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Agrochemicals Knowledge and Attitude to Safety Practices among Farmers in Lejja, Nsukka Local Government Area, Enugu State

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Abstract

Agrochemicals are used by farmers to boost agricultural yields and to control pests and weeds. However, farmers applying these agrochemicals may not have adequate knowledge of agrochemicals and safety practices guiding the application. The purpose of this study was to determine the agrochemicals knowledge and attitude to safety practices among farmers in Lejja. Four specific objectives and two hypotheses guided the study. The study utilized the cross-sectional research design. The population for the study comprised of 3000 farmers in Lejja. Two-stage sampling techniques were used to draw a sample of 315 full-time farmers. The instrument for the study was the researcher's designed instrument called Agrochemical Knowledge and Attitude to Safety Practices Questionnaire (AKASPQ). Frequencies and percentages were used to answer research questions 1 and 2, and mean were used to answer research question 3 and 4. Hypothesis 1 was tested using Chi-square statistics while hypothesis 2 was tested using ANOVA statistics. The result of the study showed that: farmers had low level of knowledge (37.2%) of agrochemicals, farmers with tertiary education possessed high level of knowledge (65.6%), secondary education possessed moderate level of knowledge (36.3%) and those with primary education had very low level of knowledge (13.9%) of agrochemicals. The result also showed that farmers had negative attitude ($\bar{x}$= 2.06) to safety practice of agrochemicals. Farmers with tertiary education had positive attitude ($\bar{x}$ =2.62) while farmers with secondary and primary education had negative attitude ($\bar{x}$=2.25,$\overline{x}$ 2.01) to safety practices of agrochemicals. Findings of the study indicated that farmer's level of knowledge of agrochemicals and attitude to safety practices differed according to level of education. It was therefore recommended that Lejja farmers' welfare association in conjunction with agricultural extension workers should organize seminars periodically to enlighten the farmers on use of agrochemicals and to encourage them use the personal protective equipment and other safety practices in agrochemicals applications. This will increase the knowledge of agrochemical use and can improve attitude to safety practices

Keywords: Agriculture, Agrochemicals, knowledge, Attitude, Safety practices

Introduction

Agriculture is the major source of livelihood in developing countries especially among the rural residents. Amodu et al. (2017) noted that farming is the main occupation of the rural people. Agriculture is the major occupation of people in Nigeria and it employing over 70% of the active labour force Akangbe et al. (2015). It is pertinent to state that role of agriculture in boosting the economy of a nation is enormous. Agriculture provides food, employment and even

raw materials for other industries. Agriculture is defined as term generally used in the broad sense including all activities directly related to cultivating, growing, harvesting and primary processing of agricultural products, animal and livestock breeding including aquaculture and agro-forestry (Pragya & Abha 2018). These farmers in effort to ensure increased agricultural productivity and control pests/weeds have resulted to use of agrochemicals.

Agrochemicals are substances used to control weeds, kill pests and also help to improve agricultural production. Muhibbullah and Sarwa (2017) defined agrochemical as a generic term for the various chemical products, such as fertilizers, hormone, fungicides, insecticides or soil treatment that improves the production of crops. Awad et al. (2018) noted that pesticides are widely used by farmers to protect crops from insects and diseases. The extensive and indiscriminate use may be worst with inadequate knowledge of the agrochemicals and the safety practices. Jean et al. (2019) stated that the population (farmers) ignored the health risks linked to pesticides applications. Jin et al. (2015) reported that lack of knowledge of agrochemical risks, willingness to make profit and to prevent a lower yield resulted in promoting pesticide use among farmers. The attention of the farmers was focused on increasing agricultural products to maximize profit without taking the cognizance of the toxicity of the agrochemicals. Agrochemicals and pesticides are used interchangeably in this study. Agrochemicals commonly used by the rural farmers in lejja are herbicides, pesticides, hormones, chemical/natural fertilizers and others. Herbicides and pesticides are used to control weeds and pests. Awad et al. (2018) reported that all (100%) of the farmers were using insecticides and fungicides and only one person was found using herbicides in addition to insecticides and fungicides. These farmers in applying these agrochemicals may not be knowledgeable on the use of agrochemicals.

Knowledge is essential to man's existence and quality of life because everything we do depends on knowledge. Oparah et al. (2019) defined knowledge as possession of information, skill and understanding gained through learning and experiences. Knowledge is prerequisite to understanding the handling and application of agrochemicals, observing the expiring and adulterated chemicals, using the personal protective equipment and other safety practices to minimize unnecessary exposures to agrochemicals. Previous studies by Jambari et al (2020), Nwadike et al (2021) and Sharaf et al (2018) reported that their respondents possessed moderate and high (61.1%, 91.2% and 74.8%) level of knowledge of agrochemical use. Contrarily, Endalew et al. (2020); Fatemeh et al. (2019) and Mequanint et al (2019) reported that that farmer's level of knowledge of agrochemicals was low (33.3%, 31.1% and 39.4%). Studies by Adesuyi (2018) and Jallow et al. (2017b) noted that majority of their participants reported that they do not read, understand or follow pesticide labels. This inability to read or follow the pesticide labels may be attributed to low educational level of the farmers. Previous researchers Jean et al (2019), Jallow et al. (2017); Okoffo et al. (2016) indicated that their majority of their respondents disposed the empty pesticide containers wrongly by throwing them into barren lands, running waters (stream/rivers), in garbage, some clean and reuse the emptied containers in the house. Improper disposal and reusing of agrochemical empty containers indicates that farmers had low or poor knowledge of the agrochemicals, thus it becomes imperative to study their level of knowledge of agrochemicals. Such knowledge is likely to impact on farmers' attitude to safety practices of agrochemicals.

Attitude can be referred to as a way of thinking, feeling or reacting to something or someone. Attitude is a disposition or state of mind about somebody or something. Achalu, (2019) referred to attitude as the perception and reaction to a situation, which can be positive, negative or even indifference Aurang et al. (2017) defined practice as any customary action or

proceeding regarded as individual habit. Safety practices are those strategies that will help to protect the farmers from exposure to toxic agrochemicals. Attitude to safety practices denote the belief and behaviour of the farmers towards the use of safety practices. Attitude of farmers can be positive or negative. Positive attitude to safety practices imply that farmers apply the agrochemicals with cautions and at the same time using the personal protective equipment (PPE) and other preventive measures consistently to protect themselves, consumers and the environment.

Negative attitude to safety practices implied indiscriminate use of the agrochemicals without cautions and being indifference to the use of PPE thereby exposing themselves to the harmful effects of agrochemicals. Adesuyi (2018) noted that the use of appropriate PPE and adoption of other safe protective measures and attitude during preparation and application of pesticides are important to reduce occupational exposure to pesticides. Studies by Nwadike et al. (2021) Endalew (2020), Mequanint et al. (2020), Jambari et al. (2020) and Awad et al. (2018) indicated that their respondents had positive attitude to the use of personal protective equipment when applying agrochemicals but contrary to the studies of Jallow et al. (2017b), Sharafi et al 2018) which reported that their respondents had negative attitude to personal protective equipment. Fatemeh et al. (2019) and Jallow et al. (2017b) further reported that the respondents took shower immediately after mixing or spraying pesticides, washing clothing used for agrochemical applications separately, not eating and drinking. These practices depicts positive attitude to safety practices during agrochemical applications. Previous researchers such as Jallow et al. (2017b), Adesuyi et al. (2018) and Nwadike et al. (2021) noted that the participants reported that they stored the purchased agrochemicals in living areas or in refrigerators with other items at home. The authors lamented that this negative attitude to safety practices can lead to accidental poisoning of the farmers and threaten the health of the families especially children. The varied attitudes of farmers to safety practices may be influenced by social variable of level of education.

Education is crucial to knowledge of agrochemicals and the safety practices. Educated farmers may have more knowledge on how to mix and apply the chemicals as well as safety practices to minimize the harmful effects of the agrochemicals. Other researchers Al-Zadjali et al. (2015) and Jallow et al. (2017b) indicated that a considerable number of the respondents in their studies were illiterates or had limited formal education, and did not receive any training or technical support in pesticide safety which hampered their ability to read and understand pesticide labels regarding the correct and safe use of agrochemicals. Sharafi et al. (2018) and Jallow et al. (2017b) observed that farmers who completed tertiary levels of education had greater awareness of issues such as pesticides toxicity. Previous studies by Bemi et al. (2021), Karunamoorthi et al. (2021) and Nwadike et al. (2021) noted that educational attainment play a significant influence on farmer awareness and safety behaviours and that farmer with a good level of education tend have a good safety awareness and behavior towards pesticide handling.

Studies have shown that farmers use agrochemicals to increase agricultural productivity by controlling pests, herbs and application of fertilizers and hormones. Majority of Lejja home based are full-time farmers who depend on farming for source of livelihood applying agrochemicals to increase crop production for commercial purposes. These farmers produce crops such as tomatoes, green/yellow pepper, cucumber, water melon, local beans (akidi), tomatoes, pumpkins, garden-egg, cassava, yam/cocoyam, potatoes, groundnuts, okra, and different types of leafy green vegetables poultry, pigs, goats and cows. However, these farmers may not be knowledgeable on the agrochemical use which may affect their attitude to the safety

practices in the use of agrochemicals. Thus, this study investigated the agrochemicals knowledge and attitude to safety practices among farmers in Lejja, Nsukka Local Government Area (LGA), Enugu State. Specifically, the study seeks to determine: level of knowledge of agrochemicals among farmers in Lejja,. Nsukka LGA, Enugu State; level of knowledge of agrochemicals among farmers in Lejja Nsukka L.G.A, Enugu State based on level of education; attitude to safety practices of agrochemicals among farmers in Lejja Nsukka L.G.A, Enugu State; and attitude to safety practices of agrochemicals among farmers in Lejja Nsukka L.G.A, Enugu State based on level of education.

Hypotheses

1. There is no significant difference in the level of knowledge of agrochemicals among farmers in Lejja based on level of education ($p<0.05$).
2. There is no significant difference in the attitude to safety practices of agrochemicals among farmers in Lejja based on level of education ($p<0.05$).

Methods

Design of the Study: Cross sectional research design was employed to achieve the purpose of the study.

Area of the Study: The study was conducted among rural farmers in Lejja, Nsukka Local Government Area of Enugu State, Nigeria. Lejja is made up of 33 villages that depend on farming as source of livelihood. Lejja farmers were chosen for the study because majority of the residence were full-time farmers producing different types of food crops utilizing agrochemicals to control weeds/pests to increase agricultural productivity.

Population for the Study: The population for the study consisted of all the 3000 adults in Lejja who are engaged in full-time farming activities. Lejja farmers association register (2020) indicated that about 3000 rural residents of Lejja were engaged in full-time farming as source of income.

Sample and Sampling Technique: The sample consisted of 315 farmers. This in line with Cohen, Manion and Morrison (2018) which stipulated that if the population for a study is 3000 and above at 95 per cent confidence level and 3 per cent confidence interval, the sample size should be 234. Based on that, the study sampled 315 farmers to ensure enough representation. Lejja is made up of 33 villages. Two-stage sampling was used to draw the sample. First stage involved simple random sampling of balloting without replacement to select 21 villages out of 33 villages. Second stage was purposive sampling technique to select 15 full-time farmers from each of the 21 villages. This produced a total of 315 respondents that were used for the study.

Instrument for Data Collection: The instrument for data collection was researcher designed questionnaire called Agrochemicals Knowledge and Attitude to Safety Practices Questionnaire (AKASPQ). The questionnaire was divided into two sections- section. Sections A and B. Section A comprised of seven multiple choice questions that determined the level of knowledge of agrochemicals. The respondents were expected to choose from options A-D the one that correctly answers the question. Section B consisted of eight items that determined the attitude to safety practices. The respondents were required to indicate The degree of agreement or disagreement as follows: Strongly agree (SA), Agree (A), Disagree (D) and Strongly disagree (SD), with assigned values of 4, 3, 2, and 1 for positive items and 1, 2, 3, and 4 for negative items respectively.

Validation and Reliability of the Instrument: The instruments were face-validated by three experts from the Department of Human Kinetics and Health Education, University of Nigeria, Nsukka. The reliability of the instrument was determined using split-half method through Spearman Rank Order Correlation Coefficient and reliability index of .80 was obtained and adjudged reliable for the study.

Data Collection and Analysis: A total of 315 copies of the questionnaire were administered with the help of six research assistants. Research assistants were farmers in the villages who were not included in the sample and were familiar with the study area. They were briefed on the modalities of data collection during a survey. The assistants and the researcher distributed the instruments to the respondents and collected them back at the spot. Only 300 were properly completed and were used for analysis. The responses were analyzed using frequencies and percentages. The study utilized Okafor (1997) scale for measuring knowledge. Percentage score of 0-19% is considered very low proportions, 20-39% low proportions, 40-59% moderate proportions, 60 – 79% high proportions while 80% and above is considered very high proportions. The research questions on attitude were analyzed utilizing Enyi and Nworgu (2006) four points scale. Where the mean score equal to or greater than the criterion mean of 2.50 indicates positive attitude whereas the mean score less than 2.50 indicates negative attitude to safety practices. Chi-square statistics was used to test hypothesis 1 while ANOVA statistics was used to test hypothesis 2, at .05 level of significance.

Results

Table 1: Level of knowledge of agrochemicals among farmers in Lejja (n=300)

S/N	Item statement	Correct responses F (%)
1	Reading and Understanding the agrochemical labels	185 (66.6)
2	Aware that agrochemicals are harmful to human health and environment.	105 (35.0)
3	Mixing of 2 or more chemicals before application	125 (41.6)
4	Received training or course on use of agrochemicals	60 (20.0)
5	Aware that some agrochemicals have been banned for use	108 (36.0)
6	Proper disposal of agrochemical empty containers.	110 (36.6)
7	Usually use the recommended dose of the agrochemicals	90 (30.0)
	Overall %	**(37.2)**

Key: Very low knowledge = 0-19%, low knowledge = 20-39% moderate knowledge = 40- 59%, High knowledge = 60-79% Very high knowledge =80% and above.

Table1shows that farmers in Lejja possessed low (37.2%) level of knowledge of agrochemicals. The table shows that the respondents had moderate level of knowledge (41.6%) that mixing of 2 or chemicals before application is dangerous.

Table 2: Level of knowledge of agrochemicals among farmers in Lejja based on level of education

S/N	Knowledge of agrochemicals	Pri. Edu (n=130) Correct responses F(%)	Sec. Edu (n=110) Correct responses F(%)	Ter. Edu (n=60) Correct responses F(%)
1	Reading and Understanding the agrochemical labels	20 (15.5)	80(72.7)	38 (63.3)
2	Aware that agrochemicals are harmful to human health and environment.	15 (11.5)	30(27.2)	25(41.6)
3	Mixing of 2 or more chemicals before application is dangerous.	25 (19.2)	50(45.4)	37(61.6)
4	Have received training or course on use of agrochemicals	10(7.6)	15(13.6)	35(58.3)
5	Aware that some agrochemicals have been banned for use	15(11.5)	40(36.3)	40(66.6)
6	Proper disposal of agrochemical empty containers	30(23.0)	35(31.8)	53(88.3)
7	Usually use the recommended dose of the agrochemicals	12(9.2)	30(27.2)	48(80.0)
	Overall %	**13.9**	**36.3**	**65.6**

Key: Very low knowledge = 0-19%, low knowledge = 20-39%, moderate knowledge = 40-59%, High knowledge = 60-79% and Very high knowledge =80% and above.

Table 2 indicates that farmers with tertiary education possessed high level of knowledge (65.6%), farmers with secondary education possessed low level of knowledge (36.3%) while those with primary education level possessed very low level of knowledge (13.9%) of agrochemicals.

Table 3: Attitude to Safety Practices of Agrochemicals among Farmers in Lejja based on level of education (n=300)

S/N	Attitudinal statements on Safety practices	$\bar{x}$
1	It is important to wear protective equipments such as face masks, goggles, booths, hand gloves, hats, and overalls/raincoats before use of agrochemicals.	1.72
2	Agrochemical containers should be thrown away or discarded when empty.	1.95
3	Washing of hands with soap and water after agrochemical use will help to reduce chemical poisoning	2.18
4	Farmers should avoid touching the mouth, eyes, smoking, eating or drinking while mixing or spraying agrochemicals.	2.10
5	It is important to take bath with soap and water after applying agrochemicals before doing any other thing.	3.12
6	Clothes used when applying agrochemicals should be washed separately from other clothes.	1.29
7	Agrochemicals should be stored in a locked cupboard and kept out of reach of children and family food stuff.	2.09
8	Farmers should report to hospital for treatment when illness developed after applying agrochemicals.	2.05
	Grand mean	**2.06**

Key: Positive attitude = > 2.50; Negative attitude = < 2.50

Table 3 indicates that grand attitudinal mean score of ($\bar{x}$ = 2.06) which was less than the criterion mean of 2.50. This implies that farmers had negative attitude to safety practices of agrochemicals. The table further shows mean score of ($\bar{x}$= 1.72 for use of personal protective equipment; $\bar{x}$ = 1.95 for disposal of empty containers which are less than criterion mean of 2.50 indicating negative attitude; and ($\bar{x}$ = 3. 12) in taking baths immediately after applying agrochemicals which is greater than the criterion mean of 2.50. This implies that farmers attitude towards this item is positive.

Table 4: Attitude to safety practices of agrochemicals among farmers in Lejja based on level of education

S/N	Attitudinal statements	Pri. Edu (n=130) $\bar{x}$	Sec. Edu.(110) $\bar{x}$	Ter. Edu. (60) $\bar{x}$
1	It is important to Wear protective equipments such as face masks, goggles, booths, hand gloves, hats, and overalls/raincoats before use of agrochemicals.	1.72	1.94	2.25
2	Agrochemical containers should be thrown away or discarded when empty.	1.65	1.94	2.25
3	Washing of hands with soap after agrochemical use will help to reduce chemical poisoning	2.05	2.30	2.49
4	Farmers should avoid touching the mouth, eyes, smoking, eating or drinking while mixing or spraying agrochemicals.	2.11	2.28	2.35
5	It is important to take bath with soap and water after applying agrochemicals before doing any other thing.	3.10	3.15	4.01
6	Clothes used when applying agrochemicals should be washed separately from other clothes.	2.08	2.33	2.43
7	Agrochemicals should be stored in a locked cupboard and kept out of reach of children and family food stuff.	1.79	1.97	2.64
8	Farmers should report to hospital for treatment when illness developed after applying agrochemicals.	1.58	2.14	2.58
	Overall mean	**2.01**	**2.25**	**2.62**

Key: Positive attitude = > 2.50; Negative attitude = < 2.50

Table 4 indicates that grand mean score of farmers with primary education ($\bar{x}$=2.01), which slightly lower than those with secondary education ($\bar{x}$ 2.25).These means were less than the criterion mean of 2.50. This implies that the attitude of farmers with primary and secondary education to safety practices of agrochemicals was negative. The table further indicates that overall mean score of farmers with tertiary education (($\bar{x}$ = 2.62) which was greater than the criterion mean of 2.50. This implies that attitude of farmers with tertiary education to safety practices of agrochemicals was positive.

Table 5: Summary of Chi-square Analysis of No Significant Difference in the Level of Knowledge of Agrochemicals based on Level of Education (n = 300)

Variable	N	YES	NO	x^2	Df	P-value	Decision
Gender	**300**	**0(E)**	**0(E)**				
Prim Ed.	130	18.(13.9)	112.(85.9)		3		
Sec. Ed.	110	40(36.3)	70(63.6)	8.486	3	.000	Rejected
Ter. Ed.	60	39(65.6)	21(34.2)		3		

Table 5 shows that there was a significant difference in level of knowledge of agrochemicals among farmers based on level of education (x^2=8.486, p=.000) since p-value is less than .05 level of significance. This implies that farmers with different levels of education differed in their level of knowledge of agrochemical use.

Table 6: Summary of Analysis of variance (ANOVA) Testing the Hypothesis of No Significant Difference in the Attitude to Safety Practice of Agrochemical Use among Farmers based on Level of Education (n-300)

	Sum of squares	Df	Mean square	F-value	P-value
Between groups	112.539	3	37.513		
Within groups	124.310	3	41.450	5.946	.001

Table 6 indicates that the calculated value and the p-value (F=5.946, p = .oo1) which is less than .05 level of significance. This implies that farmers differed in their level of agrochemical use based on their level of education.

Discussion

Result in Table 1 shows that farmers in Lejja possessed low (37.2%) level of knowledge of agrochemicals. The low level of knowledge could be attributed to low educational level of the majority of the respondents. This is at variance with previous studies by Nwadike et al. (2021), Jambari et al. (2020), and Sharafi et al. (20118) which reported that their respondents possessed moderate and high (61.1%, 91.2% and 74.8%) respectively level of knowledge of agrochemical use but agrees with the findings of Endalew et al. (2020) Fatemeh et al. (2019) and Mequanint et al. (2019) which reported that that farmer's level of knowledge of agrochemicals was low (33.3%, 31.1% and 39.4%). Findings in Table 1 indicate that high proportions (61.6%) could read and follow the pesticide labels. This contradicts with the findings of studies by Adesuyi (2018) and Jallow et al. (2017) which noted that their participants reported that they could not read, understand or follow pesticide labels. Findings in Table 1indicates that low proportions (36.6%) of farmers dispose the emptied containers improperly. This corroborates with the

findings of previous researchers, Jean et al. (2019), Jallow et al. (2017), Okoffo et al. (2016) which indicated that the majority of their respondents disposed the empty pesticide containers wrongly by throwing them into barren lands, running waters (stream/rivers), in garbage, some clean and reuse the emptied containers in the house. The result in Table 1 shows that low proportions (20.0%) received training on agrochemical use. This is in agreement with the finding of Jallow et al (2017a) who reported that majority (64%) of the farmers had not received any training or technical support on judicious use or safe handling of pesticides. The low level of knowledge could be attributed to low educational level of the majority of the respondents. The inability to read and understand the pesticides label, lack of training on agrochemical use, and improper disposal of emptied agrochemical containers depicts lack of knowledge of agrochemicals among the respondents. This can lead to improper mixing of the chemicals, using expired or banned agrochemicals, excessive use of the products and food poisoning with its adverse effect on human health and environment.

Result in Table 2 shows that farmers with tertiary education possessed high level of knowledge (65.6%) of agrochemicals. This implies that farmers with tertiary level of education are more knowledgeable of agrochemicals than those with secondary and primary levels of education. Result in table 5 also shows that there is significant difference in the level of knowledge of agrochemical use based on level of education (p =.000). This is in consonance with the studies by Sharafi et al. (2018) and Jallow et al. (2017b) who observed that farmers who completed tertiary levels of education had greater awareness of issues such as pesticides toxicity. The finding of the study also agrees with the studies by Bemi et al. (2021), Karunamoorthi et al. (2021), and Nwadike et al (2021) that farmer with a good level of education tend have a good safety awareness about pesticide handling. This is because knowledge is power and revolves and influences every aspect of life. Those farmers with tertiary level of education are able to read, understand and apply the instructions of the producers on the agrochemical containers and apply the pesticides correctly to reduce unnecessary exposures.

Result in Table 3 indicated that grand attitudinal mean score of ($\bar{x}$ = 2.01) which was less than the criterion mean of 2.50. This implies that farmers had negative attitude to safety practices of agrochemicals. This is in contrast with the studies by Nwadike et al. (2021) Endalew (2020), Mequanint et al. (2020), Jambari et al. (2020), and Awad et al. (2018) which indicated that the respondents had positive attitude to safety practices when applying agrochemicals. However the finding of the study is in agreement with the findings of Sharafi et al. (2018), and Amodu et al. (2017) which reported that the respondents had negative attitude as (18%) only used full body protection while (>13%) do not use any protection. The findings of Table 3 indicates that positive attitude (3.12) of the respondents to taking baths with soap and water after application of agrochemicals before doing any other which concur with the studies of Fatemeh et al. (2019) and Jallow et al. (2017b) further reported that the respondents took shower immediately after mixing or spraying pesticides. These practices depicts positive attitude to safety practices during agrochemical applications. Findings in Table 3 indicate negative attitude ($\bar{x}$ = 2.09) in the storage of agrochemicals. This is in agreement with the studies by Nwadike et al. (2021), Adesuyi et al. (2018) and Jallow et al (2017b) which noted that the participants reported that they stored the purchased agrochemicals in living areas or in refrigerators with other items at home. The authors lamented that this negative attitude to safety practices can lead to accidental poisoning of the farmers and threaten the health of the families especially children. This may be attributed to low level of knowledge of the respondents; lack of training on pesticide use and they do not really

understand the importance of using the personal protective equipment in application of agrochemicals.

Result in table 4 indicates that grand mean score of farmers with primary education ($\bar{x}$=2.01), secondary education ($\bar{x}$ =2.25) and tertiary education (($\bar{x}$ = 2.62). Findings in Table 6 shows that there is significant difference in the attitude to safety practices of agrochemical use based on level of education (F = 5.946, p =.001).This implies that the attitude of farmers with primary and secondary education to safety practices of agrochemicals was negative while attitude of farmers with tertiary education to safety practices of agrochemicals was positive. This is concordant with the findings of Bemi et al. (2021), Karunamoorthi et al. (2021) and Nwadike et al. (2021) which noted that educational attainment play a significant influence on farmer safety behaviours and that farmer with a good level of education tend have a good behavior towards pesticide handling. The respondents indicated reasons for negative attitude to safety practices as: lack of availability when needed, personal protective equipment not being comfortable in the hot weather, two expensive, slow down work, and not cultural to put all these while working in the farms.

Conclusion

Findings of the study indicated that farmers in Lejja had low level of knowledge of agrochemicals, which has detrimental outcome on the health of the farmers and general public. Also, the findings showed that the level of knowledge of agrochemicals among farmers differed according to level of education implying that educated farmers are more knowledgeable on the agrochemical use compared to the uneducated counterparts. Again the findings showed that farmers had negative attitude to safety practices of agrochemicals which implies that the low level of knowledge of agrochemical use affected their attitude to safety practice. Though the farmers had negative attitude to safety practices of agrochemicals, their attitude differed according to level of education.

Recommendations

1. Lejja farmers' welfare association in conjunction with agricultural extension workers should organize seminars periodically to enlighten the farmers on the use of agrochemicals and to encourage them use the personal protective equipment and other safety practices in agrochemicals applications to minimize the harmful effects on human health. This will assist them to develop positive attitude to safety practices in the farming activities. Also, since majority of the farmers had low level of education, the agricultural extension workers should apply the use of pictograms to explain the pesticide labels in a simplified way for easy understanding among the farmers.
2. The food regulatory bodies such as National Agency for Food and Drug Administration and Control (NAFDAC), Food and Agriculture Organization (FAO), Standard Organization of Nigeria (SON) and Ministry of Agriculture (MOA) should increase the awareness of the farmers and the general public on pesticide uses, exposures, toxicity and adverse effect on health and environment.

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