Journal of Agricultural Economics, Extension and Rural Development
Abbreviated Key Title: J. Agric. Econs. Extens. Rural Dev.
ISSN-2360-798X (Open Access): doi.org/10.54978/jaeerd
Vol 14: (3): Pp.: 21-29, 2026

Assessment of Information Sources on Improved Farm Practices among Melon Farmers in Lafia, Nasarawa State, Nigeria

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Abstract

This study assessed the sources and preferences of information on improved farm practices among melon farmers in Lafia Local Government Area of Nasarawa State, Nigeria. A multistage sampling technique involving purposive and simple random sampling was used to select 132 respondents. Data were collected using a structured questionnaire and analyzed using descriptive statistics and the Kruskal–Wallis H test. The reliability of the instrument was confirmed using the test–retest method (r = 0.82). Results showed that 74.2% of respondents were female, with a mean age of 37 years. Major sources of information included personal experience (90.9%), family/parents (70.5%), and farmers' groups (68.9%), while farmers' groups (31.8%) were the most preferred source. Key constraints included lack of awareness (mean = 2.66) and inadequate funding (mean = 2.64). The Kruskal–Wallis test revealed no significant difference in information preference across wards ($\chi^2 = 0.633$, $p > 0.05$). The study concludes that informal information systems dominate and recommends strengthening extension services and ICT-based dissemination channels.

Keywords: melon farmers, information sources, information preferences, agricultural extension, Nigeria

Accepted 2/3/2026 J. Agric. Econ. Ext. Rural Dev. (ISSN: 2360-798X) Published: 27/3/2026

INTRODUCTION

For many rural farmers in Nasarawa State, Nigeria, melon farming is a significant agricultural activity that provides food, jobs, and cash. However, evidence suggests that the level of melon production has been declining in recent years despite the increasing demand for melon seeds and other byproducts (Aroyehun *et al*., 2024; Alabi *et al*., 2025). This imbalance between demand and supply indicates a gap in productivity within the melon production system. According to Anthony *et al. (2022),* the growing demand for melon products has not been matched by a corresponding increase in production. This decline raises concerns regarding the sustainability and efficiency of melon production practices among farmers.

Some factors have constrained improved agricultural productivity among smallholder farmers. These include limited access to agricultural information, inadequate extension services, poor access to modern farm inputs and credit facilities, weak infrastructure, environmental degradation, and limited access to markets (Mukaila *et al*., 2022). In many rural communities, farmers continue to rely on traditional farming practices and subsistence-orientated production systems, which often result in low yields and limited profitability (Aroyehun *et al*., 2024). These practices may partly explain the persistent gap between the potential yield of melon as indicated by research and the actual yields farmers obtain.

Access to relevant and timely agricultural information is important in improving farm productivity and facilitating the adoption of improved agricultural technologies (Amidu *et al*., 2021). The development and dissemination of agricultural technologies require a systematic and effective flow of information from research institutions to farmers through extension systems and other communication channels (Patrick *et al*., 2023). Ideally, agricultural research institutions generate innovations, extension services disseminate these innovations to farmers, and farmers provide feedback based on their #

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xperiences with the technologies. Such feedback mechanisms are necessary for improving technologies and ensuring their appropriateness for farmers' socio-economic conditions.

This study is anchored on the Diffusion of Innovation Theory, which explains how new ideas, technologies, and practices spread within a social system over time. According to the theory, access to timely and credible information is a critical determinant of adoption decisions among farmers. Information sources such as extension agents, media platforms, and farmer networks play significant roles in influencing awareness, interest, evaluation, and eventual adoption of improved agricultural practices. Therefore, understanding the dominant and preferred information channels among melon farmers is essential for enhancing the diffusion and uptake of innovations.

Despite efforts to promote agricultural innovations, there is a difference between the production levels achievable under improved technologies and those currently realised by farmers. This gap suggests weaknesses in the linkages among researchers, extension agents, and farmers. Weak communication channels and limited farmer participation in the planning and dissemination of agricultural innovations often result in farmers being unaware of available technologies or uncertain about where to obtain reliable agricultural information. Consequently, many farmers may not optimally benefit from innovations developed by research institutions.

Though some studies have been carried out on farmers' access to agricultural information (Fidelugwuowo, 2021; Amidu et *al*., 2021; Gbughemobi *et al*., 2021), limited empirical research has focused specifically on the sources of agricultural information available to melon farmers in Nasarawa State. Given the importance of information in facilitating technology adoption and improving agricultural productivity, it is necessary to investigate the sources through which melon farmers obtain information on improved farming practices.

Objectives of the Study

The broad objective of this study is to assess the sources of information on improved farm practices among melon farmers in Lafia Local Government Area of Nasarawa State, Nigeria. Specific objectives were to:

i. Describe the socio-economic characteristics of melon farmers in Lafia Local Government Area of Nasarawa State;
ii. Identify sources of information on improved farm practices among melon farmers in the study area;
iii. Identify sources of information preferred by melon farmers in the study area; and
iv. Identify constraints to accessing information on improved farm practices among melon farmers in the study area.

Statement of Hypothesis

Based on the specific objectives, the following null hypothesis will be tested:

H01: There is no significant difference in the preference of sources of information among respondents across the selected council wards in Lafia.

METHODOLOGY

The study was conducted in the Lafia Local Government Area of Nasarawa State, Nigeria, located within the southern Guinea savanna ecological zone. Nasarawa State falls between latitude 7°–9° N and longitude 7°–10° E and comprises thirteen Local Government Areas. Lafia, the state capital, experiences two distinct seasons—wet (May–September) and dry (October–April)—with annual rainfall ranging between 1,000 and 1,500 mm and mean temperatures of 24–33°C. Farming, fishing, and mining are the main occupations, with crops such as maize, rice, cowpea, guinea corn, sesame, sugarcane, and melon (*Citrullus colocynthis*) widely cultivated.

The population of the study comprised all melon farmers in Lafia Local Government Area. A combination of purposive and simple random sampling techniques was employed. Five council wards were purposively selected based on the concentration of melon farmers, and a total sample of 132 respondents was drawn using proportional allocation (20% of the sampling frame). The choice of a 20% sampling proportion was considered adequate based on recommendations for social science research where the population is relatively homogeneous. The sampling frame consisted of a compiled list of registered melon farmers obtained from local agricultural offices and farmer associations within the selected wards.

Respondents were randomly selected from each council ward to ensure representativeness. Primary data were collected using a structured questionnaire comprising five sections. Section A captured socio-economic characteristics, Section B focused on sources of

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information on improved farm practices, Section C addressed preferred sources, Section D assessed the effectiveness of these sources, and Section E explored constraints in accessing agricultural information. Constraints to accessing information were measured using a 3-point Likert-type scale (1 = Not a constraint, 2 = Mild constraint, 3 = Severe constraint). A mean score of 2.0 and above was considered indicative of a significant constraint. The questionnaire was pre-tested for validity and reliability prior to administration. Collected data were coded, cleaned, and analysed using descriptive and inferential statistics. The research instrument was validated by experts in the Department of Agricultural Extension and Communication, Joseph Sarwuan Tarka University, Makurdi, Benue State, Nigeria, ensuring both face and content validity. The reliability of the research instrument was established using the test–retest method, yielding a correlation coefficient of r = 0.82, indicating a high level of consistency and reliability.

Data collected from the study were analysed using descriptive and inferential statistical techniques. Descriptive statistics, including frequencies and mean scores, were employed to address the study objectives. The Kruskal-Wallis test was used to test the hypothesis. The Kruskal–Wallis H test, a non-parametric alternative to one-way ANOVA, was employed due to the ordinal nature of the data and the non-normal distribution of responses. All statistical analyses were conducted using Stata.

RESULTS

Socio-Economic Characteristics of Respondents

The socio-economic characteristics of the respondents are presented in Table 1. It was found that female farmers constituted the majority (74.2%) of the respondents, while males accounted for 25.8%, suggesting that melon farming in Lafia is predominantly undertaken by women. In terms of age distribution, the largest proportion of respondents (52.3%) was between 31 and 40 years, with a mean age of 37 years, indicating a relatively young and active workforce engaged in melon production. Most respondents were married (56.8%), followed by singles (27.3%), which may reflect household labour availability for farming activities.

The educational profile of respondents shows that a substantial proportion had attained secondary education (42.4%), while 17.4% had no formal education, suggesting a moderate level of literacy among melon farmers. Household size data revealed that most of the respondents (87.1%) had five or fewer persons per household, with a mean household size of 3, which may influence farm labour availability. Regarding annual income, over half of the respondents (55.3%) earned ≤ 100,000 Naira per annum, with a mean income of approximately 202,273 Naira, indicating that most farmers operate at a low-income level.

Analysis of farm characteristics showed that most farmers (93.9%) cultivated ≤ 2 hectares, reflecting predominantly smallholder production systems. Farming experience varied, with the majority (63.6%) having 10 years or less of experience and an overall mean farming experience of 12 years. This indicates that many respondents are relatively new to melon farming and may require adequate experience to adopt improved farm practices. Overall, the socio-economic profile indicates that melon farming in Lafia is largely female-dominated, small-scale, and moderately educated, with relatively low income and limited land resources, factors that are likely to influence access to and utilisation of agricultural information.

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Table 1: Socio-economic Characteristics of Respondents

Socio-economic characteristics	Frequency	Percentage (%)	Mean
Sex of respondents			
Female	98	74.2	
Male	34	25.8	
Age (years)			
21-30	47	35.6	
31-40	69	52.3	37
41-50	12	9.1	
51-60	3	2.3	
> 60	1	.8	
Marital status			
Married	75	56.8	
Single	36	27.3	
Divorced	8	6.1	
Widow/widower	13	9.8	
Level of education			
No formal education	23	17.4	
Primary	34	25.8	
Secondary	56	42.4	
Tertiary	19	14.4	
Household size (persons)			
≤5	115	87.1	
6-10	17	12.9	
11- 15	3	3.00	3
Annual income (Naira)			
≤ 100,000	73	55.3	
100,001 - 200,000	35	26.5	202,273
200,001-300,000	18	13.6	
300,001-400,000	1	.8	
> 500,000	5	3.8	
Farm size (Hectares)			
≤2	124	93.9	1
> 2	8	6.1	
Farming experience			
≤ 10	84	63.6	
11-20	32	24.2	12
21-30	11	8.3	
31-40	4	3.0	
> 40	1	.8	

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Sources of Agricultural Information

Melon farmers in Lafia utilise various sources of agricultural information, as shown in Table 2. Personal experience was the most recurring source, with 90.9% of respondents relying on their own prior knowledge and practical experience in melon farming. This was followed closely by family/parents (70.5%), farmers' groups (68.9%), and neighbours or friends (67.4%), highlighting the importance of informal and community-based networks in the dissemination of agricultural knowledge among smallholder farmers. Fidelugwuowo (2021) also found personal experience to be a major source of information for farmers in South-East Nigeria, while Edward *et al.* (2025) reported that neighbours and friends are major sources of information among rural farmers in Adamawa State.

Among formal sources, radio (67.4%) emerged as the most accessible medium, while agricultural extension officers (27.3%), television (34.1%), and farm journals (34.8%) were less commonly accessed. Other sources, such as the internet (25.8%), cell phones (22.0%), and brochures or leaflets (3–5.3%), were minimally used, indicating low penetration of modern ICT and print media in the study area. The findings suggest that while informal channels remain dominant in providing information on improved farm practices, there is potential to enhance the role of formal communication sources, particularly extension services, radio, and ICT platforms, to improve farmers' access to reliable agricultural information. The dominance of informal information sources suggests limited effectiveness of formal extension systems in the study area, which may hinder the dissemination of scientifically validated agricultural innovations.

Table 2: Source of Information on Improved Farm Practices among Melon Farmers

Information sources	Frequency	Percent
Radio	89	67.4
Farm journals	46	34.8
Television	45	34.1
Family/parents	93	70.5
Village leader	33	25.0
Neighbor or friends	89	67.4
Agricultural extension officers	36	27.3
Personal experience	120	90.9
Brochures	4	3.0
Newspapers and magazines	23	17.4
Cell phone	29	22.0
Farmers' group	91	68.9
Leaflets	7	5.3%
Internet	34	25.8%

Preferred Sources of Agricultural Information

The respondents' preferred sources of information on improved farm practices are presented in Table 3. The findings indicate farmers' groups as the most preferred source, with 31.8% of respondents favouring this channel. This highlights the importance of peer networks and collective learning platforms in facilitating access to relevant agricultural knowledge. Alabi *et al*. (2019) also identified farmers' groups to be the most preferred source of information for cashew farmers in Oyo State, Nigeria. Personal experience (18.2%) and family/parents (14.4%) were also important, suggesting that farmers value trusted and familiar sources in decision-making on farming practices.

Formal channels such as agricultural extension officers (9.1%) and farm journals (9.8%) were relatively less preferred, while modern ICT-based sources, #

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including cell phones (0.8%) and the internet (0.8%), were rarely cited, indicating limited adoption or accessibility of technology-mediated information among melon farmers. Other informal sources, including neighbours or friends (8.3%), radio (4.5%), and village leaders (2.3%), were minimally preferred. This suggests that, though farmers are exposed to multiple sources of information, group-based and experiential sources remain the most trusted and influential, underscoring the need to strengthen community-based dissemination strategies and integrate them with formal extension services for wider reach and effectiveness. Farmers are encouraged to share their personal experiences with others, as personal experience is identified as a preferred source of information among the respondents

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Table 3: Sources of Information Preferred by Melon Farmers (n=132)

Preferred source of information	Frequency	Percent
Agricultural extension officers	12	9.1
Cell phone	1	0.8
Family parents	19	14.4
Farm journals	13	9.8
Farmers group	42	31.8
Internet	1	0.8
Neighbours or friends	11	8.3
Personal experience	24	18.2
Radio	6	4.5
Village leader	3	2.3

Constraints to Accessing Agricultural Information

Table 4 presents the constraints faced by melon farmers in accessing information on improved farm practices. The findings indicate that the most severe constraint was lack of awareness of improved information sources, with 71.2% of respondents identifying it as a severe barrier (mean = 2.66). Lack of awareness is a major constraint among farmers in Southern agricultural zone of Nasarawa State, Nigeria. Inadequate funding (64.4%) and difficulty accessing information (53.0%) were also major challenges, highlighting the financial and logistical limitations that hinder farmers from obtaining relevant agricultural knowledge.

Other significant constraints included limited time (56.8%), small farm size (56.1%), and insufficient number of extension agents (43.2%), suggesting that both human and material resources are critical factors in information access. Socio-cultural and personal factors such as low literacy levels (31.1%), language barriers (33.3%), and cultural settings (43.2%) also posed moderate constraints, indicating that communication strategies must consider local contexts and educational levels. Additionally, 43.2% of respondents reported a lack of information services, reflecting gaps in formal agricultural extension provision. Overall, the findings reveal that a combination of awareness, accessibility, financial, human, and socio-cultural factors significantly limits farmers' ability to obtain and utilize agricultural information effectively, underscoring the need for targeted interventions to enhance information dissemination and technology adoption.

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Table 4: Constraints to the Sources of Information on Improved Farm Practices among Respondents (n=132)

Constraints	Mild	Not a constraint	Severe constraint	Mean $(\bar{x})$
Lack of awareness of improved information sources	31(23.5)	7(5.3)	94(71.2)	2.66
Information not easily accessible	62(47.0)	-	70(53.0)	2.53
Literacy level	79(59.8)	12(9.1)	41(31.1)	2.22
Language barrier	76(57.6)	12(9.1)	44(33.3)	2.24
Inadequate fund	47(35.6)	-	85(64.4)	2.64
Inadequate number of extension agents	67(50.8)	8(6.1)	57(43.2)	2.37
Lack of information services	73(55.3)	2(1.5)	57(43.2)	2.42
Cultural setting	72(54.5)	3(2.3)	57(43.2)	2.41
Time	57(43.2)	-	75(56.8)	2.57
Farm size	56(42.4)	2(1.5)	74(56.1)	2.55

Comparison of Extent of Use of Information Sources across Wards

The results of the Kruskal-Wallis test (Table 5) indicate that there was no statistically significant difference in the extent of use of information sources among melon farmers across the five selected wards in Lafia ($\chi^2 = 0.633$, df = 4, p = 0.956). This suggests that farmers in all wards accessed and utilized information sources to a similar extent, regardless of geographical location within the study area.

The mean rank sums for the wards ranged from 1,029.00 (Agyaragu Tofa) to 2,602.50 (Shabu Kwandere), reflecting slight variations in usage patterns; however, the differences across the wards were not statistically meaningful at the 5% significance level. This finding implies a relatively uniform exposure to information sources among melon farmers in Lafia, possibly due to shared community networks, common informal knowledge channels, and similar socio-economic characteristics across the wards. It further underscores the potential for area-wide interventions in information dissemination, as strategies implemented in one ward are likely to be equally effective in others.

Table 5: Comparison of Extent of use of Information Sources

Ward	Observation	Rank Sum	Rank
Agyaragu tofa	14	1029.00	Chiroma
Ashigie	21	1406.00	Assakio
Assakio	23	1482.00	Agyaragu Tofa
Chiroma	35	2258.50	Ashigie
Shabu kwandere	39	2602.50	Shabu Kwandere

Chi-squared = 0.633 with 4 d.f., probability = 0.9593
Level of sig. = 0.05, sig = 0.956

DISCUSSION

The findings reveal a strong dependence on informal information channels such as personal experience, family, and farmer groups. This aligns with the Diffusion of Innovation Theory, which emphasises the role of social systems in influencing adoption behaviour. However, the low utilisation of formal sources such as extension agents and ICT platforms indicates systemic gaps in institutional support and technology dissemination.

The preference for farmer groups highlights the importance of participatory and community-based

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extension approaches. This suggests that policies aimed at strengthening farmer cooperatives and group learning platforms could significantly improve information dissemination.

The absence of significant differences across wards implies uniformity in access constraints and information behaviour, indicating that interventions can be designed at a broader local government level rather than being ward-specific.

Conclusion and Recommendations

The study concludes that melon farmers in Lafia rely predominantly on informal and community-based information sources, with limited engagement with formal extension and ICT channels. Key barriers such as lack of awareness and financial constraints significantly limit access to improved agricultural information. Addressing these challenges through integrated extension strategies, enhanced awareness programmes, and digital inclusion will be critical for improving agricultural productivity and livelihoods.

Based on the findings of this study, the following recommendations are proposed:

1. The government and other agencies involved in extension service provision should increase the number of extension officers and provide continuous training to improve their outreach to melon farmers.

2. Given the high reliance on farmers' groups and peer networks, community-based platforms should be leveraged for disseminating improved farm practices. Farmers' groups should be supported to serve as formal channels for training and knowledge sharing.

3. Farmers should be sensitised to the availability and relevance of improved farm practices and formal information sources through workshops, demonstration farms, and training programmes.

4. Policies and programmes that provide access to credit, subsidised inputs, and other financial support will enable farmers to adopt recommended practices more effectively.

5. Agricultural messages should be designed to reflect the local socio-economic characteristics of the farmers, taking into account literacy levels, language, and household labour availability.

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