

A Study Of Socio-Economic Importance And Methods Of Controlling Weeds Among Rural Farmers In Yala Local Government Area Of Cross River State, Nigeria.

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Abstract: A survey was conducted to determine the socio-economic importance and methods of controlling weeds among rural farmers in Yala Local Government Area of Cross River State, Nigeria. The population of the study consists of all rural farmers in Yala Local Government Area of Cross River State. A total of 150 respondents were randomly selected from the five council wards of the study area. Data for this study were collected mainly from primary sources using a well structured questionnaire. The collected data were analyzed using frequency tables, percentages and Kruskal Wallis (H) test. It was found that most (32.4%) of the respondents fell within the age range of 40-49 years, while majority (72.6%) of them were male farmers. It was also found that 71.9% of them were married, and 43.8 % of them had primary school education. About 63.7% of the respondents took to farming as their major occupation and 46.6% of them have been earning between ₦35, 000 and ₦85, 000 per annum, and only 28.8% of them had the largest farm size of 2.0-2.5 hectares. Common weeds found in the study area were spear grass (12.5%), elephant grass (12.4%), guinea grass (12.4%), Southern gamba grass (12.2%), Northern gamba grass (12.0%), giant star grass (10.0%), bahama grass (7.3%), bush marigold (7.0%), goat weed (7.0%) and strigas (6.9%). It was found that 88.4% of the rural farmers used round up to control spear grass, 72.6% used premium to control strigas, 82.2% used glycel to control tridax, 94.5% used force up to control northern gamba grass, 93.8% used round up to control bahama grass, 85.6% used round up to control wire weed, 91.8% used round up to control guinea grass, 87.7% used round up to control giant star grass, while 94.5% used glycel to control goat weed. Kruskal Wallis test (H) reveals that $H_{cal} (0.28) < X^2_{tab} (9.49)$ at 0.05 level of significance. This indicates that there is no significant difference in the methods of weed control in the five selected council wards. It was recommended that Government, as well as the private sector should subsidize the cost of herbicides to make them accessible and affordable to rural farmers and farmers should be educated on the economic importance of weeds, and on the effective use of herbicides for optimum results.

Key words: Weeds, Socio-economic importance, Methods of weed control.

1 INTRODUCTION

The pressure on Nigeria to increase food supplies to support her growing population, as well as those of her neighboring countries continues to rise every year. Presently, food production is far below expectation due to several constraints created mainly by poor agronomic practices, low level of technology and draconian, infamous and Machiavellian government policies. Poor pest and disease control measures form a major impediment to adequate food production in Nigeria. Major crop pests, known to have adverse effects on crop production in Nigeria are weeds.

Besides being the most prominent, they constitute the number one pest which the farmer must contend with, if better crop production is to be achieved (Wikipedia, 2009). Weeds compete with crops for light, water, nutrients and space, thereby causing reduction in crop yields. Larimer (2008) stated that yield reduction caused by uncontrolled weed growth ranges from 40 percent in maize to 100 percent in upland rice. As much as 50 percent of the total yield loss caused by uncontrolled weed growth occurs during the first four weeks of crop establishment. According to Larimer (2008), weeds cause approximately 500 million dollar loss in crop yields in Canada annually. There is therefore, the need for farmers to remove weeds from their farms as early as possible, as late weeding results in reduced crop yields. According to Norman (1996), one of the major tasks facing Nigerian farmers in their effort to feed the nation is the absence of adequate technology to control weeds. The area of land that a single farmer can keep weed free is limited, as the labour available at his disposal is also limited (Norman, 1996). Besides the competition established between crops and weeds, weeds also lower the quality and market value of harvested crops by contamination, and may harbor harmful insects and disease causing organisms that may attack our crops (Wikipedia, 2009). Weeds may also contain some miserable alkaloids which could impair the health of animals that feed on them, and equally depreciate the value of lands (Adewumi *et al.*, 2002). Weeds can be controlled culturally, biologically, mechanically and chemically. The chemical method of weed control seems however to be the most efficient of all the methods, and farmers should be encouraged to adopt this method of weed control (Howard *et al.*, 1992). The cost of the herbicides used for

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weed control is however a problem faced by farmers. However, reduction in the need for labour for weeding could compensate for the expensive nature of herbicides, as one person can spray a relatively large area of land of over one hectare (Norman, 1996). While efforts are geared towards formulating herbicides that decompose within a short time to reduce the likelihood of its residual effects on crops cultivated in future seasons, herbicides with low residual activity often do not provide long season weed control (Larimer, 2008). While Nigeria aims at food security, the challenge posed by weeds on production should not be ignored, as it can make production and output miserable (Wikipedia, 2009). Yala Local Government Area of Cross River State, though not recognized as a food producing area, has been contributing its best to meeting the food needs of the nation. Their best can however be made better if the problem of weeds on their farms is properly and promptly handled. From the fore going, it becomes necessary to ask the following research questions:

1. What are the socio-economic characteristics of the rural farmers in Yala Local Government Area of Cross River State?
2. What are the common weeds found in the study area?
3. What are the existing methods of weed control in the study area?
4. What are the specific herbicides for the control of weed of selected crop plants in the study area?
5. Are there significant differences in the methods of weed control across the five selected council wards of the study area?

Objectives of the Study

The broad objective of this study is to assess the socio-economic importance and methods of controlling weeds among rural farmers in Yala Local Government Area of Cross River State, Nigeria. The specific objectives of the study are to:

1. determine the socio-economic characteristics of rural farmers in the study area.
2. identify the common weeds found in the study area.
3. determine the existing methods of weeds control in the study area.
4. identify specific herbicides for the control of specific weeds of selected crop plants in the study area.
5. compare the methods of weed control across five (5) council wards in the study area.

Hypothesis

There is no significant difference in methods of weed control among farmers in the five selected council wards in Cross River State.

2 Materials and Methods

This study was carried out in Yala Local Government Area of Cross River State. The Local Government Area was carved out of the present Ogoja Local Government Area in 1991. It lies between the coordinates of latitudes 8°58' North and longitude 79°23' West (Yade, 2008). It is bounded to the South by Ogoja Local Government Area, to the East by Bekwera Local Government Area, Ebonyi State in the West and Benue State in the North (Yade, 2008). Yala Local

Government Area of Cross River State is made up of fourteen (14) council wards. These are Yache, Gabu, Okuku, Echumofana, Ugaga, Ijegu, Okpoma, Yahe, Ukele North, Ukele South, Wonakom, Jiballor, Okpadom and Adum. It has a population of 211,557 people out of the total State population of 2,888,966 people, with a land mass of 3,485km² (NPC, 2006). The Local Government Area has a tropical climate with two identifiable seasons, the wet and the dry seasons, which starts from March to early November and November to March respectively (Yade, 2008). The major occupations of the people are farming and trading. The farmers produce cassava, yam, rice, maize, groundnut, guinea corn, pepper and garden egg. Animals such as poultry, sheep and goats are sparingly reared. The population of the study comprises all the rural farmers in Yala Local Government Area of Cross River State. Primary data were collected through the use of a well structured questionnaire. Thirty (30) respondents were selected from each of the five council wards, namely: Yache, Gabu, Okuku, Ugaga and Echumofana. A total of 150 respondents were selected using simple random sampling technique. The data collected were analyzed using descriptive statistics such as frequency tables and percentages, as well as inferential statistics such as Kruskal Wallis (H) test.

Table 1. DISTRIBUTION OF RESPONDENTS ACCORDING TO THEIR SOCIO-ECONOMIC CHARACTERISTICS

Socio-Economic Characteristics	Frequency	Percentage
Age (Years)		
20-29	37	25.5
30-39	44	30.3
40-49	47	32.4
50-59	14	9.7
60-69	3	2.1
Sub-Total (a)	145	100.0
Sex		
Male	106	72.6
Female	40	27.4
Sub-Total (b)	146	100.0
Marital Status		
Married	105	71.9
Single	41	28.1
Sub-Total (c)	146	100.0
Level of Educational		
Primary School	64	43.8
Secondary School	41	28.1
Tertiary	41	28.1
Sub-Total (d)	146	100.0
Major Occupation		
Farming	93	63.7
Trading	23	15.8
Teaching	30	20.5
Sub-Total (e)	146	100.0
Annual Income (₦ '000)		
35-85	68	46.6
86-136	41	28.1
137-187	4	2.7
188-238	2	1.4
239-289	3	2.1
290-340	3	2.1
No Response	25	17.1
Sub-Total (f)	146	100.0
Farm Size (Ha)		
0.5-1.5	15	10.3
2.0-2.5	42	28.8
3.0-3.5	38	26.0
4.0-4.5	15	10.3
>5.0	19	13.0
No Response	17	11.6
Sub-Total (g)	146	100.0

Source: Field Survey, 2010

Table 2: COMMON WEEDS FOUND IN THE STUDY AREA

Common weeds found	*Frequency	Percentage	rankin g
Spear grass			
Elephant grass	146	12.5	1.0
Guinea grass	145	12.4	2.5
Southern gamba grass	145	12.4	2.5
Northern gamba grass	142	12.2	4.0
Bahama grass	140	12.0	5.0
Strigas	85	7.3	7.0
Giant star grass	81	6.9	10.0
Bush marigold	117	10.0	6.0
Goat weed	82	7.0	8.5
	82	7.0	8.5
	1165	99.7	
Total			

*Multiple responses

Source: Field Survey, 2010

Table 3: DISTRIBUTION OF RESPONDENTS ACORDING TO METHODS OF WEED CONTROL

Methods of Weed Control	*Frequency	Percentage
Chemical control method	146	100.0
Biological control method	11	7.5
Mechanical control method	26	17.8
Cultural Practices Used	146	100.0
Hoeing	146	100.0
Hand Pulling	53	36.3
Bush Burning	16	11.0
Flooding	146	100.0
Slashing		

*Multiple responses

Source: Field Survey, 2010

**Table 4: DISTRIBUTION OF RESPONDENTS
ACCORDING TO SPECIFIC HERBICIDES USED TO
CONTROL SPECIFIC WEEDS**

Specific Weeds and Herbicides Used	*Frequency	Percentage
Spear Grass		
Glytex	77	52.7
Round Up	129	88.4
Strigas		
Dragon	84	57.5
Premium	106	72.6
Tridax		
Vanish	71	42.6
Glycel	120	82.2
Northern Gamba Grass		
Glycel	120	82.2
Force Up	139	94.5
Wire Weed		
Round Up	125	85.6
Sarosate	133	91.1
Bahama Grass		
Round Up	137	93.8
Sarosate	126	86.3
Guinea Grass		
Round Up	134	91.8
Sarosate	124	84.9
Giant Star Grass		
Glytex	77	52.7
Round up	128	87.7
Elephant Grass		
Round up	115	78.8
Glycel	70	47.9
Goat Weed		
Glycel	138	94.5
Sarosate	120	82.2

*Multiple responses

Source: Field Survey, 2010

Table 5: KRUSKAL WALLIS ANALYSIS OF METHODS OF CONTROLLING WEEDS IN YALA LOCAL GOVERNMENT AREA OF CROSS RIVER STATE.

Methods	Council Wards Yache		Gabu		Okuku		Ugaga		Echumatana	
	Frequen cy	R1	Frequ ency	R2	Frequ ency	R3	Frequ ency	R4	Frequ ency	R5
Chemical	30	30.5	30	30.5	30	30.5	30	30.5	30	30.5
Biological	0	2	2	5.5	8	16.5	2	5.5	0	2
Mechanical	0	2	3	7	7	14	7	14	8	16.5
Cultural										
Hoeing	30	30.5	30	30.5	30	30.5	30	30.5	30	30.5
Hand pulling	30	30.5	30	30.5	30	30.5	30	30.5	30	30.5
Bush burning	10	18	7	14	6	12	14	19	16	20
Flooding	4	9	4	9	4	9	1	4	5	11
Slashing	30	30.5	30	30.5	30	30.5	30	30.5	30	30.5
		$\Sigma R1=1$		$\Sigma R2=15$		$\Sigma R3=17$		$\Sigma R4=16$		$\Sigma R5=171.5$
		53		7.5		3.5		4.5		

Source: Field Survey, 2010

3 Results and Discussion

Socio-Economic Characteristics of Respondents

Table 1 reveals that most (32.4%) of the respondents were within the age range of 40-49 years. They were therefore youthful and can contribute meaningfully to agricultural productivity (Adewumi and Omoresha, 2002). Majority of them (72.6%) were male and 71.9% were married. This is in agreement with the Journal of Rural Development (2002) which reveals that more men have access to farm and other farm input than women. Table 1 also reveals that 43.8% had primary education. This low level of education could be a hindrance to the adoption of improved farming methods, as level of education is an important socio-economic characteristic that can influence farmers' reception of improved farming techniques. (Ejemi,1992). About 63.7 percent of the respondents indicated farming as their major occupation. Most of them are however small scale farmers with small land size of 2.0-2.5 hectares, and annual income range of ₦35, 000.00 - ₦85, 000.00. This low annual income is sure to affect the living standard of the respondents.

Common Weeds Found in the Study Area

Table 2 reveals that spear grass (12.5%), elephant grass (12.4%), guinea grass (12.4%), Southern gamba grass (12.2%), Northern gamba grass (12.0%) and strigas (10.0%) were the common weeds found in the study area. This implies that crop plants grown in the study area are vulnerable to numerous kinds, of weeds ranging from annual to perennial weeds.

Methods of Weed Control

Table 3 reveals that 100.0% of the rural farmers adopted chemical control method, and only 17.8% used mechanical method. This is in line with the view of Lavabre (1991) that one method of controlling weeds could not sufficiently meet the needs of crops at all times, and the adoption of two or more methods will facilitate effective weed control. Farmers in the study area lacked sufficient knowledge and capital to use mechanical and biological methods of weed control. The common cultural methods of weed control used by farmers were hoeing (100.0%), hand pulling (100.0%) and slashing (100.0%). This could be due to the fact that they

were more cost effective. Integration of cultural and chemical methods could go a long way in minimizing environmental pollution and destruction of biodiversity.

Herbicides used to Control Specific Weeds

Table 4 reveals that 88.4% used Round up to control spear grass, 72.6% used Premium to control Strigas, 82.2% used Glycel to control Tridax, 94.5% used Force up to control Northern gamba grass, 91.1% used Sarosate to control Wire weed, 93.8% used Round up to control Bahama grass, 91.8% also used Round up to control guinea grass, 87.7% used Round up to control Giant star grass, 78.8% used Round up to control elephant grass, while 94.5% of the rural farmers used Glycel to control goat weed. It could be observed from these findings that Round up is the most effective herbicide adopted by rural farmers in Yala Local Government Area of Cross River State to control most of the weeds found there.

Comparison of the Methods of Weed Control in the Five Selected Council Wards

Table 5 reveals that there was no significant difference in methods of weed control among rural farmers in five council wards in Yala Local Government Area of Cross River State ($H_{cal} = 0.28 < X^2_{tab 0.05, 4df} = 9.49$). The null hypothesis of this research, which states that there is no significant difference in the methods of weed control among farmers in the five selected council wards in Cross River State, is therefore accepted.

4 Conclusion

One of the greatest challenges militating against increased crop productivity in Nigeria is how to combat the menace of weeds on the farm. Weeds compete with growing crop plants for light, water, nutrients and space, with resultant decrease in both quality and quantity of crop yields. They also reduce economic value of crop products, besides being deleterious to man and farm animals. It was found that the common weeds in the study area include spear grass, elephant grass, guinea grass, Southern gamba grass, Northern gamba grass, and strigas. Moreso, a considerable number of rural farmers adopted the use of herbicides, as well as cultural practices such as hoeing, hand pulling and slashing. Most of the farmers used Round

up to control most of the weeds on their farms. Rural farmers need to be empowered economically and educationally to squarely face the challenges associated with weeds control.

5 Recommendations

In order to ensure effective control of weeds on crop farms with a view to ensuring enhanced crop productivity in Nigeria in general and Yala Local Government Area in particular, the following recommendations based on the findings of this study are pertinent:

1. Government should encourage more farmers to adopt chemical control of weeds by subsidizing the cost of herbicides.
2. Intensification of enlightenment campaign on effective use of herbicides, since most of the rural farmers have low level of education.
3. More research work should be conducted to invent and identify more effective and efficacious herbicides that could be used to control weeds.

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