



Constraints to use of Agrochemical among arable crop farmers in Osun State

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Abstract

Due to the potential health and environmental hazards posed by the use agrochemicals mainly pesticides, various methods have also been developed for the determination of their residues in various environmental matrices notably soils, plants/foodstuffs and water. Constraints to use of Agrochemical among arable crop farmers in Osun State were therefore investigated. A multi-stage sampling procedure was used through questionnaire and interviews to collect information from 150 arable crop farmers. Data were analyzed using descriptive statistics of frequency counts, percentage and means, Chi-square and Pearson Product Moment Correlation (PPMC) at 0.05% level of significance. Results of analysis revealed that majority of the respondents fell within the age range of 50years to 59 years and most respondents (88.7%) were males. Over 30.7% had secondary and below as their educational qualification with most (70.0%) married, with fairly large household size of 6-10 persons. Majority (100.0%) of the respondents used fertilizer, 96.0% used Herbicides, 92.0% used Fungicide and 89.3% used Insecticides as Agrochemical. also, inadequate access to capital (92.0%) as respondents minor constraints militating against to use of Agrochemical in the study area.

The results further revealed that there was significant relationship between constraints ($r= 0.253$, $p= 0.002$) and respondents' use of Agrochemical. The study concludes that respondents could not use agrochemical to ease their production activities due to high constraints. It is therefore recommended that Government should make extension service available for the farmers to carry them along on the use of Agrochemical and also enlighten them on the misuse of agrochemical.

Keywords: arable crop farmers, agrochemical use, constraints

Introduction

Many important benefits are achieved by the use of agrochemicals in agricultural production and have made important contributions to the successes of the "green revolution" (Briggs *et al.*, 1989) ^[2] and increase in food supply. Use of agrochemicals mainly associated with increased crop yields, animal production and reduced post-harvest losses and makes a significant difference in food production particularly in countries that struggle periodically with famines (Muller, 2000) ^[5]. Without pesticide application the loss of fruits, vegetables and cereals from pest injury would reach 78%, 54% and 32% respectively (CAI, 2008). Organic fertilizers nearly always have much lower concentrations of plant nutrients and have the problems of economical collection, treatment, transportation. Synthetic fertilizers are commonly used for growing all crops, with application rates depending on the soil fertility, usually as measured by a soil test and according to the particular crop. Major nutrients supplied include Nitrogen, Phosphorus and Potassium by soil application whereas micronutrients such as Zinc, Boron and Manganese are applied mainly through foliar sprays. Phosphatic fertilizers include Diammonium phosphate, triple superphosphate and Monoammonium phosphate. Nitrogen fertilizers include Calcium Ammonium nitrate and Urea while Potassium fertilizers include Potassium chloride and Potassium sulphate (Vitosh, 2005) ^[9]. Major pesticides classes are organochlorines, Organophosphates and carbamates. When a pesticide is released into the environment many things happen to it. Sometimes, the leaching of some herbicides into the root zone

can result in better weed control and at times releasing pesticides into the environment can be harmful, as not the entire applied chemical reaches the target site (Cesna *et al.*, 2005). It is against this backdrop that this research investigated the extent of constraints to use of Agrochemical among arable crop farmers in Osun State.

Hypothesis of the study

The hypothesis stated in the null form is tested:

H₀₁ – There is no significant relationship between constraints faced by the respondents and their use of Agrochemical in the study area.

Materials and Methods

The study was carried out in Osun State. The state covers approximately 14,875 square kilometers in land area (NPC, 2006). Agriculture is the major source of income for the larger number of the people of the State (about 256,000 Farming Families). The state lies in the equatorial rainforest belt and the rainfall around this area varies from 155mm to 1800mm per annum. The forest zone with high humidity favours the cultivation of tree crops such as Cocoa, Kola, Mango, Citrus and oil palm as well as arable crops like maize, cassava, Yam and Rice.

Sampling Procedure and Sample size

A Multi-stage sampling procedure was used to select respondents for the study. Purposive sampling Technique was used to select

blocks from ADP zone that are predominantly noted for arable crop farmers that always use agrochemicals for farming in the study area: (Iwo, Ayedire, Ola-Oluwa blocks). Systematic sampling techniques was used to select 10 respondents in each village of the blocks and this gives a total of one hundred and seventy six (150) respondents for the study.

Results and Discussion

Socio-economic characteristics of respondents

Analysis of data

Data Collected were subjected to descriptive and inferential Statistical analysis using Statistical Package for the Social Sciences (SPSS). Descriptive statistical tools used included frequency counts, mean and percentage while inferential statistical used is Chi-square.

Table 1: The Socio-economic characteristics of the respondents

Variables	frequency	Percentage (%)
Age		
20-39 years	33	22.0
40 – 59	101	67.3
60 and above	16	10.0
Sex		
Male	133	88.7
Female	17	11.3
Marital status		
Single	20	13.3
Married	105	70.0
Divorced	10	6.7
Widowed	15	10.0
Level of education		
No formal education	27	18.0
Adult education	21	14.0
Arabic education	9	6.0
Primary education	25	16.7
Secondary education	46	30.7
Tertiary education	22	14.7
Household size		
1-5	54	36.0
6-10	90	60.0
Above 10	6	4.0
Religion		
Christianity	84	56.0
Islam	59	39.3
Traditional	7	4.7
Income		
Less than 100,000	1	0.7
101,000- 200,000	29	19.3
201,000- 300,000	18	12.0
301,000- 400,000	23	15.3
401,000- 500,000	28	18.7
Above 500,000	51	34.0
Experience		
1-10 years	45	30.0
11-20 years	11	7.3
21-30 years	80	53.3
31-40 years	8	5.3
Above 41 years	6	4.0
Area of land (hectares)		
1-4	26	17.3
4-6	22	14.7
6-8	67	44.7
8-10	15	10.0
Above 10	6	4.0
Total	150	100

Source: Field survey, 2017.

Result of analysis in table 1 shows that majority (40.0%) of the respondent fell within the age range of 50-59 years This means that most of the farmers in the study area are middle aged which may be due to less involvement of youths in farming activities. The result also reveals that 88.7% of the respondents are male and 11.3% were female. This means that males are into farming than females in the study area. This is in line with Sokoya *et al.*, (2012) [8] who stated that agriculture is generally regarded in Africa as an occupation for men.

The result also revealed that 70.0% of the respondents were married. This is corresponding with Akinbile (2007) [1] who stated that marriage confers responsibility, which send a signal that they are matured and versatile even responsible. The results further revealed that the level of education of the respondents in the study area with majority (30.7%) had secondary education. This implies that the farmer has ability to require knowledge when information is made available. This is in line with Oladele (2005) [7] who found out that exposure of farmers to education will increased the farmer’s ability to adopt change.

The result further shows that majority of the respondents had number of household range of 6-10 persons with majority of the respondents were Christians 56.0% and Islam 39.3% while 4.7% were Traditionalist. The result also shows that income earned per annum of the respondents, majority earned above 500,000 (34.0%), followed by 100,000-200,000 with 19.3%, 401,000-

500,000 with 18.7%, 301,000-400,000 with 15.3% and 201,000-300,000 with 12.0% while less than 100,000 have 0.7%

The result also indicate that, majority (53.3%) of the respondents had farming experience ranges from 21-30years with the Area of land (44.7%) had 6-8 hectare. The implication of this was based on the criteria set by Fayinde *et al* as cited by Ogunjimi and Farinde (2012) [6] that all farmers who operate on land less than 10 hectares are small-scale farmers.

Table 2: Types of Agrochemicals frequently used Agrochemical

Agrochemical	Yes	No
Herbicides	144(96.0)	6(4.0)
Fungicides	138(92.0)	12(8.0)
Fertilizer	150(100.0)	0(0.0)
Insecticides	134(89.3)	16(10.7)
Rodenticides	13(8.7)	137(91.3)

Source: Field survey, 2017, Percentage (%) in Parenthesis

Result of analysis in table 2 revealed that majority of the respondents (100.0%) used Fertilizers, followed by Herbicides with 96.0%, Fungicides with 92.0% and Insecticides with 89.3% while 8.7% were using Rodenticides. This implies that Fertilizers is commonly used by the respondents in the study area than other Agrochemicals.

Table 3: Constraints faced in the use of Agrochemicals

Constraints	Major Constraints	Minor Constraints	Not a Constraints
Inadequate access to capital	3(2.0)	138(92.0)	9(6.0)
Unavailability of Agrochemicals	1(0.7)	53(35.3)	96(64.0)
Inadequate know how to use agrochemical	3(2.0)	28(18.7)	119(79.3)
Poor extension services	7(4.7)	23(15.3)	120(80.0)
Lack of safety measures	2(1.3)	27(18.0)	121(80.7)

Source: Field survey, 2017, Percentage (%) in parenthesis

Result of analysis in table 3 shows that majority (92.0%) of the respondents had inadequate access to capital in purchasing agrochemicals as minor constraint, and also majority (80.7%, 80.0%, 79.3% and 64.0%) of the respondents claimed that lack of safety measures, Poor extension services, Inadequate know how to use agrochemical and Unavailability of Agrochemicals respectively were not a constraint in the study area.

Ho1: There is no significant relationship between effect of agrochemical and their constraints

Table 4: Pearson Product Moment Correlation Analys

Variable	r-value	p-value	Decision
Effect of agrochemical and Constraint	0.253	0.002	S

S= Significant at 0.05

Result of analysis in Table 4 revealed that there is significant relationship between effect of agrochemical usage ($r = 0.253$, $p < 0.05$) and their constraint. This means that the constraints faced in the use of agrochemical have effect on the effect of agrochemical usage in the study area.

Conclusion and Recommendations

This study revealed that most of the respondents are males and they are in their active age, married with majority secondary

education. The respondents’ constraint to use of agrochemical were low but only access to capital in purchasing agrochemicals was minor constraint. Also Rodenticides were not used regularly by the respondents in the study area. Thus, in order to promote or increase use of agrochemical; Government should make extension service available for the farmers to carry them along on the use of Agrochemical. Also there should be developed proper and effective information dissemination channels to ensure that farmers have adequate sources of technical information available on the safe use of the agrochemicals with regard to their recommended usage, human health and the environment.

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