



LAC-IEE-04-41

## ENVIRONMENTAL THRESHOLD DECISION

**Activity Location** : Guatemala

**Activity Title** : Special Objective: Support the Implementation of the Peace Accords

**Specific Activity** : Peace Support Resettlement Zones (520-0426.23)

**Activity Number** : 520-0426

**Funding** : \$450,000

**Life of Project** : FY 2004

**IEE Prepared by** : Claudia de Pastor, USAID/Guatemala

**Environmental Documentation Ref:** Environmental Impact Assessment of Pesticides for USAID/Guatamala

**Recommended Threshold Decision** : Negative Determination with Conditions

**Bureau Threshold Decision** : Concur with Recommendation

### Comments:

The Threshold Decision is based on the completion by USAID/Guatamala of the attached IEE - PERSUAP including amendments for pesticide use, addressing USAID's Pesticide Procedures, pursuant to 22 CFR 216.3 (b)(1)(i)(a - l). **An overall condition is that the USAID Regional Environmental Advisor for Cental America will review the compliance to these conditions at least once each year of implementation.**

For future commodities, pests and pesticide products to be considered under this program implemented, but not covered in the present PERSUAP as amended, **a further condition is stipulated. An additional amendment to the PERSUAP shall be submitted,** pursuant 22

CFR 216.3 (b)(1)(i)(a - 1). Any additional amendment to the PERSUAP must be cleared by the USAID-Guatamala MEO and USAID-Central America REA before submission to the Mission Director for signature and before review by the BEO. Finally, the **third condition is that all recommendations in the attached PERSUAP will be adhered to and all mitigating actions shall be part of the implementing agents' contracts or grants.**

Based on these conditions a **Negative Determination is issued.**

CTOs are responsible for making sure environmental requirements are met. It is the responsibility of the SO Team to ensure that the SOAG and MAARDs or contracts and grants contain specific instructions to this effect.

\_\_\_\_\_  
Date \_\_\_\_\_  
George R. Thompson, P.E.  
Bureau Environmental Officer  
Bureau for Latin America & the Caribbean

Copy to : Glenn Anders Mission Director, USAID/G-CAP  
Copy to : Anne Dix, MEO, USAID/Guatemala  
Copy to : Liliana Gil, USAID/Guatemala  
Copy to : Claudia de Pastor, USAID/Guatemala  
Copy to : Michael Kerst, LAC/CAM  
Copy to : Michael Donald, REA, Central America  
Copy to : IEE File

**Attachment: IEE – PERSUAP**

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**INITIAL ENVIRONMENTAL EXAMINATION  
PERSUAP**

**Activity Location** : Guatemala

**Activity Title** : Special Objective: Support the Implementation of the Peace Accords

**Specific Activity** : Peace Support Resettlement Zones (520-0426.23)

**Activity Number** : 520-0426

**Funding** : \$450,000

**Life of Project** : FY 2004

**IEE Prepared by** : Claudia de Pastor, USAID/Guatemala

**Recommended Threshold Decision** : Negative Determination with Conditions

**Environmental Documentation Ref:** Environmental Impact Assessment of Pesticides for USAID/Guatamala

**Date Prepared** : June 24, 2004

**Comments:**

The PERSUAP for this activity has been prepared per **Reg 216.3(b)(1)(i) through (l)**, and based on the Referenced EA. This PERSUAP is for rice and sugar cane plantations to be implemented in the communities relocated outside Sierra de Lacandón and Laguna del Tigre National Parks, in the Mayan Biosphere Reserve/Guatemala.

A Negative Determination with Conditions is issued for this activity on the condition that follow-up and monitoring needs to be provided by the USAID/G-CAP MEO and REA.

CONCURRENCE

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Glenn Anders  
USAID/G-CAP Director

Date \_\_\_\_\_

Clearances:

Michael Donald, REO \_\_\_\_\_

Carey Yeager, REA \_\_\_\_\_

Liliana Gil, PDM \_\_\_\_\_

Action Framework for the Funds for Peace (USAID) supporting the communities associated with the Sierra del Lacandon and Laguna del Tigre National Parks, MBR<sup>1</sup>, Peten, Guatemala

EVALUATION AND PLAN OF ACTION REPORT FOR THE USE OF PESTICIDES  
(PERSUAP) IN RICE AND SUGAR CANE CROPS IN THE CASERIO LA PAZ

I. INTRODUCTION

**There is an interest to promote the use of production alternatives for the relocated populations of the Peten National Parks, such as the Guayacán and Jerusalén communities, relocated to the Caserio La Paz in Sayaxche, Peten, through the AID Special Funds for Peace, managed by FIPA/IRG-USAID.**

**Given the climate and soil conditions and the interest of the farmers in these communities, the production alternatives to be developed are rice and sugar cane plantations, the first for production and commercialization of dry unprocessed rice, and the second to process and commercialize block sugar in the raw and other sub-products.**

**These plantations require a series of actions to improve results. One of these refers to the use of agricultural activities related to pest prevention and control. These would be operational through an Integrated Pest Management (IPM) Plan, which includes a series of non-chemical interventions. The chemical interventions will be used in cases of extreme need and with approval through this plan developed by FIPA/IRG-USAID.**

**Pests exist as a function of the extent and level of technology used. The consequences of the damage to pests are marked by a reduction in the levels of production, affecting the availability of food for the families of the producers and the possibilities of commercialization. It is estimated that it is possible to reduce the damage of pests by 50% by improving pest control technology.**

**This plan for the safe use of pesticides has been developed by the FIPA/IRG-USAID Funds for Peace, to be implemented by the farmers in the Caserio La Paz in order to reduce the damage in the plantations caused by pests. The IPM may allow the following objectives to be reached:**

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<sup>1</sup> Mayan Biosphere Reserve

- That the farmers use the IPM plan as a simple, practical and inexpensive tool for the control of pests.
- That the farmers are aware of the different types of toxins contained in pesticides.
- That the farmers know which pesticides have restrictions and/or prohibitions in Guatemala in terms of the lists provided by AID.
- That the farmers know about safe procedures in the use of pesticides.
- That the farmers know how to determine the extent of the infestation of pests and how to face this situation.

## II. ACTIONS TO PROMOTE THE INTEGRATED PESTS MANAGEMENT PLAN

- **Improve the agricultural ecosystems in order to develop the crops and natural predators of the pests through:**
  1. The use of live barriers on the outside limits of each production block.
  2. The use of compost
  3. The diversification and annual rotation of crops.
  4. The conservation of soil and water.
  
- **Modify the environment in order to create unfavorable conditions for pests:**
  1. Agricultural practices soil preparation, planting date management, weedings.
  2. The use of pest and sickness resistant varieties.
  
- **Direct elimination of the pest:**
  1. The use of AID-approved and recommended pesticides, based on the Environmental Impact Assessment of Pesticides research by International Resources Group in 2001

## III. IMPLEMENTATION OF STRATEGIES

- Interactive training and learning processes regarding the products involved.
- Technical personnel training to further train volunteer farmers (heads of brigades), community leaders and beneficiaries (creating a multiplying effect). The training will be done through the use of videos,

**on site talks, exchange of experiences, method demonstrations, visits to review lessons learned.**

- **Continuous technical support with the presence of ARROZGUA<sup>2</sup> technicians, a trainee of the School of Agriculture of USAC and a designated technician from the Caserio by the Fondo de Tierras.**

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<sup>2</sup> Asociación Guatemalteca del Arroz

IV. INTEGRATED PEST MANAGEMENT INTERVENTION FOR RICE (*Oryza sativa*):

Crop	Pest	Recommended Actions	Chemical Treatment Considerations
Rice ( <i>Oryza sativa</i> )	Soil insects: *May or June Beetles ( <i>Phyllophaga spp</i> ), *Wire worms ( <i>Agriotes spp</i> ), *Spittlebugs ( <i>Prosapia sp.</i> )	Crop-related: a good soil preparation, adequate weed control, elimination of crop residues. Establish the population density before applying the pesticide.	Treatment with contact, ingestion or inhalation pesticides. Foxim (Volaton) will be used, applied to the soil before seeding, provided there is a high population density after crop-related activities and these have not produced any results.
	Insects on leaves: *Rice Aphids ( <i>Sogata spp.</i> ), *Spittlebugs ( <i>Prosapia sp.</i> ), *( <i>Scaptocoris talpa</i> )	Crop-related: The elimination of crop waste. Frequent monitoring in order to detect the presence and effect of pests. Use of pheromones traps.	Treatment with wide-specter pesticides. Cipermetrina will be used, applied to the leaves, provided there is a high population density after crop-related activities and these have not produced any results.
	Weeds: *( <i>Echinocloa crusgalli</i> ), ( <i>Echinocloa colonum</i> ), ( <i>Fimbristylis millacea</i> ), ( <i>Cyperus spp.</i> )	Crop-related: Good soil preparation, elimination of weeds before blooming, and adequate seeding density.	Glysophate application before seeding if there is a high density of weeds that were not eliminated with crop-related actions. If there is a high occurrence of weeds after the seeding emerges, it is advisable to use Basagran.
	Fungus: *( <i>Pyricularia orizae</i> )	Crop-related: Manage an adequate seeding density. Use of resistant varieties.	Application of Carbendazim alternated with Mancozeb.



## **V. ANALYSIS OF THE PRODUCTS TO BE USED:**

### **A. FOXIM (Volaton):**

#### **1. Pesticide Situation in the USEPA Registers:**

The EPA classifies Foxim in Category II of toxicity. There is no evidence of cancer or mutation causing effects. Some products that contain Foxim produce eye irritation and stinging.

#### **2. Basis for the selection of the pesticide:**

Foxim is a non-selective pesticide that controls soil pests. It acts through the cuticle by ingestion or inhalation.

#### **3. Possible use of the pesticide in the IPM:**

Before applying Foxim, it is recommended that the following be used: resistant varieties, a good soil preparation; in case these actions are not effective, a chemical controlling substance will be used, taking into consideration the existence of natural predators in order to avoid interfering with their activity.

#### **4. Proposed application method, including the availability of appropriate and safe equipment:**

Broadcast applications will be used given that it is in granular form. It is always recommended to follow the procedures for “the safe use and management of pesticides”, including the use of masks, gloves, boots, thick, long-sleeve shirts, caps and glasses; bathing and changing clothes after the application and adjusting the spray of the equipment before the application.

#### **5. Tolerance:**

Foxim is persistent and toxic for a large variety of mammals and other organisms, resulting in a significant environmental impact.

#### **6. Effectiveness of the requested pesticide for the proposed use:**

Foxim is a widely used pesticide given its effectiveness in the control of soil pests.

#### **7. Compatibility of the proposed pesticide with the included and not-included ecosystems:**

Foxim is a substance of light persistence given that microorganisms in the soil eliminate it.

#### **8. Conditions under which the pesticide will be used: including weather, flora, fauna, geography, hydrology and soil:**

Foxim is used under normal weather and soil conditions, without polluting the environment. The average annual temperatures range between 21.9 and 25.6 ° C and the average annual rainfall is 1843.80 mm. The soil is of the Sotz series (equivalent to the order Alfisoles and Vertisoles, sub-order Udalfs and Uderts), flat with a depth from the A horizon of 40 to 50 cms. and has no limitations regarding rockiness with clay-like texture, low filtration and flooding factors given the high content of clay. The topography is that of flat land with an inclination that doesn't exceed 30%.

**9. Availability and effectiveness of other pesticides or non-chemical control methods:**

For this project, the execution of crop-related practices that help reduce the presence of pests in the soil, eliminating host plants and an adequate preparation of the soil, will be promoted.

**10. Capacity of the requesting nation to regulate or control the distribution, storage, use and elimination of the pesticide:**

In Guatemala, the MAGA (Agriculture, livestock and food ministry) is responsible for overlooking the agricultural and livestock activities; the office of Procedures and Regulations is part of the ministry, and is supported by the Plant and Animal Health Law, Decree 36-98 and Executive Order 745-99; this office implemented the Business Supervision and Technical Audit of Agricultural and Livestock Inputs program, the purpose of which is to constantly supervise businesses that import, export, produce, formulate, outsource, package, re-package, store, distribute, sell and commercialize inputs for agricultural and livestock use; the commercial name of the input, its active ingredient, concentration, producing company, country of origin, registration number with MAGA, expiration date of the registration and the representative of the registering entity are verified. The correct labeling of the product, expiration date, sealing of containers and the appropriate storage of the inputs are also verified.

**11. Training activities for the people who will use and apply them:**

The project will have technical personnel of FIPA/AID who will support the safe use and management of the insecticides through training sessions; consulting support from the Guatemalan Rice Association and the Fondo de Tierras will also be available.

**12. Supervision of the use and effectiveness of the pesticide activities:**

The technical personnel of FIPA/AID assigned to the community will verify the correct use by the producers of the insecticides. All dangerous practices for humans, animals or the environment will be stopped immediately.

**B. CIPERMETRINA (Cipermetrina):**

**1. Pesticide Situation in the USEPA Registers:**

The EPA classifies Cipermetrina as a Category C for cancer – a possible cancer producing substance for humans with limited evidence of cancer caused in animals but no evidence in the case of humans. The symptoms of the poisoning include abnormal facial sensations, dizziness, headaches, nausea, anorexia and fatigue, vomiting and increased stomach secretions as well as skin and eye irritation.

**2. Basis for the selection of the pesticide:**

Cipermetrina is a preventive insecticide of wide-specter in relation to the insects that it controls. Its mode of action is through contact and to a lesser extent, gastric. It acts on the peripheral nervous system, generating body paralysis

**3. Possible use of the pesticide in the IPM:**

Cipermetrina is used as the last control alternative to protect the crop when the crop-related, behavioral, biological, and other controls have not produced the expected results and the presence of the pest is significantly affecting the crop.

**4. Proposed application method, including the availability of appropriate and safe equipment:**

The applications will be done with a Backpack sprayer or pump. It is always recommended to follow the procedures for “the safe use and management of pesticides”, including the use of masks, gloves, boots, thick, long-sleeve shirts, caps and glasses; bathing and changing clothes after the application and adjusting the spray of the equipment before the application

**5. Tolerance:**

Cipermetrina is practically non-toxic for birds, but has a higher level of toxicity in aquatic organisms and bees.

**6. Effectiveness of the requested pesticide for the proposed use:**

Cipermetrina is one of the most used insecticides given its effectiveness in controlling insects. Its mode of action is through contact and to a lesser extent, gastric.

**7. Compatibility of the proposed pesticide with the included and not-included ecosystems:**

Cipermetrina is a pyrethroid, insoluble in water, with a high level of stability when in contact with light and temperature, low mobility on the soil and easily degradable by microorganisms. It is not toxic for warm-blooded animals.

**8. Conditions under which the pesticide will be used: including weather, flora, fauna, geography, hydrology and soil:**

Cipermetrina is used under normal weather and soil conditions, without polluting the environment. The average annual temperatures range between 21.9 and 25.6 ° C and the average annual rainfall is 1843.80 mm. The soil is of the Sotz series (equivalent to the order Alfisoles and Vertisoles, sub-order Udalfs and Uderts), flat with a depth from the A horizon of 40 to 50 cms. and has no limitations regarding rockiness with clay-like texture, low filtration and flooding factors given the high content of clay. The topography is that of flat land with an inclination that doesn't exceed 30%.

**9. Availability and effectiveness of other pesticides or non-chemical control methods:**

For this project, the execution of crop-related practices that help reduce the presence of pests in the soil, eliminating host plants and placing traps with bait to attract the adult insects and thus reduce the population of pest insects, will be promoted.

**10. Capacity of the requesting nation to regulate or control the distribution, storage, use and elimination of the pesticide:**

In Guatemala, the MAGA (Agriculture, livestock and food ministry) is responsible for overlooking the agricultural and livestock activities; the office of Procedures and Regulations is

part of the ministry, and is supported by the Plant and Animal Health Law, Decree 36-98 and Executive Order 745-99; this office implemented the Business Supervision and Technical Audit of Agricultural and Livestock Inputs program, the purpose of which is to constantly supervise businesses that import, export, produce, formulate, outsource, package, re-package, store, distribute, sell and commercialize inputs for agricultural and livestock use; the commercial name of the input, its active ingredient, concentration, producing company, country of origin, registration number with MAGA, expiration date of the registration and the representative of the registering entity are verified. The correct labeling of the product, expiration date, sealing of containers and the appropriate storage of the inputs are also verified.

**11. Training activities for the people who will use and apply them:**

The project will have technical personnel of FIPA/AID who will support the safe use and management of the insecticides through training sessions; consulting support from the Guatemalan Rice Association and the Fondo de Tierras will also be available.

**12. Supervision of the use and effectiveness of the pesticide activities:**

The technical personnel of FIPA/AID assigned to the community will verify the correct use by the producers of the insecticides. All dangerous practices for humans, animals or the environment will be stopped immediately.

**C. GLYSOPHATE (Roundup)**

**1. Pesticide Situation in the USEPA Registers:**

The EPA classifies Glyphosate as a Group E for cancer. There is no evidence of cancer or mutation causing effects. Some products that contain glyphosate are in the toxicity III category, and produce moderate irritation of the skin and eyes.

**2. Basis for the selection of the pesticide:**

Glyphosate is a non-selective herbicide that controls all types of weeds. It is applied before seeding.

**3. Possible use of the pesticide in the IPM:**

Glyphosate is well absorbed by the soil and is practically immobile. It degrades with carbon dioxide. It doesn't move with surface water but it has the potential of polluting water through erosion. This makes it necessary to adequately protect the soil and the water.

**4. Proposed application method, including the availability of appropriate and safe equipment:**

The applications will be done with a Backpack sprayer or pump. It is always recommended to follow the procedures for "the safe use and management of pesticides", including the use of masks, gloves, boots, thick, long-sleeve shirts, caps and glasses; bathing and changing clothes after the application and adjusting the spray of the equipment before the application

**5. Tolerance:**

Glyphosate is moderately toxic for birds; it isn't toxic for fish, aquatic invertebrates and bees.

**6. Effectiveness of the requested pesticide for the proposed use:**

Glyphosate is one of the most used herbicides given its effectiveness in weed control.

**7. Compatibility of the proposed pesticide with the included and not-included ecosystems:**

Microorganisms degrade it quickly, its average life is 4-8 weeks. It doesn't show activity in the soil at commercial doses. It becomes inactive quickly in this environment through the development of substances that provoke its precipitation. It is quickly absorbed by the soil's colloids and therefore leaching is minimal.

**8. Conditions under which the pesticide will be used: including weather, flora, fauna, geography, hydrology and soil:**

Glyphosate is used under normal weather and soil conditions, without polluting the environment. The average annual temperatures range between 21.9 and 25.6 ° C and the average annual rainfall is 1843.80 mm. The soil is of the Sotz series (equivalent to the order Alfisoles and Vertisoles, sub-order Udalfs and Uderts), flat with a depth from the A horizon of 40 to 50 cms. and has no limitations regarding rockiness with clay-like texture, low filtration and flooding factors given the high content of clay. The topography is that of flat land with an inclination that doesn't exceed 30%.

**9. Availability and effectiveness of other pesticides or non-chemical control methods:**

For this project, the execution of crop-related practices that help reduce the presence of weeds in the soil, management of the density of seeding and the elimination of weeds before blooming, will be promoted.

**10. Capacity of the requesting nation to regulate or control the distribution, storage, use and elimination of the pesticide:**

In Guatemala, the MAGA (Agriculture, livestock and food ministry) is responsible for overlooking the agricultural and livestock activities; the office of Procedures and Regulations is part of the ministry, and is supported by the Plant and Animal Health Law, Decree 36-98 and Executive Order 745-99; this office implemented the Business Supervision and Technical Audit of Agricultural and Livestock Inputs program, the purpose of which is to constantly supervise businesses that import, export, produce, formulate, outsource, package, re-package, store, distribute, sell and commercialize inputs for agricultural and livestock use; the commercial name of the input, its active ingredient, concentration, producing company, country of origin, registration number with MAGA, expiration date of the registration and the representative of the registering entity are verified. The correct labeling of the product, expiration date, sealing of containers and the appropriate storage of the inputs are also verified.

**11. Training activities for the people who will use and apply them:**

The project will have technical personnel of FIPA/AID who will support the safe use and management of the insecticides through training sessions; consulting support from the Guatemalan Rice Association and the Fondo de Tierras will also be available.



## **12. Supervision of the use and effectiveness of the pesticide activities:**

The technical personnel of FIPA/AID assigned to the community will verify the correct use by the producers of the insecticides. All dangerous practices for humans, animals or the environment will be stopped immediately.

### **D. BASAGRAN (Bentazon):**

#### **1. Pesticide Situation in the USEPA Registers:**

The EPA classifies Basagran in Category III of toxicity. There is no evidence of cancer or mutation causing effects. Some products that contain Basagran produce eye irritation and stinging.

#### **2. Basis for the selection of the pesticide:**

Basagran is a selective herbicide that controls specific wide-leaf weeds; it doesn't control grass. It is used after the seedling emerges.

#### **3. Possible use of the pesticide in the IPM:**

The use of Basagran is combined with other weed control methods such as the manual control, which includes an adequate preparation of the soil to avoid the presence of weeds that can affect the productivity of the crop. Bentazon is used as a treatment in the early stages after the seeding emerges to eliminate wide-leaf weeds and some cyperaceous selectively.

#### **4. Proposed application method, including the availability of appropriate and safe equipment:**

The applications will be done with a Backpack sprayer or pump. It is always recommended to follow the procedures for "the safe use and management of pesticides", including the use of masks, gloves, boots, thick, long-sleeve shirts, caps and glasses; bathing and changing clothes after the application and adjusting the spray of the equipment before the application

#### **5. Tolerance:**

**Basagran is moderately toxic for crustaceans and algae; it has a low toxicity for fish and birds.**

#### **6. Effectiveness of the requested pesticide for the proposed use:**

Basagran is an effective herbicide for the control of specific wide-leaf weeds.

#### **7. Compatibility of the proposed pesticide with the included and not-included ecosystems:**

Microorganisms quickly degrade it. It leaches easily and therefore residues in the soil are low. It doesn't fixate to soil particles and is highly soluble in water. These characteristics could suggest a potential risk of leaching, but that doesn't occur given the quick degradation on the surface of the soil by solar light (UV) or by microorganisms.

**8. Conditions under which the pesticide will be used: including weather, flora, fauna, geography, hydrology and soil:**

Basagran is used under normal weather and soil conditions, without polluting the environment. The average annual temperatures range between 21.9 and 25.6 ° C and the average annual rainfall is 1843.80 mm. The soil is of the Sotz series (equivalent to the order Alfisoles and Vertisoles, sub-order Udalfs and Uderts), flat with a depth from the A horizon of 40 to 50 cms. and has no limitations regarding rockiness with clay-like texture, low filtration and flooding factors given the high content of clay. The topography is that of flat land with an inclination that doesn't exceed 30%.

**9. Availability and effectiveness of other pesticides or non-chemical control methods:**

For this project, the execution of crop-related practices that help reduce the presence of weeds, through an adequate preparation of the soil, will be promoted.

**10. Capacity of the requesting nation to regulate or control the distribution, storage, use and elimination of the pesticide:**

In Guatemala, the MAGA (Agriculture, livestock and food ministry) is responsible for overlooking the agricultural and livestock activities; the office of Procedures and Regulations is part of the ministry, and is supported by the Plant and Animal Health Law, Decree 36-98 and Executive Order 745-99; this office implemented the Business Supervision and Technical Audit of Agricultural and Livestock Inputs program, the purpose of which is to constantly supervise businesses that import, export, produce, formulate, outsource, package, re-package, store, distribute, sell and commercialize inputs for agricultural and livestock use; the commercial name of the input, its active ingredient, concentration, producing company, country of origin, registration number with MAGA, expiration date of the registration and the representative of the registering entity are verified. The correct labeling of the product, expiration date, sealing of containers and the appropriate storage of the inputs are also verified.

**11. Training activities for the people who will use and apply them:**

The project will have technical personnel of FIPA/AID who will support the safe use and management of the insecticides through training sessions; consulting support from the Guatemalan Rice Association and the Fondo de Tierras will also be available.

**12. Supervision of the use and effectiveness of the pesticide activities:**

The technical personnel of FIPA/AID assigned to the community will verify the correct use by the producers of the insecticides. All dangerous practices for humans, animals or the environment will be stopped immediately.



## **E. CARBENDAZIM (Carbendazin):**

### **1. Pesticide Situation in the USEPA Registers:**

The EPA classifies Carbendazim in Category III of toxicity. There is no evidence of cancer or mutation causing effects. Some products that contain Carbendazim produce skin and eye irritation.

### **2. Basis for the selection of the pesticide:**

Carbendazim is a selective fungicide that acts against *Pyricularia oryzae*. This product is applied when a crop is having problems with that fungus.

### **3. Possible use of the pesticide in the IPM:**

It is based on three aspects that must be analyzed together in order to obtain the maximum benefit in the protection of the crop, which are: 1) Genetic resistance, for *Pyricularia oryzae* there are some crops that manifest better behavior or tolerance to the disease; 2) Crop-related activities that include the elimination of waste, of host grass weeds and the use of fungicides that minimize primary inoculation and 3) Chemical control, when the environmental conditions are very favorable to the *Pyricularia oryzae*, the procedures considered above are insufficient and chemical protection is necessary to reach a level of productivity and quality appropriate to the investment made in the crop..

### **4. Proposed application method, including the availability of appropriate and safe equipment:**

The applications will be done with a Backpack sprayer or pump. It is always recommended to follow the procedures for “the safe use and management of pesticides”, including the use of masks, gloves, boots, thick, long-sleeve shirts, caps and glasses; bathing and changing clothes after the application and adjusting the spray of the equipment before the application

### **5. Tolerance:**

Carbendazim has severe toxic effects on water organisms and fish; it is practically non-toxic for birds.

### **6. Effectiveness of the requested pesticide for the proposed use:**

Carbendazim is one of the most used fungicides given its effectiveness in the prevention and control of fungus in rice crops.

### **7. Compatibility of the proposed pesticide with the included and not-included ecosystems:**

Carbendazim remains in the soil for an average of 6-14 months on non-planted soil; 3-6 months on planted soil.

**8. Conditions under which the pesticide will be used: including weather, flora, fauna, geography, hydrology and soil:**

Carbendazim is used under normal weather and soil conditions, without polluting the environment. The average annual temperatures range between 21.9 and 25.6 ° C and the average annual rainfall is 1843.80 mm. The soil is of the Sotz series (equivalent to the order Alfisoles and Vertisoles, sub-order Udalfs and Uderts), flat with a depth from the A horizon of 40 to 50 cms. and has no limitations regarding rockiness with clay-like texture, low filtration and flooding factors given the high content of clay. The topography is that of flat land with an inclination that doesn't exceed 30%.

**9. Availability and effectiveness of other pesticides or non-chemical control methods:**

For this project, the execution of crop-related practices that help reduce the presence of fungus, through the elimination of disease hosting weeds, an adequate management of the density of the seeding and the use of resistant varieties, will be promoted.

**10. Capacity of the requesting nation to regulate or control the distribution, storage, use and elimination of the pesticide:**

In Guatemala, the MAGA (Agriculture, livestock and food ministry) is responsible for overlooking the agricultural and livestock activities; the office of Procedures and Regulations is part of the ministry, and is supported by the Plant and Animal Health Law, Decree 36-98 and Executive Order 745-99; this office implemented the Business Supervision and Technical Audit of Agricultural and Livestock Inputs program, the purpose of which is to constantly supervise businesses that import, export, produce, formulate, outsource, package, re-package, store, distribute, sell and commercialize inputs for agricultural and livestock use; the commercial name of the input, its active ingredient, concentration, producing company, country of origin, registration number with MAGA, expiration date of the registration and the representative of the registering entity are verified. The correct labeling of the product, expiration date, sealing of containers and the appropriate storage of the inputs are also verified.

**11. Training activities for the people who will use and apply them:**

The project will have technical personnel of FIPA/AID who will support the safe use and management of the insecticides through training sessions; consulting support from the Guatemalan Rice Association and the Fondo de Tierras will also be available.

**12. Supervision of the use and effectiveness of the pesticide activities:**

The technical personnel of FIPA/AID assigned to the community will verify the correct use by the producers of the insecticides. All dangerous practices for humans, animals or the environment will be stopped immediately.

**F. MANCOZEB (Dithane):**

### **1. Pesticide Situation in the USEPA Registers:**

The EPA classifies Mancozeb in Category IV of toxicity. There is evidence of cancer or mutation causing effects. Some products that contain Mancozeb produce skin irritation and eye irritation and stinging.

### **2. Basis for the selection of the pesticide:**

Mancozeb is a fungicide used for the protection of fruits, vegetables and crops. It is also a prevention measure of ample specter in relation to the fungus that it controls and to the action sites inside the fungus. It doesn't produce a resistance effect because it reacts on many action sites. It is unlikely that it has reproductive effects on humans.

### **3. Possible use of the pesticide in the IPM:**

In the initial stages of the disease in the field, spraying Mancozeb may control it. The effectiveness of the treatment depends on low humidity conditions that follow the applications, because in very humid environments, the applications of these products don't stop the disease. In integrated management, it is important to have resistant crops, together with sanitary measures and agricultural practices.

### **4. Proposed application method, including the availability of appropriate and safe equipment:**

The applications will be done with a Backpack sprayer or pump. It is always recommended to follow the procedures for "the safe use and management of pesticides", including the use of masks, gloves, boots, thick, long-sleeve shirts, caps and glasses; bathing and changing clothes after the application and adjusting the spray of the equipment before the application

### **5. Tolerance:**

Mancozeb is toxic for fish; it is not toxic for bees and doesn't poison the plant.

### **6. Effectiveness of the requested pesticide for the proposed use:**

Mancozeb is one of the most used fungicides given its effectiveness in the prevention and control of fungus. It reacts on various places of action so that it doesn't create resistance.

### **7. Compatibility of the proposed pesticide with the included and not-included ecosystems:**

Mancozeb is not dangerous for the beneficiary organisms, but it is toxic for fish. The pollution of the surface water systems that could be created by washing the equipment in rivers, springs and other water sources must be avoided. Before applying, the area must be drained. It should not be applied on standing water or puddles. In rice patches treated with Mancozeb, the flooding should be done five days after the application.

### **8. Conditions under which the pesticide will be used: including weather, flora, fauna, geography, hydrology and soil:**

Mancozeb is used under normal weather and soil conditions, without polluting the environment. The average annual temperatures range between 21.9 and 25.6 ° C and the average annual rainfall is 1843.80 mm. The soil is of the Sotz series (equivalent to the order Alfisoles and

Vertisoles, sub-order Udalfs and Uderts), flat with a depth from the A horizon of 40 to 50 cms. and has no limitations regarding rockiness with clay-like texture, low filtration and flooding factors given the high content of clay. The topography is that of flat land with an inclination that doesn't exceed 10%.

**9. Availability and effectiveness of other pesticides or non-chemical control methods:**

For this project, the execution of crop-related practices that help reduce the presence of fungus, through the elimination of disease hosting weeds, an adequate management of the density of the seeding and the use of resistant varieties.

**10. Capacity of the requesting nation to regulate or control the distribution, storage, use and elimination of the pesticide:**

In Guatemala, the MAGA (Agriculture, livestock and food ministry) is responsible for overlooking the agricultural and livestock activities; the office of Procedures and Regulations is part of the ministry, and is supported by the Plant and Animal Health Law, Decree 36-98 and Executive Order 745-99; this office implemented the Business Supervision and Technical Audit of Agricultural and Livestock Inputs program, the purpose of which is to constantly supervise businesses that import, export, produce, formulate, outsource, package, re-package, store, distribute, sell and commercialize inputs for agricultural and livestock use; the commercial name of the input, its active ingredient, concentration, producing company, country of origin, registration number with MAGA, expiration date of the registration and the representative of the registering entity are verified. The correct labeling of the product, expiration date, sealing of containers and the appropriate storage of the inputs are also verified.

**11. Training activities for the people who will use and apply them:**

The project will have technical personnel of FIPA/AID who will support the safe use and management of the insecticides through training sessions; consulting support from the Guatemalan Rice Association and the Fondo de Tierras will also be available.

**12. Supervision of the use and effectiveness of the pesticide activities:**

The technical personnel of FIPA/AID assigned to the community will verify the correct use by the producers of the insecticides. All dangerous practices for humans, animals or the environment will be stopped immediately.

**VI. INTEGRATED PEST MANAGEMENT INTERVENTION IN SUGAR CANE CROPS (*Sacharum officinarum*):**

<b>Crop</b>	<b>Pest</b>	<b>Recommended Actions</b>	<b>Chemical Treatment Considerations</b>
Sugar cane ( <i>Sacharum officinarum</i> ):	Insects: *May or June Beetles ( <i>Phyllophaga spp</i> ), *( <i>Scaptocoris talpa</i> ), *Spittlebugs ( <i>Prosapia sp.</i> ), *( <i>Diatraea sp.</i> )	Crop-related: A good soil preparation, exposure of larvae to the sun, elimination of crop waste, adequate management of weeds, protection of beneficial fauna (frogs, birds, etc.). Monitor the presence and incidence of pests.	Treatment with contact, ingestion or inhalation pesticides. Foxim will be applied to the soil before the seeding when there is high population density, after completing the crop-related activities and these have not produced any effect. In addition, a treatment with Cipermetrina will be applied to the leaves when the population density is high. .
	Weeds: *( <i>Rottboellia cochinchinensis</i> ), *( <i>Eleusine indica</i> ), *( <i>Cyperus spp.</i> )	Crop-related: A good soil preparation, early preparation of the soil, exposure to the sun, elimination of the weeds before blooming, and an adequate density of seeding.	An application of Glisophate before the seeding if a high population density of weeds exists that were not eliminated with the crop-related activities. If there is a high incidence of weeds after the seeding has emerged, it is recommended that Terbutrina be used.

**A. FOXIM (Volaton):**

**1. Pesticide Situation in the USEPA Registers:**

The EPA classifies Foxim in Category II of toxicity. There is no evidence of cancer or mutation causing effects. Some products that contain Foxim produce eye irritation and stinging.

**2. Basis for the selection of the pesticide:**

Foxim is a non-selective pesticide that controls soil pests. It acts through the cuticle by ingestion or inhalation.

**3. Possible use of the pesticide in the IPM:**

Before applying Foxim, it is recommended that the following be used: resistant varieties, a good soil preparation; in case these actions are not effective, a chemical controlling substance

will be used, taking into consideration the existence of natural predators in order to avoid interfering with their activity.

**4. Proposed application method, including the availability of appropriate and safe equipment:**

Broadcast applications will be used given that it is in granular form. It is always recommended to follow the procedures for “the safe use and management of pesticides”, including the use of masks, gloves, boots, thick, long-sleeve shirts, caps and glasses; bathing and changing clothes after the application and adjusting the spray of the equipment before the application.

**5. Tolerance:**

Foxim is persistent and toxic for a large variety of mammals and other organisms, resulting in a significant environmental impact.

**6. Effectiveness of the requested pesticide for the proposed use:**

Foxim is a widely used pesticide given its effectiveness in the control of soil pests.

**7. Compatibility of the proposed pesticide with the included and not-included ecosystems:**

Foxim is a substance of light persistence given that microorganisms in the soil eliminate it.

**8. Conditions under which the pesticide will be used: including weather, flora, fauna, geography, hydrology and soil:**

Foxim is used under normal weather and soil conditions, without polluting the environment. The average annual temperatures range between 21.9 and 25.6 ° C and the average annual rainfall is 1843.80 mm. The soil is of the Sotz series (equivalent to the order Alfisoles and Vertisoles, sub-order Udalfs and Uderts), flat with a depth from the A horizon of 40 to 50 cms. and has no limitations regarding rockiness with clay-like texture, low filtration and flooding factors given the high content of clay. The topography is that of flat land with an inclination that doesn't exceed 30%.

**9. Availability and effectiveness of other pesticides or non-chemical control methods:**

For this project, the execution of crop-related practices that help reduce the presence of pests in the soil, eliminating host plants and an adequate preparation of the soil, will be promoted.

**10. Capacity of the requesting nation to regulate or control the distribution, storage, use and elimination of the pesticide:**

In Guatemala, the MAGA (Agriculture, livestock and food ministry) is responsible for overlooking the agricultural and livestock activities; the office of Procedures and Regulations is part of the ministry, and is supported by the Plant and Animal Health Law, Decree 36-98 and Executive Order 745-99; this office implemented the Business Supervision and Technical Audit of Agricultural and Livestock Inputs program, the purpose of which is to constantly supervise businesses that import, export, produce, formulate, outsource, package, re-package, store, distribute, sell and commercialize inputs for agricultural and livestock use; the commercial name of the input, its active ingredient, concentration, producing company,

country of origin, registration number with MAGA, expiration date of the registration and the representative of the registering entity are verified. The correct labeling of the product, expiration date, sealing of containers and the appropriate storage of the inputs are also verified.

**11. Training activities for the people who will use and apply them:**

The project will have technical personnel of FIPA/AID who will support the safe use and management of the insecticides through training sessions; consulting support from the advisor assigned to the farm by the Fondo de Tierras will also be available.

**12. Supervision of the use and effectiveness of the pesticide activities:**

The technical personnel of FIPA/AID assigned to the community will verify the correct use by the producers of the insecticides. All dangerous practices for humans, animals or the environment will be stopped immediately.

**B. CIPERMETRINA (Cipermetrina):**

**1. Pesticide Situation in the USEPA Registers:**

The EPA classifies Cipermetrina as a Category C for cancer – a possible cancer producing substance for humans with limited evidence of cancer caused in animals but no evidence in the case of humans. The symptoms of the poisoning include abnormal facial sensations, dizziness, headaches, nausea, anorexia and fatigue, vomiting and increased stomach secretions as well as skin and eye irritation.

**2. Basis for the selection of the pesticide:**

Cipermetrina is a preventive insecticide of wide-specter in relation to the insects that it controls. Its mode of action is through contact and to a lesser extent, gastric. It acts on the peripheral nervous system, generating body paralysis.

**3. Possible use of the pesticide in the IPM:**

Cipermetrina is used as the last control alternative to protect the crop when the crop-related, behavioral, biological, and other controls have not produced the expected results and the presence of the pest is significantly affecting the crop.

**4. Proposed application method, including the availability of appropriate and safe equipment:**

The applications will be done with a Backpack sprayer or pump. It is always recommended to follow the procedures for “the safe use and management of pesticides”, including the use of masks, gloves, boots, thick, long-sleeve shirts, caps and glasses; bathing and changing clothes after the application and adjusting the spray of the equipment before the application

**5. Tolerance:**

Cipermetrina is practically non-toxic for birds, but has a higher level of toxicity in aquatic organisms and bees.

**6. Effectiveness of the requested pesticide for the proposed use:**

Cipermetrina is one of the most used insecticides given its effectiveness in controlling insects. Its mode of action is through contact and at a lower level, gastric.

**7. Compatibility of the proposed pesticide with the included and not-included ecosystems:**

Cipermetrina is a pyrethroid, insoluble in water, with a high level of stability when in contact with light and temperature, low mobility on the soil and easily degradable by microorganisms. It is not toxic for warm-blooded animals.

**8. Conditions under which the pesticide will be used: including weather, flora, fauna, geography, hydrology and soil:**

Cipermetrina is used under normal weather and soil conditions, without polluting the environment. The average annual temperatures range between 21.9 and 25.6 ° C and the average annual rainfall is 1843.80 mm. The soil is of the Sotz series (equivalent to the order Alfisoles and Vertisoles, sub-order Udalfs and Uderts), flat with a depth from the A horizon of 40 to 50 cms. and has no limitations regarding rockiness with clay-like texture, low filtration and flooding factors given the high content of clay. The topography is that of flat land with an inclination that doesn't exceed 30%.

**9. Availability and effectiveness of other pesticides or non-chemical control methods:**

For this project, the execution of crop-related practices that help reduce the presence of pests in the soil, eliminating host plants and placing traps with bait to attract the adult insects and thus reduce the population of pest insects, will be promoted.

**10. Capacity of the requesting nation to regulate or control the distribution, storage, use and elimination of the pesticide:**

In Guatemala, the MAGA (Agriculture, livestock and food ministry) is responsible for overlooking the agricultural and livestock activities; the office of Procedures and Regulations is part of the ministry, and is supported by the Plant and Animal Health Law, Decree 36-98 and Executive Order 745-99; this office implemented the Business Supervision and Technical Audit of Agricultural and Livestock Inputs program, the purpose of which is to constantly supervise businesses that import, export, produce, formulate, outsource, package, re-package, store, distribute, sell and commercialize inputs for agricultural and livestock use; the commercial name of the input, its active ingredient, concentration, producing company, country of origin, registration number with MAGA, expiration date of the registration and the representative of the registering entity are verified. The correct labeling of the product, expiration date, sealing of containers and the appropriate storage of the inputs are also verified.

**11. Training activities for the people who will use and apply them:**



The project will have technical personnel of FIPA/AID who will support the safe use and management of the insecticides through training sessions; consulting support from the advisor assigned to the farm by the Fondo de Tierras will also be available.

**12. Supervision of the use and effectiveness of the pesticide activities:**

The technical personnel of FIPA/AID assigned to the community will verify the correct use by the producers of the insecticides. All dangerous practices for humans, animals or the environment will be stopped immediately.

**C. GLYSOPHATE (Roundup)**

**1. Pesticide Situation in the USEPA Registers:**

The EPA classifies Glyphosate as a Group E for cancer. There is no evidence of cancer or mutation causing effects. Some products that contain glyphosate are in the toxicity III category, and produce moderate irritation of the skin and eyes.

**2. Basis for the selection of the pesticide:**

Glyphosate is a non-selective herbicide that controls all types of weeds. It is applied before seeding.

**3. Possible use of the pesticide in the IPM:**

Glyphosate is well absorbed by the soil and is practically immobile. It degrades with carbon dioxide. It doesn't move with surface water but it has the potential of polluting water through erosion. This makes it necessary to adequately protect the soil and the water.

**4. Proposed application method, including the availability of appropriate and safe equipment:**

The applications will be done with a Backpack sprayer or pump. It is always recommended to follow the procedures for "the safe use and management of pesticides", including the use of masks, gloves, boots, thick, long-sleeve shirts, caps and glasses; bathing and changing clothes after the application and adjusting the spray of the equipment before the application

**5. Tolerance:**

Glyphosate is moderately toxic for birds; it isn't toxic for fish, aquatic invertebrates and bees.

**6. Effectiveness of the requested pesticide for the proposed use:**

Glyphosate is one of the most used herbicides given its effectiveness in weed control.

**7. Compatibility of the proposed pesticide with the included and not-included ecosystems:**

Microorganisms degrade it quickly, its average life is 4-8 weeks. It doesn't show activity in the soil at commercial doses. It becomes inactive quickly in this environment through the development of substances that provoke its precipitation. It is quickly absorbed by the soil's colloids and therefore leaching is minimal.

**8. Conditions under which the pesticide will be used: including weather, flora, fauna, geography, hydrology and soil:**

Glysophate is used under normal weather and soil conditions, without polluting the environment. The average annual temperatures range between 21.9 and 25.6 ° C and the average annual rainfall is 1843.80 mm. The soil is of the Sotz series (equivalent to the order Alfisoles and Vertisoles, sub-order Udalfs and Uderts), flat with a depth from the A horizon of 40 to 50 cms. and has no limitations regarding rockiness with clay-like texture, low filtration and flooding factors given the high content of clay. The topography is that of flat land with an inclination that doesn't exceed 30%.

**9. Availability and effectiveness of other pesticides or non-chemical control methods:**

For this project, the execution of crop-related practices that help reduce the presence of weeds in the soil, management of the density of seeding and the elimination of weeds before blooming, will be promoted.

**10. Capacity of the requesting nation to regulate or control the distribution, storage, use and elimination of the pesticide:**

In Guatemala, the MAGA (Agriculture, livestock and food ministry) is responsible for overlooking the agricultural and livestock activities; the office of Procedures and Regulations is part of the ministry, and is supported by the Plant and Animal Health Law, Decree 36-98 and Executive Order 745-99; this office implemented the Business Supervision and Technical Audit of Agricultural and Livestock Inputs program, the purpose of which is to constantly supervise businesses that import, export, produce, formulate, outsource, package, re-package, store, distribute, sell and commercialize inputs for agricultural and livestock use; the commercial name of the input, its active ingredient, concentration, producing company, country of origin, registration number with MAGA, expiration date of the registration and the representative of the registering entity are verified. The correct labeling of the product, expiration date, sealing of containers and the appropriate storage of the inputs are also verified.

**11. Training activities for the people who will use and apply them:**

The project will have technical personnel of FIPA/AID who will support the safe use and management of the insecticides through training sessions; consulting support from the advisor assigned to the farm by the Fondo de Tierras will also be available.

**12. Supervision of the use and effectiveness of the pesticide activities:**

The technical personnel of FIPA/AID assigned to the community will verify the correct use by the producers of the insecticides. All dangerous practices for humans, animals or the environment will be stopped immediately.

**D. TERBUTRINA (Igran):**

**1. Pesticide Situation in the USEPA Registers:**

The EPA classifies Terbutrina in Category III of toxicity. There is no evidence of cancer or mutation causing effects. It is a potential pollution agent of water. Some products that contain Terbutrina produce skin irritation and eye irritation and stinging.

**2. Basis for the selection of the pesticide:**

It is a residual action herbicide of ample specter in the control of weeds in sugar cane crops. It is absorbed through the leaves and also through the roots of the weeds, acting as an inhibitor of photosynthesis.

**3. Possible use of the pesticide in the IPM:**

In order to control the weeds in the sugar cane crops, a mechanical control is used, which begins with the preparation of the soil through subsequent weedings according to the needs of the crop. Terbutrina is applied post seeding, which leaves it on the topsoil to be absorbed by the roots of the weeds.

**4. Proposed application method, including the availability of appropriate and safe equipment:**

The applications will be done with a Backpack sprayer or pump. It is always recommended to follow the procedures for “the safe use and management of pesticides”, including the use of masks, gloves, boots, thick, long-sleeve shirts, caps and glasses; bathing and changing clothes after the application and adjusting the spray of the equipment before the application

**5. Tolerance:**

Terbutrina produces extreme toxicity for algae and high toxicity for fish and crustaceans.

**6. Effectiveness of the requested pesticide for the proposed use:**

Terbutrina is an effective herbicide for the control of the weeds in sugar cane crops.

**7. Compatibility of the proposed pesticide with the included and not-included ecosystems:**

Terbutrina is a potential water polluter, which is why it is important to avoid pollution of the surface water systems by washing the application equipment in rivers, springs and other water sources. It should not be applied when there are puddles on the lots.

**8. Conditions under which the pesticide will be used: including weather, flora, fauna, geography, hydrology and soil:**

Terbutrina is used under normal weather soil conditions, without polluting the environment. The average annual temperatures range between 21.9 and 25.6 ° C and the average annual rainfall is 1843.80 mm. The soil is of the Sotz series (equivalent to the order Alfisoles and Vertisoles, sub-order Udalfs and Uderts), flat with a depth from the A horizon of 40 to 50 cms. and has no limitations regarding rockiness with clay-like texture, low filtration and flooding factors given the high content of clay. The topography is that of flat land with an inclination that doesn't exceed 30%.

**9. Availability and effectiveness of other pesticides or non-chemical control methods:**

For this project, the execution of crop-related practices that help reduce the presence of weeds, through the appropriate preparation of the soil.

**10. Capacity of the requesting nation to regulate or control the distribution, storage, use and elimination of the pesticide:**

In Guatemala, the MAGA (Agriculture, livestock and food ministry) is responsible for overlooking the agricultural and livestock activities; the office of Procedures and Regulations is part of the ministry, and is supported by the Plant and Animal Health Law, Decree 36-98 and Executive Order 745-99; this office implemented the Business Supervision and Technical Audit of Agricultural and Livestock Inputs program, the purpose of which is to constantly supervise businesses that import, export, produce, formulate, outsource, package, re-package, store, distribute, sell and commercialize inputs for agricultural and livestock use; the commercial name of the input, its active ingredient, concentration, producing company, country of origin, registration number with MAGA, expiration date of the registration and the representative of the registering entity are verified. The correct labeling of the product, expiration date, sealing of containers and the appropriate storage of the inputs are also verified.

**11. Training activities for the people who will use and apply them:**

The project will have technical personnel of FIPA/AID who will support the safe use and management of the insecticides through training sessions; consulting support from the advisor assigned to the farm by the Fondo de Tierras will also be available.

**12. Supervision of the use and effectiveness of the pesticide activities:**

The technical personnel of FIPA/AID assigned to the community will verify the correct use by the producers of the insecticides. All dangerous practices for humans, animals or the environment will be stopped immediately.

Action Framework of the Funds for Peace (USAID) to support the communities related to the Sierra del Lacandón and Laguna del Tigre National Parks, MBR<sup>3</sup>, Petén, Guatemala.

EVALUATION REPORT AND ACTION PLAN FOR THE USE OF PESTICIDES  
(PERSUAP) FOR RICE AND SUGAR CANE PLANTATIONS IN THE LA PAZ VILLAGE

ADDENDUM<sup>4</sup>

**PROGRAM/ACTIVITY DATA:**

**Program/Activity Number:** GS-1OF-0076M  
**Country/Region:** Petén, Guatemala, Central America  
**Program/Activity Title:** 520-M-00-03-00030-00 Modification No. 1 – Productive projects

**Sub-activity Name:** Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP) for rice, sugar cane and pumpkin seed (*pepitoria*) plantations in the relocated communities related to the Sierra de Lacandón and Laguna del Tigre National Parks, Mayan Biosphere Reserve/Guatemala

**Funding Begins:** FY 2003      **Funding Ends:** FY 2004 (extended from 2002)

**PERSUAP Prepared By:** Ogden Rodas, Peace Funds Coordinator for FIPA-IRG/USAID, and Gerson Aguaré, Agronomy Faculty of the San Carlos University, FAUSAC.

**Approval Final Action Form Prepared by:**

**SUMMARY OF FINDINGS:**

This facesheet summarizes the areas in which an expansion of PERSUAP is requested: i) justification of the training in the use of the pesticides; ii) change from Cypermethrin to a lower toxicity pesticide, and; iii) basis for the use of Terbuthrin, Phoxim, and Glyphosate; in the relocated communities of the Sierra de Lacandón and Laguna del Tigre National Parks, Mayan Biosphere Reserve/Guatemala, FIPA-IRG/USAID Funds for Peace.

I. BACKGROUND

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<sup>3</sup> Mayan Biosphere Reserve.

<sup>4</sup> Prepared as per the requirement of Washington AID (George R. Thompson, P.E.)

**The PERSUAP for rice and sugar cane plantations in the La Paz village was reviewed by USAID Guatemala and USAID Washington. Given the environmental impact evaluation that IRG has for the use of pesticides, in Guatemala, an extension to the original plan presented, is required, specially regarding training and its effects on the rice and sugar cane producers and clarifications regarding some of the proposed pesticides. These clarifications are included below.**

## **II. CLARIFICATIONS TO THE PERSUAP**

### **2.1 Training issues for the producers:**

In the La Paz village, Sayaxché, Petén, most of the producers have not had access to education, which limits their access to information regarding the appropriate handling of inputs (fertilizers, pesticides, seeds) for rice (*Oryza sativa*) and sugar cane (*Sacharum officinarum*) plantations. In addition, they are not careful on their own about correct doses or types of product given the danger that these represent (plague, sickness, nutritional deficiencies). The measures regarding the equipment and the persons after the applications are also inadequate. Protection is limited to the use of rubber boots, long sleeve shirts and caps. Storage of the chemical products is done in the home, taking care only that it is not within the reach of children.

These are some of the reasons why training for the farmers in the La Paz village on handling pesticides is considered important, taking as a reference the information provided by a technical assistant to the EDUCAREMOS program of CARE, Guatemala who is now providing technical assistance to the producers of the La Paz village. The experience gathered through programs like CARE and CRS (1993-2000) in rural areas in Guatemala including areas in Petén, shows that in the communities where this kind of training was provided, most people adopted the practices and recommendations for the use of inputs (pesticides, fertilizers, seeds). One of the lessons learned was that follow-up for these practices must be permanent.

Given this experience, training for the producers is proposed, provided by three technicians: the assigned technician to the farm by the Fondo de Tierras, a student who is completing his thesis in the Agriculture School of the Universidad de San Carlos and a professional technician in the production of rice of the Guatemalan Rice Association, ARROZGUA. In the case of the sugar cane plantations, the training would be provided by a FIPA/USAID consultant with experience in the plantation, using in addition as a reference the Guatemalan Center for Research and Training in Sugar Cane (CENGICAÑA).

Regarding safety in the application of pesticides, the producers will have minimal equipment and technical assistance for its use and maintenance. A warehouse will be created for the storage of chemical products under the custody of the assigned technicians to the village.

## **2.2 Use of Deltramethrin instead of Cypermethrin**

Given the short time frame available for the implementation of the projects and specifically for the Rice (*Oryza sativa*) project, a decision was made to not consider Cypermethrin in our action plan and to use Deltramethrin instead. The information on this product is as follows:

### **2.2.1 Analysis of deltramethrin (Decis):**

#### **a. Pesticide Situation in the USEPA Registers:**

The EPA classifies deltramethrin as a Category II for toxicity. There is no evidence of cancer or mutation effects in humans. The symptoms of the poisoning include upon inhalation: burning sensation, cough, headache and nausea; upon skin contact: redness, burning sensation and inflammation; upon eye contact: pain and redness.

#### **b. Basis for the selection of the pesticide:**

Deltramethrin is a preventive pyrethroid insecticide of wide-spectrum in relation to lepidóptera, homópteras, hemiptera, orthoptera, diptera and thysanoptera orders. Its mode of action is through contact and to a lesser extent, by ingestion. This product was selected due to its fast effect on plagues, stopping the damage plagues cause, within a few minutes of its application; its nutritional effect which protects the treated plants even if the insect is present, because the insect stops feeding, and dies from inanition; its repelling effect which makes the insects avoid the treated plantations; its low vapor pressure which makes it resistant to evaporation. It affects the peripheral nervous system as well as the central system of the insect. Initially it stimulates the nervous cells to produce repetitive discharges and finally generates paralysis. These effects are a result of its action on the sodium channel, a tiny hole that allows the sodium ions to penetrate the axon and cause nervous excitement. This leads to paralysis and death of the insect.

#### **c. Possible use of the pesticide in the IPM (Integrated Plague Management):**

Deltramethrin is used as the last control alternative to protect the crop when the crop-related good practices, biological, and other controls have not produced the expected results and the presence of the pest is significantly affecting the crop. In addition it has limited persistence in the field, which means that precise monitoring activities of the plague and of the thresholds of trustworthy action are needed.

#### **d. Proposed application method, including the availability of appropriate and safe equipment:**

The applications will be done with a Backpack sprayer or pump. It is always recommended to follow the procedures for “the safe use and management of pesticides”, including the use of masks, gloves, boots, thick, long-sleeve shirts, caps and glasses; bathing and changing clothes after the application and adjusting the spray of the equipment before the application

#### **f. Tolerance:**

Deltramethrin presents low levels of toxicity for mammals; it is non-toxic for birds, but has a higher level of toxicity in aquatic organisms and bees. It is important to mention that in the area where the projects will be developed there are no rivers.

**g. Effectiveness of the requested pesticide for the proposed use:**

Deltramethrin is one of the pesticides of the pyrethroid family that has been most widely used given its effectiveness in controlling insects. Its mode of action is through contact and to a lesser extent, gastric.

**h. Compatibility of the proposed pesticide with the included and not-included ecosystems:**

Deltramethrin is a pyrethroid, soluble in water, with a high level of stability when in contact with light and temperature, low mobility on the soil and easily degradable by microorganisms. In soil, it degrades during the two weeks after its application. It is not toxic for warm-blooded animals, because there is a very fast biotransformation by the hepatic microsomales esterases and oxidases and is eliminated in most part by the kidneys. This fast metabolizing together with poor absorption explains why pyrethroids have low toxicity levels for humans.

**i. Conditions under which the pesticide will be used: including weather, flora, fauna, geography, hydrology and soil:**

Deltramethrin is used under normal weather and soil conditions, without polluting the environment. The average annual temperatures range between 21.9 and 25.6 ° C and the average annual rainfall is 1843.80 mm. The soil is of the Sotz series (equivalent to the category of the Alfisoles and Vertisoles, sub-category of the Udalfs and Uderts), flat with a depth from the A horizon of 40 to 50 cms. and has no limitations regarding rockiness with clay-like texture, low filtration and flooding factors given the high content of clay. The topography is that of flat land with an inclination that doesn't exceed 30%.

**j. Availability and effectiveness of other pesticides or non-chemical control methods:**

For this project, the execution of crop-related practices that help reduce the presence of pests in the soil, eliminating host plants and placing traps with bait to attract the adult insects and thus reduce the population of pest insects, will be promoted.

**k. Capacity of the requesting country to regulate or control the distribution, storage, use and elimination of the pesticide:**

In Guatemala, the MAGA (Agriculture, livestock and food ministry) is responsible for overlooking the agricultural and livestock activities; the office of Procedures and Regulations is part of the ministry, and is supported by the Plant and Animal Health Law, Decree 36-98 and Executive Order 745-99; this office implemented the Business Supervision and Technical Audit of Agricultural and Livestock Inputs program, the purpose of which is to constantly supervise businesses that import, export, produce, formulate, outsource, package, re-package, store, distribute, sell and commercialize inputs for agricultural and livestock use; the commercial name of the input, its active ingredient, concentration, producing company, country of origin, registration number with MAGA, expiration date of the registration and the representative of the registering entity are verified. The correct labeling of the product,



expiration date, sealing of containers and the appropriate storage of the inputs are also verified.

**l. Training activities for the people who will use and apply them:**

The project will have technical personnel of FIPA/AID who will support the safe use and management of the insecticides through training sessions; consulting support from the Guatemalan Rice Association and the Fondo de Tierras will also be available.

**m. Supervision of the use and effectiveness of the pesticide activities:**

The technical personnel of FIPA/AID assigned to the community will verify the correct use by the producers of the insecticides. All dangerous practices for humans, animals or the environment will be stopped immediately.

**2.3. Clarifications regarding the use of Terbutrin, Phoxim y Glyphosate**

2.3.1. The information regarding the herbicide Igran (Terbutrin), was taken from its EPA register listed at [www.pesticideinfo.org](http://www.pesticideinfo.org), searching for terbutrin with the help of the search engine located on that page.

2.3.2 The correct name for Foxim is Phoxim. The environmental impact assessment prepared by IRG refers to the fact that the EPA classifies it as a category III. It is toxic for birds, fish and bees. Animals metabolize it quickly. It is degraded quickly in the soil.

2.3.3 The correct name of Glofosato is Glyphosate. In the EIA of IRG the oral and coetaneous category of toxicity mentioned is relatively low (category III of toxicity). There are some Glyphosates of toxicity I and II, but this is not the case for the product that will be used for the rice crops. The concentration of Glyphosate that will be used is 36% of the active ingredient.

Glyphosate is no more than slightly toxic to birds and is practically non-toxic to fish, aquatic invertebrates and honeybees. However, EPA requires some glyphosate end-use products be labeled as "Toxic to fish" because of the presence of a toxic inert ingredient (the surfactant MON0818) in the formulation. EPA does not expect that most endangered terrestrial or aquatic organisms will be affected by the registered uses of glyphosate (EPA 1991c).

This information is mentioned in the Environmental Impact Assessment of Pesticides in Areas Covered by the Guatemala USAID mission.