



## **International POPs Elimination Project**

*Fostering Active and Efficient Civil Society Participation in  
Preparation for Implementation of the Stockholm Convention*

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# **Awareness Campaign on the Danger of POPs and Other Pesticides to Human Health and Environment through Action Research Activity by a Rural Community**

**FIELD Indonesia (Farmer's Initiatives for Ecological  
Livelihoods and Democracy)**

**Indonesia  
April 2006**

## About the International POPs Elimination Project

On May 1, 2004, the International POPs Elimination Network (IPEN <http://www.ipen.org>) began a global NGO project called the International POPs Elimination Project (IPEP) in partnership with the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Program (UNEP). The Global Environment Facility (GEF) provided core funding for the project.

IPEP has three principal objectives:

- Encourage and enable NGOs in 40 developing and transitional countries to engage in activities that provide concrete and immediate contributions to country efforts in preparing for the implementation of the Stockholm Convention;
- Enhance the skills and knowledge of NGOs to help build their capacity as effective stakeholders in the Convention implementation process;
- Help establish regional and national NGO coordination and capacity in all regions of the world in support of longer term efforts to achieve chemical safety.

IPEP will support preparation of reports on country situation, hotspots, policy briefs, and regional activities. Three principal types of activities will be supported by IPEP: participation in the National Implementation Plan, training and awareness workshops, and public information and awareness campaigns.

For more information, please see <http://www.ipen.org>

IPEN gratefully acknowledges the financial support of the Global Environment Facility, Swiss Agency for Development and Cooperation, Swiss Agency for the Environment Forests and Landscape, the Canada POPs Fund, the Dutch Ministry of Housing, Spatial Planning and the Environment (VROM), Mitchell Kapor Foundation, Sigrid Rausing Trust, New York Community Trust and others.

The views expressed in this report are those of the authors and not necessarily the views of the institutions providing management and/or financial support.

This report is available in the following languages: English

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## **1. Perspective**

Brebes District is located in the northern coast of Java. The district belongs to Central Java Province. The main agricultural product from this district is onion. Many areas (12 out of 17 sub-districts) are planted with onion. There are 15-20 villages in each sub-district, and in each village there are 3-5 pesticide kiosks. This gives us an overview of the extensive pesticide use in this district. There was a survey done by the IPM Farmer's Association in Brebes and FIELD in 2003 on 60 pesticide kiosks. Many kiosks sell pesticides identified as POPs (DDT, Endrin, etc.). However, later laboratory tests under the supervision of the State Ministry of Environment showed that the samples did not contain POPs. Currently, some pesticides under WHO category I-A banned by the Ministry of Agriculture are still on the market. Many farmers do not understand the situation, or are not aware of it.

## **2. Objectives**

- To increase the awareness of the danger of pesticides, including POPs, to the health and environment of the rural community.
- To strengthen the organizing of farmer communities through the implementation of action research activities that will focus on identifying the danger of using pesticides, including POPs.
- To develop the movement on ecologically-based agriculture, in order to solve the problem of using dangerous pesticides (POPs, banned pesticides, etc.).
- To increase collaboration and support from the local government for the campaign on the danger of POPs, and promotion of ecologically-based agriculture.

## **3. Method**

The methods used for data collection were direct farmer interviews, group discussions, direct observation of spraying among farmers in the field, and workshops. Below are the details of steps taken during the data collection:

### Data Collection

1. Farmer behavior on pesticide spraying practices
2. Presentation of results by each small group of farmers, and data analysis.
3. Observe Pesticide Poisoning - Signs and Symptoms
4. Presentation of results by each small group, and data analysis
5. Survey of Pesticide Kiosks
6. Presentation of results by each small group of farmers, and data analysis
7. Survey of Impacts to human health
8. Presentation of results by each small group of farmers, and data analysis
9. Collection of secondary data and its analysis

## 4. Process and Result

### 4.1 Process

All the planned activities have been implemented. The community was able to conduct a local campaign at the village level. The farmer groups conducted a seminar at the district level, in collaboration with the Local Government and District Parliament. In addition, they plan to conduct season-long field activities on ecologically-based agriculture on onion.

The whole process of program activities consisted of several steps, as follows:

4.1.1 Program Preparation: Preparation meetings with farmers were organized on March 15 and 20, 2005 at Harapan Makmur farmer group, Jatimakmur village, Songgom sub-district. The meetings were attended by 25 farmers, 3 representatives of Indonesian IPM Farmer's Association (IPPHTI) of Brebes, and 2 Field staff. On March 24, 2005 FIELD and IPPHTI conducted a meeting with the Assistant to the District Head to explain about the program and ask for his support. On April 19, 2005 FIELD and IPPHTI conducted a half day seminar at the Local Government Office on the topic of the danger of pesticides, including POPs, and ecologically-based agriculture. The seminar was attended by 30 persons from local government institutions, including development planning, agriculture and environment, District Parliament members, head of sub districts and villages, and other stakeholders of the Brebes district.

4.1.2 Curriculum Development Workshop of Action Research: The workshop was conducted on March 28-30, 2005 in Jatimakmur village. The workshop was attended by 15 people, consisting of farmer facilitators, local NGO members, health service office, and village government representatives. The topics included pesticides and POPs, pesticide poisoning signs and symptoms, data collection, data analysis and implementation of the action research.

4.1.3 Training of Action Research for the Community Group: The training was conducted on May 10-13, 2005 in Jatimakmur village. Total participants involved in the training were 25 group members of Harapan Makmur Farmer Groups. The training was facilitated by 3 farmer trainers, 1 IPPHTI member and 2 FIELD staff. The training topics were pesticides and POPs, pesticide poisoning signs and symptoms, collecting and organizing data, implementation of the action research.

4.1.4 Action Research by Farmers: The action research by the farmers was conducted for a period of three months, from May to July 2005. The research was organized by 25 members of Harapan Makmur Farmer Group, and involved around 100 respondents in the Jatimakmur Village. The research activities focused on farmers' behavior and practices, pesticide poisoning signs and symptoms, survey on pesticide kiosks, and human health issues.

4.1.5 Seminar on the Pesticide Hazards (including POPs) and Promotion of Ecologically-based Agriculture:

This activity was implemented in two ways: village seminars, and district seminars. The objective of the seminar at the village level was to initiate the awareness-raising on the dangers of pesticides and POPs for community people where action research was

conducted (i.e., Jatimakmur Village, Songgom Sub-District, and Brebes District). The seminar took place on September 10, 2005. There were 65 participants in the seminar, consisting of farmer and government officers of the village and sub-district.

The seminar resulted in the commitment of farmers and governments officers to take immediate action on the implementation of the ecologically-based agriculture through the Farmer Field School approach, to decrease pesticide use, and to handle pesticides cautiously.

The seminar at the district level was conducted on March 25, 2006 and was held at the meeting room of Agriculture Services Office of Brebes District. There were 75 participants, consisting of the representative of District Government Staff, District Parliament, and related agricultural services, NGOs, community leaders and farmer organizations.

## 4.2 Result

From the implementation of the participatory action research activities conducted by Harapan Makmur Farmer Group at the Jatimakmur village, Songgom Sub-district of Brebes District, we obtained the following results:

4.2.1 From the survey of 195 pesticide kiosks located in 10 sub-districts of Brebes District, Central Java Province, it was found that all the kiosks did not sell pesticides under the POPs category. However we found that the average of pesticides use is very high, around 619 tons in a year. Those pesticides have various brands. Data below is an example of pesticides which were available in a kiosk in Jatimakmur village, where the action research was implemented.

### a. Liquid Insecticides, period of April – August 2005

Brand /Trade Mark	Active Ingredients	Total (liter)	Target Crops
Decis 2,5 EC	Deltamethrin 20 g	10	Onion and Red pepper
Drusban 20 EC	Chlorpyrifos	170	Onion and Red pepper
Marshal 200 EC	Carbosulfan	50	Onion and Red pepper
Tracer 120 SC	Spinozad	2	Onion and Red pepper
Rizotin 100 EC	Cypermethrin	70	Onion and Red pepper
Sidazinon 600 EC	Diazinon	4	Onion and Red pepper
Metrisida 100 EC	Permethrin	5	Onion and Red pepper
Sidabas 500 EC	BPMC <sup>1</sup>	4	Onion and Red pepper
Agrimex 18 EC	Abamectrin	5	Onion and Red pepper
Hostathion 200 EC	Triazophos	15	Onion and Red pepper
Buldok	Beta cyfluthrin	7	Onion and Red pepper
Prodigy 100 EC	Metoxiphenozide	1,5	Onion and Red pepper
Curacron	Profenofos	1,5	Onion and Red pepper
Petroban 200 EC	Chlorpyrifos	2	Onion and Red pepper
Ofunack 40 EC	Firidaphenthion	1,5	Onion and Red pepper
Lebaycid 500 EC	Phenthion	3	Onion and Red pepper
Tamaron	Metamidophos	2,5	Onion and Red pepper
	Total	372	

b. Granular and Dust Insecticides, period of April – August 2005

Brand/Trade Mark	Active Ingredient	Total (liter)	Crops Target
Larvin 75 WP	Tiodicarb	12	Onion and Red pepper
Furadan 3 G	Carbofuran 3 %	30	Onion and Red pepper
Regent 0,3 G	Phypronil 0,3 %	55	Onion and Red pepper
Metindo 50 WP	Metomil	95	Onion and Red pepper
Thiodan 20 WP	Endosulphan	15	Onion and Red pepper
Padan 50 SP	Cartap Hydrochloride	120	Onion and Red pepper
Trigard 75 WP	Siromazin	1,5	Onion and Red pepper
Rosco 75 WP	Tiodicarb	0,5	Onion and Red pepper
Orthene 75 SP	Acephate	0,75	Onion and Red pepper
Lannate 25 WP	Metomil	1,5	Onion and Red pepper
Phospit		2,5	Onion and Red pepper
Temix	Aldicarb	0,5	Onion and Red pepper
	Total	431	

<sup>1</sup> BPMC = o-sec-butyl N-methylcarbamate

Based on the interview results among onion farmers in Brebes district, 70 % of the farmers get information on how to use the pesticides from pesticide sellers or pesticides kiosk owners. Approximately 17.5 % of farmers receive information from government agriculture staff, and 12.5 % receive information from other farmers. The main reason farmers give for their interest in using the pesticides comes from intensive advertisements of pesticide companies. At this point, farmers receive unbalanced information about pesticides, especially on the benefits and negative impacts of pesticides. Farmers make quick decisions on using pesticides, without considering the health aspects. This is because onion cultivation is a good way to earn big money quickly, even though the business cost is high and the risk of failure is very high also. This condition is utilized by pesticide sellers to market their products. The highest period of using the pesticides by the farmers in Brebes follows the onion planting seasons: (A) Season I: April-May, (B) Season II: July and August, and (C) Season III: October-November.

Regarding farmer behavior related to pesticide use, an alarming 80% spray pesticides without using a mask. In addition, 85% of respondents go over the required dosage of the pesticide. Although the majority (80%) of the farmer respondents say that they spray because there are pest and disease problems, 67% percent also admit that they spray even when there is no actual problem. There is frequent use of pesticides among the farmers, as 64% of them spray twice a week. After using the pesticides, 64% of the farmers dispose of the pesticide containers at any place convenient, which can lead to contamination problems. Approximately 73% also do not store the pesticides in a special room or storage place. (See Farmer Behavior data table below)

4.2.2 **Farmer Behavior** related to pesticide use practices (Data was collected from 100 farmer respondents in Jatimakmur Village): (Y = Yes; N = No)

No	Farmer Behavior	Group I		Group II		Group III		Group IV		Group V		Total	
		Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
1	Spraying pesticide without using mask	17	3	15	5	15	5	15	5	18	2	80	20
2	Spraying pesticide without using gloves	0	20	0	20	0	20	20	0	0	20	20	80
3	Over dosage of pesticide use	20	0	10	10	15	5	20	0	20	0	85	15
4	Smoking while spraying	1	19	1	19	0	20	0	20	3	17	5	95
5	Mix pesticides with hands	1	19	2	17	0	20	0	20	0	20	3	97
6	Store pesticide in a special room/storage	7	13	7	13	3	17	2	18	8	12	27	73
7	Do not wearing long sleeves while spraying pesticide	13	7	7	13	5	15	2	18	18	2	37	63
8	Do not wash the sprayer tank	1	19	3	17	15	5	11	9	12	8	42	58
9	Spraying in opposite of wind direction	15	5	0	20	0	20	20	0	6	14	41	59
10	Spraying with no actual reason (no actual problem)	20	0	20	0	8	12	20	0	20	0	67	33
11	Spraying because there is pest and disease problems	20	0	20	0	10	10	20	0	20	0	80	20
12	Spraying just to follow other farmers	0	20	0	20	0	20	1	19	0	20	1	99
13	No hand washing after spraying	20	0	3	17	0	20	0	20	17	3	40	60
14	Dispose the pesticide containers in any places	20	0	0	20	12	8	20	0	12	8	64	36
15	Use leakage sprayer tank for spraying	0	20	0	20	0	20	4	16	1	19	5	95
16	Spraying due to the bad weather	0	20	20	0	0	20	0	20	0	20	20	80
17	Spraying without using glasses	19	1	0	20	0	20	0	20	19	1	38	62

18	Store pesticides/ sprayer tank close to the kitchen	9	11	0	20	3	17	2	18	15	5	29	71
19	There is no special place to store pesticides	1	19	0	20	0	20	16	4	6	14	27	73
20	Spray pesticide in the morning	18	2	10	10	10	10	13	7	10	10	61	39
21	Spray the pesticide in the noon	2	18	4	16	3	17	0	20	0	20	9	91
22	Spray the pesticide in the afternoon	2	18	17	3	2	18	9	11	2	18	32	68
23	Spray the pesticide in the evening	0	20	0	20	0	20	0	20	0	20	0	100
24	Interval of spraying - once a week	2	18	0	20	0	20	2	18	3	17	7	93
25	Interval of spraying - twice a week	20	0	16	4	7	13	12	8	6	14	61	39
26	Interval of spraying - three times a week	0	20	16	4	6	14	3	17	1	19	26	74
27	Interval of spraying - four times a week	0	20	0	20	2	18	0	20	0	20	2	98

Among the poisoning signs experienced by the farmer respondents, 44% noted excessive sweating. Others experienced runny nose (31%), red eye (28%), and scaly skin (23%). Some farmers experience staggering (20%), white spots on the skin (13%), clogged nose (11%), tremors (9%), coughs (9%), and watery eyes (7%). These signs indicate possible acute and/or chronic poisoning from exposure to pesticides. (See Poisoning Signs data table below)

4.2.3 **Poisoning Signs** that are felt by the respondent during spraying of the pesticides (Data from 100 respondents in Jatimakmur Village): (Y = Yes; N = No)

NO	Poisoning Sign	Group I		Group II		Group III		Group IV		Group V		Total	
		Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
1	Tremor	9	11	0	20	0	20	0	20	0	20	9	91
2	Twitching eyelids	0	20	4	16	0	20	0	20	0	20	4	96
3	Excess sweating	20	0	20	0	0	20	0	20	4	16	44	56
4	Red Eye	5	15	5	15	6	14	3	17	9	11	28	72
5	Runny-nose	20	0	0	20	0	20	0	20	11	9	31	69



6	Cough	3	17	0	20	0	20	0	20	6	14	9	91
7	Sound breathing	0	20	5	15	0	20	0	20	5	15	10	90
8	Staggering	0	20	0	20	15	5	0	20	5	15	20	80
9	Diarrhea	0	20	0	20	0	20	0	20	3	17	3	97
10	Red rash	0	20	0	20	0	20	0	20	5	15	3	97
11	White spot skin	10	10	0	20	0	20	0	20	3	17	13	87
12	Scaly skin	11	9	8	12	0	20	0	20	4	16	23	77
13	Unconscious	0	20	0	20	0	20	0	20	0	20	0	100
14	Stiff	0	20	0	20	0	20	0	20	0	20	0	100
15	Vomiting	0	20	0	20	0	20	0	20	0	20	0	100
16	Dried lip	0	20	0	20	0	20	0	20	5	15	5	95
17	Itching	0	20	0	20	0	20	3	17	3	17	6	94
18	Nose gagged	0	20	0	20	11	9	0	20	0	20	11	89
19	Red face	0	20	0	20	0	20	4	16	0	20	4	96
20	Has water in eye	0	20	0	20	7	13	0	20	0	20	7	93

Regarding poisoning symptoms experienced by the farmers, 64% reported feeling listless or tired, while 41% had dry throat. Symptoms of acute poisoning experienced by the farmers also included sore throat (27%), burning nose (27%), itchy skin (25%), excess salivation (23%), headaches (20%), and shortness of breath (13%). 10% of the farmers further experienced blurring of vision, while 16% experienced muscle cramps. This data further indicates that these farmers may have been poisoned from pesticide use. (See Poisoning Symptoms data table below)

4.2.4 **Poisoning Symptoms** received from the respondents during interviewing pesticide use (Data from 100 respondents in Jatimakmur Village): (Y = Yes; N = No)

No	Poisoning Symptom	Group I		Group II		Group III		Group IV		Group V		TOTAL	
		Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
1	Headache	10	10	3	17	11	9	6	14	12	8	20	80
2	Vomiting after spraying	1	19	0	20	0	20	0	20	3	17	4	96
3	Blurred vision	0	20	0	20	2	18	3	17	5	15	10	90
4	Short of breath	7	13	0	20	3	17	3	17	0	20	13	87
5	Less appetite for food	0	20	0	20	0	20	1	19	0	20	1	99
6	Burning skin	0	20	0	20	2	18	0	20	0	20	2	98
7	Burning back	0	20	0	20	5	15	2	18	2	18	9	81
8	Dry throat	20	0	5	15	7	13	0	20	9	11	41	59
9	Listless (tired)	20	0	20	0	15	5	0	20	9	11	64	36
10	Stomachache	0	0	2	18	0	20	0	20	3	17	5	95
11	Sore throat	20	20	3	17	4	16	0	20	0	20	27	73
12	Burning nose	13	7	0	20	4	16	0	20	10	10	27	73
13	Excess salivation	20	0	0	20	1	19	0	20	2	18	23	77
14	Itchy eyes	0	20	0	20	5	15	0	20	9	11	14	85

15	Burning eyes	0	20	0	20	7	13	0	20	0	20	7	93
16	Itchy skin	14	6	0	20	7	13	0	20	4	16	25	75
17	Muscle cramp	14	6	0	20	0	20	0	20	2	18	16	84
18	Chest pain	8	12	0	20	0	20	0	20	0	20	8	92
19	Numbness	8	12	0	20	0	20	0	20	0	20	8	92

After collecting the data on signs and symptoms of pesticide poisoning from the respondents, the action research team then conducted cholinesterase tests for the respondent farmers in Jatimakmur Village of Songgom Sub-district, in collaboration with the Health District Office on August 6, 2006. The cholinesterase test was used in order to determine blood levels of cholinesterase. Cholinesterase levels in the blood are lowered when there is organophosphate or carbamate pesticide poisoning. There were a total of 47 respondents tested, consisting of 41 men and 6 women. The results of the tests are showed below (percentages are in reference to the total sample size):

	NORMAL (%)	Low Poisoning (%)	Moderate Poisoning (%)	High Poisoning (%)	Total (%)
Gender					
Male	10.6	74.5	2.1	0	87.2
Female	0	12.8	0	0	12.8
				<b>Total</b>	<b>100</b>

The testing team consisted of Mr. A Sulkhan, Ms. Emi Sri Hastuti, Ms. Elfi F, Ms. Lina S, Ms. Nuke SKM, Mr. Muftiadi (Health District Office), and Jamali (representative of action research team) .

From the data above, said it can be seen that majority of the respondents (89.4%), both men and women, were contaminated with pesticides. Even though 10.6% of the respondents (all men) showed normal levels of cholinesterase, this still does not automatically rule out pesticide poisoning since cholinesterase levels differ from person to person, and it is possible that current levels found in the farmer may be lower compared to the farmer's baseline level. Approximately 36 men or 87.8% of the men were poisoned by pesticides, while 100% of the women in the sample (6 women) were poisoned. In further studies, an increase in sample size is recommended, for both genders in the sample.

#### 4.2.5 Victims of pesticide poisoning

The condition of pesticide hazards in Brebes District is already at a critical level, as shown in the results of the action research by the farmers. The action research team has observed and followed two cases of pesticide poisoning. The observations were made during in the period of May to September 2005. The results of the observations are described below.

- The case of Ms. Jewi, 60 Years old, Address : Jatimakmur Village, Songgom Sub-district, Brebes District of Central Java Province

Ms. Jewi is a widow and mother of three children. She works as agricultural worker



at a big farm. She works in the field, and does other work as requested by her employer. In the field, she mainly works to treat the onion seedling (cut some parts of onion seedling by hand before planting). She has worked at this job for years. On May 13, 2005 she cut some parts of an onion seedling by hand. However, the seedling has been treated by MIPCIN (pesticide). This pesticide is under the carbamate group, with the active ingredient MICP (Isocarb). There was a direct contact with Ms. Jewi's skin. The immediate symptoms felt by Ms. Jewi were headaches, seeing stars, fever and chills. She then became unconscious. Ms. Jewi was then sent by her family to the health care center in her village. She did

not feel better at the center, so she was finally sent to the District Hospital of Brebes, and hospitalized for 7 days. She spent 2 Million Rupiah (\$ 200) during her hospitalization period. However, even after her hospitalization, she felt short of breath, had blurred vision, had feelings of wanting to urinate often, was often thirsty, and had a dry and sore throat. She got a stroke and easily to forgot about many things. Finally, Ms. Jewi passed away on February 2006 after long suffering from her poisoning problems.

- Mr. Makmuri, 58 years old, Address : Jatimakmur Village, Songgom Sub-district, Brebes District of Central Java Province

Mr. Makmuri is known as a hard working farmer in his village. He continues farming by himself even when he is feeling well. On April 8, 2005 he sprayed weeds in his onion field with a herbicide called GOAL. Mr. Makmuri sprayed his plant without using proper protective equipments such as mask and glasses. Unfortunately, Mr. Makmuri sprayed against the wind, and the herbicide liquid from the nozzle went to his eyes. Suddenly he felt his eyes burning, and it became red and watery. He also experienced pain in his eyes and had headaches. His



family sent him to a physician three times. But Mr. Makmuri's condition worsened, until his eyes bled and discharged pus. Due to his condition, his family finally sent him to Kardinah Hospital, a bigger hospital in Tegal District (a neighboring district)

for an eye operation treatment. Even after the treatment, his eyes continued to bleed and suppurate. Finally, he was sent to AINI Hospital (a hospital especially for eye problems) in Jakarta. He lost one eye and had to undergo an eye transplant at the hospital.

## **5. Conclusion and Recommendations**

### **5.1 Conclusion**

The project “Awareness Campaign on the Danger of POPs and Other Pesticides to Human Health and Environment through Action Research Activity by Rural Community”, implemented in Jatimakmur Village, Songgom Sub-District, has increased the organizing capability of farmers and the communities in the Brebes district, where the government did not have any supportive policy. Besides that, another interesting point of this project is the improved awareness among farmers and decision makers in the district on the danger of pesticides and POPs. The success indicators of the program are as follows:

- The knowledge of the IPM Farmer Field School alumni on implementation of action research was enhanced, so they were able to facilitate the awareness process on the danger of pesticides, including POPs, to human health and environment in the Brebes District.
- The stakeholders became accountable in solving the problem of the hazardous effects of pesticide use in the Brebes District. An action plan was presented by the local government of Brebes District during a seminar, to deal with the dangers of pesticides and POPs. The action plan consisted of several programs, in which the local government of Brebes District will (1) support the movement on decreasing the danger of pesticides and start the development of an ecologically-based agriculture program; (2) increase the budget in year 2006 to implement ecologically-based agriculture from Rp 90 million to Rp 450 million, and will be further increased in the year 2007; (3) support IPPHTI (the Indonesian IPM Farmers Association) to conduct campaigns on the danger of pesticides; (4) the District Parliament (DPRD) will monitor the commitment of the District Government on the campaign on danger of pesticides; (5) conduct dialogs with the pesticide producers and ask them to take responsibility for the impact of using pesticides on the environment (damage to land, water, and other agriculture sources) and human health; and (6) build and improve the coordination between government, IPPHTI, and other organizations linked in campaign development on the danger of pesticides.
- This project has strengthened the capacity and facilitation skills of the farmer community to solve the problem on the hazard of pesticides, which ultimately threatens farmers' livelihoods.

### **5.2 Recommendations**

The data showed that the hazardous effects of pesticide use in Brebes District are at a critical level. The results of the cholinesterase test showed that 100% of the respondents (male and female) in Jatimakmur village have low to moderate poisoning signs and symptoms during in the period of May 2005 – February 2006. One person has died (Ny. Jewi), and another person has lost his eye (H. Makmuri). Both farmers are located in the same village.

This project has started the campaign on the danger of pesticides use in one village. However, Brebes District consists of hundreds of villages, and approximately 699 tons of pesticides per year are being sprayed in Brebes District areas. This situation is very dangerous for human health and the environment. Findings from this study indicate areas of concern that exacerbate the situation:

- (1) The community is more concerned about the financial benefit of using pesticides rather than the effects it can have on their health.
- (2) Farmers and their communities have low awareness on the dangers of pesticide use.
- (3) Farmers did not recognize the signs and symptoms caused by pesticide poisoning.
- (4) There is an imbalance of information on the danger of pesticides. Survey results showed that 70% of farmers get information on pesticide use through pesticide seller/pesticide shop owner, 17.5% from government agriculture staff, and 12.5% from other farmers. This data indicates that communication of information on pesticides is more on the promotion of its use rather than the dangers of pesticide use.
- (5) Interview results revealed that up to now, there is no program established by the governments at the national, province, and district level to promote and solve the danger of pesticide use, especially in Brebes District.

Based on the problems described above and the results of the program activities, the following actions need to be done by several organizations:

- (1) Develop a team consisting of representatives from the Government of Indonesia and the Local Government of Brebes District, to conduct an in-depth study on the impact of pesticides and initiate a policy on the development of ecologically-based farming.
- (2) The local government of Brebes District should provide support to the Indonesian IPM Farmers Association (IPPHTI), to conduct campaigns on the danger of pesticides and promote the development of the ecologically-based farming.
- (3) It is anticipated that IPEP will support the continuation of the campaign program on the danger of pesticides in Brebes District, or facilitate other international institutions to collaborate on solving the problems related to the danger of pesticides, and help protect farmer's health and environment from the danger of pesticides.