

## **Assessment of Farmers' Understanding of the Information Displayed on Pesticide Product Labels in Ilorin Metropolis of Kwara State**

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### **ABSTRACT**

*This paper assesses farmers' understanding of the information displayed on pesticides product labels in Ilorin metropolis of Kwara State. Data were obtained using structured questionnaire. A random sampling was employed for selecting 86 respondents representing 20% of the total 430 registered members of farmers association of Nigeria in the metropolis. Descriptive statistics were used as analytical tools. The result shows that majority of the farmers were male and ranges between 31 to 50 years of age. The farmers were literate with majority having secondary education and also with 6 to 10 years experience in pesticides usage and farming. The study further revealed that despite high literacy level among farmers in Ilorin metropolis of Kwara state and widespread experiences in the use of pesticides, majority do not understand the information displayed on pesticide product label. The results showed the information displayed on pesticide product label was not effective in the sense that the farmers do not read the labels let alone understood it. They however preferred the information given by their colleagues. Majority of the farmers keep the pesticides inside their houses, prepare it on the field and discard the empty packages into forest. Most of the farmers know about Dichloro-diphenyl trichloro ethane as the only banned pesticide in circulation. The major problems facing the farmers with regards to understanding pesticide labels are that languages used are mostly technical and foreign. It was suggested that pictorial demonstration and bold images should be used since what is seen are easy understood.*

**Keywords:** information displayed, pesticides and product labels,

### **INTRODUCTION**

Pesticide is a substance, mixture or organism made or used for destroying any pest as well as insects. It may be used for eliminating weeds or moulds, preserving woods and regulating plant growth. Pesticides are the only toxic substance, mixture or organism released intentionally into our environment to kill living things. Its use extends not only

on agricultural fields, but also in homes, schools and our environment. According to Anyim (2003), pesticides are regarded as a basic tool in pest management because they provide a dependable, rapid and effective means of controlling most of the pest when used judiciously. Pesticides by nature are not only harmful to pests alone but to man and its environment. This is noted by Ibitayo (2007) that pesticides are however, poisonous by design and poisoning result from unsafe use of these chemicals.

Nigeria is ranked first in West Africa in the use of pesticides (Youm *et al.*, 1990). However illogical use of pesticide constitutes one of the main public health problems in developing countries whose economies are based on agricultural product and production (Koh and Jeyaratnam, 1996). One of the most important tasks for the economy of developing countries like Nigeria is to develop the agricultural sector. To attain food sufficiency, government encourage farmers to use improved seeds, fertilizers, irrigation and pesticides (Udoh and Umoh, 2011). However, off-setting the benefits are many problems identified with pesticides use such as unsafe use; persistence in the environment; toxicity to animals, fish and wildlife; contamination of water source; and persistence accumulation in the food chain (Udoh, 1998).

Nigeria farmers buy and use many pesticides for protecting crops and livestock. A series of evidence of food poisoning had been reported and attributed to the illogical use of pesticide which has caused death of many person because of poor regulation and their easy availability which also makes it a popular method of self-harm: To the users they can easily come in contact with the pesticides, for example when mixing the chemicals or when applying them to the crop. To the consumers the pesticides that were sprayed on the crop can leave behind residues that will be eaten and To our environment pesticides will not only reach the target organisms but will also kill other organisms (e.g. beneficial insects, birds, earthworms, fish) in or around the crop fields, causing loss of biodiversity, deaths of wild life, and death of farm animals. Understanding of information on pesticides product labels could bridge the gap of risk of poisoning. Within this framework, the paper seeks to achieve the following objectives:

- To describe the socio economic characteristics of farmers in the study area.
- To ascertain the level of farmers understanding of information displayed on pesticides product labels.
- Identify the Pictogram level of understanding of the farmers in the study area.
- Identify the problems faced by the farmers in understanding the information on pesticides product labels.

This study will have important implication for policy makers in making appropriate policies in area of agricultural production in general and to make farmer beware of their contribution to unsafe use of pesticides.

## **MATERIALS AND METHODS**

The study was carried out in Ilorin metropolis, the capital of Kwara state, Nigeria. The state was created on 27<sup>th</sup> may, 1967, as one of the 12 state that replaced the former four regional structures. It had an estimated population of about 2.347 million people as of 2006 (NPC, 2007). Kwara State is in the middle belt zone of Nigeria and lies between latitude 7°20' meridians. It is also within the guinea savannah zone with hot and humid seasons and lies along the country's most important linking commercial route from the northern part to southern part of Nigeria and has 16 local government areas. The major ethnic groups are the Yoruba, the Hausa, the Fulani, the Barubas and the Nupe people. The major occupation of the people in the areas are craft work, carving, cloth weaving and to greater extent farming.

The target population for this study was farmers in Ilorin metropolis of Kwara state. From a list of all registered members of the Farmers Association of Nigeria (FAMAN), a random sampling was employed in selecting 86 respondents constituting 20% of the total 430 registered members of Farmers Association of Nigeria (FAMAN) and was administered with the questionnaire. However, only 80 questionnaires were filled and returned for the analysis. Standardized questionnaires was used to obtain information on variables such as general knowledge on banned pesticides in circulation and attitudes on pesticides handling, safety and protection strategies and on pesticides risk perception, social characteristics such as sex, age, education levels, years of working in farming, pesticides use, work force. Ten pictograms often used in pesticides labeling were presented to know if they understood it. Descriptive statistics were used as analytical tools.

## **RESULTS AND DISCUSSION**

### **Socio economic characteristics of farmers**

Table 1 shows the distribution of socio economic characteristics of farmers interviewed. The result shows that most of the farmers interviewed were males (92.5%). The age distribution shows that most farmers were young middle-aged (66.25%) between 31-50 years old. About 47.5% of the farmers having secondary education, with 41.2% of the farmers have 6-10 years of farming experience, Hired labour was dominant (62.5%) in use by the farmers.

**Table 1: Socio Economic Character**

	<b>Frequency</b>	<b>%</b>
Sex		
Male	74	92.5
Female	06	07.5
Age (years)		
<30	14	17.5
31-50	53	66.2
>50	13	16.2
Educational status (level)		
Primary	12	15
Secondary	38	47.5
Tertiary	24	30
Quran	6	7.5
Pesticide usage (years)		
1-5	26	32.5
6-10	33	41.2
>10	21	26.2
Farming experience (years)		
1-5	14	32.5
6-10	36	41.2
>10	21	26.2
Work force		
Family labour	20	25
Hired labour	50	62.5
Both	10	12.5

Field survey, 2011.

The result shows that majority of the farmers were male been reason that farming is believed to be the tradition of males with age range between 31-50years which is known to be active age range. Hired labour dominant may be due to the fact that their children go to school during farming time.

Understanding of information displayed on pesticides product

Table 2 shows the level of understanding of information displayed on pesticides product and Sources of information on pesticide usage. Pesticides labels is the most important sources of information on it use, providing information on safety and health risk reduction. The result shows that most (85%) of the farmers do not understand the information displayed on pesticides and majority preferring information from other farmers for use.

**Table 2: Level of Understanding of Information Displayed and Sources of Information on Pesticide Usage.**

<u>Understands</u>	<u>Frequency</u>	<u>%</u>
Yes	12	15
No	68	85

<u>Sources of information on pesticide usage</u>		
Farmers	41	51.2
Retailers	16	20.0
Extension agents	23	28.7

Field survey, 2011.

The result shows that majority of the farmers did not understand the information on pesticides product which may be as a result of the technicality of language used but prefers to learn from other farmers because they meet regularly for meetings. This is in support of Eve, (1995) that technicality of languages used for instruction discourages farmers from reading them and may lead to misunderstanding of the product message. The result also indicates that despite high literacy observed from the farmers, many still do not understand and read the information displayed on pesticide product labels where as the information displayed on the labels play an essential role in reducing pesticide exposure and risk of poison even with their experience in farming they do not seek proper information from expert (extension agent) rather they prefer the instruction given by their colleagues (farmers).

Preparation, storage and fate of empty pesticides packs

Table 3 shows the distribution of place where pesticides were prepared, stored and fate of emptying packs. The result shows that 72.5% of the farmers prepare it on field, 48.8% of

the farmers store their pesticides inside house and 41.3% of the farmers discard empty packs into forest.

**Table 3: Preparation, Storage and Fate of Empty Pesticides Packs**

	Frequency	%
Place of preparation		
Home	20	25.0
In fields	58	72.5
Others	2	2.5
Place for storage		
Inside house	39	48.8
Inside plantation	10	12.5
Tool storage shacks	31	38.8
Fate of empty packs		
Buried	26	32.5
Burned	21	26.2
Discard into forest	33	41.3

Field survey, 2011.

The result shows that many of the farmers store pesticides product inside their houses and discard the empty packs into forest. This is in support of Waichman *et al.*, (2007) that it increases the risk of accidental poisoning by family members.

### **Knowledge of Banned Pesticides in Circulation**

Table 4 shows the distribution of farmers' knowledge on banned pesticides in circulation. Farmers were presented with five banned pesticides still in circulation. The result shows that 57.5% of the farmers know that *dichloro-diphenyl tichloto ethane* (DDT) is a banned pesticide. Aldrin which is a banned pesticide too, 61.2% of the farmers did not know about it, 75% of the farmers did not know that parathion is banned pesticides. About 80% of the farmers do not know about Ethylene oxide ban and Mirex a banned pesticide was also presented to the farmers, 85% do not know about the ban.

**Table 4: Knowledge of Banned Pesticides in Circulation**

Banned pesticides	Yes	%	No	%
Dichloro-diphenyl trichloto-ethane	46	57.5	34.0	42.5
Aldrin	31	38.8	49.0	61.2
Parathion	20	25.0	60.0	75.0
Ethylene-oxide	16	20.0	64.0	80.0
Mirex	12	15.0	68.0	85.0











Field survey, 2011.

The result showed that majority of the farmers did not have the information that all other but *Dichloro-diphenyl trichloto-ethane* was a banned pesticide.

Pictogram level of understanding of the farmers

Table 5 shows the pictogram level of Understanding of the farmers. The result shows that 82.5% of the farmers did not understand the pictogram that shows “handle carefully liquid product”. Handle carefully powder product, 78.8% did not understand it. 57.4% understood what the pictogram “spray atomizer” and almost all (87.5%) of the farmers understood what the “use gloves” means. Every single farmer showed that they understood the pictogram “wash after use and wear boots”, while almost half of the farmers do not understand what the pictogram “wear mask” means. 60% of the farmers do not understand the pictogram “wear water proof apron”. 85% of the farmers do not understand what the pictogram “use face shield”. The pictogram “wear a pesticide respirator” shows that 82.5% of the farmers did not understand it.

**Table 5: Pictograms to Show Level of Understanding in Percentage**

	Not understood		Understood	
	Frequency	%	Frequency	%
 *Handle Carefully Liquid Product	66	82.5	14	17.5
 *Handle Carefully Powder Product	63	78.8	17	12.2
 *Spray Atomizer	34	42.6	46	57.4
 *Use gloves	10	12.5	70	87.5
 *Wash after use	0	0	80	100
 *Wear Mask	39	48.7	41	51.2
 *Wear Waterproof Apron	48	60	32	40
 *Use Face Shield	68	85	12	15
 *Wear Boots	0	0	80	100
 *Wear a Pesticide Respirator	66	82.5	14	17.5

Field survey, 2011.\*not provided to the farmers.

The result showed that the farmers understood perfectly three pictograms which involve washing of hands after use, wearing of boots and using gloves without even reading the information on the pesticides product labels. Whereas, all other except spray atomizer and wear mask pictograms did not show a substantive understanding by the farmers. As shown by Waichman *et al.*, (2007) that misunderstanding of pictogram messages usually lead to a practice that actually increases risk and poisoning.



## CONCLUSION

This paper assesses farmers' understanding of information displayed on pesticides product labels in Ilorin metropolis of Kwara State. Pesticides play an important role in food production among farmers mostly small farmers and are perceived by farmers as an economic safety against the uncertainty of agricultural production (Guivant, 2001). It was found that farmers in Ilorin metropolis do not understand information displayed on pesticides product labels. The study further revealed that despite the literacy level and pesticides usage experience of the farmers in the metropolis they do not read the labels let alone understand it but prefer information given by their colleagues.

More so, it is important for farmers to be made aware of high toxicity associated with handling pesticides incorrectly. In agreement with Waichman *et al.*, (2007) pesticides should be sold by prescription provided by an entomologist for a particular pest and crop followed by consultative advice too but, this is not the reality in Ilorin metropolis of Kwara State. In reality farmers are allowed to buy, use and without training prescribe to other colleagues too.

The major problems identified in this study were that languages used are not easily understood and sometime technical in the sense that they are often foreign. Fonts used are sometimes not bold enough so it is easier to forgo. The farmers suggested that pictorial demonstration should be used with bold images instead of information written with small fonts because they believe that whatever they see with their naked eyes are easily understood than reading lines.

## RECOMMENDATION

Based on the findings of the study, the following recommendations are made:

- I. That there should be a law guiding buying and the use pesticides or a written prescription by an entomologist so that at least misuse of pesticide will be minimal.
- II. Pesticides or agrochemical companies should be using bold pictograms and easily understood or official language for countries in which their products are going.
- III. Training of farmers especially on the use and handling of pesticides with practical demonstration should be provided by ministry of agriculture through the department responsible to increase the awareness of reducing exposure and risk to human and animal health.

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