



Awareness, Access and Utilization of Certified Seeds by Rice Farmers in Ebonyi State

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Abstract

The study assessed the awareness, access and utilization of certified seeds by rice farmers in Ebonyi State. One hundred and Twenty respondents were selected for the study using a

multi-stage random sampling procedure. Data were collected using a structured questionnaire and analyzed with percentages, mean and Probit regression at 5% significance level. Results show that 51.7% of the farmers were aware of certified rice seeds. The main sources of information on certified seeds were cooperative associations (72.5%) and mass media (49.0%). Certified rice seeds were available for the farmers ($\bar{x}=1.8$) but not always accessible ($\bar{x}=1.3$). Majority of the farmers utilized FARO 44 (74.2%) due to its early maturing and high yielding quality. Membership of a cooperative association (0.600) and ownership of phones (0.012) had positive significant influence on the utilization of certified seeds. The study concludes that rice farmers have low access to certified seeds and recommends that the value chain for the distribution of certified seeds should be re-invigorated to ensure that certified seeds become more accessible to farmers

Introduction

Nigeria is among the nations of the world where the attainment of food security has remained elusive as food is regarded as one of the essential basic citizen's rights (FAO et al., 2021). In a bid to ameliorate this challenge, many researchers are of the opinion that the development of the agricultural sector will be of utmost importance.

Rice is among the three major food crops cultivated in Nigeria including wheat and maize (Udemezue, 2018). Cultivation of cereals, especially rice, gives Nigeria a comparative advantage over other developing countries in their food security stride. The centres of rice production in Nigeria include states in the middle belt such as Benue, Kaduna, Niger and Taraba as well as states in the South-eastern part including Enugu, Ebonyi, and Abia. Of all the states in Nigeria, Kaduna is the highest producing state followed by Niger, Benue, Ebonyi and Taraba. Despite that rice cultivation can be carried out in all these states of Nigeria, the nation is yet to catch up with its population's demand for rice with the Food and Agriculture Organization (FAO) (2020), reporting an annual deficit supply of close to 3 million metric tons. Nigeria is the highest producer and importer of rice in African and second in the world after China (Durand-Morat et al., 2019 & Onyeneke, 2021). Previous governments in Nigeria have developed policies and strategies targeted at increasing rice production in the country. Such policies include the ANCHOR borrowers scheme, Agricultural Transformation Agenda Special Program in addition to other strategies funded by international organizations (Ibrahim & Saifullahi, 2020). Also, farmers have experimented on the expansion of cultivated land, but it is evident that without the utilization of innovative practices such as use of certified seeds, this cannot bring about the much-needed increase in agricultural productivity (Akanbi et al., 2022).

At the centre of improvement in food production in Nigeria is the need to utilize improved farm inputs and practices, as seeds are the principal and mandatory input in the crop production sub-sector. This is because the farmer cannot utilize other farm inputs such as weedicides, fertilizer, pest control chemicals etc. without first planting the seeds. In view of this, seeds are the mainstay of crop production. Given that seeds are the backbone of crop production, farmers' inability to access certified seeds will constitute a severe hindrance in their production activities.

Hence, seed certification has remained the basic instrument for quality assurance in the Nigerian seed industry over several decades for selected crops. Before 2007 when the National Agricultural Seeds Council (NASC) was established as an agency of the Federal Ministry of Agriculture with the mandate of overseeing the development and regulation of the national seed industry; the major legislated document that gave

direction to the development of agricultural seed in Nigeria were National Seeds Decree of 1992 and the National Agricultural Seeds Act, Cap N5 of 2004 (NASC & Seed Entrepreneurs Association of Nigeria (SEEDAN), 2020). It has been reported that the national seed certification capacity is extremely poor. As at 2019, Nigeria had only 50 seed inspectors and 75 seed certification officers who were on secondment to the Agricultural Development Project offices in the 36 states and Federal Capital Territory (FCT).

Efforts were intensified between 2013 and 2015 towards the production of certified seeds for maize, rice and other crops on a larger scale when compared to the amount of seeds utilized in the previous years, but these efforts never yielded the expected results. Within this period, FARO 44 was the major certified rice seed in Nigeria. Yet, this variety was introduced in Nigeria in the 1990s with many of its preferred traits been improved upon by later varieties (Takehima et al., 2022)

Notwithstanding the efforts by agricultural input value chain actors to ensure that certified seed varieties are prominent, reports show that farmers in Nigeria still utilize their old seed stocks in their farm operations. The quantity of improved seeds used in Nigeria is very low as over 80% of Nigerian smallholder farm households acquire their seeds through unofficial channels such as fellow farmers and local markets (Chiemela et al., 2021), while only 5 to 10 percent of cultivated land is planted with improved seeds and this has resulted in low yield whereas the use of improved seed varieties can boost crop yield by about 35% (Takehima et al., 2022 & Akanbi, et al. 2022).

Ebonyi state is a major producer of rice in Nigeria, but there exists little information on farmers' awareness, access and utilization of certified seeds in Ebonyi State. It is in view of this that this study;

1. ascertained the level of awareness of certified rice seeds,
2. profiled farmers' sources of information on certified seeds,
3. assessed the availability and accessibility of certified seeds,
4. assessed the utilization of certified seeds by farmers and their preference criteria,
5. ascertained determinants of utilization of certified seeds among rice farmers.

The study hypothesized that there is no significant relationship between the socioeconomic characteristics of rice farmers and their utilization of certified seeds.

Methodology

The study was carried out in Ebonyi State. The State lies at latitude 6⁰31¹N and longitude 8⁰15¹E (Ezeh, Eze and Eze, 2021). Although the National Agricultural Seed Council centre is in Umudike; several seed companies operate within Ebonyi state and include Ebonyi State University (EBSU) Agribusiness enterprise, Strategic Seeds Nigeria Limited, International Fund for Agricultural Development Value Chain Development Programme (IFAD-VCDP), Agronursery among others. The population of the study was made up of all rice farmers in the state. Ebonyi Central and Ebonyi South agricultural zones were purposively selected due to the high intensity of rice production in these agricultural zones. In the second stage, two ADP blocks, Ikwo and Ezza North were selected from Ebonyi Central; and Ivo and Ohaozara from Ebonyi South. Three cells were selected from each of the four blocks to give a total of 12 cells. The final stage involved the random selection of 10 rice farmers from each of the cells, which gave a total of 120 respondents for the study.

Data were collected with the aid of a structured questionnaire used as an interview schedule and analysed using, percentage, mean score and Probit regression model at 5% significance level. Respondents' utilization of certified seeds and sources of information were measured at a nominal level of Yes and No, with scores of 1 and 0 assigned respectively.

For awareness of certified seeds, respondents listed the number of varieties of certified rice seed they were aware of and each was assigned a score of 1. Availability of certified seeds was measured using a 4-point Likert –type scale of Never available, Rarely available, Sometimes available and Often available and assigned scores of 0,1,2 and 3 respectively. The scores were added up to give a total sum of 6 which was divided by 4 for a mean score of 1.5. The general level of availability was obtained by taking an average of variables that were measured.

Access to certified seed was measured using a 4- point Likert-typed scale of Never accessible, Rarely accessible, Sometimes accessible, and Often accessible and score of 0, 1, 2 and 3 were assigned, respectively. The scores were added up to give a total sum of 6 which was divided by 4 for a mean score of 1.5. The general level of accessibility was obtained by taking an average of variables that were measured

The hypothesis was tested using a Probit regression model with utilization of certified seeds as the dependent variable while age, household size, years of farming experience, gender, ownership of phone and distance to seed source were the independent variables.

X₁ = Age (Number of years)

X₂ = Household size (Number of household members)

X₃ = Years of farming experience (Number of years)

X₄ = Gender (If Male 1, if Female 0)

X₅ = Ownership of phone (if Yes 1, if No 0)

X₆= Cooperative membership (Member 1, Non-member 0)

X₇= Distance to seed source (Actual number in Kilometres)

Results and Discussion

Awareness of Certified Rice Seeds

Results in Table 1 show that 97.5% of rice farmers in Ebonyi state were aware of at least one variety of certified rice seed in circulation. From the Table, 51.7% were aware of more than one variety of certified rice seed. Hence, there is adequate awareness of certified rice seeds among rice farmers. This result agrees with Kalsa (2019) who reported that farmers have adequate information on certified seed use. Even though farmers may not utilize all the varieties of certified rice seeds known to them, their awareness of certified rice seeds is the take-off point of their adoption of these seeds and will also influence their rate of adoption.

Table 1: Farmers' awareness of certified rice seeds

Awareness	Percentage (n=120)
Aware of more than one certified rice seed variety	51.7
Aware of a certified rice seed variety	45.8
Not aware of any certified rice seed variety	2.5

Source: Field survey, 2023

Sources of Information on Certified Rice Seeds

As shown in Table 2, the main source of information on certified rice seeds among respondents was through cooperative organizations (72.5%) which was followed by mass media (49.2%), personal phones (40.0%), with the least been seed dealers (5.0%). This result implies that cooperative organizations are effective agencies for the dissemination of agricultural information, which was in line with the findings of Ogunkunle et al. (2023) in a similar study. The inadequate role played by extension officers in information dissemination may be attributed to the disproportionate extension-farmer ratio, as reported by Izuogu et al. (2021).

Table 2: Source of information on certified rice seeds

Source	Percentage (n=120)
Cooperative organization	72.5
Mass media	49.2
Personal phones	40.0
Extension officer	9.2
Co-Farmers	6.7
Seed dealers	5.0

Source: Field survey, 2023

Availability and Accessibility of Certified Rice Seeds

The results in Table 3 show that farmers had adequate availability of certified seeds ($\bar{x} = 1.8$) with the seed companies having enough certified seeds to meet their demands ($\bar{x} = 2.4$) and availability of adequate certified seeds in the market ($\bar{x} = 2.1$).

Also, results in Table 3 also show that respondents had enough income to buy certified seeds ($\bar{x} = 1.3$). Responses presented in Table 3 show that respondents got certified seeds through their social networks ($\bar{x} = 1.8$) and coped with the agronomic practices that are specific to these certified seeds ($\bar{x} = 1.5$). However, they opined that they did not always receive certified seed from government agencies ($\bar{x} = 0.9$). This implies that rice farmers may not have adequate seed security in terms of access to certified seeds.

These findings agree with Astrid et al. (2019) who reported that whilst certified seeds may be obtainable through a farmer's social network and interfacing, accessibility may be difficult as a result of the capability, social status and sway of the farmer to secure it.

Table 3: Availability and accessibility of certified rice seeds

Availability	Mean	SD
Seed companies have enough certified seeds	2.4	0.64
Certified seeds are available in the market for my purchase	2.1	0.48
There is proximity to seed markets from my house	2.1	0.48
I can get certified seeds from my social network	1.8	0.32
Seed aid organizations can supply adequate seeds for my rice farm	1.8	0.32
Certified seeds could easily be sourced throughout the farming season	1.6	0.14
I have adequate certified seeds	1.4	0.02
Grand Mean	1.8	
Accessibility		
I easily get enough certified seeds through my social network	1.8	0.24
Agronomic practices that are specific to certified seeds do not hinder my utilization of these seeds	1.5	0.16
I have enough income to buy certified seeds	1.3	0.12
I receive certified seeds from government agencies	0.9	0.03
Grand Mean	1.3	

Source: Field survey, 2023

Utilization and Preference Criteria

Entries in Table 4 show that the majority of the farmers cultivated FARO 44 (74.2%), FARO 52 (72.5%), Mass 11 (70.0%) and R8 (65.0%) among others. In rice production, farmers are not likely to cultivate all the varieties of crops that they know due to preferences associated with taste, yield, resistance to disease, resistance to drought, market value, early maturity and adaptability to local conditions among others (Arora et al., 2019).

The result shows that yield potential was a major criterion for farmer's preference of certified seed varieties. This finding agrees with Okoro et al. (2023) that higher yield is a characteristic that rice farmers would put into consideration for the type of rice to be grown for better yield, income and living standard of farming households. According to Fatondji et al. (2020), an increase in grain yield, and better cooking and eating qualities do encourage the choice of rice varieties for cultivation. Farmer's preferences will influence the utilization of certified seeds, as they may be unwilling to cultivate varieties that do not demonstrate comparative advantages over the indigenous varieties.

Table 4: Utilization and preference criteria

Variety	Variety used	Preference criteria
FARO 44	74.17	Early maturing, high yield
FARO 52	72.50	High yield, Better cooking quality
Mass 11	70.00	Early maturing, high yielding
R8	65.00	High yielding, tolerant to sub mergence
FARO 57	51.67	Resistant to diseases
Gina	49.17	Long grains, tolerant to sub-mergence
306	44.17	Matures early, tolerant to drought
Volume 15	40.83	Drought resistant

Source: Field Survey, 2023

Determinants of Utilization of Certified Rice Seeds

Table 5 shows that the explanatory indices in the model encapsulated most of the variation ($F= 2.73$) in the resolve to plant certified seeds. Membership in a cooperative organization had a positive influence on the farmer's utilization of certified seeds. Essentially, the more farmers join cooperative organizations, the more the likelihood of utilizing certified rice seeds. Mghweno et al. (2020) opined that membership in an association can influence the extent to which farmers utilize innovations, as they are expected to access information on farm inputs and other advisory services through these associations. Ownership of personal phones was positively related to the utilization of certified seeds. Mwalupaso et al. (2019) reported that mobile phone use increased innovation adoption, reduced the vulnerability of farmers, and achieved consistency with the primary goal of any agricultural system

The result also shows that the distance between farmer's house and sources of certified rice seeds had a significant negative influence on the utilization of certified rice seeds. This implies that as the distance between the farmer's house and the source of certified seeds increases, the lesser the tendency of the farmer to utilize certified seeds. The findings agree with Okezie and Offor (2022), Zakaria et al. (2020), Mwalupaso et al. (2019) and Abdullah et al. (2019) that living far from input market sources increases the farmer's transaction expenses and may serve as a disincentive to adopt improved agricultural practices.

Years of farming experience had a negative influence on the utilization of certified rice seeds. This implies that the more years farmers spent in rice cultivation, the higher the likelihood of their not utilizing certified seeds. Ogunkunle et al. (2023) reported that as farmers advance in age, the probability of neglecting improved farm practices may increase. Hence, more experienced rice farmers may develop resentment towards certified rice seeds.

Table 5: Determinants of utilization of certified rice seeds

Variables	Coefficient
Age	-0.174
Size of household	-0.110
Years of farming	-0.560**
Gender	0.018
Ownership of phone	0.012***
Co-operative membership	0.600***
Distance to the source of certified seed	-0.082**
Constant	-1.755
	$F = 2.73$

* $P \leq 0.05$

Conclusion and Recommendation

Rice farmers are aware of certified seeds which are also available to them, however, the seeds are not readily accessible to farmers. Cooperative associations and the media were the major sources of information for farmers on certified seeds. Though the utilization of certified seed by the respondents was low, the utilization is influenced by their membership in cooperative organizations and ownership of phones. Since farmers' sources of information influence their decision-making process, cooperative associations should be effectively supported and supervised by the government to ensure that they do not circulate inappropriate ideas to the farmers. The value chain

for the distribution of certified seeds should be reinvigorated by the actors to ensure that certified seeds are more accessible to farmers.

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