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Adviser: Cunegunda D. Abellera. MSc

ABSTRACT

This study on pesticide utilization of vegetable farmers in Barangay Dalipey, Bakun was conducted to determine the different kinds of pesticides used by the respondents and the frequency of application, the practices utilized by farmers in handling pesticides and the problems encountered by the respondents in handling pesticides.

Personal interview with the use of a questionnaire were used to gather the needed information from the 50 respondents. Respondents had an average farming experience of eight years.

The data gathered indicate that the farmer-respondents used the blue and the green bands pesticide and applied it twice a week with three days interval. They consider pest population attacking their crops when they apply pesticides and decide on what pesticide to use.

With regards to the practices in handling pesticides, the respondents combine two or more pesticides to derive benefits. They used protective equipment such a boots, mask and gloves when handling pesticides. However, they do not practice field sanitation.

It was also found out that the problems encountered by the respondents in handling pesticides were: the pesticides were used without considering the harmful effects to human and environment and the inability to identify the insect pest.

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INTRODUCTION

Rationale

Pesticides are most valuable tools to agriculturist and urbanite when used properly. It plays a very important role in agricultural production for it is widely believe that it helps increase crop production without considering its side effect. It is mostly manufactured and only few are produced naturally by plants. It is commonly used because of its simplicity, efficacy, wide used and faster economic return of investment. However its widespread use has brought a number of pressing problems of insect resistance to such chemicals (Cuilan, 1996). It has been estimated that only 0.1% of applied pesticides reach the target pest leaving the bulk of pesticide (99.9%) to impact the environment. However farmers still used pesticides as the ultimate solution in eradicating problems such as diamond back moth (*Plutella xylostella*) which is the most common during summer and attack crops most often thus affecting its marketability due to its low quality. Moreover consumers today are becoming conscious of their health. They become aware of the food they eat they demand for products that are safe, high quality and free from insect damage and disease blemishes.

Pesticides are any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest. Some of these chemicals are applied to control pest that reduces crop yields or to protect the nutritional value of our food. Others are used for cosmetic purposes to enhance the appearance of fresh food (Sarojini, 1991).

Hence the introduction of Integrated Pest Management by Agricultural agencies is a program where farmers are trained and educated to avoid the excessive use of pesticides by eliminating pest and diseases. It seeks to integrate all available non- chemical method

such as physical methods, biotechnology methods, biological and cultivation methods. It is an environmental concerned crop protection. It enhances income and limits health risk to consumers and lessens to farmers who handle pesticides and help improve crop protection (Fermin, 1999).

Statement of the Problem

This study was conducted to determine the pesticide application of the farmers in Barangay Dalipey, Bakun, Benguet. Therefore, the researcher wanted to seek the answer of the following questions.

1. What are the different kinds of pesticides used by the farmers and the frequency of application?

2. What are the practices of the farmers in handling pesticides?

3. What are the problems encountered by the farmers in handling pesticides?

Objectives of the Study

This study attempted to do the following:

1. To determine the different kinds of pesticides used by the farmers and the frequency of application;

2. To determine the practices of the farmers in handling pesticides; and

3. To determine the problems encountered by the farmers in handling pesticides.

Importance of the Study

This study was conducted in order to gain better knowledge in pesticide application in Barangay Dalipey, Bakun, Benguet. This study is very useful in developing the farming practices of vegetable farmers because it will offer new insights in increasing

their production though less pesticide use. It will inform the farmers about the hazardous effect of using pesticide excessively. It may not completely solve their problems but it could provide them with some information's on how to apply pesticide in a good way.

Scope and Limitations

The practices of the farmers in handling pesticide, the different kinds of pesticide used and frequency of application, hazardous effects of pesticide and some of the problems encountered in using pesticides.

The study was conducted in Barangay Dalipey, Bakun, Benguet. Respondents were the farmers who were planting vegetables and had farming experience of at least five years.

REVIEW OF LITERATURE

Background on Pesticides

Pesticides refer to any device, methods or chemical that kills plant or animals that compete for humanity's food supply. The use of chemicals dates ancient time, but man's great dependence on them for pest control dates essentially from World War II with the first used of dichlorodiethyl trichloethane in 1942 and the two major classes of pesticides are now in use: the chlorinated hydro carbons (dichlorodiethyl, trichloethane, endrines and others) and organic phosphorus compound (nerve gasses). These and many chemical now used as pesticides are synthetics new to man as to the earth's slowly evolved ecological system (Rudd, 1997)

Hama (1991) stated that since limited members of insecticide against diamond back moth are available, studies on how to use control measures against pest are worth while. Developing effective application program using various insecticides with different mode of action should be monitored.

Farmers in Handling Pesticides

The Integrated Pest Management (IPM) and the Farmers Field School (FFS) bring farmers together to carry out an intensive training on IPM methods and issues over the life cycle of a crop. The FFS introduced by the Department of Agriculture (DA) in designed to train farmers to become IPM experts in their own fields through self discovery as based largely on farmer's experiences. Farmers are taught to do agro-ecosystem analysis where they become familiarized with the IPM principles and to gain insights from the ecological interaction on their crops and environment (Equid, 1996).

Friedrich (1997) stated that the concept of Integrated Pest Management (IPM) where synthetic pesticides are only used as a last resort in now a day considered a common practice among professional agriculturist. The non-chemical alternative includes cultural practices, the selection and development of pest resistant varieties, the creation of an environment favorable to natural enemies of the pest, the used of biological product and agents including beneficial insect.

The implementation of Integrated Pest Management therefore shows that objectives of natural control of insects' pest could be achieved gradually by means of a staged release of diadegma against the major pest, Diamond Back Moth (*Plutella xylostella L*). This would create a relationship between biological and chemical controls conserving natural enemies, damages caused by insect and pest could use less pesticide in the system of Integrated Pest Management

IPM (Zhicheng, 1996)

Kinds of Pesticides Used and Frequency of Application

Pesticides differ according to their effects on various organisms. Selective pesticides are toxic only to target pest. They cause little or no harm to other organism. However, non-selective pesticides should be used only when no other method of control is available. A better method, therefore of determining the period of applying, control measures is little training and time than counting and identifying the insects correctly. It could be also easily documented by pictures and can be provided to farmers for comparison in the field (Ligat, 1990).

Problems Encountered Using Pesticides

The application of pesticides is a task to be always taken seriously and done carefully. It is important to know the facts abut hazards and exposures. The major routes of pesticides are dermal, whereby contact is through the skin. Oral where is contact through the mouth and inhalation which is breathing. The Fertilizer and Pesticide Authority (FDA) recommend some guidelines on the safe and effective use of pesticides. They stated that farmers should buy from FPA registered dealers which is authorized by the government to sell pesticide and agro chemicals. Be sure that the goods you buy are not damaged. These are not only to waste money, but a health hazards as well. Have a separate bag exclusively for pesticides. During storage, always keep pesticides safely locked and make sure that pesticides are stored separately from food animal feed stuffs. When using pesticides always read the label and make sure to understand and follow all instruction without taking any shortcut. Check the sprayer for defects that whatever repair necessary should be done before the chemicals are mixed. The operator must be physically fit. One possible defect of a sprayer is a clogged nozzle. Never fixed the clogged nozzle with bear hands or blow it with the mouth. You could very well ingest the pesticides. Clean the nozzle with water or soft probing device. Clean the leaky equipment, it can also cause unnecessary waste as well as hazards, do not use faulty and leaky sprayers. Having checked and repair equipment for leaks and other defects, you can prove to mixing (Hama, 1991).

Never eat during pesticide application and never ever smoke while applying pesticides. At the end of each days work, be sure to thoroughly clean and check all equipments and store them properly for easy access. After application of pesticides, burry

and empty cans, bottles and plastic containers with a depth of at least 8 inches away from water way and water supplies. Burn empty cardboard containers in the open away from residential areas. Never use empty pesticide containers for food storage. Be sure to wash all pieces of clothing that were use during pesticide application and take a bath immediately after work. Do not eat, drink and smoke after application unless you have thoroughly washed your hands and face (Rudd, 1997).

As cited by Saysayan (1996), stated that as pesticide becomes more expensive, there will be an increase in financial incentives since farmers used pesticides as economically as possible. If the qualities of pesticide which needed to be applied to give an accepted degree of pest and risk there might be persistence to toxic residue and of unwanted effects.

METHODOLOGY

Locale and Time of the Study

This study was conducted in Barangay Dalipey Bakun. Dalipey is one of the barangay of Bakun. Bakun is composed of seven barangays. It is located 86 kilometer. by the Baguio City-Bontoc road from Baguio City proper and the travel time is 4 to 5 hours by public utility jeep. It is one of the remote municipalities of Benguet, majority of the residents derived their income from vegetable farming.

It is bounded on the west by Sugpon, on the south by Kibungan, on the north by Cervantes, and the east by Mankayan and Buguias (Figure 1).

Bakun is land-locked with a total land area of 31,136.13 hectares of which 58% is classified as timber land, 9% for agriculture, 7% for grazing, 12% still virgin lands, 13% government, church or school reservations and 1% residential lands. Such classification by the government must have been due to Bakun's physical profile being mountainous and rocky.

The study was conducted in December 2009.

Respondents of the Study

The vegetable growers of the seven sitios of Barangay Dalipey, who had an average farming experienced of eight years provided the information needed in the study. About fifty (50) respondents were chosen and were considered in the study.

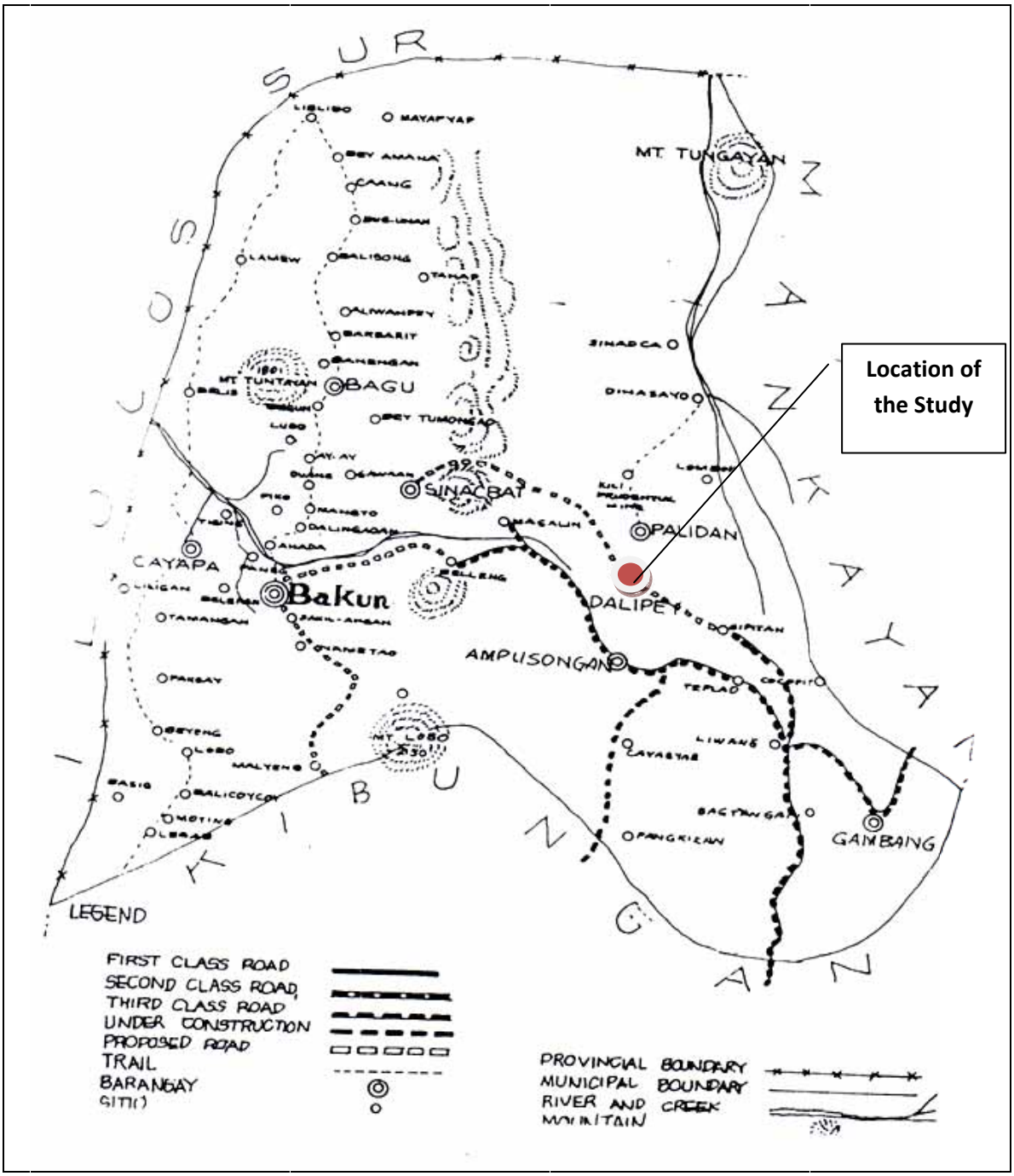

Figure 1. Map of Bakun showing the locale of the study

Data Collection

Fifty (50) respondents were personally interviewed by the researcher using the survey questionnaire as a guide to gather the data and clarification as needed in the study. The prepared questionnaire in English version was translated to the local dialect of the farmers so that the farmer could easily understood the questionnaire and for better results of the study.

Data Analysis

The data were consolidated, tabulated, and analyzed using frequency, average and percentage.

RESULTS AND DISCUSSIONS

Area of the Respondents Planted with Vegetables

Table 1 shows the area of the respondents planted with vegetable. Twenty percent of the respondents (20%) had an area of 1.0 hectare (ha.) to 1.24 ha. which they planted with vegetables; 18% had an area of 2 ha. to 3 ha.; 18% also had 0.75 ha. to 0.99 ha.; 16% had 0.5 ha. to 0.74 ha.; 12%, 0.25 ha. to 0.49 ha. and only 6% had an area of 1.25 ha. to 1.49 ha. This implies that the areas planted with vegetables were not too wide so the respondents used human power technology and not mechanical power technology in managing their farms.

Table 1. Area planted with vegetables by the respondents (ha)

AREAS	NO. OF RESPONDENTS	PERCENTAGE
0.25 to 0.49	6	12
0.5 to 0.74	8	16
0.75 to 0.99	9	18
1.0 to 1.24	10	20
1.25 to 1.49	3	6
1.5 to 1.99	5	10
2.0 to 3.0	9	18
TOTAL	50	100

Vegetable Crops Grown

Table 2 shows the vegetables grown by the farmer-respondents. Majority of the respondents (32%) planted potato; 28%, cabbage; 16%, carrots; 12%, planted with beans; 10% planted with sweat peas and only 2%, lettuce. This tells us that the crops grown by the farmers in the study area varied.

Common Pest, Insect pest, Diseases
Encountered by the farmers

Table 3 presents the pest, insect pest, and diseases encountered by the respondents. Fifty percent (56%) of the respondents claimed that rats had high population during wet season; 8%, birds; 6%, mole cricket; and 14% had not encountered pest in their crops.

With regards to insect pest, 86% farmer respondents (80%) claimed that diamond back moth attacked their crops; 78%, leaf miner; 36%, caterpillar; and 30%, aphids.

Based on the data, farmer-respondents (80%) claimed that blight is the most common disease that attacked their crops; 40%, blackleg; 38%, club root; 20%, powdery mildew; and 18%, soft rot.

As corroborated by Harvey (2003), it is clearly an important factor for farmers to determine first the pest and disease of their crops to be able to come up with an effective pest and disease control methods. He also added that common pest found in vegetable gardens and the diseases are spread by insects. These insects live in unhealthy soils. They grow in number that causes economic damage. Insect pest are also said to be the organism that conflicts the interest of man, they destroy and depreciate the value of the products.

Table 2. Vegetables grown by the farmers

CROPS	NO. OF RESPONDENTS	PERCENTAGE
Potato	16	32
Cabbage	14	28
Carrots	8	16
Beans	6	12
Sweet peas	5	10
Lettuce	1	2
TOTAL	50	100

Table 3. Common pest, insect pest, diseases encountered

PARTICULARS	NO. OF RESPONDENTS	PERCENTAGE
Pest		
Rats	28	56
Birds	4	8
Mole cricket	3	6
None	7	14
Insect pest		
Diamond back moth	43	86
Leaf miner	39	78
Caterpillar	18	36
Aphids	15	30
Diseases		
Blight	40	80
Blackleg	20	40
Club root	19	38
Powdery mildew	10	20
Soft rot	9	18

* Multiple responses

Sources of Information Regarding the Use of Pesticides

Table 4 presents the farmer-respondents sources of information regarding the used of pesticides. Majority of them (60%) said that it comes from their co-farmers; 20% from chemical company technician; 12%, from their own experimentation; and only 8%, from mass media like television and radio. The data imply that the different sources of information of the farmer-respondents cleared their doubts and provided solutions to their common farm problems.

Factors to Consider in Applying Pesticides

Based on Table 5, 64% of the respondents considered the pest population when pesticides are to be applied; 18%, chemical company dealer's advice; 14% relied on pesticides prices; and only 4% from government technician's advice. The result shows that the respondents had took consideration on the population of the pest affecting the crop to increase yield to reduce losses.

Bands, Classification and Frequency
of Pesticide Application Used

Table 6 presents the kinds of pesticides used by the respondents, their classification and the frequency of pesticides application. Farmer- respondents used the blue band as claimed by majority of them (38%); 30%, used green bands; 20%, used red band; and only 12% used the yellow bands. It can be noted that majority of the farmer-respondents had shifted to the used of lesser quantities and toxic insecticide bands.

With regards to the pesticide classification farmer-respondents used, majority of them (60%) used stomach pesticides; 50% systemic pesticides; and 40% used contact pesticides. Stomach pesticides are pesticides that exert their toxic action only after they

have been in traduced into the alimentary canal through feeding or treated substrates. Contact pesticides on the other hand, penetrate the pest exocuticle and could then be transported to the site of action via the circulatory system and systemic pesticides when applied the toxicant is translocated to the untreated parts in concentration that makes the final translocation sites toxic to pest.

Based on the table, thirty seven of the respondents (74%) applied pesticide twice a week; 16% applied pesticide thrice a week; and only 8% of the respondents applied pesticides once a week and if insect pest were present. This shows that the interval spraying were too short. This indicates that the farmers had not reduced in pesticide usage, not reducing the risk of farmer exposure to pesticides. Nevertheless, they used the bands with less toxication and quantities. Hence accordingly, the application of pesticides is a task to be done seriously and be done carefully.

As corroborated by Cheng (1992), to maintain the economically successful multi-million peso vegetable industry, farmers in the Cordillera Administrative Region (CAR) use hazardous chemicals. They have relied almost exclusively on chemical pesticides in their desire to meet the growing demands of the consumers for high quality vegetables, to control pests that prey on their crops. They also increase their spray dosage and are spraying at closer intervals, including mixing pesticides popularly called as “cocktails” to maintain effectiveness.

Table 4. Sources of information regarding the use of pesticides

PARTICULARS	NO. OF RESPONDENTS	PERCENTAGE
Co-farmers	30	60
Chemical company technician	10	20
Farmer-respondents	6	12
Mass media	4	8
TOTAL	50	100

Table 5. Factors considered in applying pesticides by the respondents

PARTICULARS	NO, OF RESPONDENTS	PERCENTAGE
Pest population	32	64
Chemical company dealer's advice	9	18
Pesticides prices	7	14
Government technicians advice	2	4
TOTAL	50	100

Table 6. Bands of pesticides used, their classification and frequency of application

PARTICULARS	NO. OF RESPONDENTS	PERCENTAGE
Bands		
Red		
Yellow	10	20
Blue	6	12
Green	19	38
	15	30
Classification		
Stomach	30	60
Systemic	25	50
Contact	20	40
Frequency of pesticide application		
Once a week	4	8
Twice a week	37	74
Thrice a week	5	10
Application is done if insects are present	4	8

*Multiple responses

Table 7 shows if farmers practiced cocktailing or not. Seventy six percent (76%) of them claimed that they were mixing pesticides; 44% do not practice mixing pesticides; and only 20% did both, meaning that the farmer-respondents used cocktailing pesticides to derive benefits from them on several forms liked increased yield, improved quality of produced to increase effectivity as claimed by majority of the respondents.

Protective Measure Used

Table 8 shows the type of protective measures used by the respondents when handling pesticides. Most of them (96%) wore boots; 80%, used mask or handkerchief; 80%, gloves; 40%, used coats; and only 4%, used all the protective gears. It was noted that the farmer-respondents were aware of the toxic effect caused by the application and the safe used of pesticides, however, according to them some do not wear some of the mentioned protective measures like coats and eyeglasses during the handling of pesticides because they felt uncomfortable.

It was noted that all the respondents do not smoke while spraying; they took a bath after spraying and before they continue to work again. This means that all the respondents practice self sanitation and they were also aware of the hazardous effect of pesticides to human body.

Table 7. Farmers practice

PARTICULARS	NO. OF RESPONDENTS	PERCENTAGE
Do practice mixing pesticide	38	76
Do not practice mixing pesticides	22	44
Both	10	20

*Multiple responses

Table 8. Type of protective measure used by the respondents in handling pesticides

TYPE	NO. OF RESPONDENTS	PERCENTAGE
Boots	48	96
Mask	40	80
Gloves	40	80
Coat	20	40
Eyeglasses	20	40
Mask and gloves	10	20
Boots, gloves and mask	10	20
All of the above	2	4

*Multiple responses

Farmer's Practice After Handling Pesticides

Disposal of empty pesticide containers. Majority of the respondents(50%) just left the empty containers on their farms; 18%, buried them; 12% of them practiced recycling and selling ; and 10% of them burned and threw the empty pesticide containers on rivers. The data show that majority of them do not practice field sanitation although they know the bad effects of empty pesticide containers when not disposed properly. One of the reasons is that after spraying the farmers are already tired so they just left the empty pesticides bottles on their farms.

As corroborated by Harvey (2003), empty pesticide bottles can harm the environment if they are not disposed of properly. Gardeners and allotment holders need to dispose of pesticides packaging carefully. Food and Agriculture Organization (FAO) advise farmers that pesticide-related waste should not be buried, burned or dumped instead it must be recycled to avoid environmental contamination, pollution, human diseases such as foot and mouth disease. Taking the right action in dealing with pesticide containers can only improve the image of farmers and the pesticide industry.

Awareness of the Toxic Effects of Pesticides

On the awareness of the effects of pesticides, Table 10 shows that almost all the respondents were aware of the toxic effects brought about by pesticides to public health, water and air, and to animal.

Problems Encountered in Handling Pesticides

Table 11 presents the problems encountered by the respondents in handling pesticides. Sixty-eight percent (68%) of the respondents claimed that pesticides were used without considering the harmful effects to human beings; 24% encountered that they could not identify pest, 20% lack knowledge, and 18% were greatly influenced by chemical dealers to used pesticides. The data show that the farmer-respondents just used pesticide to eliminate pest and diseases to have a high yield and quality products even when it has dangerous effects to their health.

Table 9. Disposal of empty pesticide containers by the respondents

METHOD	NO. OF RESPONDENTS	PERCENTAGE
Leave on the farm	25	50
Burying	9	18
Selling	6	12
Throw on the river	5	10
Burn	5	10
TOTAL	50	100

Table 10. Awareness of the effects of pesticides

PARTICULARS	NO. OF RESPONDENTS	PERCENTAGE
Public health	50	100
Water and air pollution	49	98
Pollution to animal life	49	98

*Multiple responses

Table 11. Problems encountered in handling pesticides

PARTICULARS	NO.OF RESPONDENTS	PERCENTAGE
Pesticides are used without considering the harmful effects to human	34	68
Cannot identify the pest	12	24
Lack of knowledge	10	20
Chemical dealers greatly influenced farmers in the use of their products	9	18

*Multiple responses

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The study was conducted to determine the different kinds of pesticide used and the frequency of application, the practices of the farmers in handling pesticides, and the problems encountered by the respondents in handling pesticides.

Fifty vegetable farmer- respondents who had an average farming experience of eight (8) years were using the blue and the green bands pesticide and applied it twice a week with three days interval.

Respondents practice cocktailing. They combine pesticides and fungicides to derive benefits from them on several forms like increase yield, improved quality of produced to increase effectivity.

Farmer-respondents were using protective equipment during pesticide application such as boots, gloves and mask. After spraying, they took a bath and changed their clothing. Almost all of them were aware of the toxic effects brought about by pesticides to public health, water and air, and to animal. However they do not practice field sanitation.

The common problems encountered by the respondents in handling pesticides as claimed by majority of them were: the pesticides were used without considering the harmful effects to human and environment, and the inability to identify pest attacking their crops. Farmer-respondents believed that the only solution to pest and diseases and to meet the growing demand of the consumers for a high quality vegetables was the use of pesticides.

Conclusions

Based on the findings of the study, the following can be concluded:

1. The respondents used the blue and the green band pesticides and applied it twice a week with three days interval.

2. Farmer-respondents practiced cocktailing to derive benefits from them. Respondents used protective equipment such as boots, mask and gloves when handling pesticides. After spraying, they took a bath and changed their clothing. They were aware of the toxic effects of pesticides to human and environment. However, they do not practice field sanitation.

3. The common problems encountered by most of the respondents in handling pesticides were: the pesticides were used without considering the harmful effects to human and environment though aware of the toxic effects and the inability to identify the insect pests.

Recommendations

1. Chemical industries should introduced non-hazardous chemicals to farmers to avoid possible risk to human health and environment

2. Concerned agencies and organizations should exert more effort in introducing good agricultural practices to these farmers.

3. An intensive educational campaign on the proper use and handling of pesticide must be conducted among the farmers in Barangay Dalipey and simple and easily understood brochures and posters on the safe use and disposal of pesticide containers must also be made available to the farmers.

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Appendix A

Letter to Respondents

Republic of the Philippines
Benguet State University
College of Agriculture
La Trinidad, Benguet

Dear Respondents,

Greetings!

I am Beverlyn B. Gayaso, a fourth year student of Benguet State University who is conducting a study entitled "Survey on the Pesticide Utilization of Vegetable Farmers in Barangay Dalipey, Bakun, Benguet". This is a major course requirement of Bachelor of Science in Agriculture major in Extension Education.

This questionnaire given to you will be used to fulfill the academic requirement needed in the research.

The success of this study relies on your honest answer to the questions. Answers of yours will be kept confidentially.

Thank you very much and God Bless.

Respectfully yours,

BEVERLYN B. GAYASO
Researcher

APPENDIX B

Survey Questionnaire

Area planted to vegetables _____ha.

Vegetable crops grown

_____ Potato _____ Lettuce

_____ Cabbage _____Beans

_____ Wombok _____ Sweet peas

_____Carrots _____ Cauliflower

_____others (specify) _____

I. Pests/ Insects/ Diseases. Please Check those that attack your vegetable crops

A. 1. Pest (Check those that attack your vegetable crops)

_____a. rats

_____b. birds

_____c. others (specify) _____

B. Insect Pest

_____a. aphids

_____b. cater pillar

_____c. diamond back moth

_____d. leaf miner

_____e. others (specify) _____

C. Diseases

_____a. blackleg

_____b. club root

_____c. powdery mildew

_____d. others (specify) _____

II. Pesticide Practices

1. What are the color bands of the pesticides you are using? (Please check)

_____a. Red _____c. Blue

_____b. Yellow _____d. Green

2. What are there classifications?

_____a. Systemic _____c. Contact

_____b. Stomach _____d. others

3. Who are your sources regarding the use of pesticides? (Please check)

_____a. technicians (DA- LGU, chemical company)

_____b. local officials

_____c. mass media (TV, radio, newspaper, etc.)

_____d. friends (co- farmers)

_____e. others (specify) _____

4. What factor do you consider in applying pesticides?

_____a. Pest population

_____b. Pesticides prices

_____c. dealer's advice

_____d. Government technician's advice

_____e. Others (Please Specify) _____

5. How many times do you apply pesticides? (Please check)

_____Once a week

_____2-3 times a week until harvest time

_____Others (specify) _____

6. Do you practice mixing pesticides?

_____Yes _____No

7. How do you dispose empty pesticide containers? (Please check)

_____Throw on river _____Leave on the farm

_____ Burn _____ Bury

_____ Others (specify) _____

8. What factors do you consider when applying pesticide? (Please check)

_____ Dealers advice _____Pest population

_____ Technicians advice _____ Co- farmers' advice

_____ Others _____

9. What are the type of protection equipment do you use when spraying? (Please check)

_____Mask _____Goggles

_____Rubber Boots _____ Gloves

_____Coat

_____others (specify) _____

III. Farmers Practices After Spraying

1. What do you do after spraying

_____ Take a bath and change cloth _____ Change cloth only

_____ Wash hand only _____ others (specify)

2. Are you smoking while spraying

   _____ Yes _____ No

3. Do you continue to work on the field after spraying

   _____ Yes _____No

4. What other practices do you do after spraying?
   _____
   _____
   _____

IV. Problems Encountered (please check)

1. Problems encountered in the use of pesticides. (Yes or No)

   _____a) pesticides are use without considering the harmful effects to human and environment.

   _____b) cannot identify the pest

   _____c) Agricultural technician taught you to use chemicals in your cups

   _____d) others (specify) _____

2. Are you aware that the chemicals affects public health and the environment such as soils, animals, water sources qualities of air, balance of pest and natural enemies?

   _____Yes _____Nos