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Smallholder Farmers' Perspectives on FARO Rice Cultivation in Southwestern Nigeria

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Abstract

This study examined the smallholder rice farmers perceptions on FARO Rice and techniques of production in Southwestern, Nigeria. Only primary data was used to achieve the work which was obtained from a total of 240 rice farmers purposively selected across 24 rice-growing communities using a multi-stage sampling approach. Data were collected with a structured and pre-tested questionnaire and analyzed using descriptive statistics and mean from Likert type scale. The results showed that most farmers were male (67.5%), married (80%), and within the productive age group of 41–50 years (30.4%). On average, farmers had 12.6 years of rice farming experience and cultivated 4.8 hectares. Education levels were moderate, with 54.2% having completed secondary school, which supported technology adoption. Farmers mainly sourced seeds from previous harvests (73.8%) and peers (62.5%), while information about FARO rice came largely from peer networks (80%), Agricultural Development Programmes (62.9%), and radio (62.5%). However, irregular extension visits reduced trust and slowed the uptake of innovations. Awareness was highest for FARO 44 (100%) and FARO 52 (83.3%), while FARO 51 (53.7%) and FARO 15 (51.7%) were less known. Farmers perceived FARO rice varieties positively, citing high seed quality, adaptability, profitability, and good market value. Still, challenges included high input costs, labor intensity, and vulnerability to flooding. The study concludes that FARO varieties have strong potential to improve yields and incomes. It recommends active resurgence of extension services, utilization and leveraging on the spread of digital platforms and mobile devices gaining rural access and adaptability, improving farmers' access to credit and inputs, and empowering farmer associations to enhance adoption.

Keywords: Awareness, Perception, FARO Rice, Smallholder Farmers, Cultivation, Nigeria.

Introduction

For decades, Nigerian governments have recognized the importance of rice and have invested heavily in efforts to boost local production. Policies such as the National Rice Development Strategy (NRDS), the Agricultural Transformation Agenda (ATA), and the Anchor Borrowers' Programme (ABP) were created to support farmers with credit, improved seeds, and mechanization (FAO, 2022; CBN, 2020). However, despite these interventions, local production has not kept pace with demand. Traditional rice varieties cultivated by many smallholder farmers yield only about 2.0–2.5 tonnes per hectare, while improved varieties have shown the potential to yield between 4.0 and 7.0 tonnes per hectare under proper management. The problem, therefore, is not simply about having improved seeds available, but about whether farmers are aware of them, whether they trust them, and whether they see them as worthwhile investments.

Agricultural technologies have several key features that can affect farmers' decisions to adopt them. Many studies have examined agricultural technology adoption, making it quite broad and sometimes difficult to summarize. Traditionally, research on adoption has focused on factors such as limited information, risk and uncertainty, institutional barriers, human capital, availability of inputs, and infrastructure as major reasons influencing adoption decisions (Obayelu et al., 2017). Adekoya and Tologbonse (2011) explained that a farmer's decision to adopt or not to adopt a recommended agricultural practice usually happens gradually over time, rather than immediately. According to Udemezue (2018), farmers must first become aware of an innovation and pass through several stages before adopting it. Adoption is a mental and decision-making process that individuals or groups go through when deciding whether to fully use an innovation introduced into their community (Rogers, 2003). For farmers to become familiar with and accept a new idea, they must go through various stages of mental decision-making (Udemezue, 2018).

In line with this, Rogers (1997) described adoption as a cumulative process that involves five stages: awareness (when the farmer first learns about the innovation but has limited details), interest (when the farmer seeks more information), evaluation (when the farmer forms a positive or negative opinion and considers trying it), trial (when the farmer tests the innovation on a small scale), and

finally adoption or rejection (when the farmer decides whether or not to continue using it). One of the most important innovations for Nigeria's rice sector has been the development of the FARO (Federal Agricultural Research Oryza) series of improved varieties. These seeds were not just developed in laboratories; they were carefully bred to meet the real challenges that farmers face on their fields. Released by the National Cereal Research Institute (NCRI), AfricaRice (formerly WARDA), and the International Rice Research Institute (IRRI), FARO varieties are designed for different ecologies upland, lowland, irrigated, and flood-prone areas and come with traits that matter to farmers: shorter maturity periods, disease resistance, tolerance to drought or flooding, and higher yields. For example, FARO 44 (SIPI) has become famous among farmers for its short maturity (110 – 120 days), good milling quality, and yield potential of up to 7 tonnes per hectare. FARO 52 (WITA 9) is valued for its disease resistance and high grain recovery rate, while newer releases such as FARO 66 (ARICA 2) and FARO 67 (ARICA 1) have been branded "climate-smart" because they perform well even under flooding and other stresses. These varieties were meant to replace traditional species that are often late-maturing, low-yielding, and susceptible to pests and diseases. According to the National Agricultural Seeds Council (NASC), more than 20 FARO varieties have been officially released in Nigeria (NASC, 2019). But on the ground, the story is different, as awareness is uneven, seed access is inconsistent, and farmers' perceptions are mixed (Ajeigbe *et al.,* 2019).

This raises an important question: why is it that despite the availability of improved FARO rice varieties, many farmers still rely heavily on traditional seeds that offer lower yields? The answer often lies in perception and awareness. Farmers make decisions not only based on what research institutions say, but also on their own experiences, the testimonies of their neighbors, the advice of extension agents, and their personal circumstances. A farmer who has heard positive results from a trusted fellow farmer may be eager to try a FARO variety. Another farmer who once planted FARO rice but faced challenges with pests, poor market prices, or lack of input support may decide never to try again. Socioeconomic realities also shape these choices while a younger or more educated farmer may be willing to experiment, an older farmer may prefer to "stick to what he knows." Similarly, access to information channels such as radio, cooperatives, or extension services can mean the difference between embracing FARO varieties and never even hearing about them.

In Southwestern Nigeria, especially in Ekiti and Ondo States, rice production has been gaining ground in both lowland and upland areas. Yet, research specific to these states on how smallholder farmers perceive FARO rice varieties remains very limited. This is concerning because adoption is not just about availability of seeds; it is about how farmers view them, what they know about them, and whether they believe the benefits outweigh the risks. Without understanding farmers' perceptions and awareness levels,

extension services may continue to miss the mark, policies may be ineffective, and the yield gap may persist.

The research problem, therefore, lies in the fact that while improved FARO rice varieties have been released in large numbers in Nigeria, little is known about how smallholder farmers in Southwestern Nigeria particularly Ekiti and Ondo States perceive them, what level of awareness they have, and how their socioeconomic characteristics and access to information influence their adoption decisions. If these perspectives of farmers are not clearly understood, the full potential of FARO rice in improving yields, enhancing food security, and reducing rice imports may never be realized. In light of this problem, this study seeks to examine farmers' awareness and perception of FARO rice and its associated production methods in Southwestern Nigeria. It aims to uncover how factors such as age, education, income, farm size, and access to information channels influence awareness and perception. The study will provide insights that can guide extension officers, seed companies, and policymakers in designing more effective interventions.

Methodology

The study was carried out in six Local Government Areas across Ekiti and Ondo States, Nigeria, regions widely known for their strong agrarian base and deep reliance on agriculture as a livelihood. Ondo State, created in 1976, lies between latitudes 5°45′N and 8°15′N and longitudes 4°30′E and 6°E, sharing boundaries with Ekiti, Kogi, Edo, Osun, and Ogun States, as well as the Atlantic Ocean. The state is home to a diverse landscape that ranges from dense rainforests to sub-savannah vegetation, providing fertile ground for various crops. According to the National Population Commission (NPC, 2020), the state has a population of 3,460,877 people. Ekiti State, which was carved out of Ondo in 1996, lies on latitude 7°40′N and longitude 5°15′E and has a population of 2,210,957 distributed across 16 Local Government Areas. The state is predominantly rural, with over 70% of its population engaged in farming activities, especially food crop production (NBS, 2021). These two states were chosen as the study location because of their long-standing tradition in crop production and their significant role in rice cultivation.

The study employed a multi-stage sampling technique to systematically reach rice farmers across the two states. In the first stage, three Local Government Areas were purposively selected from each state based on their level of involvement in rice production. In Ekiti State, Gbonyin, Ido-Osi, and Irepodun/Ifelodun were chosen, while Akure North, Akure South, and Owo were selected from Ondo State. This careful selection ensured that only LGAs with a strong presence of rice farming activities were included, thereby increasing the reliability and relevance of the findings. In the second stage, four rice-farming communities were selected from each

Local Government Area, bringing the total number of communities studied to 24. At the third stage, ten rice farmers were selected purposively from each of the chosen communities, making a total of 240 respondents. This multi-layered approach provided a representative pool of rice farmers, ensuring diversity in farming practices, experiences, and perspectives. The farmers were approached with sensitivity, and their participation was entirely voluntary, with care taken to ensure that the sample reflected both small- and medium-scale rice producers.

Data collection was carried out through the use of a structured and pre-tested questionnaire, designed to capture clear, accurate, and comprehensive information from the respondents. The instrument was carefully developed to reflect the objectives of the study and pretested to ensure its reliability and clarity before full administration. Awareness of FARO rice varieties was measured on a 3-point scale ranging from low to high levels of awareness. The responses obtained were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics such as frequencies, percentages, and means were employed to summarize the data.

Results and Discussion

The results presented in Fig. 1 reveal that most rice farmers were between 41 and 50 years of age (30.4%), followed by those aged 31– 40 (21.3%), with an average age of 45 years. This shows that the majority of farmers in their active years, are still capable of hard work and open to adopting new ideas and innovations. The data in Fig. 2 also shows that rice farming is largely male dominated (67.5%), which is not surprising given its labor-intensive nature. Women (32.5%) were more involved in postharvest activities such as processing and marketing, supporting the findings of Okunlola *et al*. (2020). Encouragingly, Fig. 3 shows that education levels were fairly strong, with 54.2% of farmers attaining secondary education, equipping them to understand and adopt agricultural innovations (Raheem *et al.,* 2023).

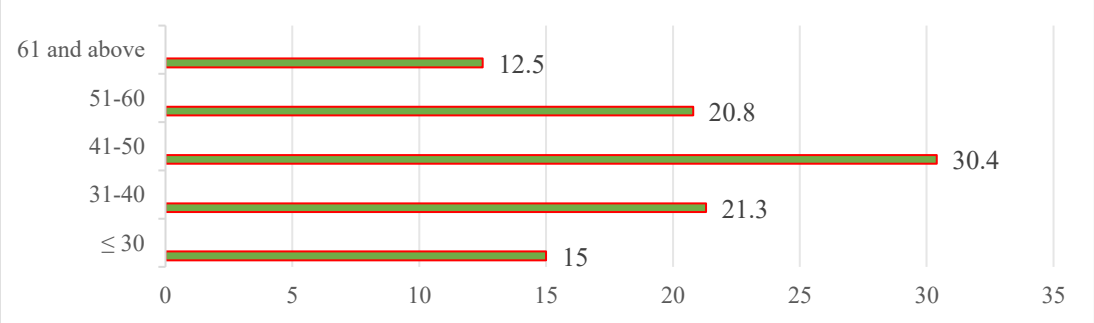


Figure 1: Bar-chart showing distribution of respondents according to Age

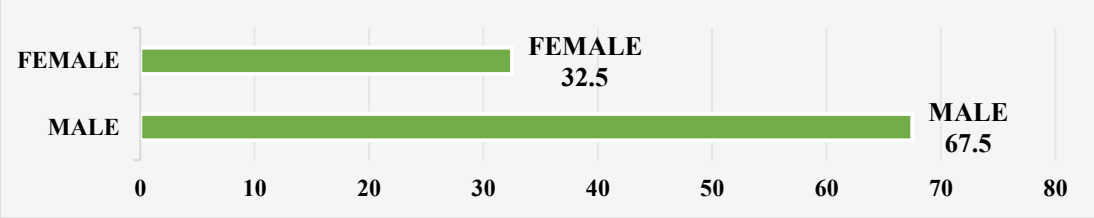


Figure 2: Bar-chart showing distribution of respondents according to Sex

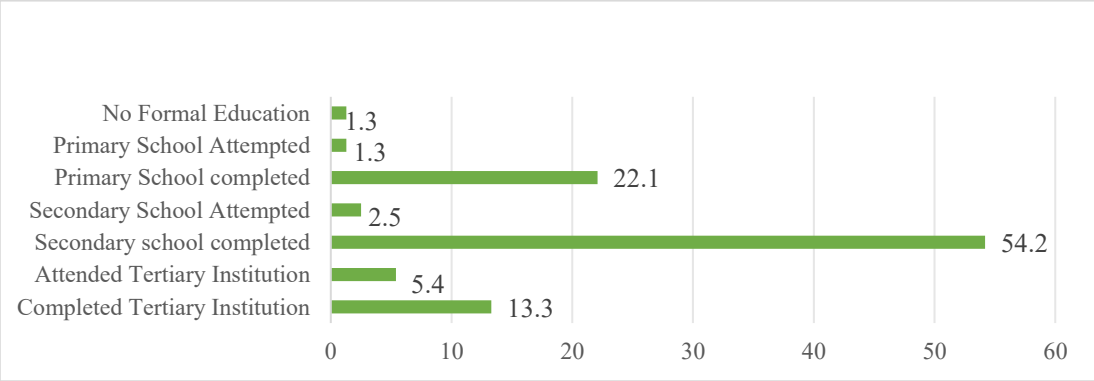


Figure 3: Bar-chart showing distribution of respondents Level of Education

The results presented in Table 1 reveal that Marriage was common among respondents (80%), showing the role of farming as both a livelihood and family responsibility. Christianity (50.8%) and Islam (35%) were the dominant religions, while family sizes of 5–8 members (59.6%) were typical, providing essential labor for farming activities (Fakoyede, 2020). Results in Table 1 reveal that Farm sizes averaged 4.8 hectares, reflecting the predominance of smallholder farmers, while average farming experience of 12.6 years gave them the confidence and skills needed to make informed decisions (Ibrahim *et al.,* 2024).

Table 1: Distribution of respondents according to socioeconomic characteristics

Socio-Economic Characteristics	Participants (n=240) Frequency	Percentage (%)	Mean (SD $\bar{x}$)
Religion			
Christianity	122	50.8	
Islam	84	35.0	
Traditional	31	12.9	
Others	3	1.3	
Marital Status			
Single	20	8.3	
Married	192	80	
Divorced	5	2.1	

Socio-Economic Characteristics	Participants (n=240) Frequency	Percentage (%)	Mean ($\bar{X}$)	SD
Separated	9	3.8		
Widowed	14	5.8		
Household Size (number)				
1-4	78	32.5		
5-8	143	59.6	5	2
≥ 9	19	7.9		
Farm Size (Ha)				
≤ 1	61	25.4		
1.1 - 4.0	129	53.8	4.8	2.8
4.1 - 8.0	26	10.8		
8.1 - 12.0	19	7.9		
≥ 12.1	5	2.1		
Farming Experience				
≤ 5	18	7.5		
6 – 10	81	33.8		
11- 15	75	31.3	12.6	5.3
≥ 16	66	27.5		

Source: Field survey, 2024

Fig. 4 shows seed sourcing was mainly from farmers' own previous harvests (73.8%), peers (62.5%), and Agricultural Development Programmes (60.4%). Although this reliance builds trust in familiar sources, concerns about affordability and seed quality persist. Information about farming practices came mostly from peers (80%), ADPs (62.9%), and radio (62.5%), combining traditional knowledge networks with institutional sources. Financing for rice farming relied heavily on personal savings (72.5%) and informal networks, while access to formal credit was minimal, which restricted investment in improved practices and technologies. Labor needs were met through hired workers (63.3%) and family labor (54.2%), consistent with Rilwanu *et al.* (2024). Farmers valued practical learning, with workshops (67.1%) and demonstration plots (64.6%) providing important opportunities to see and test new ideas (Ebenehi, 2019). However, weak extension support remained a challenge: as revealed in Fig. 5, only 4.2% of farmers reported regular extension visits, while most said they were occasional (50%) or rare (46.3%), reducing trust and slowing the adoption of innovations (Suleiman & Singh, 2022).

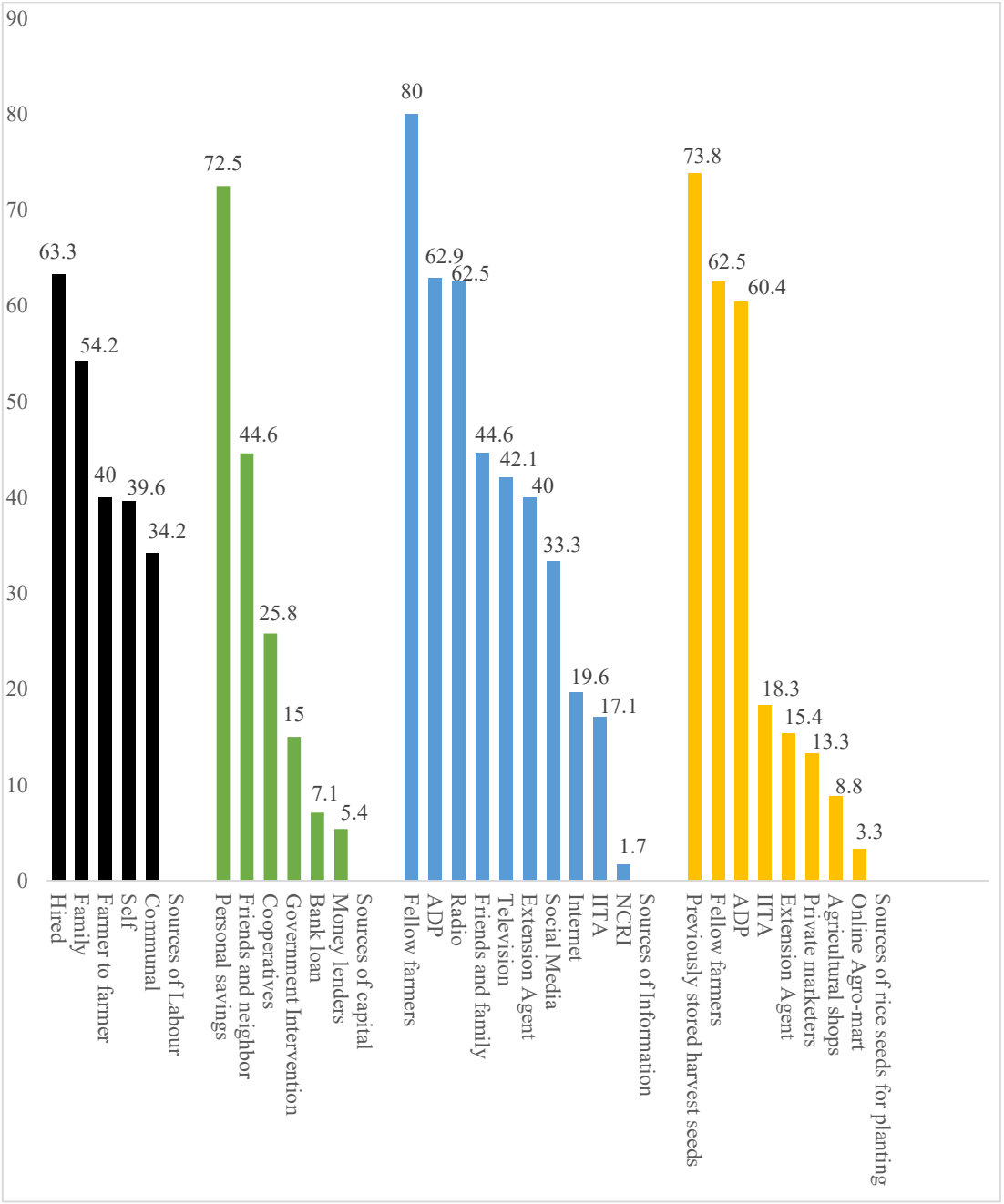


Figure 4: Bar-chart showing distribution of respondents according to Labour, Capital, Information, and Input sources

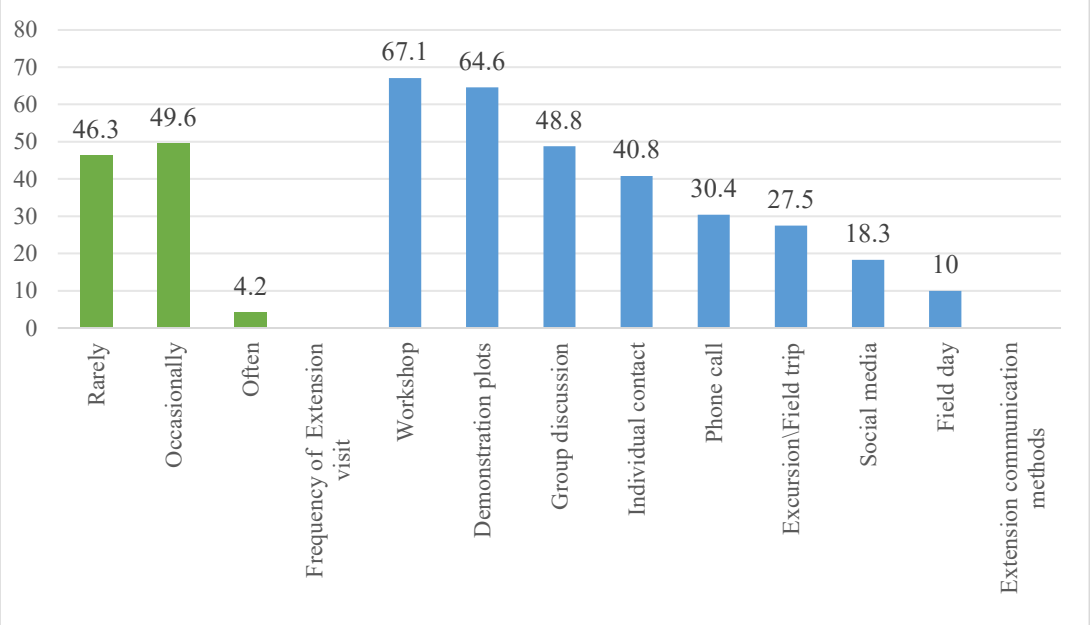


Figure 5: Bar-chart showing distribution of respondents according to Frequency of Extension visit with farmers and delivery methods

As shown in Table 2, awareness of FARO rice varieties was uneven. FARO 44 was the most widely recognized (100%), followed by FARO 52 (83.3%). Both gained visibility through peer influence and media campaigns. Awareness of FARO 51 (53.7%) and FARO 15 (51.7%) was moderate, while other varieties recorded far lower recognition, resulting in an overall mean awareness score of just 0.50. This suggests that while some varieties are well-known, general awareness of FARO rice is still relatively limited, partly due to weak extension efforts and underdeveloped rural communication systems. As Abdulmumini *et al.* (2021) pointed out, awareness is only one step toward adoption; credibility of information, peer influence, and farmers' attitudes are equally important.

Table 2: Distribution of respondents according to Awareness of FARO rice varieties

FARO rice varieties	Awareness		Level of Awareness					
	Aware Freq. (%)	Not Aware Freq. (%)	Very Much Aware Freq. (%)	Much Aware Freq. (%)	Just Aware Freq. (%)	Not Aware Freq. (%)	Mean ($\bar{X}$)	SD
FARO 44	240 (100)	0 (0.0)	83 (34.6)	139 (57.9)	18 (7.5)	0 (0.0)	2.27*	0.59
FARO 52	200 (83.3)	40 (16.7)	5 (2.1)	74 (30.8)	121 (50.4)	40 (16.7)	1.18*	0.73
FARO 51	129 (53.7)	111 (46.3)	0 (0.0)	2 (0.8)	127 (52.9)	111 (46.3)	0.55*	0.52
FARO 15	124 (51.7)	116 (48.3)	4 (1.7)	31 (12.9)	89 (37.1)	116 (48.3)	0.68*	0.76
FARO 55	112 (46.6)	128 (53.3)	0 (0.0)	20 (8.3)	92 (38.3)	128 (53.3)	0.55	0.64
FARO 56	77 (32.1)	163 (67.9)	0 (0.0)	14 (5.8)	63 (26.3)	163 (67.9)	0.38	0.59
FARO 59	74 (30.8)	166 (69.2)	2 (0.8)	19 (7.9)	53 (22.1)	166 (69.2)	0.40	0.67
FARO 61	67 (28.0)	173 (72.1)	0 (0.0)	3 (1.3)	64 (26.7)	173 (72.1)	0.29	0.48
FARO 66	53 (22.1)	187 (77.9)	0 (0.0)	0 (0.0)	53 (22.1)	187 (77.9)	0.22	0.42
FARO 67	47 (19.6)	193 (80.4)	0 (0.0)	0 (0.0)	47 (19.6)	193 (80.4)	0.20	0.40
FARO 60	47 (19.6)	193 (80.4)	0 (0.0)	4 (1.7)	43 (17.9)	193 (80.4)	0.21	0.45
FARO 48	40 (16.7)	200 (83.8)	0 (0.0)	7 (2.9)	33 (13.8)	200 (83.8)	0.19	0.47
FARO 58	43 (18.0)	197 (82.1)	0 (0.0)	3 (1.3)	40 (16.7)	197 (82.1)	0.19	0.43
FARO 65	30 (12.5)	210 (87.5)	0 (0.0)	4 (1.7)	26 (10.8)	210 (87.5)	0.14	0.39
FARO 49	20 (8.4)	220 (91.7)	0 (0.0)	3 (1.3)	17 (7.1)	220 (91.7)	0.10	0.33
Grand mean							**0.50**	

Source: Field survey, 2024

Table 3 shows that in terms of knowledge, farmers showed stronger familiarity with post-harvest and general rice practices such as storage (2.23), broadcasting (2.20), and weeding (2.14). These practices are often passed down through generations, reinforcing traditional knowledge-sharing systems (Rilwanu *et al.,* 2024). However, knowledge gaps appeared in transplanting, herbicide use, and pre-planting practices. These activities were often left to hired laborers, which not only increased costs but also limited farmers' own technical expertise.

Table 3: Distribution of respondents according to Awareness of FARO rice techniques of production

FARO rice production techniques	Very Much Aware Freq. (%)	Much Aware Freq. (%)	Just Aware Freq. (%)	Not Aware Freq. (%)	Mean ($\bar{X}$)	SD
Land choice and preparation	33 (13.8)	76 (31.7)	131 (54.6)	0 (0.0)	1.59	0.72
Variety choice and selection	13 (5.4)	46 (19.2)	161 (67.1)	20 (8.3)	1.22	0.67
Seed treatment	12 (5.0)	98 (40.8)	130 (54.2)	0 (0.0)	1.51	0.59
Nursery	24 (10.0)	88 (36.7)	115 (47.9)	13 (5.4)	1.51	0.75
Furrow making	0 (0.0)	25 (10.4)	205 (85.4)	10 (4.2)	1.06	0.38
Irrigation	0 (0.0)	104 (43.3)	116 (48.3)	20 (8.3)	1.35	0.63
Broadcasting	86 (35.8)	115 (47.9)	39 (16.3)	0 (0.0)	2.20*	0.70
Transplanting	59 (24.6)	115 (47.9)	66 (27.5)	0 (0.0)	1.97*	0.72
Weeding	52 (21.7)	170 (70.8)	18 (7.5)	0 (0.0)	2.14*	0.52
Fertilizer application	36 (15.0)	113 (47.1)	91 (37.9)	0 (0.0)	1.77*	0.69
Herbicides utilization	46 (19.2)	122 (50.8)	72 (30.0)	0 (0.0)	1.89*	0.69
Pest and diseases control	30 (12.5)	157 (65.4)	53 (22.1)	0 (0.0)	1.90*	0.58
Harvesting technique	30 (12.5)	192 (80.0)	18 (7.5)	0 (0.0)	2.05*	0.45
Stockpiling and drying	14 (5.8)	165 (68.8)	61 (25.4)	0 (0.0)	1.80*	0.52
Threshing	55 (22.9)	147 (61.3)	38 (15.8)	0 (0.0)	2.07*	0.62
Winnowing	39 (16.3)	127 (52.9)	74 (30.8)	0 (0.0)	1.85*	0.67
Storage	76 (31.7)	144 (60.0)	20 (8.3)	0 (0.0)	2.23*	0.59
Paddy processing	61 (25.4)	154 (64.2)	25 (10.4)	0 (0.0)	2.15*	0.58
Milling	37 (15.4)	169 (70.4)	34 (14.2)	0 (0.0)	2.01*	0.54
Cleaning and separation	26 (10.8)	150 (62.5)	64 (26.7)	0 (0.0)	1.84*	0.59
Grand mean					**1.77**	

Table 4 highlights that farmers held generally positive perceptions of FARO rice varieties. They praised the high seed quality (2.82), adaptability to different environments (2.78), favorable market value (2.78), fast maturity with minimal fertilizer needs (2.77), and profitability (2.70). They also appreciated its resistance to diseases (2.63) and tolerance to drought (2.61). Taken together, these positive views gave FARO rice an overall mean score of 2.51, showing that farmers regard it as reliable and profitable. These findings align with Raheem *et al*. (2023) and Banseka *et al.* (2023), who both highlighted FARO rice's adaptability, strong yields, and economic potential.

Beyond its farming performance, farmers valued FARO rice for its multiple uses, especially the straw, which served as fodder for livestock further supporting household food and income security. Nonetheless, farmers also expressed frustrations. They found FARO rice production labor-intensive (2.15), expensive in terms of inputs (2.21), and sometimes difficult to access (2.25). In addition, they noted limited information about the variety (2.30) and vulnerability to flooding (2.36). Even with

these concerns, most farmers still felt that the benefits outweighed the drawbacks, which explains their motivation to continue cultivating FARO rice.

Table 4: Distribution of respondents according to perception about Faro rice

Perception of farmers on Faro rice	Strongly Agree Freq. (%)	Agree Freq. (%)	Disagree Freq. (%)	Strongly Disagree Freq. (%)	Mean ($\bar{X}$)	SD
It has good seed grain quality	12 (5.0)	186 (77.5)	47 (19.6)	1 (0.4)	2.82*	0.45
The rice commands good price in the market	3 (1.3)	170 (70.8)	50 (20.8)	8 (3.3)	2.78*	0.59
The rice is adaptable to my farm environment	6 (2.5)	168 (70.0)	57 (23.8)	4 (1.7)	2.78*	0.55
The seeds are desirable and highly demanded	6 (2.5)	176 (73.3)	54 (22.5)	4 (1.7)	2.77*	0.51
The growth is rapid and uses minimal fertilizer	11 (4.6)	167 (69.6)	60 (25.0)	3 (1.3)	2.77*	0.54
Compared to local varieties, the return is higher	52 (21.7)	172 (71.7)	54 (22.5)	11 (4.6)	2.70*	0.57
Weak and cannot resist diseases	1 (0.4)	93 (38.8)	139 (57.9)	7 (2.9)	2.63	0.55
Weak and cannot resist drought	0 (0.0)	96 (40.0)	141 (58.8)	3 (1.3)	2.61	0.51
The yield is not satisfactory	1 (0.4)	98 (40.8)	139 (57.9)	2 (0.8)	2.59	0.52
It is cheap and affordable	2 (0.8)	122 (50.8)	110 (45.8)	6 (2.5)	2.50	0.56
The capital required for the maintenance is too high	1 (0.4)	138 (57.5)	90 (37.5)	11 (4.6)	2.46	0.59
It cannot resist flooding	1 (0.4)	156 (65.0)	79 (32.9)	4 (1.7)	2.36	0.52
The rice varieties are available	3 (1.3)	102 (42.5)	106 (44.2)	29 (12.1)	2.33	0.70
Information on the rice varieties is not always available	0 (0.0)	169 (70.4)	71 (29.6)	0 (0.0)	2.30	0.46
It is easily accessible	1 (0.4)	85 (35.4)	126 (52.5)	28 (11.7)	2.25	0.65
The required inputs to supports the rice is expensive	3 (1.3)	187 (77.9)	46 (19.2)	4 (1.7)	2.21	0.48
The cultivation is complex to practice	5 (2.1)	186 (77.5)	45 (18.8)	4 (1.7)	2.20	0.49
It has highly labour intensive practices	8 (3.3)	192 (80.0)	36 (15.0)	4 (1.7)	2.15	0.48
Grand mean					**2.51**	

Source: Field survey, 2024. Figure in parentheses represents percentage.
* Favourable perception

The results in Table 5 suggest that several factors strongly influence farmers' perception of FARO rice. Past experiences with rice production (2.65) played the most important role, as farmers who previously had good results were more open to trying new varieties. Compatibility with existing farming practices (2.58) and adaptability to local environments (2.47) also encouraged adoption, since varieties that fit well into current systems and withstand local conditions were seen as less risky. Strong demand and consumption of FARO rice (2.45) further motivated farmers, as did membership in farmer associations (2.45), which provided opportunities for shared learning and information exchange. Access to land (2.44) was another important enabler, allowing farmers to expand their planting area and test new varieties. Other factors included

access to alternative income sources (2.38), which reduced financial risks, and publicity and marketing of FARO rice (2.38), which boosted awareness of its quality and profitability. Together, these drivers gave farmers the confidence to adopt FARO rice and invest in its cultivation, showing that both social and economic influences are critical in shaping adoption decisions.

Table 5: Distribution of respondents according to Factors Influencing Farmers' perception on FARO Rice

FACTORS	Major influence Freq. (%)	Minor influence Freq. (%)	Low influence Freq. (%)	No influence Freq. (%)	Mean ($\bar{X}$)	SD
Past experiences in rice farming	171 (71.3)	55 (22.9)	14 (5.8)	0 (0.0)	2.65*	0.59
Compatibility with rice planting process	151 (62.9)	80 (33.3)	6 (2.5)	3 (1.3)	2.58*	0.61
Visible Resistance to Pest and diseases	157 (65.4)	64 (26.7)	14 (5.8)	5 (2.1)	2.55*	0.70
Adaptability to Environment	134 (55.8)	86 (35.6)	18 (7.5)	2 (0.8)	2.47*	0.67
Membership in farmers associations	141 (58.8)	70 (29.2)	26 (10.8)	3 (1.3)	2.45*	0.74
Demand, consumption of FARO rice	139 (57.9)	74 (30.8)	23 (9.6)	4 (1.7)	2.45*	0.74
Land accessibility	140 (58.3)	77 (32.1)	11 (4.6)	12 (5.0)	2.44*	0.80
Accessibility to credit and loan	124 (51.7)	91 (37.9)	20 (8.3)	5 (2.1)	2.39*	0.73
Accessibility to other source of income	113 (47.1)	106 (44.2)	21 (8.8)	0 (0.0)	2.38*	0.64
Publicity and advertisement of FARO rice	134 (55.8)	76 (31.7)	17 (7.1)	13 (5.4)	2.38*	0.84
Perceived Ease of harvest and storage	130 (54.2)	76 (31.7)	25 (10.4)	9 (3.8)	2.36*	0.82
Ease of FARO rice cultivation	116 (48.3)	95 (39.6)	25 (10.4)	4 (1.7)	2.35*	0.73
Increase in rice yield	116 (48.3)	100 (41.7)	10 (4.2)	14 (5.8)	2.33*	0.81
Availability of FARO rice seeds	102 (42.5)	110 (45.8)	23 (9.6)	5 (2.1)	2.29	0.72
Accessibility to information sources	83 (34.6)	136 (56.7)	21 (8.8)	0 (0.0)	2.26	0.61
Visitation by extension agents	91 (37.9)	118 (49.2)	31 (12.9)	0 (0.0)	2.25	0.67
Affordability of FARO rice seeds	108 (45.0)	93 (38.8)	26 (10.8)	13 (5.4)	2.23	0.85
Triability of FARO rice by other farmers	98 (40.8)	104 (43.3)	31 (12.9)	7 (2.9)	2.22	0.78
Complexity of FARO rice cultivation	52 (21.7)	147 (61.3)	39 (16.3)	2 (0.8)	2.04	0.64
Access to Irrigation and Fertilization	64 (26.7)	114 (47.5)	54 (22.5)	8 (3.3)	1.98	0.79
Access to Tractor and mechanization	68 (28.3)	100 (41.7)	45 (18.8)	27 (11.3)	1.87	0.95
Grand mean					**2.32**	

Source: Field survey, 2024. Figure in parentheses represents percentage

Conclusion and Recommendations

This study demonstrates that FARO 44, FARO 52, and FARO 55 have gained popularity largely due to peer influence, proven field performance, and farmers' hands-on knowledge. However, adoption has been slowed by weak institutional support, limited access to credit, poor extension services, and difficulties in accessing quality seeds. To strengthen awareness and adoption, efforts need to focus on inclusive communication, stronger extension services, and economic empowerment for farmers.

Recommendations include:

1. Expanding and training extension personnel (including women) to reach more rice farmers through state ADPs, and National Agricultural Extension and Research Liaison Services, with support from NGOs such as Sasakawa Africa Association and Winrock International.
2. Leveraging digital tools like mobile apps, SMS, and social media to attract younger farmers. With the advent of rural mobile technology access and increasing phone ownership, and expanding digital platforms, thereby promoting digital agricultural extension for rice farmers using mobile apps, SMS, and social media, will strengthen extension delivery and enhance the adoption of FARO rice. These tools could be utilized by National Information Technology Development Agency, and private Agri-Tech firms (e.g., FarmCrowdy, Crop2Cash, and ThriveAgric, and Village-Hills Agri-Tech)
3. Strategically fortify rice farmer associations (AFAN, RIFAN) into cooperatives as platforms for farmer to farmer learning, advocacy, which could facilitate collective input–output marketing.
4. Using trusted community networks such as churches, mosques, and local leaders for effective information sharing. Therefore, if local structures like traditional rulers, religious leaders, and Community Based Organizations are supported by the National Orientation Agency (NOA) to disseminate improved rice technologies and practices, this will contribute to wide adoption.
5. Organize regular on-farm demonstrations and farmer-led training on FARO rice production, to build confidence through practice, which could be facilitated by Nigeria Cereals Research Institute, NAERLS, and ADPs, in collaboration with seed companies and FAO/IFAD programmes.
6. Simplifying extension materials with visuals and local languages to reach farmers with limited education. Develop simple and visual extension materials in local languages to reach rice farmers with limited formal education through NAERLS, radio/TV agricultural programmes, and Farm Radio International.
7. Improving access to credit, quality inputs, and land to reduce economic barriers. This could enhance access to agricultural credit, quality seed, fertilizer, and land for smallholder rice farmers through CBN (Anchor Borrowers Programme), Bank of Agriculture, NIRSAL, and State Ministries of Agriculture.

By implementing these measures, farmers will not only become more aware of FARO rice but develop a positive perception and also feel empowered to adopt it confidently, ultimately boosting productivity, strengthening food security, and improving rural livelihoods.

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