

## Original Research Article

### PERCEPTION OF INSECTICIDES USAGE AND HAZARD IN SOME SELECTED COMMUNITIES IN ZURU LOCAL GOVERNMENT AREA OF KEBBI STATE, NIGERIA

#### **ABSTRACT**

This study assesses the farmer's perception of insecticides usage and hazard of some communities in Zuru Local Government Area. The specific objectives were to describe socio-economic characteristics, the awareness of the insecticides usage, problems of insecticide, and to determine present and safety of insecticide application in the study area. Data collected were analyzed using descriptive statistics. Result revealed that 99 percent respondents were men, high proportion of (48 percent) respondents were within the age range of 20–39 years, 40 percent had family size between 6-10 persons, 65 percent earned ₦401, 000 - ₦800, 000, 64 percent had <1ha of farm size, high proportion of 36 percent inherited their farm lands. Results further revealed that 100 percent are aware about insecticide; about 67 percent use insecticides in their farm to control insects, 52 percent got their information from friends. The result also revealed that 99 percent of the respondents used insecticide before and 73 percent used insecticide only to control insects, about 56 percent used systemic insecticide and 75 percent used sprayers to apply. Result also revealed that 75 percent of respondents are aware of insecticide hazard, a high proportion of 45 percent got their information from Extension Agents, 62 percent are aware of the health implication of insecticide, while 62 percent are aware of the negative effect of insecticide on health. It was concluded that Majority of the farmers are aware about insecticide usage, health hazards. It was recommended that farmers should be more sensitized about the danger of insecticide usage without proper handling and farmers should always protect themselves with protective cloth during spraying to avoid body contact.

**KEYWORDS: Perception, Insecticides, Usage and Hazard**

#### **1. INTRODUCTION**

Insecticides are chemical substances used to boost agricultural production (Sekhota, 2016). They are used to control insect pests and diseases caused by bacteria, fungi, pests and viruses thereby enhancing agricultural production. Used optimum dose, correct application method and time, ensure agricultural productivity (Bhan, 2014). Use of agrochemicals led to an increase in food production (Damalas, 2017). Their use has significantly increased the concentration of toxic materials in food and the environment, with negative effects on plant and

animal health (Anderson, 2016). The world health organization (WHO) has estimated that more than three million farmers in developing countries are poisoned by agrochemicals each year (WHO, 2014).

In Nigeria the agricultural sector is the major supplier of food, raw materials and largely depends on exchange and 70 percent of Nigeria's population largely depends on this sector for survival (Olakunle, 2016). Due to the country's drive to increase agricultural production and the upsurge of different species of pest that damage and ravage agricultural products in field and storage, farmers have resorted to the use of agrochemicals as an important control strategy (Ajibola, 2015). An estimated 125,500 to 130,000 metric tons of insecticides are used annually (Asogwa, 2013).

According to Stewart (2018), insecticides are specifically used to destroy insect pests and infected plants. They are applied on plants like rice and yam. The application of these insecticides is often imprecise, with unintended worker exposures. Philips (2015) stated insecticides application increases yield of crops, prevents food spoilage and diseases on farm animals. Ogwa and Dongo (2013) said that problems associated with pesticide usage and application in cocoa production in southern Nigeria has generated public health problems and environmental pollution. Exposure to insecticides is one of the most important occupational risks among farmers in developing countries. In some situations exposure to insecticides can occur from accidental spills of chemical leakages of faulty spraying equipment (Ateya, 2016). The exposure of farmers increases as the result of not paying attention to the instructions on how to use insecticides and ignoring basic safety equipment (Ajayi, 2018). In view of the adverse environmental effects from the usage of insecticide, lack of awareness of health consequences by some farmers, it therefore becomes imperative to identify farmers and pest

management practices in their farming activities by investigating farmer's awareness and perception about the effect of insecticides used in the environment.

## **2. MATERIALS AND METHODS**

Zuru Local Government Area is one of the twenty one (21) Local Government Areas of Kebbi state. The area lies between latitudes 11° 35' - 11° 55' North and longitudes 4° 45' - 5° 25' East. The area covers approximately an area of 32,626 Km<sup>2</sup>. It is bordered northwest by Fakai Local Government, south east by Sakaba Local Government, East by Danko/Wasagu Local Government Area (Kebbi State Government, 2003). The area has six administrative districts namely; Rafin Zuru, Rikoto, Dabai, Senchi, Manga and Ushe. The estimated population of the study area is one hundred and sixty five thousand five hundred and forty seven (165,547) people (National Population Commission, 2006). The Area is blessed with favourable climatic conditions for vast Agricultural productions, the vegetation of the Area is a tropical Savanna with scattered trees, the vegetation is characterized by continuous grasses which are greenish in the rainy season and dumped and dried in the dried season. Raining season is from April - October and lasts for about six months and the average temperature is 37°C while, November to February is harmattan (Girma, 2008). Data were collected with the aid of a questionnaire using simple random sampling technique. The data generated from the 100 respondents was analyzed using descriptive statistics.

## **3. RESULTS**

Results obtained from the field are presented and interpreted below; Table 1 revealed that 99 percent of the respondents were Men and 1 percent of the respondents were women, 0.99

mean, and standard deviation 0.100. The results indicated that 99 percent were men. This could be as a result of men dominating the farming activities in the area women are more involved in indoor activities than farming. The age of the respondents shows that most active groups are 20-39 years and 40-59 years, which constituted 48 and 35 percent respectively compared to other age groups. Respondents are found to have different family sizes as shown in the table. 37 percent had family size between 1-5 persons, 40 percent had family size between 6 - 10 persons, and 23 percent had family size of 11 persons and above. This implied that those people with small family size have limited supply of family labour compared to those with larger household size. Results on the educational levels revealed that a high proportion (28 percent) had one form of formal education or the other. Many of the respondents had farming experience, for about 1 - 5years, 6-10years, and 11years and above; with the following percentages 42, 44 and 14 percent respectively. Results on the farm size revealed that 64 percent respondents had <1ha, 21 percent 1.1-2ha, 10 percent 2.1-3ha and the least is 5 percent above. Source of farmland is mostly by inheritance about 36 percent and least is 5 percent which is through leased. Result on the income revealed that 8 percent of the respondents earned within ₦100,000 and below, 65 percent earned ₦101,000-₦400,000, 24 percent earned ₦401,000 - ₦800,000, 1 percent earned ₦801,000-₦1,000,000 while, 2 percent ₦1, 000,000 and above. Meaning there is gaining in the venture and the higher the income the more investment.

This Table 2 revealed that 100 percent respondents are aware about insecticide, and 13 percent used insecticides to spray their homes, 67 percent spray their farms, while 20 percent spray their environments. This shows that 67 percent of respondents used insecticides in their farms to control insect pests. The same table result showed that 52 percent of respondents got

their information about insecticides from friends, 15 percent from media, 23 percent from schools, while 10 percent from Extension staff. The same table revealed that 99 percent respondents used insecticides before in one or the other, while 1 percent respondents did not use any insecticides. More so, results revealed that 73 percent respondents used insecticides only to control insect pests, 18 percent used them to control diseases on crops or farm animals and 9 percent used them to induce flowering on plants. Results on the type of insecticides used revealed that 56 percent respondents used systemic insecticides and 44 percent used contact type. Results revealed that 75 percent respondents used knapsack sprayer as application equipment and 25 percent dusters. Result on the effectiveness of the use of insecticide in insect pests control revealed that 37 percent respondent reported that insecticides are very effective, 37 percent also says that they are effective, 19 percent respondents said they are moderately effective and 7 percent opined that they are low effective.

Results from table 3 revealed that 75 percent respondents are aware of hazards caused by insecticide, only 25 percent were not aware. Results on the source of information revealed that 17 percent got information about insecticides from friends/relatives, 45 percent from Extension Agents, while 20 percent from school, and 18 percent from media. This indicated that a high proportion of respondents 45 percent got their information from Extension Agents. Result on insecticides hazard revealed that 62 percent are aware that insecticides cause hazard related to health, 12 percent aware it affect soil by destroying some soil organisms, 10 percent know that they affect the environment, that is environmental pollution, 5 percent aware of biodiversity of living organisms as result of insecticide application and 11 percent knows that they cause water pollution. This indicated that the majority 62 percent are aware of the health implication of insecticides. Results on the negative effects of insecticide revealed that 62 percent know that

they have negative effects. The result on perception on the negative effect of insecticide revealed that 33 percent strongly agreed, 18 percent agreed, 19 percent slightly agreed, 15 percent were undecided and 15 percent didn't agree. This shows that higher proportion 33 percent strongly agreed.

Table 4 revealed that 100 percent respondents are aware about safety and precaution measures in handling insecticides. Result further revealed that 37 percent opined that wearing of protective clothes is one of the safety and precautionary measures when handling insecticides, 22 percent agreed with the use of recommended insecticides dosage for application, 11 percent opined proper disposal of insecticide containers after use, 14 percent opined the avoidance of leaking appliances (sprayers), while 16 percent respondents opined appropriate time of insecticides application.

**Table 1: Socio-Economic Characteristics of the Respondents**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>	<b>Mean</b>	<b>SD</b>
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<b>Gender</b>				
Male	99	99		
Female	1	1		
Total	100	100		
<b>Age</b>				
20-39	48	48		
40-59	35	35		
60- and Above	17	17		
Total	100	100	42.81	14.84
<b>Household Size</b>				
1 - 5	37	37		
6 - 10	40	40		
11 and Above	23	23		
Total	100	100	7.62	4.63
<b>Educational Level</b>				
Adult Education	22	22		
Primary education	28	28		
Secondary	23	23		
Tertiary education	27	27		
Total	100	100		
<b>Years of Farming Experience</b>				
1 – 5	42	42		
6 – 10	44	44		
11 and above	14	14		
Total	100	100	7.08	3.735
<b>Annual Income (₦)</b>				
<100, 000	8	8		
101,000 - 400,000	65	65		
401,000 - 800,000	24	24		
801,000 - 1,000 000	1	1		
>1, 000, 0000	2	2		
Total	100	100	38.2480451249.8	
<b>Farm Size (ha)</b>				
< 1ha	64	64		
1.1 – 2ha	21	21		
2.1 3ha	10	10		
3.1 and above	5	5		
Total	100	100	1.56	0.868
<b>Land Acquisition</b>				
Rent/Hired	36	36		
Gift	11	11		
Purchased	23	23		
Leased	5	5		
Borrowed	11	11		
Total	100	100		

**Source: Field Survey Data, 2021**

**Table 2: Distribution of Respondents According to Insecticide Awareness**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Awareness about Insecticide</b>		
Yes	100	100
No	0	0
<b>Purpose of Insecticide Usage</b>		
Household Use	13	13
Farm Use	67	67
Environmental Usage	20	20
<b>Source of Information about Insecticide</b>		
Friends	52	52
Media	15	15
School	23	23
Extension Agent	10	10
<b>Involvement in Insecticide Usage</b>		
Yes	99	99
No	1	1
<b>Usage of Insecticide</b>		
Insect Control	73	73
Disease Control	18	18
Induce Flowering	9	9
<b>Types of Insecticide Used</b>		
System	56	56
Contact	44	44
<b>Equipment Used for Insecticide Application</b>		
Sprayer	75	75
Dusters	25	25
<b>Effectiveness of Insecticide on Insect Control</b>		
Very Effective	37	37
Effective	37	37
Moderately Effective	19	19
Low Effective	7	7

**Source: Field Survey Data, 2021**

**Table 3: Distribution of Respondents According to Awareness about Insecticides Hazard**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Awareness about Insecticide Hazard</b>		
Yes	75	75
No	25	25
<b>Source of Information about Insecticide</b>		
Friends/Relatives	17	17
Extension Agent	45	45
School	20	20
Media	18	18
<b>Kinds of Hazard</b>		
Health	62	62
Soil	12	12
Environmental	10	10
Biodiversity	5	5
Water Pollution	11	11
<b>Negative Effects of Insecticides</b>		
Health	62	62
Soil	12	12
Environmental	10	10
Biodiversity	5	5
Water Pollution	11	11
<b>Perceived Negative Effect of Insecticide</b>		
Strongly Agreed	33	33
Agreed	18	18
Slightly Agreed	19	19
Undecided	15	15
Not Agreed	15	15

**Source: Field Survey Data, 2021**

**Table 4: Distribution of Respondents According to Awareness about Safety and Precaution Measure**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Awareness about safety and precaution measure</b>		
Yes	100	100
No	0	0
<b>Source of Information about Safety and Precaution Measure</b>		
Friends/Relatives	62	62
Extension Agent	12	12
School	10	10
Media	5	5
Others	11	11
<b>Perceived Safety and Precautionary Measures</b>		
Wearing protective cloth	62	62
Using Recommended insecticide	12	12
Disposal of containers	10	10
Avoid using leaking sprayer	5	5
Using appropriate time of application	11	11

**Source: Field Survey Data, 2021**

#### **4. Discussions**

In this study it was discovered that 99 percent of the farming activities were done by men compared to women, and 48 percent are youths within ages of 20-39 years. Family size of 1-6 members per/household forms 40 percent of the respondents as reported by Olakunle, (2016) that in Nigeria the agricultural sector is the major supplier of food, raw materials and largely depends on exchange and 70 percent of its population largely depends on this sector for survival and FAO, (2012) also reported that farmers produce safe and quality food and also help farmers to have abundant and affordable food all year round. It was discovered that many are aware of insecticides and used them in controlling insect pests in their homes, farms and environment, about 67 per cent used them in their farms, this was similar with Bhan, (2014), Sekhota, (2016) and Damalas, (2017) who opined that insecticides application boost agricultural production and are also used to control pests and diseases as well enhance agricultural production. Most of the

people in the study area, about 75 percent, are aware that insecticides cause hazard to man, farm animals and pollute the environment, water both for drinking and domestic activities. This finding agreed with Dennis, (2002), Anderson, (2016) and Ateya, (2016) who said that insecticides are highly hazardous and can cause acute and chronic effects on man and environmental pollution. They equally know that they have a negative effect, about 33 percent strongly agreed on the negative effect of insecticides. This was similar to Alewu, (2012), Bouaziz, (2013) and WHO, (2012) findings who said that insecticides cause acute toxicity and they are lethal when inhaled or ingested. Lowrence, (2017) reported that insecticides cause cancer. They also are aware of the safety precautions in handling insecticides; many of them used protective clothes when working with insecticides. This finding was similar to Alewu, (2014), Ogwa and Dongo, (2013) that insecticides are poisonous and must be handled with care and also generates public health problems and environmental pollution. They should be kept in original containers and stored in a label cabinet or fenced area to avoid accessibility to unauthorized persons. This report was similar to Marcelo, (2016) and Ajayi, (2018) that farmers ignore basic safety instructions and equipment. In respect of educational level, most of them have one form of education or the other, at least secondary education. This helps them to plan well in respect of farming activities. This was in line with the findings of FAO, (2012) and Connel, (2012) who reported that education is an important source of empowerment in increasing agricultural productivity.

## **5. Conclusion**

The study on perception of insecticides usage and health hazard in some selected communities in Zuru Local Government Area was carried out to find out the awareness of the people about the use of insecticides. This was done by sampling two villages in six

administrative districts each in the study area (twelve villages). Structured questionnaires were used to collect data from respondents. Based on the findings, most respondents used insecticides, either in the farm or at home to control insect pests. Good percentage of them are men compared to females and most of them are youth and middle age, they are aware of insecticide usage and hazard. Some of the respondents agreed that insecticides have a negative effect if not properly handled. It is suggested that safety precautionary measures should be followed when handling and applying insecticides and should be handled carefully. These insecticides help in increasing crop yield production in the area despite their harmful effect.

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