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EVALUATION OF FARMERS' ACCESS TO EXTENSION SERVICES ON SORGHUM PRODUCTION IN MALUMFASHI LOCAL GOVERNMENT AREA OF KATSINA STATE, NIGERIA

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ABSTRACT

This study evaluates sorghum farmers extension services access in Malumfashi Local Government Area of Katsina State, Nigeria. A two-stage sampling technique was used to select 120 sorghum farmers from different wards in the Local Government Area. The data collected were analysed using descriptive statistics. The results discovered that the majority (83%) of the sorghum farmers had access to extension services, and the majority (62.5%) accessed the services through farming groups. Majority (88%) of the respondents perceived the extension services delivered to them as useful, about 87.5% of the respondents indicated that the services had improved their farming practices and extension agents' attitude was the major constraints faced by the sorghum farmers in extension services access. The study concluded that the majority of sorghum farmers in Malumfashi Local Government Area had access to extension services and perceived the services as useful. The study recommends that the government should strengthen the extension services in the Local Government Area in order to improve the productivity of sorghum farmers.

Keywords: Extension services, sorghum production, farmers' access

INTRODUCTION

Extension is exposed to a wide range of understandings based on applicability specific to all situations. It describes a continuous and dynamic process of relations with farmers and other rural dwellers so as to improve their livelihoods or general standard of living (Salau, 2020). According to Maulu, Hasimuna, Mutale, Mphande & Siankwilimba (2021), extension is a casual informative function that narrates to any organization circulating statistics and advice to incite learning, which generally inclines to be linked to agriculture, fisheries and aquaculture, and rural development. It is supposed and directed at serving farmers to benefit themselves by ascertaining their difficulties, convincing novelties, determining chances; providing recommended services; bringing and encouraging latest agricultural knowledges and support to the farmers.

Extension service according Salau (2020) is the act of a diversifying activities and programmes aimed at helping to improve rural lives. There are two types of extension services, specifically; agricultural extension services and non-agricultural extension services (Lamin, Ogbe & Gowon, 2021). Agricultural extension services focus mainly on agricultural activities which offer practical guidance on agriculture to farmers and the rural dwellers, and it also teaches them how to implement research recommendations. It covers a wider scope to include: improved crop varieties, enhanced livestock control, and water management as well as the control of weeds, pests or plant diseases.

According to Makarau, Usman & Tafidda (2020) and Food and Agriculture Organization [FAO] (2023), agricultural extension services aim at educating the farming communities on how to progress their quality life through diffusion of knowledge, skills, systems, methods, ideas, and suitable info. The establishment of agricultural extension services in Nigeria has immensely improved the nation's production capacity. The Extension agents in the Agricultural Development Program (ADP) have been continuously and specifically charged with the tasks of agricultural information diffusion, novelty assistance and release to farmers countrywide. This has led to diverse advances to the practices of free extension extending from Training and Visit to the Research-Extension-Farmers-Input-Linkage-System, Farmers Field School, Community-Based Demand-Driven and University-Based Agricultural Extension System, to incite innovations from the farmers and encourage usage (Sennuga, Oyewole & Emeana, 2020).

Agricultural extension agents serve as a link between the researchers and the farmers. The ratio of extension agents to farmers is between 1: 5,000 and 1: 10,000 (Davis, Lion & Arokoyo, 2019). This showed that there is a great number of farmers compared to agricultural extension agents in Nigeria, restricting farmers' seamless access to technical information.

Sorghum (Sorghum bicolor L.) is the 5th most vital world cereal crop next to maize, wheat, rice, and barley (FAO 2019). It is a main food crop in the drier parts of Africa, China, and India (Ajeigbe, Akinseye, Jonah & Kunihya, 2018; Mrema, Shimelis Laing & Mwadzingeni, 2020: Ahmad et al., 2022). The major world's sorghum producers comprise the USA with total annual grain production of 8.7 million tons from 2.0 million hectares, Nigeria (6.9 million tons and 5.4 million hectares), Ethiopia (5.3 million tons and 1.9 million hectares), and Sudan (3.7 million tons in 6.8 million hectares) (FAO 2019; Ahmad, Shimelis, Nebie, Ojiewa & Danso-Abbeam, 2022). Nigeria is the top sorghum producer, followed by Ethiopia in Africa in terms of total production. Sorghum is

the major cereal crop accounting for 50% of the total output and occupying about 45% of the total land area dedicated to cereal crops production in Nigeria (FAO 2019). The sorghum yield in the country is 1.23 t ha−1, which is fairly low related with the world average of 1.45 t ha−1 and the USA with 4.58 t ha−1 (FAO 2019). Sorghum is fairly tolerant to drought and waterlogging (Curtis 1967; Mrema, Shimelis, Laing & Bucheyeki, 2017; Ahmad et al., 2022) and has a varied adaptation to varied soil conditions (Ajeigbe *et al.* 2018; Ahmad *et al.,* 2022). These features make sorghum the key crop of choice in Africa's most drier regions to pursue food and income security. However, sorghum yield in the region is small (≤1.0 t ha−1) due to some production parameters. Nigeria's majority of sorghum production is derived from the Northern Guinea and Sudan/Sahel ecologies of Northern Nigeria. Sorghum is considered as a traditional food crop in this agro-ecologies. In Northern Nigeria, sorghum is consumed in different forms, such as Tuwo, Kumu, enflamed pancakes and snack as roasted grain (Ega, Olatunde & Nwasike, 1992; National Research Council [NRC], 1996). Sometimes, sorghum grain is enflamed for malting and used in formulating local brewing products. Technically, sorghum is mostly utilized by companies producing beverages, breakfast cereals, and confectionery and a small percentage of the grain is also utilized as animal feed. The stalks are used to make shelters or fences and as livestock feed. Other future sorghum values are recognised in the country, including as raw materials for the biofuel industries (Global Agricultural Research Network [GAIN], 2020). Sorghum is grown by over 59% and 55% of farmers in Adamawa and Borno States, respectively. It is mostly grown for home eating and the surplus sold to make income.

The agricultural sector calls for more improvement on sorghum production in order to ensure the sustainability of food security for the increasing population in Sub-Saharan African countries. The integration of farmers in agricultural activities is therefore an important factor toward agricultural sector development in Nigeria. Most farmers in developing countries and Nigeria in particular rely heavily on informal channels for access to extension services. This study aims at assessing the farmers' access to extension services on sorghum production in the study area. However, the objectives of the study were to identify the various sources of agricultural extension service among the sorghum farmers in the study area; examine the perception of sorghum farmers on extension service access; and describe the problems faced by sorghum farmers 'on the access of agricultural extension service in the study area.

METHODOLOGY

The study was conducted in Malumfashi Local Government Area (LGA) of Katsina State. It has an area of 674 km^2 and with a projected population of 322,475 people in 2024. It has a Latitude 11°48'N and Longitude 7°37'E. The primary livelihood of the people is farming with a large number of civil servants and traders. Some of the civil servants and traders are also involved in agriculture on a part time basis. It receives an average annual rainfall of 1100mm and a mean temperature range of 27 ºC to 35 ºC.

The climate is suitable for the cultivation of cereal crops, cowpea and also favours the rearing of livestock like cattle, sheep and due to the prevalence of grasses and browse shrubs in the vegetation of the area. The plants of the region are mostly of savannah type having only about three months of rainfall per annum. The most important crops cultivated in the area were Sorghum, Millet, Cowpea, Rice, Groundnut, Soya bean cotton and Vegetables (Ati & Abaje, 2013).

A two-stage sampling technique was used to select the sorghum farmers. At the first stage, four villages were purposively selected from four wards due to the high involvement in sorghum production. The villages selected were Unguwar-Dawo, Nasarawa, Gidan Dan Birni and Gangarawa. The second stage, from 190 sorghum farmers 120 sorghum farmers were proportionately selected from Unguwar-Dawo (28), Nasarawa (36), Gidan Dan Birni (31) and Gangarawa (25) to give the study sample size. Primary data for the study was collected through the distribution of questionnaires with the help of trained enumerators under the supervision of the researchers.

Table 1: Sampling procedure and Sampling Size

Name of Villages	Sampling frame	Number of selected sorghum farmers (sample size)
Unguwar Dawo	45	28
Nasarawa	57	36
Gidan Dan Birni	49	31
Gangarawa	40	25
Total	**191**	**120**

Descriptive statistics such as frequency count, percentages and ranking were used to achieve the objectives of the study.

Likert Scale
Likert Scale was used to ascertain perception of sorghum farmers on extension service access in the study area, the sorghum farmers were required to indicate the level of their agreement on each indicator using a 5 – point Likert type continuum scale of VS = Very Satisfied, S = Satisfied, N = Neutral, DS =Dissatisfied, VD = Very Dissatisfied. With assigned a weights of 5, 4, 3, 2 and 1 for VS, S, N, DS and VD respectively. For each indicator a weighted mean was obtained as follows:

VS = Very Satisfied, S = Satisfied, N = Neutral, DS =Dissatisfied, VD = Very Dissatisfied
WM = [(FVS* 5) + (FS*4) + (FN*3) + (FDS*2) + (FVD*1)]
Where WM = Weighted Mean
F = Frequency

Adopting Abdulmumini (2019) perception analysis, the mean for all indicators were then categorized as follows:

The mean 1.00 – 1.49 = Very Dissatisfied, 1.50 – 2.49 = Dissatisfied, 2.50 – 3.49 = Neutral, 3.50 – 4.49 = Satisfied and 4.50 – 5.00 = Very Satisfied.

RESULTS AND DISCUSSION

Access to Extension service
The result for this study in Figure 1 discovered that the most 83 % of the sorghum farmers have access to extension services. While 17% of the sorghum farmers have no access to extension services. The goodness of this result is that only few farmers have no access to extension services, this could be due to the limited number of extension services channels to cover the study area. This is a challenge to the agricultural extension specialists when designing the most appropriate strategy for farmers. The finding of this study is supported by Ikoyo-Eweto, Adedokun, Archibong & Okwuokeneye (2024) who found out that the rate of access to extension services was high in the study area.

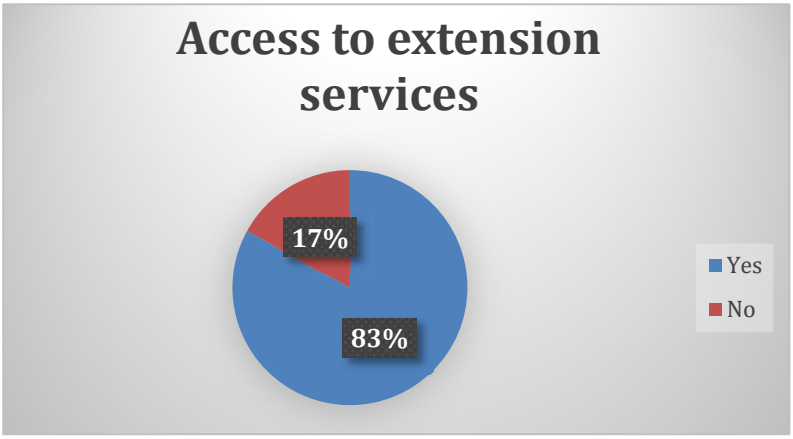

Figure 1: Access to extension services
Source: Field Survey Data, (2022)

Sources of extension services
Figure 2 displays that the extension services in the study area were sourced from farmers group (62.5%) followed by extension agent 17%, social media 9% and television 6.5%. This is similar to the findings of Musa, Abdullahi & Sulaiman (2023) which revealed that most (88.5%,87% and 86.5) % of the respondents obtained information on extension services from radio, fellow farmers and friends/neighbor separately, 69 % of the farmers obtained information from farmers group/cooperatives, while 68.5% and 61% of the respondents also received information on extension services delivery from extension agent and community leaders, respectively. This imply that sorghum farmers in the study area adopted multi-channel approach sources of extension services delivery which might be effective in reaching farmers.

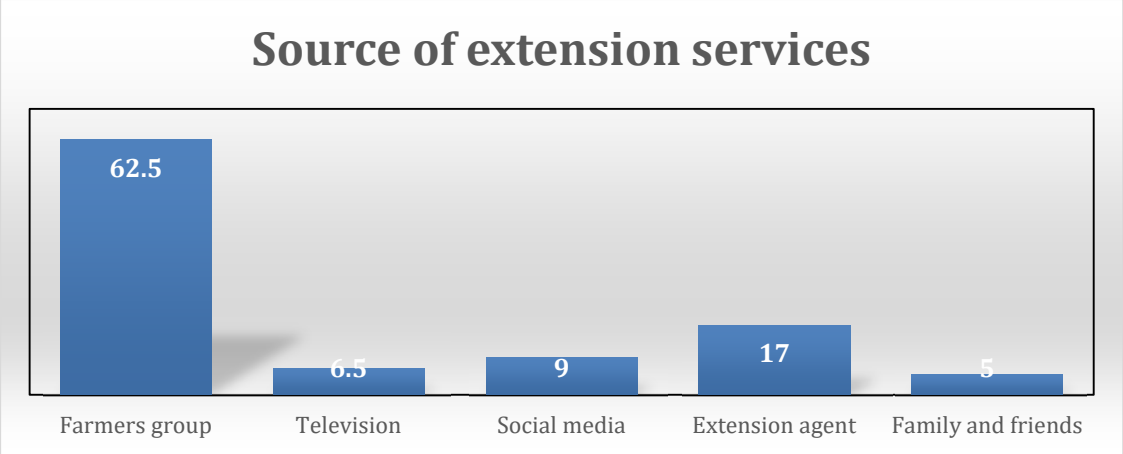

Figure 2: Sources of extension service
Source: Field Survey Data, (2022)

Relevant of message delivered to sorghum farmers
The result in Table 4 indicated that 88% of the sorghum farmers believed that extension services delivered to the sorghum farmers was useful. More extension services need to be provided and accessible to the farmers. This implies that there is effective communication, useful information and potential impact of the message delivered by the extension agents to the sorghum farmers in the study area. This is similar to the findings of Ada, Chijioke & Chukwud (2012) which revealed that most of the sorghum farmers utilized information because of its importance on all sorghum farming operation in the study.

Table 3: Relevance of services delivered to sorghum farmers

Relevant of service	Frequency	Percentage (%)
Yes	106	88
No	14	12
Total	**120**	**100**

Source: Field Survey Data, (2022)

Service provided through extension services
The results in table 5 represent the different extension services provided to the sorghum farmers in the study area. Training to improve their farming practices (48%), teaching on disseminated technology (29%) and conducting a trial of the technology (13%) were the major extension services provided to the sorghum farmers in the study area. This is similar to the results of Issa & Adiyu (2020) that the major extension services provided to rice farmers in the study area include linkage with inputs, linkage to credit/loan sources, training on group development and management.

Table 4: Extension services provided to the sorghum farmers

Services	Frequency	Percentage (%)
Training to Improve their farming practices	58	48
Teaching on disseminated technology	35	29
Conduct a trial of the technology	16	13
Create links with agro base input providers.	11	10
Total	**120**	**100**

Source: Field survey, 2022

Perception of farmers on extension services delivery
Farmers' perception on access to extension services play a crucial part in the acceptance of improved production technologies and decision making toward accepting or rejecting a particular technology and ensure successful extension services delivery among the sorghum farmers. In order to measure the perception of sorghum farmers on access to extension service in the study area, a 5-point Likert scale was used and the result discovered that farmers had different perceptions about access to extension service. This was captured with a rating scale reaching from Very Dissatisfied to Very Satisfied.

The sorghum farmers had a positive perception on the channel of message delivered was satisfied (x = 4.28), satisfied are you with extension services (x = 4.00), relevant of the message Delivered (x=3.89) has positive perception among the sorghum farmers by the

respondents. Importance of extension service delivered (x=3.84). This implies that the extension services delivered to the farmers in the study area were effective and helped the farmers to increased productivity, income and food security. This finding tallies with those of Ray (2015)

Table 5: Perception of farmers on extension service delivery

Perception	WS	MS	Rank
Channel of message delivered	428	4.28	1st
Extension service	400	4.00	2nd
Relevant of the message Delivered	389	3.89	3rd
Importance of extension service delivered	384	3.84	4th

Constraints Militating Against Sorghum Farmers Access to Extension Service Delivery Provided.

Table 6 shows the constraints that limit the delivery of extension service among sorghum farmers and sorghum farmers were given the chance to choose more than one constraints. However, extension agents' attitude (100%) was the major constraints faced by the sorghum farmers towards access to extension services, followed by poverty (83%), insecurity (78%) ,18% indicated not having access to extension services and bad roads (12%). This is similar to the findings of FAO (2012) that the low ratio of extension workers to farmers in addition to poor infrastructure, lack of conducive working conditions, the poor motivation of extension workers and lack of efficient extension policy among others has made the provision of extension services very difficult in Nigeria. Likewise, Musa *et al.* (2023) believed that the main constraints to extension services delivery were insufficient transportation/mobility of extension workers, scarce equipment/teaching material and poor extension agent farmer ratio.

Table 5 Constraints Militating Against Sorghum Farmers Access to Extension Service

Constrain	Frequency	Percentage (%)
Extension agent attitude	120	100
Poverty	100	83
Insecurity	94	78
Bad road	14	12
Not have access to extension service	22	18

Source: Field Survey, (2022)

CONCLUSION AND RECOMMENDATIONS

The role of agricultural extension services cannot be overstressed in the life of sorghum farmers. Agricultural extension agents are saddled with the responsibility of providing facts on agricultural innovations to their target audience. The study concluded that the most of sorghum farmers in Malumfashi Local Government Area had access to extension services and perceived the services as useful. The study recommends that the government should strengthen the extension services in the Local Government Area to expand the yield of sorghum farmers. The extension services are planned to assist farmers in solving their problems. Extension agents' attitude was the major constraint faced by sorghum farmers in the study area.

It is therefore recommended that government and non-governmental organizations should provide training to the extension agents and update their knowledge to have good rapport with the sorghum farmers in the study area.

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