. This Association began operations in Mexico on

March 8, 1903 and founded the orphanage Hogar Divina Providencia in Santa Tecla, El Salvador on March 8, 1994.

The orphanage presently works with orphans of cancer victims, abandoned children, children at risk, and children in extreme poverty. Children receive food, physical and psychological care, non-formal training, and healthy recreational opportunities. The orphanage works to ensure that 55 children feel welcomed and loved; protected from social problems that are so commonplace in today's society; and that they have the necessary elements for their wellbeing and integral development.

This project will support USAID/El Salvador's strategic objective "Investing in People: Healthier, Better Educated People." The proposal was submitted in response to a Congressional directive included in the Senate's Foreign Operations, Export Financing, and Related Programs Appropriation Bill, 2005.

1.2 Description of Activities

The activities described in the proposal will support appropriate mixes of education, vocational-technical training, apprenticeships, and other opportunities to enhance income generation for 55 vulnerable children that currently reside in the Hogar Divina Providencia. The duration of this program will be approximately 24 months and will require an investment of \$150,000.

This program will support two components that contribute to the development of the orphanage's children:

1. Education/vocational training that will provide greater opportunities for the orphanage's children; and
2. Productive projects (agriculture, sewing, bakery, computer training, artistic development) that contribute to the orphanage's self-sustainability

Under the first component, the program will provide financial resources to the Hogar Divina Providencia to **purchase educational supplies**, uniforms, shoes, and food for the children, and to **hire staff** that can respond to the special physical, educational, nutritional, social and emotional needs of approximately 55 displaced, abandoned, or orphaned children. This sub-component will require approximately 87% of the resources.

The second component will help the Hogar Divina Providencia improve the productivity of a small **coffee farm** (about five acres in size) situated within the orphanage grounds in a peri-urban area and to launch other small scale agricultural activities such as horticulture and a greenhouse for ornamental plants. This sub-component will require approximately 13% of the resources.

The **horticulture garden** will be used mainly for growing fruits and vegetables destined for self consumption. Children will learn how to grow vegetables that will help defray

some of the operational costs of the Hogar Divina Providencia while teaching children skills that will remain with them even after they leave the orphanage.

The orphanage has a **water well** within its property; however, it has not been functional for the past few years. As part of this subcomponent, the agronomist will lead a team responsible for assessing the condition of the well and correcting deficiencies. Water from the well will be used to irrigate the horticulture garden.

The project will also teach children the delicate art of growing **ornamental plants** in a small greenhouse. The plants will be sold to the public that attends mass at the orphanage on weekends.

1.3 Purpose and Scope of IEE

This IEE is accompanying the proposal submission for a new activity named “Improving Children’s Lives at the Divina Providencia Orphanage” and addresses all activities planned for the period 2005-2007. Included in the analysis are activities that have been implemented since May 2005 (with the orphanage’s own resources) in preparation for program implementation.

2. Country and Environmental Information

2.1 Locations Affected

All activities associated with this project will take place within the grounds of the Divina Providencia Orphanage, located in Santa Tecla, approximately 10 miles southwest of San Salvador, El Salvador. The orphanage is on relatively level ground and is delimited by two highways and two coffee farms.

The population of Santa Tecla is approximately 114,000; it is situated among coffee farms although recent urban development has practically merged the city with San Salvador. There are no protected areas or conservation zones within the city’s boundaries.

2.2 Salvadoran Environmental Policies and Procedures

The Salvadoran Environmental Policy plays a role in guiding and directing the administration toward an ecologically balanced environment that constantly adapts to human requirements within a framework of sustainability. It consist of two thematic areas: a) use and conservation of natural resources, including territorial differentiation, water, air, soil, biodiversity, and forests; and b) environmental management, consistent with the judicial and institutional framework, environmental education, social participation, economic structure, gender considerations, and prevention and control of contamination.

In relation to the activities that form part of this project, the Salvadoran Environmental Policy provides the following guidelines:

Soil

- Promote conservation practices and sustainable use of the soil, focalized in small scale farmers in critical areas.
- Guide the adoption of organic agriculture, promoting soil conservation, integrated pest management, appropriate production technology, and the use of natural fertilizers and insecticides.
- Promote the effective utilization of land in accordance to its natural vocation and potential.
- Protect soils from water and wind erosion.

Water

- Promote the development of appropriate technologies that foster the sustainable use of water resources.
- Define criteria for the effective and sustainable use of water resources.

3. Evaluation of Activity Issues with Respect to Environmental Impact Potential

3.1 Introduction

Many of the activities being implemented are related to purchasing supplies, hiring personnel, and training children and have little or no impact on the local environment. There are certain aspects of the program that deserve further analysis and are presented below. It is important, however, to keep in mind that the magnitude and extent of most potential environmental impacts will likely be minute.

3.2 Agriculture

As the orphanage's coffee farm is currently underused and not managed properly, the project will hire an agronomist that will implement simple agricultural practices to transform it to an efficient small-scale operation.

Initially, production levels for coffee will only be around 600 pounds. However, project designers expect production to reach 4,500 pounds in approximately five years. Coffee production at the orphanage will become self sustainable after three years, at which time coffee sales will help supplement the orphanage's income.

Children will also have an opportunity to participate in the process and learn valuable skills that will remain with them even after they leave the orphanage. The agronomist, who has experience working with children, will conduct the training and supervise the children while they learn local agricultural practices in horticulture and skills necessary to operate a greenhouse for ornamental plants. Children will participate in theoretical classes and practical demonstrations. The agronomist will lead a team responsible for assessing the condition of an existing water well that will be used to irrigate the horticulture garden.

This project will only use organic fertilizers and bio-pesticides. Nevertheless, even these products can result in unexpected effects on many living creatures – from beneficial insects and birds that act as natural pest controls to human beings.

The environmental impacts resulting from watering cultivated areas include inadvertent drawdown of the water table; sloping lands within the perimeter leading to run-off can create canal systems that leak and poor water management can become particularly acute.

4. Recommended Mitigation Activities

4.1 Recommended IEE Determinations

This project consists of two components: (1) education/vocational training that will provide greater opportunities for the children; and (2) productive activities that contribute to the orphanage's self-sustainability.

Component (1) qualifies for a categorical exclusion, under Sections 216.2(c)(1)(i) the action does not have an effect on the natural or physical environment; (2)(i) education, technical assistance or training programs except to the extent such programs include activities directly affecting the environment (such as construction of facilities), of 22 CFR.

Component (2) qualifies for a negative determination with conditions per 22 CFR 216.3(a)(2) and (b)(1).

4.2 Mitigation, Monitoring, and Evaluation

Activities will follow recommendations presented in Acree, J. et al. 2001. *Environmental Impact Assessment of Pesticides for the USAID/Guatemala Mission*. International Resources Group. An adapted summary of this document can be found in Annex 1; however, project directors or coordinators will be responsible for the implementation of all mitigating measures recommended in the aforementioned environmental impact assessment. The project will also adhere to guidelines presented in Fisher, R. 2003. *Initial Environmental Examination*. Consolidation of Alternative Development Efforts (CONCADE). Bolivia.

The project will not use synthetic fertilizers or pesticides; it will only use natural fertilizers and bio-pesticides approved by the U.S. Environmental Protection Agency (EPA). A summary of important characteristics of the approved fertilizers and pesticides under this IEE is presented below.

Table 1. Permitted Fertilizers and Pesticides Commercially Available in El Salvador

Permitted Fertilizers	
Chelated micronutrients	Completely bio-available and non-phytotoxic to plants when applied in accordance to directions.
Humic Acid	Naturally occurring organic substance found in soils, coal and peat, resulting from the decomposition of organic matter, particularly dead plants.
Permitted Pesticides	
Allium sativum (garlic) Marañón Nim Lime	Natural repellent made from pure garlic juice

Additional mitigating conditions for Component (2) are:

- Activities will adhere to Salvadoran environmental policies and procedures. Special consideration will be placed on the following:
 - Ley sobre control de pesticidas, fertilizantes y productos para uso agropecuario (D.L. N°315, 25 de abril de 1973; D.O. N° 85, Tomo 239, 10 de mayo de 1973)
 - Reglamento para la aplicación de la ley sobre control de pesticidas, fertilizantes y productos para uso agropecuario (D,E, N° 28, 21 de mayo de 1980-, D.O. N° 101, Tomo 267, 30 de mayo de 1980).
 - Prescripciones para el uso de insecticidas mediante el sistema llamado "ultra bajo volumen" (D.E. N' 89, 10 de septiembre de 1968. D.O. N° 172. Tomo 220, 16 de septiembre de 1968).
- Soil testing before application of fertilizers is essential, plus following manufacturer's directions for storage and application.
- Children will not participate in any activities associated with the transport, storage, use, and disposal of organic fertilizers and bio-pesticides.
- The agronomist will maintain a log of all pesticides and fertilizers, showing date of purchase, quantity purchased, date of use, quantity used, and authorizing party.
- The agronomist will develop a monitoring and evaluation plan for environmental mitigation activities in the first three months of implementation.

Annex 1

Adaptation of Applicable Findings and Recommendations presented in “Environmental Impact Assessment of Pesticides for the USAID/Guatemala Mission¹” and “Initial Environmental Examination LAC-IEE-03-48²”

1. The Use of Proposed Pesticides as Part of an Integrated Pest Management Program

1.1 Pesticide Use in IPM Programs

Among the desirable characteristics that pesticides must have to be considered within an IPM program are:

- The pesticide must be selective. Preferably, the pesticide should control only the pest(s) of interest without any harm to natural enemies and non-target species, including the crop.
- Residuals must be low or moderate. The pesticide should dissipate in the environment, preferably to less toxic or non-toxic metabolites within a reasonable period.
- The pesticide should not be phytotoxic to the crop in which it is being applied or to rotation or associated crops.
- It should have minimum toxicity to warm blooded animals, including humans.
- It should be easily degraded into non-toxic compounds to decrease crop or environmental contamination.
- The pesticide should be exempt from bioaccumulation and biomagnification. It should have low mobility in the environment. Pesticide use within an IPM approach should take all necessary precautions to protect water sources.
- The pesticide should ensure there is little risk of the pest’s evolving resistance.

1.2 IPM Focus

a. Identification of primary pests in each crop and decision thresholds

Many of the most important pests are general pests, i.e. those that affect a wide range of crop species. If there are also specific pests for each crop, they must be properly identified to determine the best control alternative. Most extension and field workers know pests by common names but not necessarily by scientific name. It would be very useful to provide or develop field identification guides to be used both by field workers. Proper diagnosis is fundamental to initiate an IPM program and it should receive special consideration.

¹ Acree, J. *et al.* 2001. *Environmental Impact Assessment of Pesticides for the USAID/Guatemala Mission*. International Resources Group. Contract No. 520-C-00-00-00035-00. Guatemala.

² Fisher, R. 2003. *Initial Environmental Examination*. Consolidation of Alternative Development Efforts (CONCADE). Bolivia

b. Selection of adequate control measures

All available tactics should be considered to solve specific pest problems. Pesticides should be considered as an option and its possible use balanced against the efficacy and economic, social, and environmental impact of other practices. Preference should be given to methods such as genetic control (resistant varieties), natural or biological control, and cultural practices: quality seed, field diversification (associated crops, cover crops), optimized planting distances and densities, and adequate fertilization.

c. Regular assessment of field conditions

Field observations should be used to follow the dynamics of pests and their natural enemies. Monitoring should be made together with the farmer so that the latter can receive the benefit of continuous practical training, focused primarily on recognizing pests and natural enemies, distinguishing between primary and secondary pests, assessing crop damage, developing decision criteria, and evaluating control methods. Both the agronomist and the farmer should maintain records of their field observations, efficacy of control practices and time and financial resources spent in pest and crop management.

d. Safe and correct use of all control methods

All control methods have certain inherent risks and advantages. Field personnel and farmers should duly assess both aspects as part of their interaction and work dynamics. Special care should be given to pesticide use, since these products are intrinsically toxic and harmful to organisms. Field advisors and their supervisors should be very conscious of advantages and disadvantages of these control methods and be prepared to train trainers and growers in assessing their hazards.

e. Respect for current laws and regulations

It is the responsibility of project directors to make sure that all personnel involved in their projects know and understand the legal aspects related to pest management and pesticides established by the proper authorities in [El Salvador]. Both parties should also fully understand those USAID-funded projects are required to comply with USAID policies and regulations for IPM, pesticides, and natural resource management. Ignorance of the laws or regulations clearly established by USAID does not justify agricultural practices that jeopardize human and animal health and the environment.

2. Guidelines for Pesticide Application

The equipment of choice for the majority of farmers assisted by PVOs is the hand-operated knapsack sprayer. Many farmers do not have a single sprayer that they use to spray all types of pesticides and foliar fertilizers. Moreover, it is difficult to obtain spare parts, even for the most well-known brands of sprayers. Sometimes farmers use their own imagination to fix the sprayer, making seals with plastic bags or replacing nuts with wire. This makes these pieces of equipment very unsafe and prone to leak. The most commonly needed replacement parts are piston packing, filters, nozzles, the hose, and the lance or boom. Farmers must be trained in basic spray equipment maintenance and minor repairs, so that they do not have to take them into a distant shop. Another problem is that the farmers do not know the water pH or have pH meter papers.

The project should make an effort to provide spare parts and pH meter paper to farmers if required. If the project will provide knapsack sprayers to farmers they should buy only good quality equipment for which parts are available and easy to obtain. Sprayers that have a paddle inside the tank to assure constant mixing of the pesticide are strongly recommended. Many knapsack sprayers come equipped with an adjustable nozzle, which should be substituted for disc nozzles, which discharge the spray in a more uniform pattern. Tee Jet flat fan nozzles should be used for herbicides. Also available, though more difficult to find, are nozzles that help in preventing drift (working at lower pressures to produce larger drops).

Motorized equipment should not be used due to its high cost and this area's small plot size. Knapsack sprayer applications should be conducted with the wind so applicators are minimally exposed to spray. Applications should not be done when wind velocity is high or at high pressure to avoid drift. For the same reason, low volume applications are not recommended. When the application is finished, care should be taken that unauthorized persons do not enter fields before the reentry period stipulated on the pesticide label. Domestic animals and cattle should also be protected.

Farmers usually prefer liquid formulations. Because the most widely used pesticides are generic compounds, emulsifiable concentrates are very common. These formulations are based on rather toxic solvents and diluents such as xylene. Newer, brand-name compounds are now presented in safer formulations such as dispersible granules and flowables. However, in the case of granules and other solid formulations farmers lack the means to weigh them. And farmers handle some of the most dangerous solid formulations, especially wettable powders, without the necessary basic protection (masks and gloves).

All project personnel and farmers who use pesticides will use protective clothes and equipment. Despite the high temperature and humidity conditions, protective equipment should include masks, gloves, boots, pants, and long-sleeved shirts. Shirts and pants can be similar to those used everyday, but worn only to conduct applications. Protective equipment and clothes should be washed thoroughly, avoiding contamination of wells and rivers. Clothes worn to apply pesticides should be washed separately from other clothes. Applicators should not smoke or eat while using pesticides. Drinking water should not be carried in empty pesticide containers, even when they have been carefully washed. Under no circumstance should children or women apply pesticides.

Field personnel should see that pesticides are transported, stored, mixed, applied, and disposed of correctly, according to label specifications. Labels should be written in Spanish, registered by the [El Salvadoran] authorities, and include the names of pests to be controlled by the particular pesticide. The project will not allow or recommend the use of pesticides not sold in their sealed original containers.

To this effect, project coordinators will make pertinent arrangements for training in pesticide use, transportation, storage, and disposal. Pesticides should be stored in their

original containers and locked up in adequate places. A sign, in Spanish, should be hung outside which says “Danger, Poison, Pesticide Storage Area.” Pesticides should be kept away from food for human or animal consumption or drinking water. Herbicides should be stored separately from seed to avoid damage to them. As much as possible, the area where pesticides are stored should be protected from floods and risk of fire. There should also be a minimum of materials to adsorb and clean up spills.

Empty pesticide containers should not be used for other purposes, since there is no practical way to completely remove toxic residues. For liquid pesticides, empty containers should be rinsed three times, filling the container a quarter full, shaking it and draining the liquid. Rinse water should be emptied into the spray tank as part of application mixture. The rinsed recipient should then be perforated, crushed and buried in a place designated for this purpose. Farmers should only prepare the amounts necessary avoiding leftovers at the end of the application. Prepared pesticide mixtures should be reapplied to the crop (except herbicides) or around the edges of the farm but away from water sources and other sensitive areas. Empty containers and paper or plastic bags should be buried in holes (50 cm deep), whose sides and bottom should be covered with lime, mineral, or plant carbon or plant residues. These holes should be covered with dirt until they are higher than ground level.

3. Guidelines for Fertilizer Use

Chelated micronutrients for plants may be applied before or at planting through irrigation water, as banding or broadcast. The application rate is 2.5-10 liters per hectare (1 quart to 1 gallon per acre) depending on the crop, soil conditions and application methods. For maintenance, 2.5 liters per hectare (1 quart per acre) are usually recommended.

Between 1.25 and 2.5 liters (16-32 oz. per acre) of chelated micronutrients for plants per hectare in early spring when new leaves are emerged or when deficiency symptoms appear. Repeat the application 2-4 weeks later.

Apply 1.0 to 2.0 pounds of humic acid in 500 gallons of water or liquid fertilizer per acre. Apply 0.5 to 1.0 pound of humic acid with foliar fertilizer in at least 200 times of water per acre. It can also be applied with pesticides. Humic acid is compatible with most fertilizer solutions and pesticides. Also check the compatibility before mixing. Humic acid is not a plant food product. Avoid contact with eyes, skin, and clothing.

The need for mineral fertilizer and dolomite during the production phase of these tree crops will be monitored and similar protocols as those described above would be developed, as appropriate.

Additionally:

1. All fertilizers will be stored in safe, dry areas, beyond the reach of children.
2. Applications should be made according to approved protocols.

3. No fertilizers should be applied when it is raining.
4. In the field, special care should be taken to thoroughly incorporate fertilizers into the soil to enhance availability to crops and avoid losses from run-off.
5. Fertilizer guides, extension materials and technical manuals will be prepared and/or revised; and non-chemical (organic production) inputs such as legume cover crops, composting, etc. will be given adequate weight in these manuals, as appropriate.
6. All project personnel responsible for the purchasing, storage, and/or handling of fertilizers and soil amendments will be given training in the same.
7. Simple, easy to understand handouts will prepared and distributed to all participating farmers with adequate weight given to non-mineral fertilizer practices.
8. Spot monitoring of field operations will be done at least once a month.

3. Acute and Long Term Human and Environmental Hazards and Mitigation Measures

All pesticides should be treated as toxic substances. Active ingredients of pesticides are screened and designed to affect vital processes in target organisms at doses low enough to guarantee that under field conditions they will produce its death or disturb growth and development in such a manner that the pest will become disable.

The individual's health and the pesticide formulation influence the toxicological risk. A formulation with a high concentration of active ingredient is potentially more toxic than a less concentrated one. Likewise, solvents or inert ingredients used in formulation can also influence toxicity. For example, wettable powders are more hazardous than water dispersible granules, due to the dust that the former generates during loading and preparation of the spray mixture.

Acute effects of pesticides should not be underestimated. In tropical countries, one of the most serious dangers facing applicators and the public comes from the acute effects of pesticides. This danger is related to pesticide toxicity as well as to the lack of appropriate application equipment, the absence or insufficiency of protective clothing and problems associated with working in hot, humid climates (Watterson 1988).

3.1 Restricted-Entry Interval (REI)

The time which must elapse after pesticide application before it is safe to enter the treated area without wearing protective clothing and equipment. The EPA's Worker Protection Standard, published in August 1992, established new REIs and requires new pesticide labeling that includes the REI.

3.2 Long-Term Effects of Pesticides

Pesticide use also implies possible negative long-term effects on health and the environment. Long-term health effects depend on the pesticide, exposure route, dose, and exposure time. People most exposed are those who are in contact with pesticides in their work. Applicators are exposed to products during preparation of the mix, loading, application and reentry into recently treated areas. Nevertheless, if they use protective clothes and equipment, this risk is noticeably reduced. As already mentioned, labels provide information about required safety measures for pesticide handling. These instructions should be strictly followed.

Long-term effects on the environment are many; they include biodiversity deterioration, contamination of waterways and effects on wildlife. To assess this type of effects, prolonged and complex studies are required. These studies are centered in temperate conditions, and not in the tropics for resource availability reasons.

As indicated in the section on criteria for selecting pesticides, to approve pesticides for use in this project, consideration was given to acute and chronic toxicity as well as to environmental impact of the chemicals. If instructions for their appropriate use are followed, long term harmful effects to human health and to the environment will be minimized.

It should be clear to those responsible for project activities that pesticide use approval in this EIA does not imply a recommendation of a particular active ingredient. Therefore, pesticides should not be promoted as the main tactic to control pests. Continuous pesticide use will bring about environmental deterioration, elimination of beneficial organisms, resurgence of secondary pests, and evolution of resistance.

3.3 Efficacy of Requested Pesticides for the Proposed Use

The pesticides selected are registered with the EPA for uses similar or identical to those proposed and are widely known for their efficacy in different Latin American countries against pests to be controlled in project activities. Most of these are used commercially in Guatemala to control the same pests, and include products that are already known and trusted by farmers.

It is expected that growers, by judiciously selecting products shown in the accompanying guidelines and in accordance with the various tables in this EIA, will be able to control general and specific pests that attack crops in areas served by the projects.

3.4 Compatibility of Proposed Pesticides with Target and Non-target Organisms

The need to promote integrated pest management and avoid pesticide use is emphasized in this document. Many of the important pests affecting the crops of interest can be reduced effectively through the use of alternative methods, especially cultural practices. Among these, we can cite adequate land preparation and planting seasons, organic fertilizers, appropriate plant densities, removal and destruction of harvest residues, use of certified seed, elimination of affected plants and tissue, and others. Natural pest control methods should always be given priority.

For organic production, an important reference is the National List of substances that can and cannot be used in organic production and handling operations as provided by the US Organic Foods Production Act of 1990. The National List is based upon recommendations from the National Organic Standards Board (NOSB) and from comments from the first National Organic Program (NOP) regulation proposal. The National List was developed in consultation with the Food and Drug Administration and EPA. It can be found in the Code of Federal Regulations (7 CFR Part 205.600-606).

3.5 Availability and Efficacy of Other Pesticides and Non-chemical Control Methods

There are many weeds that affect small farmers, and it is essential that the project recommends the use of several legumes like mucuna (*Mucuna deeringiana*) and *Canavalia ensiformis* that effectively control many weeds and cover the soil, especially if planted simultaneously with the crop.

There is a diversity of plant and other naturally based products that are becoming quite popular as alternative methods to synthetic pesticides for controlling agricultural pests. Monge and García (1993) collected information about traditional pest control knowledge in Central America. Some of the products used by farmers seem to have no scientific base; however, there is sufficient technical backing for some products to be considered as useful options for IPM programs and especially for organic farming.

References

EPA (United States Environmental Protection Agency). 1996. *Proposed guidelines for carcinogen risk assessment*. Publication EPA/600/P-92/003C. EPA Office of Research and Development, Washington, DC

Monge, J.E., and J.E. García. 1993. "Los conocimientos tradicionales y el combate de plagas en América Central: Revisión de los archivos del ICECU." *Manejo Integrado de Plagas* (Costa Rica) 28: 57–63

Watterson, A. 1988. *Pesticide User's Health and Safety Handbook*. New York: Van Nostrand Reinhold