Attachment A

Pesticide Evaluation Report Safer Use Action Plan (PERSUAP)
Disaster Preparedness and Emergency Assistance Bicol Project
Save the Children
September 4, 2007

Background Information:

The Livelihood Component of the Disaster Preparedness and Bicol Assistance Project aims to rehabilitate and diversify the livelihood sources of affected families as a means to ensure food security at the family level. To attain this objective, 15 core subsistence/small scale farmers' households who are engage in rice, corn and vegetable production will be provided assistance in the form of farm inputs (seeds, fertilizers and pesticides as needed), training on farming technology, and post harvest processing and marketing support as necessary.

The land area cultivated for crop production of the target beneficiaries ranges from less than a hectare to about 2 hectares, particularly for rice and corn. Vegetable production areas are smaller and mostly backyard based. The commonly cultivated vegetables in the project sites are bitter gourd (ampalaya), squash, eggplant, and beans.

Most of the farmers are practicing Integrated Pest Management (IPM) and only use chemical based pesticides as needed, considering the small scale of their farming operations.

IPM and use of organic fertilizer and least use of chemical based pesticide control will be the norm but since chemical based pesticides will still be used, this PERSUAP will guide the project in adhering to the 22 CFR 216 requirements of USAID.

The following are the responses to the PERSUAP guidelines of USAID.

a. US EPA registration status of the proposed pesticides.

All of the currently used pesticides are registered with the US EPA and the Fertilizer and Pesticide Authority of the Philippines (FPA) as of January 2006. These pesticides are also not in the banned and restricted pesticides list of the Philippines nor with the banned or restricted list of US EPA. A review of the pesticides label showed further proof of the registration of the pesticides with the FPA.

Table 1. Registration Status of Commonly Used Pesticides by the Beneficiaries

Chemical	Chemical Class	US EPA Registration	Phils Registration	Remarks
Herbicides				
Glyphosate (Round Up)	Phosphonoglycine	Yes	Yes	
2,4-D Amine	Chlorophenoxy	Yes 2,4-D (	Yes	Also a plant

	acid or ester	Parent) No, 2.4-D Amine		growth regulator
Butachlor (Machete. Lambast)	Chloroacetanilide	No	Yes	
Molluscicide				
Niclosamide (Bayluscide)	Niclosamide	No	Yes	
Insecticides				
Cypermethrin	Pyrethroid	Yes	Yes	
Malathion	Organophosphorous	Yes		
Carbaryl (Sevin)	N-Methyl Carbamate	Yes	Yes	Also a Plant Growth Regulator, Nematicide
Carbufuran (Furadan)	N-Methyl Carbamate	Yes	Yes	Also a Nematicide

b. Basis for selection of the pesticides

Table 2. Current List of Pesticides Used by the Beneficiaries and Basis for Selection

Chemical	Crop	Pest/Disease/Weed Problem
Glyphosate (Round Up)	Rice	Weeds
2,4-D Amine	Rice	Weeds
Butachlor (Machete. Lambast)	Rice	Weeds
Niclosamide (Bayluscide)	Rice	Golden Snail
Cypermethrin (Insecticide)	Rice, Corn, vegetables	Plant hoppers, green leafhoppers, stem borers, rice bugs, whorl maggots, aphids, bean fly, fruit worm
Malathion	Vegetables	Aphids, yellow squash beetles, mosaic
Carbaryl (Sevin	Vegetables Corn	Fruit worm, lady beetle, mites, leafhopper, corn plant hopper, stem borer
Carbufuran (Furadan)	Rice	Rice bugs, green leafhopper

An interview with the farmers revealed that their primary bases for selecting the pesticides are efficacy, availability and cost. The marketing activities of agricultural technicians of agricultural chemical companies share a substantial influence in the selection of pesticides

for use by the farmers. Given this, the project will work with the farmers and the agricultural technicians in the locality that they strongly include other important factors such as environmental and health effects, appropriate formulation that is stable in the tropical conditions and adapted to the available application equipment, form of the pesticides (powder, granules, liquid) that are less susceptible to untoward exposure to the pesticides, packaging of appropriate volume compared to the actual amount needed based on land area to be covered, strong packaging materials such as plastic (as possible and permitted) compared to glass bottles which are highly breakable, and with labels in understandable language to the users.

In terms of environmental and health effects, Table 3 presents the toxicity level of the currently used pesticides. Those that are highly toxic to the environment, other organisms and are potential ground contaminants will be further investigated and less hazardous pesticides will be recommended. A list of thoroughly investigated pesticides will be developed and recommended for farmers' use and documentation of their efficacy and other effects will be done with the Department of Agriculture Crop Protection Center technician and other regulatory agencies as possible.

3. Extent to which the proposed pesticide use is, or could be, part of an Integrated Pest Management (IPM) program

Integrated Pest Management (IPM) is practiced by the farmers in the project sites given the benefits on the use of this technology and considering the small scale of their farming operations. IPM is a series of pest management evaluations, decisions and controls. The presence of pests in crops does not always mean control is needed. Prevention is the first line of pest control under IPM. The use of cultural methods such as crop rotation, following the regular planting period in the locality, selecting pest resistant varieties, planting pest-free rootstocks, proper and adequate land preparation, proper soil management, proper spacing, proper water management, intercropping and other proven agricultural methods are very effective and cost efficient means of pest control and present little risk to the people or the environment.

A set action threshold level is determined at which control is needed since pest can become an economic threat. Then there is the crucial step of monitoring and identifying the pests present in the crops. This step is crucial so that pesticides are used only when needed and that the right pesticide is used. Control of pest follows after thorough evaluation of the proper control method both for effectiveness and risk. Effective, less risky pest control methods are chosen first, including use of highly targeted chemicals such as pheromones to disrupt pest mating or mechanical control such as trapping or weeding. If after further evaluation the less risky methods are not working, then additional pest control measures will be employed such as targeted spraying of pesticides.

The Department of Agriculture has been strongly advocating IPM in all fronts of agricultural production in the area. Each municipality has a Municipal Agricultural Officer (MAO) who is tasked to provide technical assistance to the farming community in the assigned area. Farming educational materials-some of them in comics form and in the dialect or Tagalog, are distributed to farmers hand in hand with IPM training and field demonstrations. Thus, usually the beneficiaries' use of pesticides is in the whole context of IPM and is on need basis as much as possible. Cost of pesticides as another farm expense is

another consideration on the practice of IPM of the farmers. However, there are practices by which farmer use more than the required pesticides for them to be assured that the pests will be controlled and that yield will not be significantly affected. Frequency of pesticide application is another area of concern that needs to be addressed, again due to farmers' attempt to reduce losses, without further evaluation of the consequences of their actions to the environment, their health and pesticide resistance development.

As a support to the IPM technology, the government has adapted a pesticide labeling scheme where all red labels where eventually banned and or restricted and all over the counter pesticides available in agricultural chemical stores are only those with green labels. Green labels mean that the pesticide is in the form least hazardous to the environment and has meet standards set forth as general use pesticides.

A review of the IPM practices for rice, corn and selected vegetables and correlated with the pest control practices of the farmers revealed that most of them are aware of IPM and are practicing them more during the dry season when pest infestation is low compared to the wet season cycle.

For rice production, pest infestation usually occurs from 30 to 40 days after planting. IPM recommends no spray from first 30 to 40 days after planting if there are sufficient numbers of friendly organisms such as spiders, beetles and if stem borer egg masses are parasitized and few larvae have emerged. Preventive measures such as planting during the regular planting time in the locality, using resistant varieties, sanitation, proper spacing, and proper fertilizer rate are the practices being followed for the rice crop to have a good head start and able to resist pest better. The pesticides currently used by the farmers are part and parcel of the IPM technology as they only apply pesticides once the set threshold for pest control has been attained and that they have the money to buy the needed pesticides. Use of pesticides during the dry season cycle is usually low compared to wet season cycle since infestation is higher during the wet season cycle.

For corn, IPM is also part of the technology that the farmers practice. Varieties resistant to pest and diseases prevalent in the area are the basic preventive control measures being applied. Fungicide for hybrid corn seeds are only used if diseases are prevalent in the area, if planting is later than the regular season and if resistant variety is not available. Thorough land preparation, proper fertilizer application, weeding and cleaning of the surrounding crop area and seeds properly covered with soil after planting and crop rotation are also important basic preventive measures against pest infestation. At 20 days after planting, if insecticide has been sprayed against corn seedling maggots, spraying against cutworm, semi-lopper or corn earworm may not be necessary since natural enemies of these pests like parasitoids and predators are usually abundant.

Vegetable production in the project sites are mostly for home consumption, thus IPM practices such as crop rotation, crop diversification, intercropping, proper land preparation and weeding, mechanical pest control and use of biological control measures are usually the norm. In cases where crops are highly infested, pesticides are used as a last resort.

d. Proposed method or methods of application, including the availability of application and safety equipment.

For the Glyphosate herbicide, the weed wipe application technology will minimize the volume applied and the potential exposure to humans and the environment. The other types of pesticides are applied with a knapsack sprayer, following instructions in the label of the pesticides such as on safety precautions during application, storage and disposal. The farmers are also mostly aware of the safety precautions in handling pesticides but a retraining is necessary considering that new members of the family are starting to engage in farming activities while already trained farmers may have been lax in following the safety precautions considering their long years of experience in handling the pesticides with no adverse effects. It must be noted that in the project areas, random interviews revealed that they have not heard of any pesticide related death or serious morbidity in the area for some years now. When asked why, they responded that most of the chemicals now are less hazardous and that they have been conscious of safety precautions compared before.

The farmers usually own at least a knapsack sprayer but these could have been damaged or washed away during the typhoons in the area. Considering that the beneficiaries are those families affected by the typhoons, especially those from the Albay province where whole houses were carried away by flash floods and stone boulders, most of them may not have the knapsack sprayer now or if they have, the safety and functionality may be in question.

Validation of farmers' beneficiaries will be conducted to ensure that they have the appropriate equipment and protective material before providing them with the pesticides. The functionality and safety of the equipment and protective material will be inspected and if a replacement is needed, the project will provide for it.

e. Any acute and long term toxicological hazards, either human or environmental, associated with the proposed use, and measures available to minimize such hazards.

Table 3. Acute and long term toxicological hazards, either human or environmental, associated with the current pesticides used by the beneficiaries

Chemical	**Acute Toxicity Class**	**Chronic Toxicity**	**Ecotoxicity**	**Groundwater Contamination Potential**	**Other comments/ Crops**
Cypermethrin (Cymbus)	WHO Acute Hazard: Not listed:	Possible carcinogen	No aquatic ecotoxicity data available	Insufficient data	Rice, corn, vegetables/ Insecticide
2,4-D Amine	WHO Acute Hazard: 11, moderately hazardous US EPA Air Pollutant List: Yes	Possible carcinogen Suspected Endocrine disruptor Not a cholinesterase inhibitor No weight of the evidence summary assessments for developmental or reproductive toxicity	Slightly toxic to amphibians and insects, Not acutely toxic to annelida, fish, mollusks and zooplanktons	Potential	Rice/ Herbicide
Glyphosate (Round Up)	WHO Acute Hazard:	Not likely as carcinogen	No weight of the evidence	No weight of the evidence	Rice/ Herbicide

Chemical	Acute Toxicity Class	Chronic Toxicity	Ecotoxicity	Groundwater Contamination Potential	Other comments/ Crops
	Unlikely to be hazardous	Not a cholinesterase inhibitor No weight of the evidence summary assessments as endocrine inhibitor	summary assessments available	summary assessments available	
Malathion (Karate)	WHO Acute Hazard: 111, Slightly Hazardous	Possible carcinogen High toxicity as cholinesterase inhibitor No weight of the evidence summary assessments as developmental or reproductive toxin Suspected endocrine disruptor	Highly toxic to amphibians & marine benthic community Moderately toxic to fish and crustaceans Slightly toxic to mollusks, annelida, zooplanktons, nematodes and flatworms	Potential	Vegetables, Rice and Corn
Carbaryl (Sevin)	WHO Acute Hazard: 11, Moderately Hazardous US EPA Air Pollutant List: Yes	Highly Carcinogenic High in cholinesterase inhibitor Suspected endocrine disruptor	Highly toxic to crustaceans Moderately toxic to fish, annelida, amphibians, zooplanktons	Potential	Vegetables
Niclosamide (Bayluscide)	WHO Acute Hazard: U, Unlikely to be hazardous	No weight of the evidence summary assessments as carcinogen, development or reproductive toxin or endocrine disruptor	Very highly toxic to fish and mollusks, Moderately toxic to insects Not acutely toxic to zooplanktons	No weigh of the evidence summary assessments as ground water contaminant	Rice/ Molluscicide
Butachlor (Machete, Lambast)	WHO Acute Hazard: U, Unlikely to be hazardous	Highly carcinogenic Not a cholinesterase inhibitor No weight of the evidence summary assessments as development or reproductive toxin or endocrine disruptor	Highly toxic to fish and insects Moderately toxic to amphibians, mollusks, crustaceans and zooplanktons	No weight of the evidence summary assessments as ground water contaminant	Rice/ Herbicide
Carbufuran	WHO Acute	Not likely as	Very highly	Potential	Rice/

Chemical	Acute Toxicity Class	Chronic Toxicity	Ecotoxicity	Groundwater Contamination Potential	Other comments/ Crops
(Furadan)	Hazard: 1b, Highly Hazardous UN EPA Prior Information Consent (PIC)	carcinogen High toxicity as cholinesterase inhibitor No weight of the evidence summary assessments as development or reproductive toxin or endocrine disruptor	toxic to zooplanktons Highly toxic to crustaceans and insects Moderately toxic to fish, annelida and mollusks Slightly toxic to amphibians		Vegetables Insecticide Nematicide May need to be drop by list of pesticides for use by the project and be replaced with less hazardous one

Measures available to minimize hazards or risk reduction actions

1. Training and retraining of the farmers on the risk reduction actions established by the project.

In coordination with the Municipal Agricultural Officers of the project sites, the crop protection specialist of the Department of Agriculture Regional Office V, the assigned agricultural technicians of the agricultural companies in the area, farmer's organizations and other stakeholders, a farmers training program on Risk Reductions Actions will be established at the project site level. The program will train all project farmer beneficiaries and other farmers in the project sites before the start of the agricultural production activities of the livelihood component of the Bicol Assistance Project.

For each household beneficiary, the presence of the farmer member of the family, the spouse who usually helps in farming activities and or youth who is slowly being engaged in farming activities will be required. This is necessary so that each farmer can get support, reminder and advocacy from the other trained family member so that appropriate behavior change occurs as immediate as possible. Follow up visits and discussions are necessary for the farmers to sustain the practice of the new behavior.

The project staff will also attend the training sessions on risk reduction program.

The training will include topics on:

a. Environmental awareness, causes of environmental pollution, health, social, economic and other effects of environmental pollution, ways to protect the environment and ways to reduce environmental pollution.

   This is essential for farmers to be aware of the current state of the environment and how farming practices and even household practices contribute to further degradation and pollution of the environment. At the end of the topic, each trainee will list down immediate doable behaviors or practice they can apply at the farm,

household and community levels to protect the environment and reduce environmental pollution and degradation. A duplicate copy of the list will be collected by the project staff for monitoring and technical support provision purposes. During the environment month of June and Earth Day on April, activities to recognize farmers/households that mostly attain their list of actions to protect the environment and other environmental awareness activities will be launched.

b. Integrated Pest Management for rice, corn and vegetables.

Topics on IPM are essential for farmers to avoid use of pesticide as possible and practice IPM technologies more regularly and effectively. While most of the farmers have heard about IPM and in more ways that one practices it, a need to retrain them and train new farmers is important to update them on the technology and further enhance their practice of IPM. The training will start with theoretical inputs and later a farm demonstration site will be selected for farmers to further learn the technology hands on. Field visits to other successful IPM practitioners will occur. As the project progresses, cross visits with farmers in other project sites will also happen.

c. Masipag Rice Production Technology.

This technology only uses organic fertilizers and biological pesticides and cultural practices to grow rice, together with ducks and fish. There is a Masipag farmers' group in Bicol that successfully switch to organic rice production and are now sustaining the technology and sharing them with other farmers. The key to this technology is the selection of adaptable rice varieties in the specific localities of the farmer beneficiaries conducted through a 2 cycle seed selection method. The farmers are given 50 selected rice varieties to be validated for adaptation in his own locality then the top three varieties are recommended for use for full production. According to the Masipag farmers groups, there are practitioners in the project sites in Camarines Sur. After the training, field visits will be arranged and farmers will be highly encourage to try the technology and those who are interested will be supported.

For corn and vegetable production, the RINCOMESA Farmers Association in Camarines Sur is the resource to tap for organic farming. This group was trained by Philippine Rural Reconstruction Movement in sustainable agriculture and organic farming technology, are practicing the technology, selling their produce and sharing the technology to interested farmers. Orientation on the technology will occur with site visits. If the community is interested, farm demonstration will be established in the project sites with technical assistance from the RINCOMESA group. If there are individual farmers who are interested to try the technology, the project will support them.

d. Pesticide Management and Safe Use

The training will include sessions on the criteria to use in pesticide selection, proper use of the selected pesticides- from transport, storage, during use and after use.

In terms of pesticide selection, farmers will be oriented on available pesticides with reduced toxicity but are also effective and to select those which are recommended and registered with US EPA and registered with the FPA of the Philippines. Topics will include buying the amount they only need even if there are promotions such as buy one take one offers or reduced cost for certain quantities, inspecting for strong packaging material for the selected pesticides and absence of leakage or dint of the packaged pesticides, expiration period, completeness of label information particularly on the uses, formulation, first aid, storage, disposal, registration information of the pesticides to avoid buying unregistered pesticides, signs and symptoms, toxicity to other organisms. Reduction of exposure to pesticide during transport from the source of pesticide to the farm or household level, packaging the pesticides during transport and storing of pesticides in the farm or household level. The key messages are reducing the toxicity of choices, and reducing the degree and duration of exposure to the pesticides.

Training of pesticide handling and safe use during use or application is next. The training will include the formulation of the pesticides, use of appropriate and acceptable protective equipment, and use of protective material and observance of buffer zones during application. All safety precautions indicated in the labels of selected pesticides, plus the standard safety precautions set forth by the regulatory agencies of the government (FPA, DA, and Crop Protection Centers) and other international bodies will be included in the training. Samples of the appropriate equipment and protective materials and demonstration on how to use them (not using actual pesticide during the training) are included. Information on suppliers of these equipment and protective materials in the locality that passed the quality control set forth by the government will also be provided to the farmers. The time and guidelines when to replace the protective materials and equipment are also in the training topics

After use safety procedures will come next. Topics will include waiting period before the farmers or anybody can go to the pesticide sprayed farm or the re-entry period, cleaning procedures for the equipment and protective materials, bathing and cleaning procedures for the applicator, storage of equipment, protective materials and remaining pesticides and disposal of pesticide containers. Specific guidelines in terms of use such as the prohibition of smoking during the preparation and application of the pesticides, use of acceptable gloves every time a pesticide is being handled, constant hand washing during preparation and application and complete bathing application and use of pesticides, avoid disposal of the equipment and protective material washing residue in bodies of water or in areas near the water sources of the families and communities and farm animals, avoid disposal of treatment solution in bodies of water and other required and standard safe use requirements.

The project staff together with the members of the farmers group or Barangay Council in the project sites will conduct regular monitoring on site especially during times of pesticide application based on cropping calendar to check observance of safe use of pesticide during application. After the pesticide application period, field inspection and visits to farmers' houses will occur to monitor the observance of the farmers on the storage and disposal aspects of the plan.

Based on the results of the monitoring activities, a retraining may be necessary for specific farmers/households or for all the beneficiaries as new information on effects of the currently used pesticides becomes available or if there are new technology and innovations to avoid pesticide use for crop production, and reduce its hazards to the environment, human beings and other organisms.

The misuse and overuse of pesticides in the project sites is one area for close monitoring by the project staff, with the MAO, Barangay Councils and key farmer leaders in the area. Retraining of all or selected farmers or one on one session with the concerned farmer is included in the plan. After the retraining or one on one session, close monitoring will again follow with the concerned farmers until the farmers in question stop the practice.

e. Orientation/training on other alternatives to chemical pesticides that are in place in country and its application in the project sites.

Continuous orientation and exposure of farmers to other non-chemical based pest control such as biological control, manipulation of the environment, induced reproductive sterility, physical control and repellents, attractants and traps and genetic manipulation of pest population.

2. Sourcing, production and distribution of educational materials on the training topics. All training and orientation sessions will have visuals during the training and hand outs that the farmers can take with them to further read and refer to at home. Educational materials will be in the language/dialect easily understandable to the farmers, in form that are user friendly and according to their literacy level (comics, well illustrated posters, etc).

Various training methodologies that appeal most to the farmers will be employed such as skit, drama, songs, poems, stories, testimonials, and community theatre. Learning methodologies that are empowering, participative, highly interactive, fun and enjoyable but still communicating the messages of the session are included in the plan.

To properly situate the training inputs and methodologies to be employed, training needs assessment, baseline data gathering on the current pesticide use and safety procedures observed by farmers will be done to further substantiate the initial interview conducted with farmers during the preparation of the PERSUAP.

3. Training on first aid application and signs and symptoms from pesticide handling is planned for at least one adult member of the household who is always around, health service providers assigned in the area such as the barangay health workers and paramedics residing in the area. As a further support, barangay medical emergency transport plan will be in place where 24 hour transport systems are in place by tapping private individuals in the barangay who have transportation means and contributing an amount as reserve for emergency medical evacuation- at least for fuel of the assigned transport means.

4. While effort is made to store pesticides in areas away from the reach of children, accidents may still happen. To reduce the risk, children in elementary schools and youth will be trained on how to identify signs of dangerous chemicals, what to do in case they came across them in their house, in the school, in the farm, along the roads, rivers and other

places that are vulnerable for misuse and or may cause harmful effects to the environment, the human beings and other organisms in the area. Educational materials and learning methodologies appropriate to their age will be employed such as coloring workbook, comics, well illustrated posters, drama in school, poem, songs, stories, etc. The local dialect will be used during the learning sessions and in the educational materials.

At the household level, farmers will be assisted to designate a place to store pesticides, equipment and protective materials that are beyond the reach of children, securely lock and properly labeled. The designation of safe pesticide storage area is one of the area for monitoring by the monitoring group.

5. Organization of Safer Pesticide Use Committee. At the project sites, with the Barangay Councils and any existing farmers' organization in the area, a Safer Use of Pesticide Committee will be organized. This committee will ensure adherence of the farmers and residents on safe use of pesticide procedures, report pesticide poisoning, establish and implement the medical emergency evacuation plan, monitor pesticide use, coach/mentor farmer and families (as a follow up to the training sessions) on pesticide use, coordinate with the MAO, agricultural technicians and Barangay Council on pesticide related issues and concerns of the farmers and the community.

f. Effectiveness of the requested pesticide for the proposed use.

As per farmer's interview, the currently used pesticides are effective in terms of controlling appropriate pest infestation in their crops. To reduce pest resistance though, they use different brands during the dry and wet season cycle. The aggressive marketing of agricultural companies also influences their pesticide use especially if it is offered for free trial. But as expressed by them, they always revert back to the currently listed pesticides as they have been proven to be effective. It cannot be neglected though that when their funds are low they resort to cheap and unknown pesticides, and if they found them quite effective patronize them for a while and again switch to their more proven pesticides to prevent pest resistance development and assure them of optimum yield.

The effectiveness of pesticide use is also a factor of application procedures, lack of efficacy due to resistance development or both. It is therefore necessary that the currently used pesticides be monitored for their efficacy over time and to determine factors that affects efficacy. This task will be coordinated with the Crop Protection Center of the Department of Agriculture.

g. Compatibility of the proposed pesticide use with the target and non-target ecosystems

The currently used pesticides are compatible with the target organisms as expressed by the farmers being effective in controlling pest in rice, corn and vegetables. However, Table 3 shows the toxicity of the currently used pesticides, where most of the affected organisms are fish, crustaceans, amphibians and zooplanktons.

The project will further investigate other mostly compatible pesticides as new formulations become available or coming from existing formulations.

h. Conditions which the pesticide is to be used, including climate, flora, fauna, geography, hydrology, and soils.

The project sites are characterized by two types of climate according to the climatic classifications of the Philippines. Buhi and Camalig are classified under 2nd type climate. This classification is characterized by a very pronounced maximum rainfall from November to January and no dry season. Nabua, Baao and Guinobatan are classified under 4th type climate, characterized by evenly distributed rainfall throughout the year, with the exception of the occurrence of tropical cyclones in the vicinity which can cause rainfall abnormalities.

The Region receives an average annual rainfall of 3, 013 millimeters and has a mean annual temperature of 27.2 degrees Celsius. It has high relative humidity at 80-82 because of the pronounced wet season in most areas.

The Region has prominent elevation marks such as Mt Mayon (2,462 meters above sea level), Mt Masaraga near Guinobatan (337 meters above sea level) and Mt Iriga near Nabua and Buhi (1,143 meters above sea level). The area is generally mountainous and hilly with stretches of plains in Camarines Sur to Albay called the Bicol River Basin which covers 312,000 hectares. It is also a coastal area with numerous bays and gulfs.

The Region is an agricultural area, planted mostly with coconut, rice (paddy and upland) and corn while abaca, banana, vegetables, fruit tress and root crops share the other agricultural lands. Chickens and pigs are mostly raised in the area, together with water buffalo, cattle, and goats. It has rich and diverse bird specie and marine life.

Soils in the area are classified as Pellusterts with Udalfs, Udorthents and Tropepts. Pellusterts with Udalfs are deep to very deep, poorly to very poorly drained, dominantly gray to black, very sticky, very plastic and heavy clay, moderately high inherent fertility, with high organic matter content and very low permeability. Udalfs are moderately drained, deep to very deep with brown to dark brown or yellow brown clay loam, silt loam, loam or silty clay loam texture, occur in gently or moderate slopes. Inherent fertility is moderate to high, organic content is more than 1.0%, pH is slightly acidic to neutral, good for paddy rice and coconut trees and other agricultural crops but marginally suited for vegetables.

Udorthents occur in recent erosional surfaces (> 25% slopes), moist throughout the year, better drained, loamy to clayey soil, organic matter decreases regularly with depth, vegetation are usually grasses, shrubs, brushes and secondary forests.

Troperts are moderately deep to deep brownish to reddish well drained soils, good for corn, tomatoes, beans, and soil pH of 5 or more and present mostly in Camarines Sur.

The Region has a main drainage way called the Bicol River Basin. It meanders through the northwest direction of Lake Bato and joins Sipocot River, its main tributary at point about 7 km from its mouth before discharging to San Miguel Bay. It has an annual run off of 5, 102 cubic meters.

i. Availability of other pesticides or non-chemical control methods.

There are other pesticides and non-chemical control methods available for rice, corn and vegetables. The Department of Agriculture have tested, developed and disseminated other non-chemical methods that incorporate into the overall IPM technology. These methods are

cultural methods (proper land preparation, proper spacing, water and fertilizer management, crop rotation, intercropping, crop diversification, use of resistant varieties, planting during the regular planting season, etc). Biological methods are also available like the use of BT spray, use of metharizium biological fungicide to control rice black bug. Botanical pesticides are also available like using hot pepper concoction as pest spray. Physical methods such as trapping, attractants and repellants are also an option.

The project will introduce and or re-introduce these non-chemical methods as part of the IPM training.

j. Host country's ability to regulate or control the distribution, storage, use and disposal of the requested pesticide.

The Philippine government has designated the Department of Agricultural with its attached agency, the Fertilizer and Pesticide Authority, to regulate or control the distribution, use and disposal of registered pesticides. As such it requires all pesticides for use in the country to be registered and that their registration is updated. All handlers of pesticides such as importer, trader, distributor, repacker, formulator, suppliers, dealers, local subsidiary, CCA treatment plant, Lorsban Recycling Plant and Sub-area distributors are required to registered with the FPA using standard format and requirements.

Annex A is the Pesticide Regulatory Policies and Guidelines of the FPA of the Philippines that presents in details the regulation, control, safe use, storage and disposal of the registered pesticides.

k. Provision for training of users and applicators

As mentioned in Section e of the PERSUAP, training for users and applicators are in place in the project activities. Please refer to Section e for more details.

l. Provision made for monitoring the use and effectiveness of this pesticide.

In coordination with the FPA representative in the Region or Province level of the Department of Agriculture, MAO of each municipality, and the Safe Use of Pesticide committee at the barangay level, monitoring the use and effectiveness of the pesticides will be in placed. At the start of the planting season up to the harvesting season, this group will conduct monthly monitoring visits at the farm sites of the farmer beneficiaries and report on the use and effectiveness of the pesticides. Guidelines and appropriate forms in the conduct of the monitoring visits will be developed to ensure the adequacy and sufficiency of the data gathered to meet the objectives of the monitoring visits. These monitoring visits will be fully documented and authenticated by the Department of Agriculture Crop Protection Unit. Actions needed to be done as a result of the monitoring visits will be deliberated by the team and properly initiated and managed at the appropriate levels. Misuse, overuse, and other reports that pertain to unsafe use of pesticides will be acted immediately within the monitoring visit period by coaching/mentoring the concerned farmer, with a follow up visit and or retraining during the next month monitoring visit.

The project will also coordinate with the Department of Agriculture research units on effectiveness of pesticides use under local conditions.