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Farmers' Perception of Extension's Role in Use of Knapsack in Agricultural Production in Yenagoa Local Government Area, Bayelsa State

Nnadi, Custodian[1*]

[1]Department of Agricultural Economics, Extension and Rural Development, Niger Delta University, Wilberforce Island, Bayelsa State, Nigeria

Corresponding Author: Nnadi, Custodian

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Department of Agricultural Economics, Extension and Rural Development, Niger Delta University, Wilberforce Island, Bayelsa State, Nigeria.

ABSTRACT

This study assessed farmers' perception of extension role in knapsack use in agricultural production in Yenagoa Local Government Area of Bayelsa State. The specific objectives included to; identify the agricultural area(s) of production of farmers using knapsack in Yenagoa Local Government Area, ascertain reasons for use of knapsack by farmers, analyze farmers' perception of Extension's role in knapsack use in agricultural production in Yenagoa Local Government Area, Bayelsa State. A multi-stage sampling technique involving cluster and random sampling was used to select 124 farmers; whom structured questionnaire were administer to. Statistical tools of frequency, mean and percentage were the descriptive statistical tools used in the analyses, while results were presented with Tables. Results indicated dominance of crop production (69.64%) among YELGA farmers. Also, only 8.04% of YELGA farmers perceived that extension plays role in knapsack use. Furthermore, training of farmers in the use of knapsack was specified by only 22.22% YELGA farmers. The work therefore concludes that although extension plays role in Knapsack use in agricultural production in YELGA, very little role is played in relation to the core extension mandate of training/educating farmers. Overhauling of state extension service in Bayelsa State was recommended.

Keywords: Extension, Knapsack, Perceived, Role, Farmers.

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1.0 INTRODUCTION

Agriculture has not stopped playing vital roles of man's source of; livelihood, food supplies, fodder for livestock, and foreign exchange/national income via international trade (Ofuoku, 2011; Nwakile, Ejiofor and Ali, 2017). Despite these, Nigeria's agriculture remains characterized by small-scale production (Bayerlee, 2011; World Bank, 2013; Nnadi, Nwajiuba, Onubuogu and Nnadi, 2018), low output, low income, farmers' unaffordability of yield-increasing technologies, and low levels of investment in farms. This story, the Nigerian government over the years have tried to change through implementation of several policies and programmes dimmed fit at revamping the sector; for which prominent among them is the Agricultural Development Program (ADP). Ezeh, (2007) agree to this.

Babalola (2002) stated that one of the greatest hurdles, constraining agricultural production is the scarcity and cost of labor for farm operations, which is estimated to cost about 60% of farm accounts. This could be one of the drivers of knapsack sprayers use among farmers. Although the knapsack spraying technology evidently is not indigenous to Bayelsa State farmers, very many farmers however are often times seen carrying knapsack sprayers to and fro farm. The question therefore calls to mind as to how farmers in Bayelsa State adopted the knapsack spraying technology. Attempt to answer the question though, directs one's thought to the existence and presence of the Agricultural Development Programme (ADP); an agricultural extension organization/government parastatal whose core mandate it is to extend teaching to farmers in out-of-school setting. Miller and Bellinder (2001) agree that knapsack sprayers are indispensable agricultural tools; and understanding how to use them is essential for the successful application of agricultural chemicals.

Also, McAuliffe and Gray (2002) opined that the knapsack sprayer offer many advantages to smallholder farmers; for which they will continue to find it most important for their agrochemical application. The

advantages the equipment offers that will generate high interest in its use among farmers as highlighted by the authors are; firstly, versatility in use with different types of pesticides that suits the requirements and resources of small-scale farmers aiming to increase agricultural productivity under harsh conditions in developing nations and secondly, innovations in plastics and metals that make sprayers lighter in weight and more efficient in pumping; making knapsack sprayers easier to use, particularly in areas with excessive heat and difficult terrain. Corroborating this, Lambrecht, Silva da Rosa, Lilles, Machado, Lilles, and Vieira dos Reis (2019) and Afolabi, Ade-jumo, Atere, and Ilori (2023) indicated that Knapsack sprayers are employed on a large scale by small, medium, and large scale farmers due to their sizeable adaptability that meet the existing needs in rural settings and the equipment's features of low purchasing cost that permit products to be applied in individual societies. These perhaps best explains farmers regular use of Knapsack sprayer in Bayelsa State.

These notwithstanding, there could be more that follow misuse of kapsack. For example, the health of the farmer may be at risk if the knapsack is used inappropriately. In line with this, Afolabi, Ade-jumo, Atere and Ilori, (2023) in their study found that one type of post operational body pain such as shoulder pain (most frequent), early incidence of fatigue mostly in female operators and cumulative trauma at shoulder, back, and upper and lower arm which may result over time; occur with knapsack usage. Similarly, McAuliffe and Gray (2002) identified lack of pressure control as the single biggest limitation in the use of knapsack and stated that knapsack equipment can lead to misapplication of chemicals and ineffective control of the target pest; as lack of pressure control can lead to variable flow rates (dosages) of chemical preparations, inconsistent spray pattern and spray droplet size, all of which affects spray coverage and chemical performance while variable pressure can also influence the drift of spray particles reducing crop coverage and exacerbating worker exposure to the chemicals. For these, there is need for extension role in teaching farmers the use of knapsack.

The ADP in Nigeria is synonymous to agricultural extension. According to Ammani, Auta and Aliyu (2010), ADP was designed to increase food production with the major components being; improving technology, increasing the supply of farming inputs as well as reasonable improvement in basic infrastructure. Unfortunately, ADPs in majority of states in Nigeria seem to have gone against their initial design/objectives, thus, fallen short of their roles in the aspect of transfer of vital/relevant information and proven production technologies. They have become shadows of themselves, and in majority of the states, stand just as symbols of past glory (Auta and Dafwang, 2010). This situation calls for worry.

The hype of lack of information as well as inadequate education among farmers handling agrochemicals for example Osibanjo (2001), Reeves and Schafer (2003), Konya (2005), Tijani (2006), Owusu-Boateng and Amuzu (2013) among others, is a clear indicator; suggestive of near or complete failure of agricultural extension; whose mandatory role it is to inform, educate and/or train farmers on improved agricultural practices, technologies and innovation. This, the researcher has feared is happening in Yenagoa Local Government Area (YELGA), Bayelsa State as regards knapsack use among farmers vis-à-vis extension role. There is need therefore for empiricism

Currently, there is no evidence that research has been conducted on farmers' perception of extension role in knapsack use in agricultural production in Yenagoa Local Government Area, Bayelsa State, hence this research. This study is considered timely and appropriate as existing knowledge and information gap(s) on farmers' perception of extension role in knapsack use in agricultural production will be filled. Thus, to guide this work, the following specific objectives were set:

I. Identify the agricultural area(s) of production farmers use knapsack.
II. Ascertain reasons for use of knapsack by farmers for agricultural production, and analyze farmers' perception of Extension's role in knapsack use in agricultural production.

2.0 METHODOLOGY

This research was carried out in Yenagoa Local Government Area (YELGA) of Bayelsa State. The area houses the seat of power of the state. YELGA lies between Latitudes 4°45' N and 5°23' S and Longitudes 5°15' E and 6°45' E. YELGA is one of the eight Local Government Areas in the state; and covers a total area of 1,698 km squared. It has a population of 353, 344 (National Population Census 2006). Using the annual growth exponential of 2.4 (NPC, 2006) however, a 2022 population projection is therefore 489,028 persons. The major soil type in the area is the poorly drained clay soil. Rainfall generally is nearly every month of the year; with 2 distinct seasons of dry and rainy. The rainy season (from March to November) lasts for a much longer period than the dry season (from December to February) with a short dry period between July and September (August break). The hottest months are December to April. (Kainga, Miller and Epidi. 2016). Whereas fishing and crop production system of mixed cropping dominate the livelihood activities of the people, other means of livelihood include hunting, lumbering, distillation, palm oil milling, building, and weaving (Alagoa, 1999). Among crops produced in the area are; cocoyam, banana, cassava, plantain, oil palm, sugarcane, pepper and maize. YELGA is home to the ljaw ethnic group, as well as the Atissa/Epie. The common spoken language for communication in the area is the *pidgin* English.

A multi-stage sampling technique was used. At first, a cluster sampling was used to segregate farmers into Ijaw communities and Epie/Atissa communities due to language/dialectical and cultural differences. In the second stage, random sampling was used in selecting eight (8) from the sixteen (16) Epie communities, six (6) from twelve (12) Atissa communities, and seventeen (17) from thirty-four (34) Ijaw communities respectively. The third stage involved a random sampling of four (4) farmers each from the thirty-one (31) communities; giving a total of one hundred and twenty-four (124) farmers. The lists of farmers were obtained by the aid of key informants such as village/community heads and leaders. The data for this study was collected using primary and secondary data collection techniques of questionnaire; augmented with an interview schedule administered to the one hundred and twenty-four (124) sampled farmers and secondary information sourced from published research/Journal articles and other relevant texts. The data collected were analyzed using descriptive statistical tools of frequency distribution and percentage.

3.0 RESULT PRESENTATION

3.1 Agricultural Production Areas of Farmers in YELGA

The Table 1, indicates the distribution of farmers according to their respective areas of production. A total of 69.64% of YELGA farmers are into crop production while 16.96% of them are into animal production. The remaining 13.40% of the farmers are into fishery production.

Table 1: Distribution of Agricultural Production Areas of farmers

Agricultural Production	Frequency	Percentage
Crop	78	69.64
Animal	19	16.96
Fishery	15	13.40
Total	**112**	**100.00**

Source: Field Survey Data, 2023.

3.2 Reasons for knapsack use by YELGA farmers

From Table 2, result indicates that all the farmers (100%) in YELGA that use knapsack in production, indicated ease of use (usability) and accessibility respectively as reasons for their use of the equipment. These are closely followed by those who indicated availability (98.21%) as their reason for use. On the other hand, while 87.50% of the farmers attributed their use of knapsack to affordability (cheap), only 9.82% attributed their use to environmental friendliness.

Table 2: Distribution of farmers by reason for use of knapsack in agricultural production in YELGA

Reasons	*Frequency	Percentage
Easy to use	112	100.00
Affordability/Cheap	98	87.50
Availability	110	98.21
Environmental friendliness Accessibility	11	9.82
Total	112	100.00

*Multiple Response Source: Field Survey Data, 2023.

3.3 Perceived extension role in knapsack use among farmers in YELGA

From Table 3a, result indicates that 8.04% of YELGA farmers perceived that extension plays role in knapsack use as against 91.96% that indicated no role by extension on knapsack use in YELGA. Probes on what informed their perception revealed that, all (100%) of those that indicated no role by extension indicated no contact ever with extension while all (100%) of those that indicated extension role justified that by their contact with extension. Furthermore, 77.78% of the farmers who perceived that extension played role in knapsack use, specified role in supplying knapsack and linking farmers to suppliers of knapsacks respectively. The remaining 22.22% perceived that extension was involved in training of farmers on use of knapsacks are shown in table 3b.

Table 3a: Distribution of farmers by perceived extension role in knapsack use by farmers in YELGA

Extension role	Frequency	Percentage
Yes	9	8.04
No	103	91.96
Total	112	100.00

Source; Field survey data, 2023

Table 3b: Distribution by farmers perceived specific extension role in knapsack use in YELGA

Roles	Frequency	Percentage
Supply of knapsack	7	77.78
Linking farmers to suppliers of knapsack	7	77.78
Training farmers in use of knapsack	2	22.22
Total		

Source: Field Survey Data, 2023.

4.0 DISCUSSION

4.1 Agricultural Production Areas of Farmers in YELGA

The predominance of crop production in YELGA may not be out of place. Bayelsa state is a typical riverine state; with much of its land area existing as lowlands. However, YELGA is one of the Local Government Areas in the state with vast upland. The vast expanse of arable land when compared to other Local Government Areas in the state, offers YELGA farmers more opportunities to engage in crop production than any other production area. Also, the rearing of animals may be considered capital intensive especially in terms of housing; thus making only 16.96% of the farmers to be involved. The least percentage (approximately 13%) of farmers' engagement in fishery production/aquaculture practice may have been the result of farmers; naturally/culturally engaging in artisanal/capture fisheries. Generally speaking, while the cost implication of animal and fish housing could be a discouraging factor amongst farmers, huge losses in times of flooding of both fishes and animals by farmers could be attributed to the engagement of fewer farmers in animal and aquaculture production areas.

4.2 Reasons for use of knapsacks by YELGA farmers

The indication by all the farmers (100%) in YELGA of, ease of use (usability) and accessibility respectively, availability (98.21%) and affordability/cheap (87.50%) as reasons for their use of knapsack in production is highly commendable. The ease of use could have been due to diffusion of innovation most likely to take place among farmers; whose settlement pattern is more of cluster. This settlement pattern is cultural. Due to the nature and terrain of the area, people live together whether or not they are closely related by blood. Similarly, accessibility and availability as indicated by majority of the farmers for use of knapsack, may not be unconnected to close relationships established among the people by virtue of their living together; making the equipment accessible and available to farmers perhaps through borrowing from relations, friends or even neighbors. Again, the result showing that 87.50 % of YELGA farmers indicated affordability/cheap as their reason for the use of knapsack is highly commendable; as YELGA farmers seem to tap into and take advantage of favorable price of knapsack. The result is in tandem with Afolabi, Adejumo, Atere, and Ilori (2023); who as earlier indicated, reported low purchasing cost of knapsack. Environmental friendliness as reason for use of knapsack by a small percentage of YELGA farmers (9.82%) - Table 2, could be a pointer to majority (90.18%) holding contrary opinion.

4.3 Farmers' perceived extension role in knapsack use by farmers in YELGA

The indication by an overwhelming majority of YELGA farmers (91.96%) of no extension role; justified by no extension contact ever is rather worrisome. It could be adduced that the core mandate of extension; which is training of farmers (technology transfer) generally speaking has not been fulfilled in YELGA. This is indeed a minus to the entire system; as a people without knowledge could be retrogressive and deteriorative. Adequate information and knowledge through technology transfer is required; especially in the current technology driven world. Farmers need to be abreast of information not only to improve/increase their production and revenue, but to do so in manner devoid of health risk factors. In line with this, McAuliffe and Gray (2002) stated that though the lever - operated knapsack is the most used for crop protection in developing countries of the world, chemicals are often misapplied, resulting to poor biological results, unnecessary chemical exposure to the applicator and the environment, exacerbation of resistance to pesticides, and added expense of already cash limited farmers due to poor management of spray equipment; which has little or no pressure regulation for accurate and consistent pesticide applications. There is need for revisiting and reviewing the state's extension service system; their activities and operations.

4.4 Extension's role in knapsack use as perceived by farmers in YELGA

The fact that extension has been identified as playing role in knapsack use by farmers is commendable. However, the question remains; to what extent has extension played her mandatory role to farmers? Further analysis of the situation indicated that only 1.79% of the entire YELGA farmers perceived that extension played role in the training of farmers on use of knapsack. The implication of this is that extension barely exist in Bayelsa State. The reason for this is not farfetched; as earlier indications pointed to near or total collapse of extension in many states in Nigeria. Despite this trend, there is room for improvement. Poor funding and remuneration; a disincentive to sustenance of the extension service in many states in Nigeria and Bayelsa State in particular has been identified as key problem of extension (Nnadi, Kainga, Nnadi, Okoroma and Ebiwei, 2014). Overhauling and revamping the ADP (Extension Service), could go a long way in improving the system.

5.0 CONCLUSION AND RECOMMENDATION

Extension plays role in knapsack use in agricultural production in YELGA; mostly in the area of supplying and link to sellers of knapsack. Farmers however, need information to improve or adapt their farming practices. Misuse of equipment can have impacts on the environment and on health of both man and animal; especially the farmers who are directly involved in the handling of the tools. For this, the vital role of extension service – information/knowledge transfer (farmer training) in respect to the use of knapsack is required. Overhauling and revamping of the extension service is needed to improve the system.

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