

INFORMATION SOURCES ON THE HEALTH HAZARD OF AGROCHEMICAL USE AMONG ARABLE CROP FARMERS'IN MUBI AGRICULTURAL ZONE, ADAMAWA STATE.

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Abstract

This study was conducted to examine the information sources on the health hazard of agrochemical application among arable crop farmers in Mubi Agricultural Zone, Adamawa State. This research was conducted through the administration of structured questionnaire to 251 respondents selected through the multistage random sampling technique. The data collected was analyzed using descriptive statistics such as mean, frequency, percentage and inferential statistics such as Pearson product moment correlation (PPMC) were used to test the hypothesis at 0.05 level of significance. Data collected on the socio economic characteristic revealed that 74.8% of the respondents were in their prime age, with mean age of 40 years and modal class of 40 – 49 years, 68.1% were male farmers, most (70.1%) of the arable crop farmers were married and 69.9% had small family size of 1 – 5 persons per household, 87.7% of the respondents had one form of education or the other. About 69.8% of the respondents had farming experience above ten years, 60% indicated a positive perception of health hazard of agrochemical usage, and 58% had positive attitude toward use of agrochemicals. Major information sources on the use of agrochemicals were farm associates/friends and radio while newspapers, posters, internet, mobile phone and extension agents were the least sources of information. Correlation between information and the use of agrochemicals is very weak. There is inefficient source of information for the arable crop farmers on health hazard associated with the use of agrochemicals in the study area. It is recommended that extension services, advisory and advocacy services be provided by relevant agencies to provide information associated with health hazard as a result of agro-chemical usage.

Introduction

Agro-chemicals can be defined as any chemical substance intended for preventing, destroying, repelling or mitigating the effect of any pest of plants and animals. They include herbicides, nematocides, avicides, repellents, fungicides, insecticides, rodenticides, molluscides, attractants used in agriculture, public health, horticulture, food storage or chemical substance used for a similar purpose (NAFDAC, 1996). It has been reported that the occupancies of pest and disease have led to indiscriminate use of pesticide and other agrochemicals. High levels of agrochemical use in small holder vegetable farm has been reported due to excessive multiple cropping system and excessive application of agrochemicals on land, water and environment, (Ngowi, 2007).

Agro-chemicals when used properly have been of tremendous benefit to man and his environment especially in the developing countries, where they are used to eradicate insect

borne, endemic disease to produce adequate food and protect forest plantation and fibre. Presently, more than about 2.5 million tons of Agro-chemicals valued to over 30 million US dollars are being used in cultivation alone all over the world (Strauss1991). When Agro-chemicals are misused or used carelessly they cause considerable harm. The risk or hazards of using Agro-chemicals have increased in recent years with sharp rise in their consumption by agricultural industries, households, and government. Agro-chemicals lead to over, three million poisoning cases annually and up to 220,000 deaths, primarily in the developing countries, as reported by FAO/WHO (1988). Agro-chemicals may present danger to the users if applied improperly or without sufficient knowledge of their toxic effects. Some are highly toxic and may cause serious illness and even death if spilled on the skin, inhaled or otherwise used carelessly.

There is evidence of poor Agro-chemicals education and misuse in Nigeria, for instance a

situation where over dosage for the purpose of effecting rapid kill of crop pests is common among government trained, or agency trained and assisted small-scale farmers (Ivbijaro, 1998). It has also been noticed that these farmers sometimes use these pesticides for purposes other than that for which they are manufactured. Some stunning revelations of agro-chemicals misuse have been reported by some scientists (Ivbijaro, 1977; Youdeowei, 1989; Ivbijaro, 1990, 1998) as follows: Lindane formerly used for the control of pests on cereal crops is poured into rivers and streams to kill fish, which is then sold for human consumption. Mixing of fungicides and insecticides together during fungicides application period to reduce workload of spraying each differently. Careless disposal of expired pesticides and use of pesticides containers for domestic purposes. Was reported by (Asogwa and Dango, 2009). This study will proffer solution for the need to create awareness to the farmers by the relevant agencies to safeguard the use of agro-chemicals.

Objectives of the Study

The general objective of the study was to determine the perception on health hazards associated with the use of agro-chemicals among arable crop farmers in Mubi ADP zone, Adamawa State.

The specific objectives were to: -

- i. describe the socio-economic characteristics of the arable crop farmers in Mubi ADP Zone of Adamawa state;
- ii. determine the level of usage of agro-chemicals among the respondents;
- iii. assess respondents' level of awareness and adherence to safety practices and health hazards associated with the use of Agro-chemicals in the study area;

- iv. determines attitude of the respondents to the health hazard associated with the use of agro-chemicals;
- vi. determines sources of information on the health hazard associated with the use of agro-chemicals among arable crop farmers in the study area;

Hypotheses of the study

- Ho 1. There is no significant relationship between respondents' awareness of safety practice in use of agro-chemicals and their perception of the health hazard associated with use of agro-chemical.
- Ho2. There is no significant relationship between respondents' attitude toward use of agro-chemical and their perception of the health hazard associated with use of agro-chemicals.

Methodology

A multi-stage random sampling technique was adopted to select respondents for the study. In the first stage, five out of the eight Extension Blocks of Adamawa Agricultural Development Programme (ADADP) in the zone were selected for the study. In the second stage, a proportionate random sampling based on the number of cells in each of the sampled blocks was selected for the study. In the third stage, proportionate sampling based on the number of arable crop farmers in the selected cells were used to distribute a total number of 260 structured questionnaires to the respondents in the study area. Out of which 251 questionnaires were filled and returned for analysis as shown below:

Distribution of the Study Area

Agricultural liaison offices	Extension Blocks	Number of questionnaire distributed	Numbers of returned questionnaire
Mubi	Mubi I	60	60
	Mubi II	60	57
	Mayobani	80	58
Michika	Bazza	40	39
	Gulak	40	39
Total		260	251

Data were analyzed using inferential and descriptive statistics such as Pearson product moment correlation.

The Pearson's Product Moment Correlation was however used to test the coefficient at 5% level

$$r = \frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{N\sum x^2 - (\sum x)^2} \sqrt{N\sum y^2 - (\sum y)^2}}$$

Where

r = Correlation coefficient

x = Dependent variables

y = Independent variables

$\sum$ = Summation

Results and discussion

Table 1 indicates some of the socio-economic characteristics of the arable crop farmers. Sex of the respondents revealed that 68.1% are males; this indicated that most farmers' households' heads were male. This is due to the fact that the study area is a patriarchal society where males are expected to head, care and take decision for the wellbeing of their families, while women and children are subordinated under men. Age distribution of the respondents revealed that the age between 40 – 49 years recorded the highest age of the farmers with 31.9%, followed by 30 – 39 years with 23.9%. This reveals that most of the arable crop farmers are in their prime age. Marital status indicated that 70.1% of the respondents were married with only 23.1% single, and the rest were divorced, and widowers. Household size equally revealed that 6-10 persons per household record the highest

of significance of the levels of awareness of the respondents to safety practices used in handling agrochemicals. The formula is as follows:

with 60.9%. This connotes that household size determined the family labour that can be used to produce food and vice versa; hence the need for agrochemical to produce arable crops is necessary due to labour scarcity among the respondents.

Educational attainment indicated that most of the respondents attended one form of education or the other, first school leaving certificate had 24.3%, senior school certificate with highest population of 38.3% and tertiary education with only 15.1%. This implies that respondents had few people with advance educational attainment to interpret instructions required for agrochemical use in the study area. Farming experience revealed that respondents with 11 – 20 years had 48.6%, thus implies that the older the farmer the more experienced they are in arable crop production. This result implies that the educational level of the respondents in the study area is not enough to enable them read and comprehend the instruction labeled on the use of agro-chemicals, let alone the recommended dosage. It indicates that vestivelon training is needed by the arable crop farmers on the use of agro-chemicals by the extension agents and all stakeholders interested in the field. This result is in tandem with ascension of Jibow et al, (2011).

Table 1. Socio-economic characteristic Age distribution of the respondent

Age (years)	Frequency	Percentage (%)
<30	43	17.1
30 – 39	60	23.9
40 – 49	80	31.9
50 – 59	40	15.9
60 and above	28	11.2
Total	251	100
X	39.59	
Marital Status		
Single	58	23.1
Married	178	70.1
Divorced	7	2.8
Widower	10	4.0
Total	251	100
Household size		
1 - 5	50	19.9
6-10	153	60.9
11-15	33	13.1
16-20	9	3.6
>20	6	2.4
Total	251	100
X	9	
Educational attainment		
No formal education	31	12.4
First School Leaving Certificate	25	10.0
SSCE	61	24.3
NCE/Diploma	96	38.3
BSc/HND	38	15.1
Total	251	100
Farming experience		
1 – 10	48	19.1
11- 20	122	48.6
21 – 30	50	19.9
> 40	31	12.4
Total	251	100
X	19	

Source: Field survey 2018

Respondents' information sources on health hazard associated with the use of agro-chemical

Table 2. shows that, most (81.7%) of the respondents sourced information from families and neighbors, relatives' /farm associates (65.8%), radio (58.6%) on daily basis. Also 22.3% accessed information weekly from television and (28.6%) accessed information on monthly basis from bulletin/posters. In the same vein (40.2%) received information once in several months from agricultural extension agents.

Radio as source of information shows that, most of the respondents (58.6%) use and received information from radio on daily basis, (10.8%) listen to radio broadcasting weekly, fortnightly with only 1.6%, 4.8% monthly, 9.8% receive information via radio once in several months. Only 14.7% revealed not listening to radio completely among the respondents. Nwachuku, (2003) reported that radio is the cheapest and quickest means of passing

information and effective medium of disseminating agricultural information in Nigeria.

Television as source of information revealed information on agrochemical use that 28.3% were not completely having access to Television, 21.1% receive information daily via Television, 22.3% weekly, 4.4% fortnightly, 6.8% monthly and 17.1% watched such programmes on television once in several months. Omotayo (2011) reported that television as source of information was the most effective tools in communication for the support of development in Africa. This implies that television broadcast transfer and deliver information on health hazard associated with the use of agro chemicals visually to both literate and illiterate farmers alike.

Internet as source of information revealed that 53.8% of the total respondents were not getting information from the net, 14.7% had daily access to information via internet, 8.0% weekly, 4.0% fortnightly, also 4.0% had information monthly, 15.5% receive information via the internet once in several months. The use of internet among the respondents is very low this may be due to poor knowledge of computer and perhaps accessing information on the net may be difficult more especially with low and poor information communication technology (ICT) infrastructure that is the characteristics of rural parts of the third world nations. This collaborates with Norman and Antokothe (1999), who reported that the major constraints in relation to agricultural information were lack of adequate equipment's such as computers up-to-date books as well as inadequate budgetary

GSM Phone as source of information shows that 42.6% of the respondents were not receiving information on agrochemicals application, while 14.7% received information daily through phone calls, 24.7% weekly, 6.8% fortnightly, and 11.2% receive phone calls once in several months. Table 4.10 revealed that (14.70%), 24.7%, 6.8% and 11.2% received GSM phone calls daily, weekly, monthly, fortnightly and once in several months respectively. While 42.6% of the total respondents were not receiving information from (GSM) calls at all. This implies that mobile phone is easier for

farmers to communicate and it is also less expensive among arable crop farmers on the health hazard associated with the use of agro chemicals.

Newspaper as source of information recorded that 26.7% of the respondents had not received information from newspaper, 13.5% daily, 27.1% weekly, 3.2% fortnightly, 8.8% monthly and 20.8% get their information on newspaper once in several months. Table 4.10 indicates that 13.5%, 27.1%, 3.7%, 8.8% and 20.8% get and received information on daily, weekly, fortnightly, monthly and once in several months respectively, only 26.75 revealed that were not receiving information on newspaper. This collaborates with the findings of Laogun (2013), who reveal that the quantity and the quality of publication of newspapers in Nigeria still pose a problem as relevant source of information because newspapers cannot be accessed in a timely manner by the farmers in Nigeria.

Bulletin/posters as source of information revealed that most of the respondents (67.4%) were not using bulleting/posters as their source of information, (60.4%) use it once in several months, (28.6%) used it on monthly bases and 18.8%, 13/2% and 11.6% used bulleting and poster weekly, fortnightly and daily respectively. This indicates that most of the respondents were not able to access information on the health hazard associated with the agro chemicals in extension bulleting/posters. This may be due to late release of such bulletins/posters nowadays as a result of inefficiency in extension service delivery system.

Extension agents as source of information revealed that, most (40.4%) of the respondents did not get information from extension agents only 15.1% got information from extension agents fortnightly, 10.8% got information weekly, 5.2% monthly and 19.5% got information from extension agents once in several months. This implies that respondents had accessed information from extension agents expected. Orokoyo *et al* (2003) who revealed that farmers in northern Nigeria have limited contact with agricultural extension agents.

Relatives/families as source of information indicates that, majority (65.8%) of the respondents obtained information daily from

relative's/family members while 31.8%, 30.3% and 22.3% obtained information on weekly, once in several months and on monthly basis respectively. But 28.6% did not obtain information on health hazard associated with the use of agro chemicals among the respondents. This implies that farmers may not get adequate technical information from families/relatives, most of the information they get are of indigenous practices. This finding is in tandem with Achia, (2002) who found that farmers access to agricultural information is based mainly on their everyday interaction with their communities of which they are apart and the group of individuals with whom they regularly come into contact.

Farm associates/neighbors' as source of information revealed that majority (81.7%) obtained information daily from farm associates/neighbors while 39.4%, 26.6%, 15.3% and 12.4% obtained information weekly, once in several months, monthly and fortnightly respectively. Only 24.7% did not use information from farm associates/neighbors on the health hazards associated with the use of agro chemicals. Fellow farm associates/neighbors' are becoming the major source of information among most farmers in developing countries, as most of the respondent

used information obtained from farm associates/neighbors daily. The finding is in line with Anthult (1994) who found that there is rise in farmers' preference to other farmers as the first hand source of information on agricultural production. This may perhaps be due to apparent perceived ineffectiveness in the public extension service in developing countries.

Nongovernmental organization as source of information revealed that 99.6% of the total respondents had not received information from nongovernmental organizations, 0.4% of the total respondents indicated receiving information daily, this implies that nongovernmental organization do not completely give information to arable crop farmers in the study area.

This implies that farmers' fellow friends have become the major sources of information among most of the farmers in third world nations, as most of the respondents used and shared information received from their fellow farmers daily. The findings are in consonant with Anthult *et al* (1994) that there is rise in farmers preferring other farmers as firsthand information source on the health hazard associated with the use of agrochemicals. This is due to poor public extension service in the developing nations of the world.

Table 2. Distribution of information source on agro-chemical application

Source of information	Don't use	Daily	Weekly	Forth Nightly	Monthly	Once in several months
	(F) %	(F) %	(F) %	(F) %	(F) %	(F) %
Radio	37 14.7	147 58.6	27 10.8	4 1.6	12 4.8	24 9.8
Television	71 28.3	53 21.1	56 22.3	11 4.4	17 6.8	43 17.1
Internet	135 53.8	37 14.7	20 8.0	10 4.0	10 4.0	39 15.5
Phone call	107 42.6	62 24.7	7 2.8	17 6.8	28 11.2	30 12.0
Newspaper	67 26.7	34 13.5	68 27.1	8 3.2	22 8.8	52 20.7
Bulletin/ posters	169 67.4	29 11.6	47 18.8	33 13.2	72 28.6	152 60.4
Extension agents	49 19.5	13 5.2	23 9.2	27 10.8	38 15.1	101 40.2
Relatives/ Families	72 28.6	165 65.8	80 31.8	44 17.6	56 22.3	76 30.3
Farm associates/ neighbors	60 24.7	205 81.7	99 39.4	31 12.4	38 15.2	67 26.6
Non-governmental organization	250 99.6	0 0.0	0 0.4	0 0.0	0 0.0	0 0.0

Source: Field survey 2018

F = frequency, % = percentage

Correlation between information and use of agrochemicals.

The test of hypotheses in table 3 revealed that there is significant relationship between information source ($r = 0.154^*$ $P < 0.05$) and the use of agrochemicals, it also indicated that there is weak correlation between precautionary measures ($r = 0.007^*$ $P < 0.05$)

used by the respondents and their information of agrochemical use. The findings are in tandem with (Ngowi et al, 2007), who stated that information toward safety practices has direct relationship with farmer's perception of the health hazard associated with the use of agrochemicals.

Table 3. Correlation between information and use of agrochemicals and precautionary measures.

Variables	r – value
Use of agrochemicals	0.007*
Information on safety practices and precautionary measures	0.154*

Source: Field survey, 2014,* significant at 0.05 level

Conclusion and Recommendation

Based on the findings of this study, most of the arable crop farmers in the study were engaged in the use of agrochemicals in one way or the other for their production, this was particularly due to small family size of the majority of the respondents to reduce labour cost on farm. Information received by the respondents on the health hazard of pesticide use and application. Majority of the respondents depended on their friends, relatives and neighbours for firsthand information regarding the health hazard and

associated with the use of agrochemicals. This may be gross inefficient. It was therefore recommended that serious efforts should be made in ensuring that extension messages are properly channeled to arable crop farmers through various sources of information such as radio, television, mobile phones, farm associates, relatives and families. A combination of these information sources would assist agricultural extension workers to effectively reach out to farmers on the health hazards associated with agrochemical usage

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