

## **BIBLIOGRAPHY**

DADA-AN, MAJESREH A. APRIL 2010. Market Potential of Sunflower Extract as Fertilizer and as Botanical Pesticide. Benguet State University, La Trinidad, Benguet.

Adviser: Clifton D. Llanes,

## **ABSTRACT**

This study is about market potential of sunflower extract as fertilizer and as botanical pesticide in La Trinidad. Interview guide were administered to 65 respondents coming from the different barangays of the municipality.

The users of sunflower extract are in barangay Shilan and Balili and the non-users are from Pico and Betag. Majority of the user are organic practitioner and few transitional farmers.

The common use of sunflower extract to farmers is to fertilize the soil and as to the effect as botanical pesticide the farmers claim that it has no effect as botanical pesticide.

There is no standard application rate among farmers, though farmers intend to increase utilization due to planned expansion of organic area, among other reasons.

The respondents are willing to pay P100 to P150 per liter of sunflower extract. The non-user is not using sunflower extract because they do not know about it hence, now that they know about it some of them are willing to use sunflower extract though,

they must try and test it first. Additionally, most respondents say that they would produce their own sunflower extract.

It is hence recommended for the establishment of information on the efficacy of sunflower extract as fertilizer and as biological pest control to convince farmers and to have non-users try and test it in their farms. This also requires the establishment of standard rate of application. Further, a study on the economic costs and benefits of sunflower extract production is likewise desired.



## TABLE OF CONTENTS

	Page
Bibliography .....	i
Abstract.....	i
Table of Contents.....	iii
INTRODUCTION.....	1
REVIEW OF LITERATURE.....	5
METHODOLOGY	
Locale and Time of the Study.....	9
Respondent of the Study.....	9
Data Collection.....	9
Data Analysis.....	9
RESULTS AND DISCUSSION	
Demographic Profile of the Respondents.....	10
Crop planted.....	10
Uses of Sunflower Extract.....	14
Effects of Sunflower Extract as Botanical Pesticide.....	20
Distribution of the User Respondent's According to Identified Pests.....	27
Volume of Sunflower Extract they Apply per Week for every 250 m <sup>2</sup> .....	29
Intensions of the Respondent to Increase Utilization of Sunflower Extract.....	40

Respondent's Reasons of Increase Utilization of Sunflower Extract. ....	43
Source of Sunflower Extract of the User. ....	50
Source of Additional Sunflower Extract of the Non-user. ....	52
Price that the Users are Willing to Pay per Liter of Sunflower Extract. ....	58
Substitutes to Sunflower Extract. ....	61
Reason of the Non-user Why the Respondent's do not Use Sunflower Extract. ....	62
Non-user Respondent Willingness to Use Sunflower Extract. ....	65
Factors that Convince Non-user to Use Sunflower Extract. ....	68
<b>SUMMARY, CONCLUSIONS AND RECOMMENDATIONS</b>	
Summary. ....	73
Conclusions. ....	75
Recommendation. ....	76
LITERATURE CITED. ....	77
<b>APPENDIX</b>	
A. Interview Guide for the User of Sunflower Extract. ....	78
B. Interview Guide for the Non-user. ....	80

## INTRODUCTION

### Rationale

Vegetable production is one of the industries that play an important role in the agricultural development of a country that is why it is one of the most important industries in the Philippines.

The geometric increase in population necessitates an increase in food production. Due to change in lifestyle of people, taste and preferences of consumers also change. Current trend points to an increasing awareness and popularity of organic products thus requiring farmers to shift to organic production. It is therefore necessary to use organic fertilizer and pest control practice to meet this growing demand.

Fertilizer and pest control deserves special attention in farming enterprise. Plants need a well balanced diet and to be pest free in order to grow vigorously and produce maximum yield.

Pest control plays also an important role to plant development ensuring its optimum yield. The use of sunflower extract has been identified as one of the techniques/technologies most effective for organic agriculture. It is applied as foliar fertilizer and for pest control.

There are studies done by Engineer Jerry Gonzales as cited by Allad-iw (2006), DA-PhilRice (2004), and Michael Bengwayan (2007) that claim sunflower contains millions of beneficial nitrogen-fixing microbes that make phosphates and other soil nutrients soluble and therefore readily absorbed by plants, and control the growth of soil-borne pathogens, which causes diseases.



It was found that sunflower leaves have high nitrogen content (2.9 percent oven dry weight) and that fresh sunflower can give an equivalent of 60 N kg/ha. Aside from being locally available and free, wild sunflower easily decomposes (7-10 days) and also hastens the decomposition of other weeds. In sloping mountains, it helps to prevent soil erosion. Wild sunflower can likewise be used as pest control agent, floor polish, and firewood. In the Cordillera, it has been reported to control aphids in vegetables and earthworms in rice paddies.

In other studies it is also evaluated by Malama that Sunflower pruning had 2.5% N, 0.14% P, 4.20% K, 0.98% Ca, 0.32% Mg, 300ppm Fe and 11 ppm Zn. It is also experimented that the effect shows that after a few minutes, the larvae and caterpillar drop off the plants and die.

Natural Sunflower extract commonly called sunflower tea is produced and available for sale at BSU Organic Demo Farm. These are presently produced in the organic Demo farm coordinated by Dr. Jose G. Balaoing and Mr. Tinoyan. This is available in 1.5 L container. The marketing of the sunflower that is still at the exploration stage are well as its acceptability in the market. Further improvement on its quality and packaging is still in development stage, however.

Given the promising contribution of the use of sunflower extract to organic agriculture, there is hence a need to look into the acceptability and market potential of sunflower extract as fertilizer and pesticide in order to explore its commercial potential.

### Importance of the Study

Results of this research would indicate possibilities for the commercialization of sunflower extract and thus would be basis for different consideration if such would be



pursued. Furthermore, the results could act as spring board for other researcher to determine the viability of commercial production of sunflower extract or to explore market potentials of other similar or substitute products.

### Statement of the Problem

The “1<sup>st</sup> Cordillera Organic Agriculture Congress” was held in the year 2006 that envisioned to help CAR farmers maintain their market - or even expand it - through organic farming, an agricultural method that eliminates chemical fertilizers and pesticides.

Sunflower extract has been identified as one of the more promising techniques in production. However, little is known about whether it has a commercial potential among farmers or not. Hence, this study intends to answer the following questions:

1. Who are the users and non-users of sunflower extract?
2. For what purpose sunflower extract is used?
3. How much quantity of sunflower extract do the users apply per time period?
4. Do they intend to increase the volume of utilization of sunflower extract?
5. What are the reasons of increasing the utilization?
6. Where do they source sunflower extract?
7. What price is acceptable to buyers or potential buyers?
8. Are there substitute for sunflower extract as either a fertilizer or as botanical pesticide?
9. What are the reason non-users don't apply sunflower extract?



10. What are the conditions that would encourage the non-users to employ sunflower extract?

### Objectives of the Study

1. To identify the users and non-user of the sunflower extract.
2. To determine the uses of sunflower extract.
3. To determine the quantity of utilization of sunflower extract per time period.
4. To determine possible increase in utilization of sunflower extract.
5. Identify the reasons for possible increase the volume of utilization.
6. To identify the users' sources of sunflower extract.
7. To determine the acceptable price of sunflower extract among users.
8. To identify direct substitutes for sunflower extract.
9. To determine reasons of non-user don't employ sunflower extract.
10. To identify condition that would encourage non-users to employ sunflower extract.

### Scope and Delimitation

The research focused on describing the market potential of sunflower extract as pesticide and as fertilizer in La Trinidad, Benguet. The research will be conducted on December, 2009. Respondentss of the study will be identified users and some non-uses of sunflower extract.





## **REVIEW OF LITERATURE**

Montanosa Research and Development Center (MRDC) noted that in Barangay Balugan, Sagada, Mountain Province used an average of 500 tons of fungicide, 500,000 liters of pesticides and 15,000 tons of commercial fertilizers had been disposed yearly in the vegetable belt in the region alone. MRDC stated that these amount to half a billion pesos.

Cheng and Bersamira as cited by Wolfe (2006) studied the health and environment hazards of pesticides in the vegetable district in Benguet. They concluded that the volume of pesticides and fungicides poured into Benguet's vegetable pot in a year, if used in a biological warfare, is enough to kill the total population of the country.

### Popular Practices in Organic Agriculture

Fernandez (2004) reported that for centuries, farmers in Ifugao and Mountain Province have been using this plant known as Sunflower to fertilize rice, vegetables, and sweet potato. The fertilizer value of wild sunflower has been confirmed in recent researches done by the Department of Agriculture-Philippine Rice Research Institute (DA-PhilRice) in 2004.

### The Use of Sunflower Extract in Organic Agriculture

Allad-iw (2006) started that according to Gonzales, a partner of Montanosa Research Development Center (MRDC) in the Bio-Green project, that sunflower is used



as fertilizer. Bio-Green is a microbial organic fertilizer which would address the agro-chemical dependent farmers and acidic-turned farms in the vegetable and rice producing areas of the Cordillera. He explained that as a microbial fertilizer, it contains millions of beneficial nitrogen-fixing microbes that make phosphates and other soil nutrients soluble and therefore readily absorbed by plants, and control the growth of soil-borne pathogens, which cause plant diseases. “The fertilizer is environment-friendly as it does not cause soil acidity and does not toxify water and atmosphere,” Gonzales told Nordis after the demonstration, adding it has high NPK (Nitrogen, Phosphorous, and Potassium) necessary during seedling root development and survival. It is also a soil conditioner that improves soil structure, increases the ability of the soil to hold water and nutrients, and provides better aeration added Gonzales, an advocate of organic farming.

Bengwayan (2007) blogged his application of botanical insecticide. It is prepared using half drum of water, wild sunflower (*Tithanium diversifolia*) shoots, kakawate (Madre de cacao leaves and cigarette butts). The effect shows that after a few minutes, the larvae and caterpillar drop off the plants and dies. The sunflower and kakaw leaves have properties that kill off the worms. The effect of both leaves is made more potent by the tar and nicotine extracts from the cigarette butts. This is his effective, simple and inexpensive control for worms and larvae. He warn though, that the only disadvantage is that the decoction smells and the applicator should cover all his body and face to prevent the smell from sticking to his skin. But the extract is safe when in contact with the skin.

As cited by Fernandez (2004) , PhilRice researchers have found that sunflower leaves have high nitrogen content (2.9 percent oven dry weight) and that fresh sunflower can give an equivalent of 60 N kg/ha. Aside from being locally available and for free,



wild sunflower easily decomposes (7-10 days) and also hastens the decomposition of other weeds. In sloping mountains, it helps prevent soil erosion. Wild sunflower can likewise be used as pest control agent, floor polish, and firewood. In the Cordillera, it has been reported to control aphids in vegetables and earthworms in rice paddies.

Bengwayan (2007) blogged that no pesticide is used on all crops. As of now no insect pest has attacked the succini, lettuce and potatoes but a few diamonback moth (*Plutella xylostella*) are attacking the cabbages. We have prepared a botanical control of sunflower extract (*Tithonia diversifolia*) to be used against the pest.

#### Threats of Sunflower Production and Utilization

Bengwayan (2008) blogged that agriculture industry in north Luzon is in danger of declining because of organic gardening. This is because organic gardeners are cutting all visible wild sunflower plants (*Tithanium diversifolia*) which they widely compost for fertilizer. As a result, the bees in this region that depend heavily on nectar and pollen produced by the sunflowers have difficulty foraging for food.

On the other hand Caluza (2009) reported that La Trinidad, Benguet — Agriculturists have asked farmers to stop using sunflower as compost after they observed that honey production started to drop in areas where the plants used to thrive. As cited by Caluza (2009), Ananayo, chief of the agribusiness and marketing assistance division of the Department of Agriculture in the Cordillera and also a beekeeper agreed on this and also blamed changing weather for the decrease in honey production.



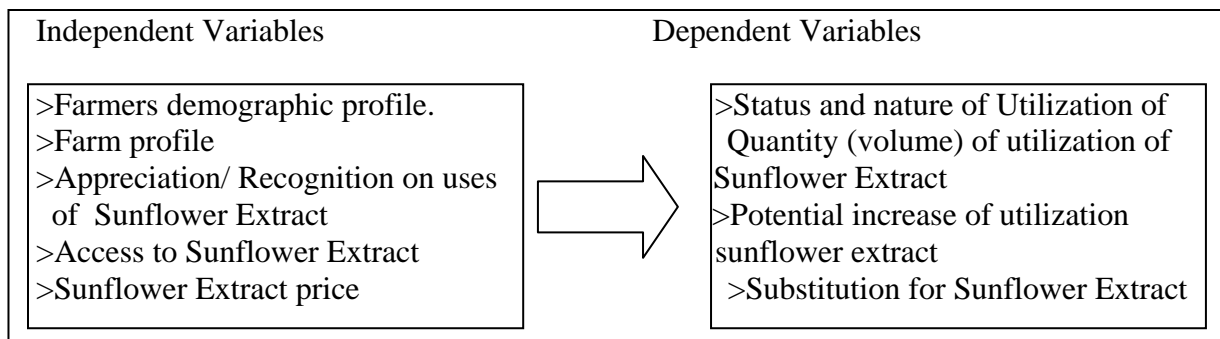


Figure 1: Paradigm of the Study

### Definition of Terms

Agro-chemical farmers- farmers with the use of synthetic chemical fertilizers, raw or unprocessed organic fertilizer – such as chicken dung– which aggravates soil destruction and acidity and contributes to the prevalence of pest and diseases.

Bio-green- composed of 70 percent chicken dung and 30 percent sunflower plant

Population geometric increase- population an increase in an area

Market potential- the possibility to commercialize and market a product due to the existence of a substantial demand for it.

Sunflower Extract- an extract from compost sunflower used either as fertilizer or pesticide.

Transitional farmer- farmer applying a mix of conventional farming practices and principles of organic farming.

Weeds- different grasses grow in the field



## **METHODOLOGY**

### Locale and Time of the Study

The study was conducted in La Trinidad, Benguet. This place was selected because of the comparatively wide area used for organic farming. Furthermore, farmers in this place is produced lettuce, cabbage, and petchay are produced which leafy vegetables are requiring significant efforts in pest control for their cultural management.

### Respondents of the Study

The respondents of this study were farmers of La Trinidad, Benguet who were growing lettuce, cabbage, Chinese cabbage and petchay. The sampling method used was “Random sampling” where in, 65 farmers of La Trinidad were take as respondents.

### Data Collection

An interview guide for both users and non-users was used to gather the needed data and relevant information from respondents. The interview guide was formulated based on the objective of the study which was used to determine potential demand for sunflower extract.

### Data Analysis

The researcher used the descriptive method and including the percentage, frequency distribution and mean.



## RESULTS AND DICUSSION

### Profile of the Respondents

Table 1 presents the profile of respondents as grouped into various demographic characterize of the 65 respondents 29 (44.6%) were user and 36 (55.4%) were non-user of sunflower extract Majority (67.7%) of the respondents were male and most (81%) were between the age of 25 to 54 years old. The oldest respondents being above 65 years old.

Respondents from barangay Pico composed 24.6% of the total respondents with most of them (23.1%) being non-user of sunflower extract. Balili follows with 10(15.4%) respondents.

Close to half (46.2%) of the respondents were classified transitional organic with only 10 (15.4%) conventional farmers.

A significant number of respondents (83.1%) have been farming for more than 10 years with 19 (29.2%) respondents farming for more than 30 years. Majority (56.9%) of the respondents farm on less than 1000 m<sup>2</sup> area and majority (76%) operate an organic farm area less than 900 m<sup>2</sup> Most of them are relatively new practitioner of organic farming with only one (3.8%) practicing for over 11 years.

### Crop Planted

Table 2 presents the crop planted by respondents as grouped into type of farmer, years of farming, farm size, organic area and length of time as organic farmers. Majority (61.5%) of the respondent's plant lettuce and only 26 (40%) of them plant patchay.



Lettuce is more popular vegetable planted among transitional, conventional and organic farmers alike. Petchay is the next popular crop by both organic and conventional.

Table 1. Demographic profile of respondents

PARTICULARS	USER		NON-USER		TOTAL	
	F	%	F	%	F	%
Age						
<25	1	01.6	03	4.80	04	06.3
25-34	8	12.7	10	15.9	18	28.6
35-44	10	15.9	06	9.50	16	25.4
45-54	6	09.5	11	17.5	17	27.0
55-64	1	01.6	03	4.80	04	06.3
65+	1	01.6	03	4.80	04	06.3
<b>TOTAL</b>	<b>27</b>	<b>42.9</b>	<b>36</b>	<b>57.1</b>	<b>63</b>	<b>100</b>
Sex						
Male	20	30.8	24	36.9	44	67.7
Female	9	13.8	12	18.5	21	32.3
<b>Total</b>	<b>29</b>	<b>44.6</b>	<b>36</b>	<b>55.4</b>	<b>65</b>	<b>100</b>
Place						
Alapang	3	04.6	0	00.0	03	04.6
Bahong	0	00.0	1	01.5	01	01.5
Balili	6	09.2	4	06.2	10	15.4
Beckel	3	04.6	4	06.2	07	10.8
Bineng	2	03.1	0	00.0	02	03.1
Betag	1	01.5	6	09.2	07	10.8
Pico	1	01.5	15	23.1	16	24.6
Puguis	2	03.1	2	03.1	04	06.2
Poblation	0	00.0	3	04.6	03	04.6
Shilan	8	12.3	0	00.0	08	12.3
Ambiong	3	04.6	0	00.0	03	04.6
Longlong	0	00.0	1	01.5	01	01.5
<b>TOTAL</b>	<b>29</b>	<b>44.6</b>	<b>36</b>	<b>55.4</b>	<b>65</b>	<b>100</b>



Table 1 continued...

PARTICULARS	USER		NON-USER		TOTAL	
	F	%	F	%	F	%
Type of farmer						
Organic	18	27.7	7	10.8	25	38.5
Transitional	10	15.4	20	30.8	30	46.2
Conventional	1	1.5	9	13.8	10	15.4
<b>TOTAL</b>	<b>29</b>	<b>44.6</b>	<b>36</b>	<b>55.4</b>	<b>65</b>	<b>100</b>
Years of farming						
25-30	8	12.3	03	04.6	11	16.9
20-24	6	09.2	04	06.2	10	15.4
15-19	4	06.2	03	04.6	07	10.8
10-14	2	03.1	05	07.7	07	10.8
5-9	2	03.1	03	04.6	05	07.7
<5	6	01.5	05	07.7	06	09.2
30+	6	09.2	13	20.0	19	29.2
<b>TOTAL</b>	<b>29</b>	<b>44.6</b>	<b>36</b>	<b>55.4</b>	<b>65</b>	<b>100</b>
Farm size(m <sup>2</sup> )						
<1000	13	20.0	24	36.9	37	56.9
1000-2799	09	13.8	06	09.2	15	23.1
2800-4599	03	04.6	03	04.6	6	9.2
4600-6399	01	01.5	02	03.1	3	4.6
6400-8199	01	01.5	00	00.0	1	1.5
8200+	02	03.1	01	01.5	3	4.6
<b>TOTAL</b>	<b>29</b>	<b>44.6</b>	<b>36</b>	<b>55.4</b>	<b>65</b>	<b>100</b>
Organic area(m <sup>2</sup> )						
<500	5	20	3	12	08	32
500-899	8	32	3	12	11	44
900-1299	1	04	0	00	01	04
1300-1699	2	08	0	00	02	08
1700-2099	1	04	1	04	02	08
2100+	1	04	0	00	01	04
<b>TOTAL</b>	<b>18</b>	<b>72</b>	<b>7</b>	<b>28</b>	<b>25</b>	<b>100</b>
Length of time as organic practitioner						
<2	3	11.5	1	3.8	4	15.4
2-4	8	30.8	2	7.7	10	38.5
5-7	5	19.2	1	3.8	6	23.1
8-10	3	11.5	2	7.7	5	19.2
11+	0	00.0	1	3.8	1	03.8
<b>TOTAL</b>	<b>19</b>	<b>73.1</b>	<b>7</b>	<b>26.9</b>	<b>26</b>	<b>100</b>





Table 2. Crop planted

PARTICULARS	CROP PLANTED							
	PETCHAY		CABBAGE		CHINESE CABBAGE		LETTUCE	
	F	%	F	%	F	%	F	%
Type of farmer								
Organic	13	20.0	6	9.2	1	1.5	14	21.5
Transitional	08	12.3	4	6.2	2	3.1	21	32.3
Conventional	05	07.7	0	0.0	0	0.0	05	07.7
<b>TOTAL</b>	<b>26</b>	<b>40</b>	<b>10</b>	<b>15.4</b>	<b>3</b>	<b>4.6</b>	<b>40</b>	<b>61.5</b>
Years of farming								
25-30	8	12.3	3	4.6	1	1.5	5	07.7
20-24	5	07.7	0	0.0	0	0.0	6	09.2
15-19	1	01.5	2	3.1	1	1.5	5	07.7
10-14	1	01.5	1	1.5	0	0.0	5	07.7
5-9	2	03.1	1	1.5	0	0.0	3	04.6
<5	1	01.5	2	3.1	1	1.5	5	07.7
30+	8	12.3	1	1.5	0	0.0	11	16.9
<b>TOTAL</b>	<b>26</b>	<b>40</b>	<b>10</b>	<b>15.4</b>	<b>3</b>	<b>4.6</b>	<b>40</b>	<b>61.5</b>
Farm size								
<1000	14	21.5	5	7.7	1	1.5	23	35.4
1000-2799	07	10.8	4	6.2	1	1.5	08	12.3
2800-4599	02	03.1	0	0.0	0	0.0	04	06.2
4600-6399	00	00.0	0	0.0	1	1.5	03	04.6
6400-8199	01	01.5	1	1.5	0	0.0	00	00.0
8200+	02	03.1	0	0.0	0	0.0	02	03.1
<b>TOTAL</b>	<b>26</b>	<b>40</b>	<b>10</b>	<b>15.4</b>	<b>3</b>	<b>4.6</b>	<b>40</b>	<b>61.5</b>
Organic area								
<500	5	20	2	08	0	0	3	12
500-899	3	12	3	12	1	4	9	36
900-1299	1	04	0	00	0	0	0	00
1300-1699	1	04	1	04	0	0	1	04
1700-2099	2	08	0	00	0	0	0	00
2100+	1	04	0	00	0	0	1	04
<b>TOTAL</b>	<b>13</b>	<b>52</b>	<b>6</b>	<b>24</b>	<b>1</b>	<b>4</b>	<b>14</b>	<b>56</b>



Table 2 continued...

PARTICULARS	CROP PLANTED										
	PETCHAY		CABBAGE		CHINESE CABBAGE		LETTUCE				
	F	%	F	%	F	%	F	%	F	%	
Length of time as organic practitioner											
<2	1	03.8	2	7.7	0	0.0	1	03.8	4	15.4	
2-4	6	23.1	1	3.8	0	0.0	4	15.4	10	38.5	
5-7	5	19.2	2	7.7	1	3.8	4	15.4	6	23.1	
8-10	2	07.7	1	3.8	0	0.0	4	15.4	5	19.2	
11+	0	00.0	0	0.0	0	0.0	1	03.8	1	03.8	
TOTAL	14	53.8	6	23.1	1	3.8	14	53.8	26	100	

\*Multiple response

#### Uses of Sunflower Extract

Table 3 presents the uses of sunflower extract related to the type of farmer. Majority (72.4%) of the respondents use sunflower extract to fertilize the soil and 15(15%) of them are organic. The 3(10.3%) of the respondents said that sunflower extract increased the soil ability to hold water and 2(6.9%) of them are transitional farmers. Only 1(3.4%) organic said that they use sunflower extract for better aeration. The 2(6.9%) of the respondents said that they use sunflower extract because it is organic.

Table four presents the uses of sunflower related to the length of time as organic of the respondents. Majority (55.2%) of respondents use sunflower extract to fertilize the soil and 6(20.7%) of them are respondents who practiced organic for two to four years. Respondents that practice organic for five to seven years follows with 5(17.2%).



Table 3. Uses of sunflower extract related to type of farmer

USES OF SUNFLOWER EXTRACT	TYPE OF FARMERS							
	ORGANIC		TRANSITIONAL		CONVENTIONAL		TOTAL	
	F	%	F	%	F	%	F	%
Fertilize the soil	15	51.7	5	17.2	1	3.4	21	72.4
Conditions and improves the soil	03	10.3	2	06.9	0	0.0	05	17.2
Increase the soil ability to hold water	01	3.4	2	06.9	0	0.0	03	10.3
For better aeration	01	3.4	0	00.0	0	0.0	01	03.4
Increases leaves number	0.0	0.0	1	03.4	0	0.0	01	03.4
Cheap source	0.0	0.0	1	03.4	0	0.0	01	03.4
Organic	1.0	3.4	1	03.4	0	0.0	02	06.9
TOTAL	18.0	62.1	10	34.5	1	3.4	29	100

\*Multiple response

Table 4. Uses of sunflower extract related to length of time as organic practitioner

Uses of sunflower extract	Length of time as organic practitioner									
	<2		2-4		5-7		8-10		Total	
	F	%	F	%	F	%	F	%	F	%
Fertilize the soil	3	10.3	6	20.7	5	17.2	2	6.9	16	55.2
Conditions and improves the soil	1	03.4	2	06.9	0	00.0	1	3.4	04	13.8
Increase the soil ability to hold water	0	00.0	1	03.4	0	00.0	0	0.0	01	03.4
For better aeration	1	03.4	0	00.0	0	00.0	0	0.0	01	05.3
Organic	0	00.0	1	03.4	0	00.0	0	0.0	01	03.4
TOTAL	5	17.2	10	34.5	5	17.2	3	10.3	23	79.3

\*Multiple response



Table 5 presents the uses of sunflower extract related to the uses of sunflower extract related to the farm size of respondents. Majority (72.4%) of the respondents used sunflower extract to fertilize the soil and 11(37.2%) of them respondents has less than 1000m<sup>2</sup> farm size. Respondents that has 1000 to 2799 m<sup>2</sup> follows with six (20.7%).

Table 6 presents the uses of sunflower extract related to the organic area of the respondents. Majority (51.7%) of the respondents said that they use sunflower extract to fertilize the soil and (20.7%) of them has 500 to 899 m<sup>2</sup>.

Table 7 presents the uses of sunflower extract related to the years of farming. Majority (72.4%) of the respondents said that they use sunflower extract to fertilize the soil, where the respondents are farming 25 years above. The sunflower extract most uses it to fertilize the soil among organic, transitional and conventional. Conditions the soil follows hence, base on the length of time as organic practitioner they uses it most to condition the soil. The highest (27.6%) respondents according to years of farming are between 25 to 30 years. The respondents that has 20 to 24 years farming follows with six (20.7%).

Overall, (4 to 7) result show that sunflower extract is used by most (72%) respondents to fertilize the soil more than any other use.

(Table 4 to 6) show that majority (55.2% and 51.7%,respectively) of the organic practitioner base on the length of time as practitioner and organic farm size, use sunflower extract to fertilize the soil. Results imply that farmers of green leafy vegetable use sunflower extract for fertilizer as they know its efficacy but are unclear on its efficacy as a bio-pest control.



Table 5. Uses of sunflower extract related to farm size

Uses of sunflower extract	Farm size(m <sup>2</sup> )												Total	
	<1000		1000-2799		2800-4599		4600-6399		6400-8199		8200+			
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Fertilize the soil	11	37.2	6	20.7	2	6.9	0	0.0	0	0.0	2	6.9	21	72.4
Conditions and improves the soil	03	10.3	0	00.0	1	3.4	0	0.0	1	3.4	0	0.0	05	17.2
Increase the soil ability to hold water	02	06.9	1	03.4	0	0.0	0	0.0	0	0.0	0	0.0	03	10.3
For better aeration	01	03.4	0	00.0	0	0.0	0	0.0	0	0.0	0	0.0	01	03.4
Increases leaves number	00	00.0	1	03.4	0	0.0	0	0.0	0	0.0	0	0.0	01	03.4
Cheap source	00	00.0	1	03.4	0	0.0	0	0.0	0	0.0	0	0.0	01	03.4
Organic	00	00.0	1	03.4	0	0.0	1	3.4	0	0.0	0	0.0	02	06.9
Tradition	00	00.0	0	00.0	1	3.4	0	0.0	0	0.0	0	0.0	01	03.4
<b>TOTAL</b>	<b>13</b>	<b>44.8</b>	<b>9</b>	<b>31.0</b>	<b>3</b>	<b>10.3</b>	<b>1</b>	<b>3.4</b>	<b>3.4</b>	<b>3.4</b>	<b>6.9</b>	<b>6.9</b>	<b>29</b>	<b>100</b>

\*Multiple response



Table 6. Uses of sunflower extract related to the organic area

Uses of sunflower extract	Organic area (m <sup>2</sup> )												Total	
	<500		500-899		900-1299		1300-1699		1700-2099		2100+			
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Fertilize the soil	4	13.8	6	20.7	1	3.4	2	6.9	1	3.4	1	3.4	15	51.7
Conditions and improves the soil	1	03.4	1	03.4	1	3.4	0	0.0	0	0.0	0	0.0	03	03.4
Increase the soil ability to hold water	1	03.4	0	00.0	0	0.0	0	0.0	0	0.0	0	0.0	01	03.4
For better aeration	0	00.0	1	03.4	0	0.0	0	0.0	0	0.0	0	0.0	01	03.4
Organic	0	00.0	1	03.4	0	0.0	0	0.0	0	0.0	0	0.0	01	03.4
<b>TOTAL</b>	<b>5</b>	<b>17.2</b>	<b>8</b>	<b>27.6</b>	<b>1</b>	<b>3.4</b>	<b>2</b>	<b>6.9</b>	<b>1</b>	<b>3.4</b>	<b>1</b>	<b>3.4</b>	<b>18</b>	<b>62.1</b>

\*Multiple response



Table 7. Uses of sunflower extract related to years of farming

USES OF SUNFLOWER EXTRACT	YEARS OF FARMING															
	25-30		20-24		15-19		10-14		5-9		<5		30+		TOTAL	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Fertilize the soil	7	24.1	2	6.9	3	10.3	0	0.0	2	6.9	1	3.4	6	20.7	21	72.4
Conditions and improves the soil	3	10.3	0	0.0	1	3.4	1	3.4	0	0.0	0	0.0	0	0.0	03	10.3
Increase the soil ability to hold water	0	00.0	2	6.9	0	00.0	1	3.4	0	0.0	0	0.0	1	03.4	01	03.4
For better aeration	0	00.0	0	0.0	0	00.0	0	0.0	0	0.0	0	0.0	0	00.0	01	03.4
Increases leaves number	0	00.0	1	3.4	0	00.0	0	0.0	0	0.0	0	0.0	0	00.0	01	03.4
Cheap source	0	00.0	1	3.4	0	00.0	0	0.0	0	0.0	0	0.0	0	00.0	02	06.9
Organic	0	00.0	1	3.4	1	03.4	0	0.0	0	0.0	0	0.0	0	00.0	01	03.4
Tradition	0	00.0	1	3.4	0	00.0	0	0.0	0	0.0	0	0.0	0	00.0	01	03.4
<b>TOTAL</b>	<b>8</b>	<b>27.6</b>	<b>6</b>	<b>20.7</b>	<b>4</b>	<b>13.8</b>	<b>2</b>	<b>6.9</b>	<b>2</b>	<b>6.9</b>	<b>1</b>	<b>3.4</b>	<b>6</b>	<b>20.7</b>	<b>29</b>	<b>100</b>

\*Multiple response



### Effect of Sunflower Extract as Botanical Pesticide

Table 8 presents the effects of sunflower extract as botanical pesticide related to the organic area.

The eight (27.6%) respondents are the respondents that have 500 to 899m<sup>2</sup> organic area. The respondents that has less than 500 m<sup>2</sup> organic area follows with five (17.2%) respondents.

The (34.5%) of the respondents said that there is no effect of sunflower extract as botanical pesticide and 4(13.8%) of them has 500 to 899m<sup>2</sup>. Only 6 respondent said that the it controls and kills the pest.

Table 9 presents the type of farmer and the effect of sunflower extract as botanical pesticide. Majority (62.1%) of the respondents are organic practitioner. Transitional farmer follows with (34.5%) respondents. The (41.4%) respondents said that it kills and controls.

Most (34.2%) respondents that practice organic said that the sunflower extract kills controls and incapacitate the pest.

This imply that the respondents that tells that the sunflower extract has no effect as botanical pesticide is higher than the respondents that tells that sunflower extract is effective as botanical pesticide.

Table 10 presents what is the effect of sunflower extract as Botanical pesticide related to years of farming. The highest (27.6%) respondents are the respondents that have 25 to 30 years farming and 6 (20.7%) of them said that it has no effect as botanical pesticide. The farmers that has 20 to 24 years farming follows with six (20.7%) respondents.





The highest (41.4%) percentage of respondents said that sunflower extract has no effect as botanical pesticide. The respondent that tell it kills and incapacitate follows with 6 (20.7%) respondent.

There are more respondents who claim that sunflower extract has no effect as botanical pesticide than those who say it does have an effect.

Table 11 presents the effect of sunflower extract as botanical pesticide related to length of time as organic practitioner.

Most (42.1%) respondents have two to four years practicing organic. The respondents practicing organic for five to seven years follows with three (26.3%) respondents. The (57.9%) of the respondents said that the sunflower extract has no effect as sunflower extract. The (17.2%) respondents from the 57.9% respondents answered that sunflower extract has no effect as botanical pesticide hence, six (20.7%) respondents answered that sunflower extract kills and control pest.



Table 8. Effects of sunflower extract as botanical pesticide related to organic area

EFFECT OF SUNFLOWER EXTRACT	Organic area (m <sup>2</sup> )												TOTAL	
	<500		500-899		900-1299		1300-1699		1700-2099		2100+			
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Kills the pest	1	03.4	1	03.4	0	0.0	0	0.0	1	3.4	0	0.0	03	10.3
Controls the pest	2	06.9	1	03.4	0	0.0	0	0.0	0	0.0	0	0.0	03	10.3
Makes the pest dizzy	0	00.0	1	03.4	0	0.0	0	0.0	0	0.0	0	0.0	01	03.4
None	2	06.9	4	13.8	1	3.4	2	6.9	0	0.0	1	3.4	10	34.5
Scared	0	00.0	1	03.4	0	0.0	0	0.0	0	0.0	0	0.0	01	03.4
<b>TOTAL</b>	<b>5</b>	<b>17.2</b>	<b>8</b>	<b>27.6</b>	<b>1</b>	<b>3.4</b>	<b>2</b>	<b>6.9</b>	<b>1</b>	<b>3.4</b>	<b>1</b>	<b>3.4</b>	<b>18</b>	<b>62.1</b>

\*Multiple response



Table 9. Effects of sunflower extract as botanical pesticide related to the type of farmer

Effect of sunflower extract	Type of farmer						Total	
	Organic		Transitional		Conventional			
	F	%	F	%	F	%	F	%
Kills the pest	03	10.3	3	10.3	0	0	6	20.7
Controls the pest	03	10.3	2	10.3	0	0	6	20.7
Makes the pest dizzy	01	03.4	4	13.8	0	0	5	17.2
All of the above	10	34.2	2	06.9	0	0	12	41.4
Do not know	00	0	0	0	1	3.4	1	03.4
Scared	01	03.4	0	0	0	0	1	03.4
<b>TOTAL</b>	<b>18</b>	<b>62.1</b>	<b>10</b>	<b>34.5</b>	<b>1</b>	<b>3.4</b>	<b>29</b>	<b>100</b>

\*Multiple response



Table 10. Effects of sunflower extract as botanical pesticide related to the years of farming

EFFECT OF SUNFLOWER EXTRACT	YEARS OF FARMING														TOTAL	
	25-30		20-24		15-19		10-14		5-9		<5		30+			
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Kills the pest	0	00.0	1	3.4	2	06.9	0	0.0	0	0.0	1	3.4	2	6.9	06	20.7
Controls the pest	1	03.4	1	3.4	3	10.3	0	0.0	0	0.0	0	0.0	1	3.4	06	20.7
Makes the pest dizzy	0	00.0	2	6.9	0	00.0	1	3.4	0	0.0	0	0.0	2	6.9	5	17.2
none	6	20.7	2	6.9	0	00.0	1	3.4	2	6.9	0	0.0	1	3.4	12	41.4
Do not know	0	00.0	1	3.4	0	00.0	0	0.0	0	0.0	0	0.0	0	0.0	01	03.4
Scared	1	03.4	0	0.0	0	00.0	0	0.0	0	0.0	0	0.0	0	0.0	01	03.4
<b>TOTAL</b>	<b>8</b>	<b>27.6</b>	<b>6</b>	<b>20.7</b>	<b>4</b>	<b>13.8</b>	<b>2</b>	<b>6.9</b>	<b>2</b>	<b>6.9</b>	<b>1</b>	<b>3.4</b>	<b>6</b>	<b>20.7</b>	<b>29</b>	<b>100</b>

\*Multiple response



Table 11. Effects of sunflower extract as botanical pesticide related to the length of time as organic practitioner

LENGTH OF TIME AS ORGANIC PRACTITIONER	EFFECT AS BOTANICAL PESTICIDE										TOTAL	
	KILLS THE PEST		CONTROLS THE PEST		MAKES THE PEST DIZZY		NONE		SCARED			
	F	%	F	%	F	%	F	%	F	%	F	%
<2	1	3.4	0	0.0	1	3.4	1	03.4	0	0	3	15.8
2-4	2	6.9	2	6.9	0	0.0	4	13.8	0	0	8	42.1
5-7	0	0.0	0	0.0	0	0.0	5	17.2	0	0	5	26.3
8-10	0	0.0	1	3.4	0	0.0	1	5.3	1	5.3	3	15.8
TOTAL	3	10.3	3	10.3	1	3.4	11	57.9	1	5.3	19	65.5

\*Multiple response



Table 12 presents the effect of sunflower extract as botanical pesticide related to the farm size of the respondents.

Most (44.8%) respondents have less than 1000m<sup>2</sup> and 10.3% of them said that sunflower extract kills the pest. The respondents that have 1000 to 2799m<sup>2</sup> farm follows with 9(31%) respondents. Most (41.4%) of the respondents said that sunflower extract has no effect botanical pesticide.

The table's 8 to 12 imply that the most respondents said that sunflower extract has no effect as botanical pesticide.

Table 12. Effects of sunflower extract as botanical pesticide related to the farm

FARM SIZE(m <sup>2</sup> )	EFFECT AS BOTANICAL PESTICIDE												TOTAL	
	KILLS THE PEST		CONTRO LS THE PEST		MAKES THE PEST DIZZY		NONE		DO NOT KNO W		SCARE D			
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
<1000	3	10.3	4	13.8	2	06.9	3	10.3	1	3.4	1	3.4	14	44.8
1000-2799	2	06.9	1	3.4	3	10.3	4	13.8	0	0.0	0	0.0	09	31.0
2800-4599	0	00.0	0	0.0	0	00.0	3	10.3	0	0.0	0	0.0	03	10.3
4600-6399	0	00.0	0	0.0	0	00.0	0	00.0	0	0.0	0	0.0	00	00.0
6400-8199	0	00.0	0	0.0	0	00.0	1	03.4	0	0.0	0	0.0	01	03.4
8200+	1	03.4	0	0.0	0	00.0	1	03.4	0	0.0	0	0.0	02	06.9
<b>TOTAL</b>	<b>6</b>	<b>20.7</b>	<b>6</b>	<b>17.2</b>	<b>5</b>	<b>17.2</b>	<b>12</b>	<b>41.4</b>	<b>1</b>	<b>3.4</b>	<b>1</b>	<b>3.4</b>	<b>29</b>	<b>100</b>

\*Multiple response



Distribution of the User Respondent's  
According to Identified Pests

Table 13 presents the kinds of pests that sunflower extract controls related to different demographic profile. The six (20.7%) respondents has two to four years practicing organic practitioner and 3(10.3%) of them said that it kills/control/ and incapacitate the caterpillar. The five (17.2%) said that it kill/ control/ and incapacitate the caterpillar pest and three (10.3%) of them practice organic for two to four years. Only 2(6.9%) respondents have eight to 10 years practicing organic said that the sunflower extract kills/ control and incapacitate the beetles.

The relationship of pests that sunflower extract controls related to farm size. The (31 %) respondents has less than 1000 m<sup>2</sup> farm area and 17.2 % of them said that sunflower extract kills/control and incapacitate the pest caterpillar. The (27.6 %) respondents of user respondents said that it kills/control and incapacitate the caterpillar and other insects and five (17.2%) of them has less than 1000 m<sup>2</sup> farm. The five (17.2%) of the respondents said that sunflower extract kills/ control and incapacitate the flies pest and two (6.9%) of them are respondents has 1000 to 2799 m<sup>2</sup> farm.

The relationship of pests that sunflower extracts controls and the organic area. The (17.2%) respondents that has 500 to 899m<sup>2</sup> organic area said that sunflower extract kills/control/ make it dizzy the caterpillar pest and 3(10.3%) of them has 500 to 899 m<sup>2</sup> organic area. Only 2(6.9%) of the respondents said that sunflower extract kills/ control and incapacitate the beetles.

The relationships of the pests that sunflower extract controls and the years of farming. The 8(27.6%) of the respondents said that it kills/ control and incapacitate the caterpillar and 3(10.3%) of them has less than five years farming. The respondents that



has 25 to 30 years farming follows with (6.9%). The five (17.9%) of the respondents said that it kills/ control and incapacitate the flies and two (6.9%) of them has 25 to 30 years of farming. The relationship of the pests that sunflower extract controls and to the length of time as organic practitioner. The (31%) respondents practice organic and 17.2 % of them said that it kills/control and incapacitate is the caterpillar pest. The (27.6%) respondents said that it kills/control/make it dizzy the caterpillar. On the transitional farmers they are well distributed on the kinds of pests that sunflower extract kills/ control and incapacitate is the caterpillar, sap to feeding insect and flies.

Table 13. Distribution of respondent's according to kinds of pests it control

	PEST DOES IT CONTROL/KILL/MAKE IT DIZZY								TOTAL	
	CATERPILLAR		BEETLES		SAP-FEEDING INSECT PEST		FLIES			
	F	%	F	%	F	%	F	%	F	%
Length of time as organic practitioner										
<2	2	06.9	0	0.0	0	0.0	0	0.0	2	06.9
2-4	3	10.3	0	0.0	1	3.4	2	6.9	6	20.7
8-10	0	00.0	2	6.9	0	0.0	0	0.0	2	06.9
TOTAL	5	17.2	2	6.9	1	3.4	2	6.9	10	34.5
Farm size(m <sup>2</sup> )										
<1000	5	17.2	3	10.3	2	6.9	1	3.4	11	37.9
1000-2799	2	06.9	0	00.0	2	6.9	2	6.9	05	20.7
2800-4599	0	00.0	0	00.0	0	0.0	1	3.4	01	03.4
4600-6399	0	00.0	0	00.0	0	0.0	1	3.4	01	03.4
8200+	1	03.4	0	00.0	0	0.0	0	0.0	01	03.4
TOTAL	8	27.6	3	10.3	4	13.8	5	17.2	17	58.6





Table 13 continued...

PARTICULARS	PEST DOES IT CONTROL/KILL AND INCAPACITATE									
	CATER-PILLAR		BEETLES		SAP-FEEDING		FLIES		TOTAL	
	F	%	F	%	F	%	F	%	F	%
Years of farming										
25-30	0	0.0	2	6.9	1	3.4	2	6.9	5	17.2
20-24	2	6.9	0	0.0	1	3.4	1	3.4	4	13.8
15-19	2	6.9	1	3.4	0	0.0	1	3.4	4	13.8
10-14	1	3.4	0	0.0	0	0.0	0	0.0	1	03.4
5-9	0	0.0	0	0.0	0	0.0	1	3.4	1	03.7
<5	3	10.3	0	0.0	2	6.9	0	0.0	5	17.2
TOTAL	8	27.6	3	10.3	4	13.8	5	17.2	20	69
Type of farmer										
Organic	5	17.2	2	6.9	1	03.4	2	06.9	10	34.5
Transitional	3	10.3	1	3.4	3	10.3	3	10.3	10	34.5
TOTAL	8	27.6	3	10.3	4	13.8	5	17.2	20	69

\*Multiple response

#### Volume of Sunflower Extract they Apply per Week for every 250m<sup>2</sup>

Table 14 presents how much volume of sunflower extract that the respondents apply per week for every 250 m<sup>2</sup> related to what type of farmer.

Majority (62.1%) of the respondents who use sunflower extract are organic practitioner and only six (20.7%) of them said that they use one drum or 160 liter for every 250 m<sup>2</sup> per week. The 4(13.8%) respondents from the transitional farmers use 160L of sunflower extract per week. The 10 (34.5%) respondents are transitional and four (13.8%) of them uses 160 liters of sunflower extract.



This implies that the (20.7%) organic farmers use more sunflower extract than other type of farmer.

Table 14. Volume of sunflower they per week in 250m<sup>2</sup> area related to the user type of farmer

VOLUME OF SUNFLOWER EXTRACT THEY APPLY PER WEEK IN 250 m <sup>2</sup>	TYPE OF FARMER						TOTAL	
	ORGANIC		TRANSITIONAL		CONVENTIONAL		F	%
	F	%	F	%	F	%		
one liter	2	06.9	0	00.0	0	0	03	10.3
2L	0	00.0	0	00.0	1	3.4	01	03.4
4L	1	03.4	3	10.3	0	0	04	13.8
5L	4	13.8	0	00.0	0	0	04	13.8
1-drum	6	20.7	4	13.8	0	0	10	34.5
80L	1	03.4	2	06.9	0	0	03	10.3
It depends	3	10.3	1	03.4	0	0	04	13.8
Total	18	62.1	10	34.5	1	3.4	29	100

X<sup>2</sup>=0

\*-significant



Table 15 presents the volume of sunflower extract they apply per week for every 250m<sup>2</sup> related to the years of farming.

The 10(34.5%) respondents said that they use 160 liter of sunflower extract per week for every 250 m<sup>2</sup> and four (13.8%) of them that has 25 to 30 years farming said that they use 160L sunflower extract. The three (10.3%) of the respondents said that they divided into three different years of farming.

Table 16 presents the volume of sunflower extract they apply per week related to the farm size.

The nine (31%) of the respondents has 1000 to 2799 m<sup>2</sup> farm and four (13.8%) of them will use one drum of sunflower extract per week for every 250 m<sup>2</sup>. The 13(44.8%) respondents that has less than 1000 m<sup>2</sup> farm and 4(13.8%) of them use 160 liter of sunflower extract per week for every 250 m<sup>2</sup> farm. For the respondents that has the widest farm said that he uses four liter of sunflower extract per week for every 250 m<sup>2</sup>.

Overall most of the respondents use one drum or 160 liter per week for every 250 m<sup>2</sup> hence, the bigger number of respondents were distributed and said that they uses lesser volume of sunflower extract per week for every 250 m<sup>2</sup>.

Table 17 presents the volume of sunflower extract they apply per week for every 250m<sup>2</sup> related to the length of time as organic practitioner.

The eight (27.6%) of the respondents have practiced organic for two to four years and three (10.3%) of them use four liter of sunflower extract per week for every 250 m<sup>2</sup>. The five (17.2%) have five to seven years practicing organic and two (6.9%) of them said that it depends on the price of sunflower extract on how much volume they will use.



Table 15. Volume of sunflower extract they apply per week in 250m<sup>2</sup> related to the user years of farming

VOLUME OF SUNFLOWER EXTRACT THEY APPLY PER WEEK IN 250m <sup>2</sup>	YEARS OF FARMING														TOTAL	
	25-30		20-24		15-19		10-14		5-9		<5		30+			
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
one liter	0	00.0	1	3.4	1	3.4	0	0.0	0	0.0	0	0.0	1	3.4	03	10.3
2L	0	00.0	1	3.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	01	03.4
4L	0	00.0	1	3.4	2	6.9	1	3.4	0	0.0	0	0.0	0	0.0	04	13.8
5L	1	03.4	1	3.4	1	3.4	0	0.0	0	0.0	0	0.0	1	3.4	04	13.8
1-drum	4	13.8	2	6.9	0	0.0	1	3.4	1	3.4	0	0.0	2	6.9	10	34.5
80L	1	03.4	0	0.0	0	0.0	0	0.0	0	0.0	1	3.4	1	3.4	03	10.3
It depends	2	06.9	0	0.0	0	0.0	0	0.0	1	3.4	0	0.0	1	3.4	04	13.8
<b>TOTAL</b>	<b>8</b>	<b>27.6</b>	<b>6</b>	<b>20.7</b>	<b>4</b>	<b>13.8</b>	<b>2</b>	<b>6.9</b>	<b>2</b>	<b>6.9</b>	<b>1</b>	<b>3.4</b>	<b>6</b>	<b>20.7</b>	<b>29</b>	<b>100</b>

X<sup>2</sup>=.650

\*-not significant



Table 16. Volume of sunflower extract they apply per week in 250m<sup>2</sup> related to the user farm size

FARM SIZE(m <sup>2</sup> )	VOLUME OF SUNFLOWER EXTRACT THEY APPLY PER WEEK IN 250 m <sup>2</sup>															
	one liter		2L		4L		5L		1drum		80L		IT DEPENDS		TOTAL	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
<1000	3	10.3	1	3.4	2	6.9	1	3.4	4	13.8	0	0.0	2	6.9	13	44.8
1000-2799	0	00.0	0	0	0	0.0	1	3.4	4	13.8	2	6.9	09	0	9	31.0
2800-4599	0	00.0	0	0	1	0.0	0	0.0	1	03.4	1	3.4	00	0	3	10.3
4600-6399	0	00.0	1	0	1	0.0	0	0.0	0	00.0	0	0.0	00	0	1	03.4
6400-8199	0	00.0	1	0	0	3.4	1	3.4	0	00.0	0	0.0	00	0	1	03.4
8200+	0	00.0	0	0	0	3.4	1	3.4	1	03.4	0	0.0	00	0	2	06.9
TOTAL	3	10.3	1	3.4	4	13.8	4	13.8	10	34.5	3	10.3	2	6.9	29	100

X<sup>2</sup>=.561

\*-not significant



Table 17. Volume of sunflower extract they apply per week in 250m<sup>2</sup> related to the user length of time as organic practitioner

LENGTH OF TIME AS ORGANIC PRACTITIONER	VOLUME OF SUNFLOWER EXTRACT THEY APPLY PER WEEK IN 250m <sup>2</sup>													
	ONE LITER		4L		5L		1-DRUM		80L		IT DEPENDS		TOTAL	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
<2	1	3.4	0	0.0	1	3.4	1	3.4	0	0	0	0.0	3	10.3
2-4	1	3.4	0	0.0	3	10.3	0	0.0	2	6.9	5.3	5.3	8	27.6
5-7	0	0.0	0	0.0	0	0.0	3	10.3	0	0.0	2.0	6.9	5	17.2
8-10	1	3.4	1	3.4	0	0.0	1	5.3	0	0.0	0.0	0.0	3	10.3
TOTAL	3	10.3	1	3.4	4	13.8	5	17.2	2	6.9	4	13.8	19	65.5

$X^2=.412$

\*-not significant

Table 18 presents the volume of sunflower extract they apply per week in every 250 m<sup>2</sup>. The eight (27.6%) of the respondents has 500 to 899 m<sup>2</sup> organic area and three (10.3%) of them use 160 liters of sunflower extract. Five liters follows with two (6.9%) respondents. The five (17.2%) of the respondents has less than 500m<sup>2</sup> organic area and two (6.9%) of them said that they use one liter of sunflower extract per week for every 250 m<sup>2</sup>.



Table 18. Volume of sunflower extract they apply per week in 250m<sup>2</sup> related to the user organic area

ORGANIC AREA(m <sup>2</sup> )	VOLUME OF SUNFLOWER EXTRACT THEY APPLY PER WEEK IN 250 m <sup>2</sup>												TOTAL	
	ONE LITER		4L		5L		1-DRUM		80 L		IT DEPENDS			
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
<500	2	6.9	0	0	1	3.4	1	3.4	0	0	1	3.4	5	17.2
500-899	1	3.4	1	3.4	2	6.9	3	10.3	1	3.4	0	0.0	8	27.6
900-1299	0	0.0	0	0.0	0	0.0	1	3.4	0	0.0	0	0.0	1	3.4
1300-1699	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	6.9	2	6.9
1700-2099	0	0.0	0	0.0	1	3.4	0	0.0	0	0.0	0	0.0	1	3.4
2100+	0	0.0	0	0.0	0	0.0	1	3.4	0	0.0	0	0.0	1	3.4
<b>TOTAL</b>	<b>3</b>	<b>3.4</b>	<b>1</b>	<b>3.4</b>	<b>4</b>	<b>13.8</b>	<b>6</b>	<b>20.7</b>	<b>1</b>	<b>3.4</b>	<b>3</b>	<b>10.3</b>	<b>18</b>	<b>62.1</b>

X<sup>2</sup>=.585

\*-not significant

Table 19 presents how much volume they will use related to the length of time as organic practitioner. The three (8.3%) of the respondents do not know how much volume they will use and only 1(2.8%) respondents said that it depends on the price of sunflower extract.

Table 20 presents the volume that the non user will use related to their type as a farmer. Majority (52.8%) of the respondents do not know how much volume of sunflower extract they will use and 11(30.6%) of them are transitional. The 2(5.6%) respondents said that they will use two liters and only 1(2.8%) will use five hundred liter of sunflower extract.



Table 19. Volume of sunflower extract related to the Non-user length of time as organic practitioner

LENGTH OF TIME AS ORGANIC PRACTITIONER	VOLUME THE NON-USER WILL USE				TOTAL	
	DON'T KNOW		IT DEPENDS ON THE PRICE			
	F	%	F	%	F	%
<2	1	2.8	0	0.0	1	2.8
8-10	1	2.8	1	2.8	2	5.6
11+	1	2.8	0	0.0	1	2.8
TOTAL	3	8.3	1	2.8	4	100

$X^2=.513$   
\*-not significant

Table 20. Volume of sunflower extract related to the Non-user type of farmer

TYPE OF FARMER	VOLUME THAT THE NON-USER WILL USE								TOTAL	
	DON'T KNOW		IT DEPENDS ON THE PRICE		2L		500ML			
	F	%	F	%	F	%	F	%	F	%
Organic	03	08.3	1	2.8	0	0.0	0	0	04	11.1
Transitional	11.	30.6	1	2.8	2	5.6	1	2.8	15	41.7
Conventional	05	13.9	0	0.0	0	0.0	0	0	05	13.9
Total	19	52.8	2	5.6	2	5.6	1	2.8	24	66.7

$X^2=.684$   
\*-not significant





Table 21 presents the volume of sunflower extract that the respondents will use related to the farm size. Majority (52.8%) of the respondents said that they do not know how much volume of sunflower extract they will use and 13 (36.1%) of them has less than 1000m<sup>2</sup> farm. Fewer respondents know how much volume of sunflower extract they will use.

Table 22 presents the volume of sunflower extract they will use related to their organic area. The 3(8.3%) of the respondents do no know how much volume of sunflower extract they will use and 2(5.6%) of them has less than 500m<sup>2</sup> organic area.

Table 21. Volume of sunflower extract related to the Non-user farm size

FARM SIZE(m <sup>2</sup> )	VOLUME THAT THE RESPONDENTS WILL USE OF SUNFLOWER EXTRACT									
	DON'T KNOW		IT DEPENDS ON THE PRICE		2L		500ML		TOTAL	
	F	%	F	%	F	%	F	%	F	%
<1000	13	36.1	1	2.8	2	5.6	1	2.8	17	47.2
1000-2799	2	05.6	0	0.0	0	0.0	0	0.0	02	05.6
2800-4599	3	10.3	0	0.0	0	0.0	0	0.0	03	10.3
4600-6399	1	02.8	0	0.0	0	0.0	0	0.0	01	02.8
8200+	0	00.0	1	2.8	0	0.0	0	0.0	01	02.8
<b>TOTAL</b>	<b>19</b>	<b>52.8</b>	<b>2</b>	<b>5.6</b>	<b>2</b>	<b>5.6</b>	<b>1</b>	<b>2.8</b>	<b>24</b>	<b>66.7</b>

X<sup>2</sup>=.363

\*-not significant



Table 22. Volume of sunflower extract related to the Non-user organic area

ORGANIC AREA (m <sup>2</sup> )	VOLUME OF THE SUNFLOWER EXTRACT THEY WILL USE					
	DO NOT KNOW		IT DEPENDS ON THE PRICE		TOTAL	
	F	%	F	%	F	%
<500	2	5.6	1	2.8	3	8.3
500-899	1	2.8	0	0.0	1	2.8
TOTAL	3	8.3	1	2.8	4	11.1

 $X^2 = .750$ 

\*-not significant

#### Market Potential of Sunflower Extract

Table 23 can not be correlated because there is no fixed or standard volume of utilization of sunflower extract of the respondents. This means that we can not determine the exact volume they are using and because of this we can not determine the market potential of sunflower extract.



Table 23. Regression of the Volume of sunflower extract related to the farm size

FARMER	FARM SIZE (m <sup>2</sup> )	VOLUME USED (L)
1	1000	5
2	500	1
3	6000	4
4	10000	160
5	4000	160
6	2000	160
7	500	2
8	2500	80
9	350	1
10	500	4
11	500	160
12	500	1
13	3000	80
14	250	160
15	500	4
16	1000	160
17	440	160
19	2600	160
21	10000	5
22	700	5
23	8000	5
24	700	160
26	1000	160
28	1000	80
29	4000	4
Total	61540	1881
Average	241.6	75.24

Regression: equation generated

79.47399	-0.00172	D=70.47-0.002X	Where: D= demand
19.9035	0.00521	D=19.9-0.00521X	X= farm size
76.10441	0.004717	D=76.1-0.004717X	
23	0.108994	D=23-0.108994X	
133213.3	631.2789	D=133213.3-631.2789X	



Intensions of the Respondent to  
Increase Utilization of Sunflower  
Extract

Table 24 presents the respondents intentions to increase utilization of sunflower extract related to different demographic areas.

The relationship of intentions of the respondents to increase utilization of sunflower extract to the years of farming. The eight (27.2%) of the respondents had 25 to 30 years of farming and half (13.8%) of it said that they will increase sunflower extract and the other half will not. The six (20.7%) of the respondents had 20 to 24 years of farming and five (17.2%) of them said they will increase utilization of sunflower extract. Majority (72.4%) of the respondents said that they will increase utilization of sunflower extract and eight (27.6%) of the respondents said they will not increase.

The relationship of intention of the respondents to increase utilization of sunflower extract as to the length of time as organic practitioner. Majority (65.5%) of the respondents said that they will not increase utilization and 12 (44.4%) of the respondents said that they will increase utilization of sunflower extract. The five (17.2%) of the respondents that has eight to 10 years practicing organic and three (10.3%) of them said that they will not increase utilization of sunflower extract. The eight (27.6%) of the respondents has two to four years practicing organic said that they will not increase utilization of sunflower extract.

The relationship of intentions of the respondents and to the increase utilization of sunflower extract to farm size. The (24.1%) respondents that has 1000 to 2799 m<sup>2</sup> said that they will increase utilization of sunflower extract. Majority of the respondents said



(72.4%) said they will increase utilization of sunflower extract while (27.2%) said they will not.

The relationship of intentions of the respondents and to the increase utilization of sunflower extract to the respondent's organic area. The eight (27.8%) has 500 to 899 m<sup>2</sup> organic area and five (17.2%) of them said that they will increase utilization of sunflower extract. The five (17.2%) of the respondents that has less than 500 m<sup>2</sup> organic area and three (10.3%) of then said that they will increase utilization of sunflower extract. The 11 (37.9%) of the respondents said that they will increase utilization of sunflower extract.

The relationship of intensions of the respondents to increase utilization of sunflower extract to the type farmer. The 18 (62.1%) of the respondents is organic practitioner and 11 (37.9%) of them said that they will increase their utilization of sunflower extract. The 10 (34.5%) of the respondents are transitional farmers and nine (31%) of them said they will increase utilization.

Table 24 implies that the respondents that are organic and transitional have intensions to increase utilization of sunflower extract. They are the farmers that has longer period of farming and where the organic practitioner has two to seven years practicing organic which is the time when consumers of leafy vegetables become health conscious. The farmers that have small area will increase utilization of sunflower extract and the respondents that have wider farms have smaller possibility to increase utilization of sunflower extract.



Table 24. Intention of the respondent to increase utilization of sunflower extract

PARTICULARS	INTENTIONS OF THE FARMER TO INCREASE UTILIZATION OF SUNFLOWER EXTRACT				TOTAL	
	WILL INCREASE		INTENSION TO INCREASE		F	%
	F	%	F	%		
<b>Years of farming</b>						
25-30	4	13.8	4	13.8	8	27.2
20-24	5	17.2	1	03.4	6	20.7
15-19	4	13.8	0	00.0	4	13.8
10-14	1	03.4	1	03.4	2	06.9
5-9	1	03.4	1	03.4	2	06.9
<5	1	03.4	0	00.0	1	03.4
30+	5	17.2	1	03.4	6	20.7
<b>TOTAL</b>	<b>21</b>	<b>72.4</b>	<b>8</b>	<b>27.6</b>	<b>29</b>	<b>100</b>
						X <sup>2</sup> =.465*-not significant
<b>Length of time as organic practitioner</b>						
<2	3	10.3	0	0.0	3	10.3
2-4	5	17.2	3	10.3	8	27.6
5-7	2	6.9	5	17.2	7	24.1
8-10	2	6.9	3	10.3	5	17.2
<b>TOTAL</b>	<b>12</b>	<b>41.4</b>	<b>19</b>	<b>65.5</b>	<b>19</b>	<b>65.5</b>
						X <sup>2</sup> =.404 *-not significant
<b>Farm size (m<sup>2</sup>)</b>						
<1000	7	24.1	4	13.8	11	37.9
1000-2799	7	24.1	2	06.9	09	31.0
2800-4599	2	06.9	1	03.4	03	10.3
4600-6399	1	03.4	0	00.0	01	03.4
6400-8199	1	03.4	0	00.0	01	03.4
8200+	1	03.4	1	03.4	02	06.9
<b>TOTAL</b>	<b>21</b>	<b>72.4</b>	<b>8</b>	<b>27.6</b>	<b>29</b>	<b>100</b>
						X <sup>2</sup> =.257 *-not significant



Table 24 continued...

PARTICULARS	INTENTIONS OF THE FARMER TO INCREASE UTILIZATION OF SUNFLOWER EXTRACT					
	WILL INCREASE		INTENSION TO INCREASE		TOTAL	
	F	%	F	%	F	%
Organic area(m <sup>2</sup> )						
<500	3	10.3	2	06.9	5	17.2
500-899	5	17.2	3	10.3	8	27.6
900-1299	0	00.0	1	03.4	1	03.4
1300-1699	1	03.4	1	03.4	2	06.9
1700-2099	1	03.4	0	00.0	1	03.4
2100+	1	03.4	0	00.0	1	03.4
TOTAL	11	37.9	7	24.1	18	62.1
						X <sup>2</sup> =.707 *-not significant
TYPE OF FARMER						
Organic	04	11.1	3	08.3	07	19.4
Transitional	15	41.7	5	13.9	20	55.6
Conventional	05	13.9	4	11.1	09	25.0
TOTAL	24	66.7	12	33.3	36	100
						X <sup>2</sup> =.257 *-not significant

#### Respondent's Reasons of Increase Utilization of Sunflower Extract

Table 25 presents why the respondents will increase utilization of sunflower extract related to the respondents length of time as organic practitioner. Most the respondents that practice organic practitioner for less than two years said that they will increase utilization of sunflower extract to (6.9%) conditions the soil better. The 11 (37.9%) of the respondents is organic and two (6.9%) each of the reasons.



Table 25. Respondent's reasons of increase in sunflower extract utilization related user type of farmer

REASONS THEY INCREASE IN SUNFLOWER EXTRACT UTILIZATION	TYPE OF FARMER						TOTAL	
	ORGANIC		TRANSITIONAL		CONVENTIONAL		F	%
	F	%	F	%	F	%		
Expansion of the area	2	6.9	2	6.9	0	0	4	13.8
Maintain the nitrogen of the soil	2	6.9	1	3.4	0	0	3	10.3
Soil nutrient depletion	1	3.4	0	0.0	0	0	1	03.4
Defense on the needs of the plant	0	0.0	1	3.4	0	0	1	03.4
Good effect on plant	0	0.0	0	0.0	1	3.4	1	03.4
Conditions the soil better	1	3.4	1	3.4	0	0	2	06.9
There is a source of sunflower to be extracted	1	3.4	2	6.9	0	0	3	10.3
Increase fertility	2	6.9	0	0.0	0	0	2	06.9
Don't know	2	6.9	2	6.9	0	0	4	13.8
To lessen cost	0	0.0	1	3.4	0	0	1	03.4
<b>TOTAL</b>	<b>11</b>	<b>37.9</b>	<b>9</b>	<b>31</b>	<b>1</b>	<b>3.4</b>	<b>21</b>	<b>72.4</b>

\*Multiple response

This reason are expansion of the area, maintain the nitrogen of the soil, soil nutrient depletion, increase fertility and they don't know why will increase utilization of sunflower extract. There are no dominant answer means there varied uses to varied users.

Table 26 presents the reason why the respondents will increase utilization of sunflower extract related to the farm size of the respondents. Most of the respondents said that the reason why they will increase utilization of sunflower extract because it has a good effect on plant and they will (13.8%) expand their area.





Table 27 presents the reason why the respondents will increase utilization sunflower extract related to their organic area. Most of the respondents that have less than 500 m<sup>2</sup> said that they increase utilization of sunflower because they will (3.4%) expand their area, (3.4%) if they will have source of sunflower to be extracted. Most of the respondents said that they will increase utilization because they will expand their area, maintain the nitrogen of the soil and conditions the soil better.

Table 28 presents the reasons why they increase sunflower extract related to farm size. The 10 (34.5%) of the respondents has less than 1000 m<sup>2</sup> and two (6.9%) each of this reasons, where this reasons are to maintain the nitrogen of the soil and conditions the soil. The seven (24.1%) of the respondents has 1000 to 2799 m<sup>2</sup> and three (10.3%) of them said that they do not know why they increase utilization of sunflower extract.

Table 29 presents the reason why they increase sunflower extract related to the organic area. The five (17.2%) of the respondents has 500 to 899 m<sup>2</sup> and one (3.4%) each to these following reasons.



Table 26. Respondent's reasons of increase in sunflower extract utilization related to the years of farming

REASONS THEY INCREASE IN SUNFLOWER EXTRACT UTILIZATION	YEARS OF FARMING														TOTAL	
	25 - 30		20 -24		15 -19		10 -14		5 - 9		<5		30+			
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Expansion of the area	1	3.4	1	3.4	2	6.9	0	0.0	0	0.0	0	0.0	0	0.0	4	13.8
Maintain the nitrogen of the soil	1	3.4	1	3.4	0	0.0	0	0.0	0	0.0	0	0.0	1	3.4	3	10.3
Soil nutrient depletion	0	0.0	1	3.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	03.4
Defense on the needs of the plant	0	0.0	0	0.0	1	3.4	0	0.0	0	0.0	0	0.0	0	0.0	1	03.4
Good effect on plant	0	0.0	1	3.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	03.4
Conditions the soil better	1	3.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	3.4	2	06.9
There is a source of sunflower to be extracted	1	3.4	0	0.0	0	0.0	1	3.4	0	0.0	1	3.4	0	0.0	3	10.3
Increase fertility	0	0.0	0	0.0	1	3.4	0	0.0	0	0.0	0	0.0	1	3.4	2	06.9
Don't know	0	0.0	1	3.4	1	3.4	0	0.0	1	3.4	0	0.0	1	3.4	4	13.8
To lessen cost	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	3.4	1	03.4
<b>TOTAL</b>	<b>4</b>	<b>13.8</b>	<b>5</b>	<b>17.2</b>	<b>4</b>	<b>13.8</b>	<b>1</b>	<b>3.4</b>	<b>1</b>	<b>3.4</b>	<b>1</b>	<b>3.4</b>	<b>5</b>	<b>17.2</b>	<b>21</b>	<b>72.4</b>

\*Multiple response



Table 27. Respondent's reasons of increase sunflower extract utilization related to the length of time as organic practitioner

LENGTH OF TIME AS ORGANIC PRACTITIONER	REASONS WHY THEY INCREASE SUNFLOWER EXTRACT UTILIZATION														TOTAL	
	EXPANSION OF THE AREA		MAINTAIN THE NITROGEN OF THE SOIL		SOIL NUTRIENT DEPLETION		CONDITIONS THE SOIL BETTER		THERE IS A SOURCE OF SUNFLOWER TO BE EXTRACTED		INCREASE FERTILITY		DON'T KNOW			
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
<2	0	0.0	0	0.0	0	0.0	2	6.9	0	0.0	1	3.4	0	0.0	3	10.3
2 - 4	1	3.4	1	3.4	1	3.4	0	0.0	1	3.4	1	3.4	0	0.0	5	17.2
5- 7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	6.9	2	06.9
8- 10	1	3.4	1	3.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	06.9
<b>TOTAL</b>	<b>2</b>	<b>6.9</b>	<b>2</b>	<b>6.9</b>	<b>1</b>	<b>3.4</b>	<b>2</b>	<b>6.9</b>	<b>1</b>	<b>3.4</b>	<b>2</b>	<b>6.9</b>	<b>2</b>	<b>6.9</b>	<b>12</b>	<b>41.4</b>

\*Multiple response



Table 28. Respondent's reason of increase sunflower extract utilization related to the farm size

REASONS WHY THEY INCREASE SUNFLOWER EXTRACT UTILIZATION	FARM SIZE (m <sup>2</sup> )												TOTAL	
	<1000		1000- 2799		2800- 4599		4600- 6399		6400- 8199		8200+			
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Expansion of the area	1	3.4	1	03.4	1	3.4	1	3.4	0	0.0	0	0.0	4	13.8
Maintain the nitrogen of the soil	2	6.9	0	00.0	1	3.4	0	0.0	0	0.0	0	0.0	3	10.3
Soil nutrient depletion	0	0.0	1	03.4	0	0.0	0	0.0	0	0.0	0	0.0	1	03.4
Depends on the need of the plant	0	0.0	0	00.0	0	0.0	1	3.4	0	0.0	0	0.0	1	03.4
Good effect on plant	1	3.4	0	00.0	0	0.0	0	0.0	0	0.0	0	0.0	1	03.4
Conditions the soil better	2	6.9	0	00.0	0	0.0	0	0.0	0	0.0	0	0.0	2	06.9
There is source of sunflower to be extracted	1	3.4	1	03.4	0	0.0	0	0.0	1	3.4	0	0.0	3	10.3
Increase fertility	1	3.4	0	00.0	0	0.0	0	0.0	0	0.0	1	3.4	2	06.9
Don't know	1	3.4	3	10.3	0	0.0	0	0.0	0	0.0	0	0.0	4	13.8
To lessen cost	0	0.0	1	3.4	0	0.0	0	0.0	0	0.0	0	0.0	1	03.4
<b>TOTAL</b>	<b>9</b>	<b>31</b>	<b>6</b>	<b>20.7</b>	<b>2</b>	<b>6.9</b>	<b>1</b>	<b>3.4</b>	<b>1</b>	<b>3.4</b>	<b>0</b>	<b>0.0</b>	<b>22</b>	<b>75.9</b>

\*Multiple response



Table 29. Respondent's reason why they increase sunflower extract utilization related to the organic area

REASON WHY THEY INCREASE UTILIZATION OF SUNFLOWER EXTRACT	ORGANIC AREA (m <sup>2</sup> )										TOTAL	
	<500		500-899		1300 -1699		1700- 2099		2100+		F	%
	F	%	F	%	F	%	F	%	F	%		
Expansion of the area	1	3.4	1	3.4	0	0.0	0	0.0	0	0	2	6.9
Maintain the nitrogen of the soil	1	3.4	1	3.4	0	0.0	0	0.0	0	0	2	6.9
Soil nutrient depletion	0	0.0	1	3.4	0	0.0	0	0.0	0	0	1	3.4
Conditions the soil better	0	0.0	1	3.4	0	0.0	0	0.0	0	0	1	3.4
Increase fertility	1	3.4	0	0.0	0	0.0	0	0.0	0	0	1	3.4
Many sunflower near the farm	0	0.0	1	3.4	0	0.0	1	3.4	0	0	2	6.9
Don't know	0	0.0	0	0.0	1	3.4	0	0.0	1	3.4	2	6.9
<b>TOTAL</b>	<b>3</b>	<b>10.3</b>	<b>5</b>	<b>17.2</b>	<b>1</b>	<b>3.4</b>	<b>1</b>	<b>3.4</b>	<b>1</b>	<b>3.4</b>	<b>11</b>	<b>37.9</b>

\*Multiple response



### Source of Sunflower Extract of the User

Table 30 presents the source of sunflower extract related to the demographic profile.

Most the respondents that (55.2%) organic practitioner said that they produce their own sunflower extract and only one conventional said that he do not know where he will source sunflower extract. The 10 (34.5%) of the respondents is transitional and they said that they will source sunflower extract to other stores.

The relationship of the source of sunflower extract to the years of farming. Most (89.7%) of the respondents will produce their own sunflower extract and seven (24.1%) of them have 20 to 24 years of farming. The six (20.7%) of the respondents has 20 to 24 years of farming and five (17.2%) of them said that they produce their own sunflower extract.

The relationship of the source of sunflower extract related to the length of time as organic practitioner. Majority (58.6%) of the respondents will produce their own sunflower extract and seven (24.1%) of them has two to four years practicing. The relationship of the source of sunflower extract related to the farm size of respondents Most (37.9%) of the respondents that has less than 1000 m<sup>2</sup> said that they produce their own sunflower extract Most (89.7%) of the respondents will their own sunflower extract.

The relationship of the source of sunflower extract related to their organic area. The 8(27.6%) of the respondents has 500 to 899 m<sup>2</sup> and seven (24.1%) produce their own sunflower extract. The two (6.8%) that has 1300 to 1699 organic area said that they will produce their own sunflower extract. Majority (55.2%) of the respondents will produce their own sunflower extract.



Table 30 imply that there is less possibility that the respondents will buy or source to any store because most of the user respondents produces their own sunflower extract that they apply on their farms.

Table 30. Source of sunflower extract related to the user source of sunflower extract

PARTICULARS	SOURCE OF SUNFLOWER EXTRACT						TOTAL	
	OTHER STORE		PRODUCE MY OWN		DO NOT KNOW			
	F	%	F	%	F	%	F	%
Type of farmer								
Organic	1	3.4	16	55.2	1	3.4	18	62.1
Transitional	0	0.0	10	34.5	0	0.0	10	34.5
Conventional	0	0.0	00	00.0	1	3.4	01	03.4
TOTAL	1	3.4	26	89.7	2	6.9	29	100
								X <sup>2</sup> =.005 *- significant
Years of farming								
25- 30	1	3.4	7	24.1	0	0.0	8	27.6
20- 24	0	0.0	5	17.2	1	3.4	6	20.7
15- 19	0	0.0	4	13.8	0	0.0	4	13.8
10 -14	0	0.0	1	03.4	1	3.4	2	06.9
5- 9	0	0.0	2	06.9	0	0.0	2	06.9
<5	0	0.0	1	03.4	0	0.0	1	03.4
30+	0	0.0	6	20.7	0	0.0	6	20.7
TOTAL	1	3.4	26	89.7	2	6.9	29	100
								X <sup>2</sup> =.544 *- not significant
Length of time as organic practitioner								
<2	0	0.0	3	10.3	0	0.0	3	10.3
2- 4	1	3.4	7	24.1	0	0.0	8	27.6
5- 7	0	0.0	5	17.2	0	0.0	5	17.2
8 -10	0	0.0	2	06.9	1	3.4	3	10.3
TOTAL	1	3.4	17	58.6	1	3.4	19	65.5
								X=.322 *-not significant



Table 30 continued...

PARTICULARS	SOURCE OF SUNFLOWER EXTRACT						TOTAL	
	OTHER STORE		PRODUCE MY OWN		DO NOT KNOW			
	F	%	F	%	F	%	F	%
Farm size (m <sup>2</sup> )								
<1000	0	0.0	11	37.9	2	6.9	13	44.8
1000- 2799	0	0.0	09	31.0	0	0.0	09	31.0
2800- 4599	0	0.0	03	10.3	0	0.0	03	10.3
4600- 6399	0	0.0	01	03.4	0	0.0	01	03.4
6400- 8199	1	3.4	00	00.0	0	0.0	01	03.4
8200+	0	0.0	02	06.9	0	0.0	02	06.9
<b>TOTAL</b>	<b>1</b>	<b>3.4</b>	<b>26</b>	<b>89.7</b>	<b>2</b>	<b>6.9</b>	<b>29</b>	<b>100</b>
							X <sup>2</sup> = .000	
							*- significant	
Organic area (m <sup>2</sup> )								
<500	1	3.4	4	13.8	0	0	5	17.2
500 - 899	0	0	7	24.1	1	3.4	8	27.6
900 -1299	0	0	1	3.4	0	0	1	3.4
1300 -1699	0	0	2	6.9	0	0	2	6.9
1700- 2099	0	0	1	3.4	0	0	1	3.4
2100+	0	0	1	3.4	0	0	1	3.4
<b>TOTAL</b>	<b>1</b>	<b>3.4</b>	<b>16</b>	<b>55.2</b>	<b>1</b>	<b>3.4</b>	<b>18</b>	<b>62.1</b>
							X <sup>2</sup> = .949	
							* -not significant	

#### Source of Sunflower Extract of the Non-user

Table 31 presents the source of sunflower extract of the non-user related to the length of time as organic practitioner. The three (8.3%) respondents according to the length of time practicing organic will produce their own sunflower extract. The 2(5.6%) of the respondents that has 8 to 10 years practicing organic and half of them do not know where to source sunflower extract and the other will produce their own sunflower extract.





Table 32 presents the source of sunflower extract of the respondents related to their farm size. Majority (52.8%) of the respondents will produce their own sunflower extract and 12(33.3%) of them has less than 1000m<sup>2</sup> farm.

Table 31. Source of sunflower extract related to the non-user length of time as organic practitioner

LENGTH OF TIME AS ORGANIC PRACTITIONER	SOURCE OF SUNFLOWER EXTRACT				TOTAL	
	PRODUCE MY OWN		DO NOT KNOW			
	F	%	F	%	F	%
<2	1	2.8	0	0.0	1	2.8
8 -10	1	2.8	1	2.8	2	5.6
11+	1	2.8	0	0.0	1	2.8
<b>TOTAL</b>	<b>3</b>	<b>8.3</b>	<b>1</b>	<b>2.8</b>	<b>4</b>	<b>11.1</b>

Table 32. Source of sunflower extract related to the non-user farm size

FARM SIZE (m <sup>2</sup> )	SOURCE OF SUNFLOWER EXTRACT								TOTAL	
	BSU ORGANIC MARKET		PRODUCE MY OWN		ANY STORE		DO NOT KNOW			
	F	%	F	%	F	%	F	%	F	%
<1000	3	8.3	12	33.3	1	2.8	1	2.8	17	47.2
1000- 2799	0	0.0	02	05.6	0	0.0	0	0.0	02	05.6
2800- 4599	0	0.0	03	08.3	0	0.0	0	0.0	03	08.3
4600- 6399	0	0.0	01	02.8	0	0.0	0	0.0	01	02.8
8200+	0	0.0	01	02.8	0	0.0	0	0.0	01	02.8
<b>TOTAL</b>	<b>3</b>	<b>8.3</b>	<b>19</b>	<b>52.8</b>	<b>1</b>	<b>2.8</b>	<b>1</b>	<b>2.8</b>	<b>24</b>	<b>66.7</b>



Table 33. Source of sunflower extract related to the non-user organic area.

ORGANIC AREA (m <sup>2</sup> )	SOURCE OF SUNFLOWER EXTRACT						TOTAL	
	OTHER STORE		PRODUCE MY OWN		DO NOT KNOW			
	F	%	F	%	F	%	F	%
<500	1	3.4	4	13.8	0	0.0	5	17.2
500- 899	0	0.0	7	24.1	1	3.4	8	27.6
900- 1299	0	0.0	1	03.4	0	0.0	1	03.4
1300- 1699	0	0.0	2	06.9	0	0.0	2	06.9
1700- 2099	0	0.0	1	03.4	0	0.0	1	03.4
2100+	0	0.0	1	03.4	0	0.0	1	03.4
<b>TOTAL</b>	<b>1</b>	<b>3.4</b>	<b>16</b>	<b>55.2</b>	<b>1</b>	<b>3.4</b>	<b>18</b>	<b>62.1</b>

Table 33 presents the source of additional sunflower extract related to the organic area of the respondents. Majority (55.2%) of the respondents produce their own sunflower extract and seven (24.1%) of them has 500 to 899 m<sup>2</sup>. Only 1(3.4%) said that they will source their sunflower extract to the other stores.

#### Source of Additional Sunflower Extract of User

Table 34 presents the source of additional sunflower extract related to the start of farming. The 11(37.9%) respondents that started farming 30 years above said that they produce their own sunflower extract. Majority (68.9%) of the respondents produce their own sunflower extract and three (10.3%) of them has 20 to 24 years of farming. Only one (3.4%) respondents said that he will source sunflower extract to BSU organic market.



Table 34. Source of additional sunflower extract related to the user years of farming

YEARS OF FARMING	SOURCE OF ADDITIONAL SUNFLOWER EXTRACT											
	BSU ORGANIC MARKET		OTHER STORE		PRODUCE MY OWN		ANY STORE		DO NOT KNOW		TOTAL	
	F	%	F	%	F	%	F	%	F	%	F	%
25- 30	0	0.0	0	0.0	1	03.4	0	0.0	0	0.0	1	03.4
20- 24	0	0.0	0	0.0	3	10.3	0	0.0	0	0.0	3	10.3
15- 19	0	0.0	0	0.0	1	03.4	0	0.0	0	0.0	1	03.4
14- 10	0	0.0	0	0.0	3	10.3	0	0.0	0	0.0	3	10.3
9-5	0	0.0	0	0.0	1	03.4	0	0.0	0	0.0	1	03.4
<5	0	0.0	0	0.0	3	10.3	1	2.8	1	2.8	4	13.8
30+	1	3.4	2	6.9	8	27.6	1	2.8	0	0.0	11	37.9
<b>TOTAL</b>	<b>1</b>	<b>3.4</b>	<b>2</b>	<b>6.9</b>	<b>20</b>	<b>68.9</b>	<b>2</b>	<b>6.9</b>	<b>1</b>	<b>3.4</b>	<b>24</b>	<b>82.8</b>

X<sup>2</sup>=.544

\* -not significant

#### Source of Sunflower Extract of the Non-user

Table 35 presents the source of additional sunflower extract related length of time as organic practitioner. The two (5.6%) of the respondents that has less than years, eight to 10 and above 11 years of practicing organic said that they produce their own sunflower extract. Only 1(2.8%) do not know where to source their sunflower extract.

Table 36 presents the source of additional sunflower extract related to the farm size of the respondents. Most of the respondents that has (62.5) 4000 m<sup>2</sup> and (12.5%) 2800 to 4599 said that will produce their sunflower extract. The 86.6% respondents said that they will produce their own. The 8.3 % respondents said that they will source the additional sunflower. to other store and to any store.



Table 34 to 36 implies that most of the respondents will produce their own additional sunflower extract and the others buy their sunflower extract to BSU organic market and other stores. There is lesser possibility that respondents will buy sunflower extract for their additional sunflower extract.

Table 35. Source of additional sunflower extract related to the user length of time as organic practitioner

LENGTH OF TIME AS ORGANIC PRACTITIONER	SOURCE OF ADDITIONAL SUNFLOWER EXTRACT				TOTAL	
	PRODUCE MY OWN		DO NOT KNOW			
	F	%	F	%	F	%
<2	1	3.4	0	0.0	1	3.4
8 -10	1	3.4	1	3.4	2	6.9
11+	1	3.4	0	0.0	1	3.4
TOTAL	3	10.3	1	3.4	4	13.8

$X^2=.322$

\* -not significant

Table 36. Source of additional sunflower extract related to the user farm size

FARM SIZE(m <sup>2</sup> )	SOURCE OF ADDITIONAL SUNFLOWER EXTRACT										TOTAL	
	BSU ORGANIC MARKET		OTHER STORE		PRODUCE MY OWN		ANY STORE		DO NOT KNOW			
	F	%	F	%	F	%	F	%	F	%	F	%
<1000	1	3.4	1	3.4	15	51.7	1	3.4	1	3.4	17	58.6
1000 - 2799	0	0	0	0.0	01	3.4	1	3.4	0	0.0	02	06.9
2800 - 4599	0	0	0	0.0	03	08.3	0	0.0	0	0.0	03	10.3
4600- 6399	0	0	1	2.8	00	00.0	0	0.0	0	0.0	01	03.4
8200+	0	0	0	0.0	01	02.8	0	0.0	0	0.0	01	03.4
TOTAL	1	3.4	2	6.9	20	69	2	6.9	1	3.4	24	82.8

$X^2=.000$

\* - significant



Table 37 presents the source of additional sunflower extract of non-user related to their organic area. The 3(8.3%) of the respondents said that they will produce their own sunflower extract and 2(5.6%) has less than 500 organic area.

Table 38 presents the source of additional source of sunflower extract related to type of farmer. Majority (55.6%) of the respondents said that they will produce their own sunflower extract and 12 (33.3%) of them are transitional

Table 37. Source of additional sunflower extract related to the non-user organic area

ORGANIC AREA	SOURCE OF ADDITIONAL SUNFLOWER EXTRACT				TOTAL	
	PRODUCE MY OWN		DO NOT KNOW			
	F	%	F	%	F	%
<500	2	5.6	1	2.8	3	8.3
500- 899	1	2.8	0	0.0	1	2.8
<b>TOTAL</b>	<b>3</b>	<b>8.3</b>	<b>1</b>	<b>2.8</b>	<b>4</b>	<b>11.1</b>

Table 38. Source of additional sunflower extract related to the non-user type of farmer

TYPE OF FARMER	SOURCE OF ADDITIONAL SUNFLOWER EXTRACT										TOTAL	
	BSU ORGANIC MARKET		OTHER STORE		PRODUCE MY OWN		ANY STORE		DO NOT KNOW			
	F	%	F	%	F	%	F	%	F	%	F	%
Organic	0	0.0	0	0.0	03	08.3	0	0.0	1	2.8	04	11.1
Transitional	1	2.8	2	5.6	12	33.3	2	5.6	0	0.0	15	41.7
Conventional	0	0.0	0	0.0	05	13.9	0	0.0	0	0.0	05	13.9
<b>TOTAL</b>	<b>1</b>	<b>2.8</b>	<b>2</b>	<b>5.6</b>	<b>20</b>	<b>55.6</b>	<b>2</b>	<b>5.6</b>	<b>1</b>	<b>2.8</b>	<b>24</b>	<b>66.7</b>



Price that the Users are Willing to Pay  
per Liter of Sunflower Extract

Table 39 presents the price of sunflower extract that the respondents are willing to pay for one liter related to different demographic profile.

The relationship of the price of sunflower extract that they are willing to pay per liter and to their farm size. The (44. 8%) respondents has less than 1000m<sup>2</sup> and 5(17.2%) of them said that they are willing to pay P150.00 for one liter. For the respondents that has the widest farm which is above 8200m<sup>2</sup> willing to pay P150 per Liter. The nine (31%) of the respondents has 1000 to 2799 m<sup>2</sup> and four (13.8%) of them there is no price they are willing to pay for one liter of sunflower extract.

The relationship of the price of sunflower extract that the respondents is willing to pay for one liter to the years of farming. The 11 (37.9%) of the respondents said that they are willing to pay P100 per liter of sunflower extract and four (13.8%) of them have 25 to 30 years of farming. The six (20.7%) of the respondents are willing to pay P150 per liter and three (10.3%) of them has 15 to 19 years of farming. The five (17.2%) of the respondents are willing to pay P50 and two (6.9%) has 20 to 24 years of farming. This table implies that the higher years of farming and the respondents that has 20 to 24 years is not willing to pay any amount per liter.

The relationship of price of sunflower extract per liter they are willing to pay to the type of farmer. The 11(37.9%) of the respondents said that they are willing to P100 per liter which 7(24.1%) of them are organic, 3(10.3%) Transitional and 1(3.4%) are conventional. The 5(17.2%) respondents organic said that they are no price they are willing to pay for one liter sunflower extract because of its availability of sunflower on



the surroundings. The six (20.7%) of the respondents are willing to pay P150 and four (13.8%) of them is organic and two (6.9%) is transitional.

The relationship of the price of the sunflower extract per liter that the respondents willing to pay and to the length of time as organic practitioner. The eight (27.6%) of the respondents are willing to pay P100 and three (10.3%) of them has two to four years practicing organic.

The relationship of price of the sunflower extract per liter that the respondents willing to pay and to their organic area. The seven (42.1%) of the respondents said that they are willing to pay P100 per liter of sunflower extract and three (10.3%) of them have 500 to 899 m<sup>2</sup> organic area. The 5(17.2%) of the respondents are not willing to pay any amount for per liter. The four (13.8%) of the respondents are willing to pay P150 and three (10.3%) of them has 500 to 899 m<sup>2</sup> farm.



Table 39. Distribution of the respondents according to price

PARTICULARS	PRICE OF SUNFLOWER EXTRACT THEY ARE WILLING TO PAY IN PER LITER									
	P50		P100		P150		NONE		TOTAL	
	F	%	F	%	F	%	F	%	F	%
<b>Farm size(m<sup>2</sup>)</b>										
<1000	3	10.3	4	13.8	5	17.2	1	03.4	13	44.8
1000- 2799	2	06.9	3	10.3	0	00.0	4	13.8	09	31.0
2800- 4599	0	00.0	2	06.9	0	00.0	1	03.4	03	10.3
4600- 6399	0	00.0	1	03.4	0	00.0	0	00.0	01	03.4
6400- 8199	0	00.0	1	03.4	0	00.0	0	00.0	01	03.4
8200+	0	00.0	0	00.0	1	03.4	1	03.4	02	06.9
<b>TOTAL</b>	<b>5</b>	<b>17.2</b>	<b>11</b>	<b>37.9</b>	<b>6</b>	<b>20.7</b>	<b>7</b>	<b>24.1</b>	<b>29</b>	<b>100</b>
										X <sup>2</sup> = .444
										* -not significant
<b>Years of farming</b>										
25-30	1	3.4	4	13.8	1	03.4	2	06.9	8	27.6
20-24	2	6.9	1	03.4	0	00.0	3	10.3	6	20.7
15- 19	0	0.0	1	03.4	3	10.3	0	00.0	4	13.8
10- 14	0	0.0	1	03.4	1	03.4	0	00.0	2	06.9
5- 9	0	0.0	1	03.4	0	00.0	1	03.4	2	06.9
<5	0	0.0	1	03.4	0	00.0	0	00.0	1	03.4
30+	2	6.9	2	06.9	1	03.4	1	03.4	6	20.7
<b>TOTAL</b>	<b>5</b>	<b>17.2</b>	<b>11</b>	<b>37.9</b>	<b>6</b>	<b>20.7</b>	<b>7</b>	<b>24.1</b>	<b>29</b>	<b>100</b>
										X <sup>2</sup> = .416
										*-not significant
<b>Type of farmer</b>										
Organic	2	06.9	7	24.1	4	13.8	5	17.2	18	62.1
Transitional	3	10.3	3	10.3	2	06.9	2	06.9	01	34.5
Conventional	0	00.0	1	03.4	0	00.0	0	00.0	01	03.4
<b>TOTAL</b>	<b>5</b>	<b>17.2</b>	<b>11</b>	<b>37.9</b>	<b>6</b>	<b>20.7</b>	<b>7</b>	<b>24.1</b>	<b>29</b>	<b>100</b>
										X <sup>2</sup> = .766
										* -not significant







The nine (31%) of the respondents said that the substitute weeds and 3(10.3%) of them are practicing two to four years practicing sunflower extract. The four (13.6%) of the respondents said that they do not substitute any thing and two (6.9%) of them has five to seven years practiced five to seven years of practicing organic.

Table 41 presents the substitutes of sunflower extract related to the organic area. The nine (31%) of the respondents substitute weeds and three (10.3%) of them have 500 to 899 m<sup>2</sup> organic area. The four (22.2%) of the respondents said that they do not substitute any thing. The three (16.7%) of the respondents said that they substitute seaweed and two (11.1%) of them has 500 to 899 m<sup>2</sup> organic area.

Table 40 to 41 implies that that the respondents substitute weeds to both organic and transitional that has 30 years above farming. They are mostly had two to four years practicing organic and have less than one thousand farm and having 500 to 899 organic area.

#### Reason why the Respondent's do not Use

Table 42 represents the reason why the farmers do not use sunflower extract. Majority (51.6%) of the respondent do not know about sunflower extract.



Table 40. Substitute to sunflower extract related to the user length of time as organic practitioner

LENGTH OF TIME AS ORGANIC PRACTITIONER	SUBSTITUTE TO THE SUNFLOWER EXTRACT													
	CACAO EXTRACT		WEEDS		BANANA STALK		SEAWEED EXTRACT		CHICKEN MANURE		NONE		TOTAL	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
<2	0	0.0	2	06.9	0	0.0	0	0.0	1	3.4	0	0.0	3	10.3
2 -4	1	3.4	3	10.3	2	6.9	2	6.9	0	0.0	1	3.4	9	31.0
5- 7	0	0.0	2	06.9	0	0.0	1	3.4	0	0.0	2	6.9	5	17.2
8-10	1	3.4	1	03.4	0	0.0	0	0.0	0	0.0	1	3.4	3	10.3
TOTAL	2	6.9	8	27.6	2	6.9	3	10.3	1	3.4	4	13.8	20	69

\*Multiple response



Table 41. Substitute to sunflower extract related to the user organic area

ORGANIC AREA (m <sup>2</sup> )	SUBSTITUTE TO THE SUNFLOWER EXTRACT										TOTAL	
	CACAO EXTRACT		WEEDS		BANANA STALK		SEAWEED EXTRACT		NONE			
	F	%	F	%	F	%	F	%	F	%	F	%
<500	1	3.4	2	06.9	1	5.6	0	00.0	1	05.6	5	17.2
500-899	1	3.4	3	10.3	0	0.0	2	11.1	3	16.7	9	31.0
900-1299	0	0.0	0	00.0	1	5.6	0	00.0	0	00.0	1	03.4
1300-1699	0	0.0	1	03.4	0	0.0	1	05.6	0	00.0	2	06.9
1700-2099	0	0.0	1	03.4	0	0.0	0	00.0	0	00.0	1	05.6
2100+	0	0.0	1	03.4	0	0.0	0	00.0	0	00.0	1	06.9
Total	2	6.9	8	44.4	2	11.1	3	16.7	4	22.2	18	62.1

\*Multiple response



Table 42. Reason why non-user do not use sunflower extract

REASONS	FREQUENCY	PERCENTAGE
Don't know about it	19	51.6
Don't know where to buy	02	05.4
Not effective as botanical pesticide	01	02.7
No time	10	27.1
Hard to do	01	02.7
No source	03	08.1
No need	01	02.7
TOTAL	37	100

\*Multiple response

#### Non-user Respondents Willingness to Use Sunflower Extract

Table 43 presents non-user willingness to use of sunflower extract related to the demographic profile.

The relationship of the respondent's willingness to use and the length of time as organic practitioner. The 2(5.6%) of the respondents that practice organic for eight to 10 years and the respondents that has less than two years said that they will now use sunflower extract.

The relationship of the respondent's willingness to use sunflower extract and the years of farming. Majority 24 (66.7%) of the respondents said that they are not going to use sunflower extract.

The relationship of source of sunflower extract of the respondents related to their organic area. The four (11.1%) of the respondents said that they will use sunflower extract and the 3(8.3%) said that they will not use sunflower extract.



The relationship of the respondent's willingness to use and to the farm size. Majority (66.7%) of the respondents has less than 1000 m<sup>2</sup> farm area and 17 (47.2%) of them said that they will use sunflower extract while the 12 (33.3%) respondents will not use sunflower extract.

The relationship of the respondent's willingness to use to related to the organic area. The four (11.1%) of the respondents said that they will use sunflower extract and the three (8.3%) said that they will not use sunflower extract.

This table implies that majority of the respondents will use sunflower extract and majority of them have 30 years of farming and has less than one thousand meter square of farm and less than 500 m<sup>2</sup> organic area.

Table 43. Distribution of non-user respondent's willingness to use sunflower extract

PATICULARS	RESPONDENTS WILLINGNESS TO USE				TOTAL	
	WILLING		NOT WILLING		F	%
	F	%	F	%		
Length of time as organic practitioner						
<2	1	2.8	0	0.0	1	2.8
2- 4	0	0.0	2	5.6	2	5.6
5 - 7	0	0.0	1	2.8	1	2.8
8- 10	2	5.6	0	0.0	2	5.6
TOTAL	3	8.3	3	8.3	6	16.7

$X^2=.136$   
\*-not significant



PATICULARS	RESPONDENTS WILLINGNESS TO USE				TOTAL	
	WILLING		NOT WILLING			
	F	%	F	%	F	%
<b>Years of farming</b>						
25 -30	1	02.8	2	5.6	3	08.3
20 -24	3	08.3	1	2.8	4	11.1
15- 19	1	02.8	2	5.6	3	08.3
10- 14	3	08.3	2	5.6	5	13.9
5 -9	1	02.8	2	5.6	3	08.3
<5	4	11.1	1	2.8	5	13.9
30+	11	30.6	2	5.6	13	36.1
<b>TOTAL</b>	<b>24</b>	<b>66.7</b>	<b>12</b>	<b>33.3</b>	<b>36</b>	<b>100</b>
						$X^2=.320$
						* -not significant
<b>Farm size</b>						
<1000	17	47.2	7	19.4	24	66.7
1000- 2799	02	05.6	4	11.1	06	16.7
2800-4599	03	08.3	0	00.0	03	08.3
4600- 6399	01	02.8	1	02.8	02	05.6
8200+	01	02.8	0	00.0	01	02.8
<b>TOTAL</b>	<b>24</b>	<b>66.7</b>	<b>12</b>	<b>33.3</b>	<b>36</b>	<b>100</b>
						$X^2=.245$
						* -not significant
<b>Organic area (m<sup>2</sup>)</b>						
<500	3	8.3	0	0.0	3	8.3
500- 899	1	2.8	2	5.6	3	8.3
1700 -2099	0	0.0	1	2.8	1	2.8
<b>TOTAL</b>	<b>4</b>	<b>11.1</b>	<b>3</b>	<b>8.3</b>	<b>7</b>	<b>19.4</b>
						$X^2=.118$
						* - not significant

#### Factors that will Convince the



### Non- user Willingness to Use Sunflower Extract

Table 44 presents the reason why the farmer will use sunflower extract related to the type of farmer. The 20 (55.6%) of the respondents is transitional farmers most (33.3%) of them said that they will use because sunflower extract if they tried and tested it. The seven (19.4%) of the respondents is organic and six (16.7%) of them said that they will use sunflower extract if they tried and tested it. The nine (25%) of the respondents is conventional and five (13.9%) of them said that they will use sunflower extract if they tried and tested.

Table 45 presents the reason why the farmer will use sunflower extract related to the organic area of the respondents. The 6(16.7%) respondents said that they will sunflower extract if it is tried and tested and 3(8.3%) of them has 500 to 899m<sup>2</sup> organic area.

Table 44. Factors that will convince the non- user to use sunflower extract related to type of farmer

REASON WHY THE FARMER WILL USE SUNFLOWER EXTRACT NOW	TYPE OF FARMER						TOTAL	
	ORGANIC		TRANSITIONAL		CONVENTIONAL		F	%
	F	%	F	%	F	%		
Tried and tested	6	16.7	12	33.3	5	13.9	23	63.9
Affordable	0	0	4	11.1	2	5.6	6	16.7
Advertised	0	0	1	2.8	0	0	1	02.8
Recommended by the organic expert	1	2.8	3	8.3	1	2.8	5	13.9
Educated or trained on production of sunflower extract	1	2.8	3	8.3	0	0	4	11.1

Table 44 continued...





REASON WHY THE FARMER WILL USE SUNFLOWER EXTRACT NOW	TYPE OF FARMER						TOTAL	
	ORGANIC		TRANSITIONAL		CONVENTIONAL			
	F	%	F	%	F	%	F	%
Never	0	0	1	2.8	0	00.0	1	02.8
Other farmers	1	2.8	1	2.8	0	00.0	2	05.6
Pest out break	1	2.8	0	0.0	0	00.0	1	02.8
Don't have source and because of expensive commercial	0	0.0	1	2.8	1	20.8	2	05.6
Easy to make	0	0.0	2	5.6	0	00.0	2	05.6
<b>TOTAL</b>	<b>7</b>	<b>19.4</b>	<b>20</b>	<b>55.6</b>	<b>9</b>	<b>25</b>	<b>36</b>	<b>100</b>

\*Multiple response

Table 45. Factors that will convince the non-user to use sunflower extract related to the organic area

REASON WHY THE FARMER WILL USE SUNFLOWER EXTRACT	ORGANIC AREA (m <sup>2</sup> )						TOTAL	
	<500		500- 899		1700-2099			
	F	%	F	%	F	%	F	%
Tried and tested	2	5.6	3	8.3	1	2.8	6	16.7
Recommended by organic expert	0	0.0	1	2.8	0	0.0	1	02.8
Educated or trained on production of sunflower extract	1	2.8	0	0.0	0	0.0	1	02.8
Other farmers	0	0.0	1	2.8	0	0.0	1	02.8
Pest outbreak	0	0.0	0	0.0	1	2.8	1	02.8
<b>TOTAL</b>	<b>3</b>	<b>8.3</b>	<b>3</b>	<b>8.3</b>	<b>1</b>	<b>2.8</b>	<b>7</b>	<b>19.4</b>

\*Multiple response



Table 46 presents the reason why they will use sunflower extract related to the years of farming. The 13 (36.1%) of the respondents has thirty years above farming and nine (25%) of them will use sunflower extract if they tried and tested it.

Table 47 presents the reason why the farmer will use sunflower extract related to their farm size. Majority (63.9%) said that they will use if they tried and tested it and 19(52.8%) of them has less than 1000 m<sup>2</sup> farm area. The six (16.7%) of the respondents have 1000 m<sup>2</sup> and three (8.3%) of them will use sunflower extract if they tried and tested. Overall, the non-user will use if they tried and tested.

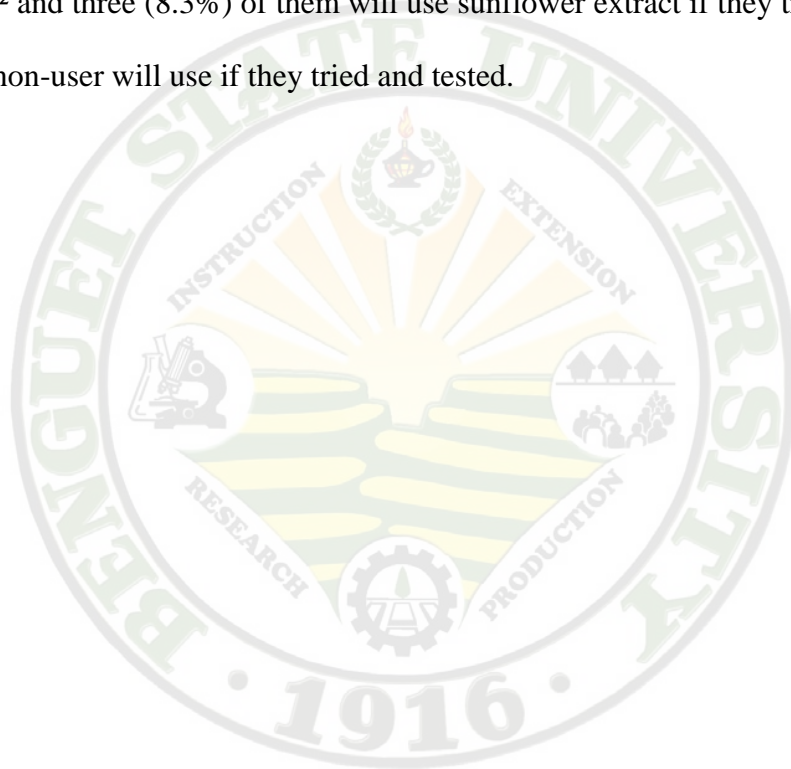


Table 46. Factors that will convince non- user to use sunflower extract related to the years of farming

REASON WHY THE FARMER WILL USE SUNFLOWER EXTRACT	YEARS OF FARMING														TOTAL	
	25 - 30		20 - 24		15 - 19		10 - 14		5 - 9		<5		30+			
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Tried and tested	3	8.3	2	5.6	2	5.6	2	5.6	2	5.6	3	8.3	9	25.0	23	63.9
Affordable	0	0.0	1	2.8	1	2.8	1	2.8	0	0.0	1	2.8	2	05.6	06	16.7
Advertised	0	0.0	1	2.8	0	0.0	0	0.0	0	0.0	0	0.0	0	00.0	01	02.8
Recommended by the organic expert	1	2.8	2	5.6	1	2.8	0	0.0	0	0.0	0	0.0	1	02.8	05	13.9
Educated or trained on production of sunflower extract	0	0.0	1	2.8	0	0.0	0	0.0	0	0.0	2	5.6	1	02.8	04	11.1
Never	0	0.0	0	0.0	0	0.0	1	2.8	0	0.0	0	0.0	0	00.0	01	02.8
Other farmers	0	0.0	0	0.0	0	0.0	0	0.0	1	2.8	1	2.6	0	00.0	02	05.6
Pest out break	0	0.0	0	0.0	0	0.0	0	0.0	1	2.8	0	0.0	0	00.0	01	02.8
Don't have source and because of expensive																
Commercial	0	0.0	0	0.0	1	2.8	1	2.8	0	0.0	0	0.0	0	00.0	02	05.6
Easy to make	0	0.0	1	2.8	0	0.0	0	0.0	1	2.8	0	0.0	0	00.0	02	05.6
<b>TOTAL</b>	<b>3</b>	<b>8.3</b>	<b>8</b>	<b>22.2</b>	<b>5</b>	<b>13.9</b>	<b>5</b>	<b>13.9</b>	<b>5</b>	<b>13.6</b>	<b>7</b>	<b>19.4</b>	<b>13</b>	<b>36.1</b>	<b>45</b>	<b>125</b>

\*Multiple response



Table 47. Factors that will convince non- user to use sunflower extract related to the farm size

REASON WHY THE FARMER WILL USE SUNFLOWER EXTRACT	FARM SIZE (m <sup>2</sup> )										TOTAL	
	<1000		1000 - 2799		2800 -4599		4600 - 6399		8200+		F	%
	F	%	F	%	F	%	F	%	F	%	F	%
Tried and tested	19	52.8	3	8.3	0	0.0	1	2.8	0	0	23	63.9
Affordable	04	11.1	1	2.8	1	2.8	0	0.0	0	0	06	16.7
Advertised	01	02.8	0	0.0	0	0.0	0	0.0	0	0	01	02.8
Recommended by the organic expert	05	13.9	0	0.0	0	0.0	0	0.0	0	0	05	13.9
Educated or trained on production of sunflower extract	03	8.3	1	2.8	0	0.0	0	0.0	0	0	04	11.1
Never	00	0.0	0	0.0	0	0.0	1	2.8	0	0	01	02.8
Other farmers	02	5.6	0	0.0	0	0.0	0	0.0	0	0	02	05.6
Pest out break	00	0.0	1	2.8	0	0.0	0	0.0	0	0.0	1	02.8
Don't have source and because of expensive commercial	00	0.0	1	2.8	1	2.8	0	0.0	0	0.0	2	05.6
Easy to make	00	0.0	0	0.0	1	2.8	0	0.0	1	2.8	2	05.6
TOTAL	34	99.4	7	19.4	3	8.3	2	5.6	1	2.8	46	127.8

\*Multiple response



## **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### Summary

This study was conducted to determine the market potential of sunflower extract as fertilizer and as botanical pesticide in La Trinidad. It aimed to: identify the users and non-user of sunflower extract in La Trinidad; determine the uses of sunflower of sunflower extract; determine the quantity of utilization of sunflower extract; identify the users sources of sunflower extract; determine the acceptable price of sunflower extract among users; identify direct substitutes for sunflower extract; determine reasons non-user don't employ sunflower extract; identify condition that would encourage non-users to employ sunflower extract.

The survey was conducted through interview. The gathered data were statistically analyzed and interpreted according to the objectives of the study. Statistical tools used in describing the data were statistics like: frequency count and percentage. The chi- square test also used at five percent level of significance.

Most users are from Barangay Shilan and Balili and most of the user are male with age ranging most to 25 to 44. They most practice organic and few are transitional farmers.

Most of the non-user is from Pico and Betag and they are most male and most are transitional and conventional farmers.

Results showed that the respondents who are organic practitioner said that they use it to fertilize the soil.



On the volume of sunflower extracts use, most of the organic practitioner organic area said that they will use one drum or 160 liter. However, there is a low correlation between farm size and volume of sunflower extract used.

On the intension of the user of sunflower extract farmer to increase utilization, most of the organic practitioner, farmers farming for 20 to 24 that practice organic for less than two years, farmers that has less than 1000 m<sup>2</sup> farm and that has 500 to 899 m<sup>2</sup> organic area said that they will increase utilization of sunflower extract.

On the reason why they will increase utilization of sunflower extract, most of the organic said that they will increase because of expansion of the area, maintain the nitrogen content of the soil and increase fertility.

Most of the transitional farmer likewise will increase utilization because of expansion of the area.

On the source of sunflower extract most of the organic and other transitional farmer said that they will make their own sunflower extract.

On the price that is acceptable to the users most of the organic said that they are willing to buy one liter sunflower extract for P100.00 to P150.00.

The identified substitutes to sunflower extract are indigent weeds.

On the intension of the non-user to of sunflower extract the farmers most of transitional farming said that they will use sunflower extract now that they heard about it.

On the source of sunflower extract of the non-user said that they will produce their own sunflower extract. However, they said that they will only use sunflower extract if it is tried an tested.



## Conclusions

Based on the results, the following conclusions were drawn:

1. The users are the organic practitioner and few transitional farmers. Most of them has less than 1000m<sup>2</sup> farm. The non-users of sunflower extract are transitional and conventional.
2. The respondents use sunflower extract to fertilize the soil. There are more respondents who claim that there is no effect of sunflower extract. This indicates that farmers are more certain of the contribution of sunflower extract to soil fertility but are uncertain as to its effect as botanical pesticide.
3. Majority of the user of sunflower extract will increase utilization of sunflower extract. There is a low correlation between farm size and volume of sunflower extract used. This indicates non-standardized application of sunflower extract among user respondents however, intend to produce their own sunflower extract. No dominant answer on what reason why they will increase. This means that there are varied uses to varied users.
4. The acceptable price to the respondents is P100 to P150 per liter.
5. Most of the respondents substitute farm indigent weeds to sunflower extract.
6. Most of the non-user does not use sunflower extract because they do not know about it.
7. The factor that will convince the non-user to use sunflower extract if they have tried and tested it.



### Recommendations

Base o the conclusions, the following are recommended:

1. Educate more farmers on the uses and rate of application of sunflower extract.
2. The botanical effect of sunflower extract should be further tested and studied to convince farmers to use this and to establish further the technology.
3. Studies on the economic costs and benefits of sunflower extract production must be done.





## LITERATURE CITED

- ALLAD-IW, A.. 2006. Sagada Produces Organic Fertilizer. Retrieved July 16, 2009 from <http://www.nordis.net/blog/?p=328>
- ANONYMOUS. 2006. 1<sup>st</sup> Organic Agriculture Congress. Retrieved October 04, 2009 from [http://www.bsu.edu.ph/content/news/agri\\_congress.php](http://www.bsu.edu.ph/content/news/agri_congress.php)
- BENGWAYAN, M.. 2007. The Community Supported Agricultural Project in Benguet, Philippines. Retrieved July 20, 2009 from <http://www.teachamantofish.org.uk/blogs/PINETREE/2007/04/communitysupported-agriculture-in.html>
- BENGWAYAN, M. 2007. Botanical Insecticide. Retrieved October 05, 2009 from [http://www.teachamantofish.org.uk/blogs/PINETREE/2007\\_04\\_01\\_archive.html](http://www.teachamantofish.org.uk/blogs/PINETREE/2007_04_01_archive.html)
- BENGWAYAN, M. 2008. Organic Gardening Threatening Bees in Luzon, Philippines. Retrieved July 20, 2009 from <http://www.teachamantofish.org.uk/blogs/PINETREE/>
- CALUZA, D. 2009. Stop Using Sunflowers for Compost. Retrieved July 20, 2009 from [http://www.teachamantofish.org.uk/blogs/PINETREE/Stop%20using%20sunflowers%20for%20compost%20%20INQUIRER\\_net,%20Philippine%20News%20for%20Filipinos.mht](http://www.teachamantofish.org.uk/blogs/PINETREE/Stop%20using%20sunflowers%20for%20compost%20%20INQUIRER_net,%20Philippine%20News%20for%20Filipinos.mht)
- FERNANDEZ, R. 2004. Wild Sunflower a Rich Source of Nitrogen for rice. Retrieved July 17, 2009 from <http://www.bic.searca.org/news/2004/dec/phi/26.html>
- SORENSEN, K. N.D. Insect Pests of Vegetables. Retrieved October 04, 2009 from [http://ipm.ncsu.edu/vegetables/pests\\_vegetables.html](http://ipm.ncsu.edu/vegetables/pests_vegetables.html)
- WOLFE, K. 2006. Estimating market potential checklist. Retrieved October 05, 2009 from <http://www.caed.uga.edu/publications/2006/pdf/CR-06-08.pdf>



## APPENDIX A

### Interview Guide

#### MARKET POTENTIAL OF SUNFLOWER EXTRACT AS FERTILIZER AND AS BOTANICAL PESTICIDE (User of sunflower extract)

Name (optional): \_\_\_\_\_

Age: \_\_\_\_\_

Gender:  male  female

Location: \_\_\_\_\_

Type of farmer:  Organic farmer  Transitional farmer  Conventional farmer

Farmer since: \_\_\_\_\_

Length of time as organic practitioner: \_\_\_\_\_

Farm size: \_\_\_\_\_ Area for organic production: \_\_\_\_\_

Crop planted:  petchay  cabbage  Chinese cabbage  lettuce

1. Why do you use sunflower extract as fertilizer?

- Makes the soil fertile by increasing the nutrient contents of the soil physical properties
- Conditions and improves the soil to hold the soil structure
- Increases the ability of the soil to hold water and nutrients
- Provides better aeration
- Increases the number of leaves per plant
- Increases the leaf area
- All of the above
- Other (specify): \_\_\_\_\_

2. What is the effect of sunflower extract as pesticide?

- Kills the pest
- Controls the pest
- It makes the pest dizzy
- All of the above
- None (no effect as pesticide)
- Other (specify): \_\_\_\_\_

3. What does it kill/control?

- Moths, Butterflies, and their young (caterpillar)
- Beetles (e.g., white fringed beetle and white grubs)
- Sap-feeding insects (e.g., larleguin bug and aphids)
- Flies (e.g., cabbage maggot)
- Other insect pests (e.g. grasshopper)
- Non-insect pest (e.g., spider mites and slugs)

4. How much quantity of sunflower extract do you use per week in a 250 square meter?

Please specify: \_\_\_\_\_



5. Do you intend to increase the volume of utilization of sunflower extract?
- Yes  
 No
6. If yes, why would you increase the volume of utilization of sunflower extract?
- Expansion of farm area  
 Maintain the nitrogen of the soil  
 Soil nutrient depletion  
 Depends on the need of my plant  
 Good effect on plant  
 Conditions the soil better  
 There is sporce of sunflower to be extracted  
 Increase fertility  
 Many sunflower near the farm  
 To lessen cost
7. Where do you source your sunflower extract?
- BSU organic market  
 Other store (specify): \_\_\_\_\_  
 Produce my own sunflower extract  
 Other (specify): \_\_\_\_\_
8. If you will increase the volume of utilization of sunflower extract where will be your source?
- BSU organic market  
 Other store (specify): \_\_\_\_\_  
 Make my own  
 Other (specify): \_\_\_\_\_
9. How much they are willing to pay for a one L bottle of quality sunflower extract?
- 50  
 100  
 150  
 200
10. What substitute do you buy if it is not available?
- Cassava peel extract  
 Cacao extract  
 Lantana extract  
 Weeds  
 Banana stalk  
 Ashes of woods soaked on water  
 Pepper  
 Seaweed extract  
 14 14 14  
 Chicken manure  
 None



## APPENDIX B

Market Potential of Sunflower Extract as Fertilizer and as Botanical Pesticide  
(Non-user of sunflower extract)

Name (optional): \_\_\_\_\_

Age: \_\_\_\_\_

Gender:  male  female

Location: \_\_\_\_\_

Type of farmer:  Organic farmer  Transitional farmer  Conventional farmer

Farmer since: \_\_\_\_\_

Length of time as organic practitioner: \_\_\_\_\_

Farm size: \_\_\_\_\_ Area for organic production: \_\_\_\_\_

Crop planted:  petchay  cabbage  Chinese cabbage  lettuce

1. Why you don't use sunflower extract?
  - Do not know about it
  - Can't afford it
  - Don't know where to buy
  - It is not that effective as fertilizer
  - It is not that effective as pesticide
  - Not proven as a fertilizer or pesticide
2. If you do not know about Sunflower extract, will you use now that you heard about it?
  - Yes
  - No
3. If yes, in what volume of sunflower extract will you apply per week?
 

Please specify: \_\_\_\_\_
4. Where will you source your sunflower extract?
  - BSU organic market
  - Other store (specify): \_\_\_\_\_
  - Other (specify): \_\_\_\_\_
5. If you will increase the volume of utilization of sunflower extract where will be your source?
  - BSU organic market
  - Other store (specify): \_\_\_\_\_
  - Other (specify): \_\_\_\_\_
6. If you will not use, what will convince you to use sunflower extract?
  - Tried and tested
  - Become affordable
  - Advertised
  - Recommended by organic production expert
  - If I will be educated or trained more on organic production using sunflower extract.
  - Never
  - Other (specify): \_\_\_\_\_

