

## Awareness and use of Plantain Technology in Owan, Ovia North East Local Government of Edo State, Nigeria

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### ABSTRACT

The study examined the awareness and use of plantain technology. Owan community in Ovia North east local government of Edo state was purposively sampled due to NIHORT intervention few years ago. The specific objectives considered in the study were socioeconomic characteristics of the respondents, farming activities of respondent's household, and awareness and utilization of plantain technologies by respondent. Data were collected through a structured questionnaire administered through personal interviews with the respondents and analyzed using descriptive and inferential statistics. The result showed that most (60.0%) of the respondents were females, all were married and majority (83.3%) were educated. Also, plantain/banana constituted 83.3% of crops cultivated by the respondents. In the same vein results further showed that most (63.3%) of the respondents were aware of the improved varieties while 16.7% adopted the technology. Majority (73.3%) of the stakeholders that used the technology experience significant increment in the level of production after using NIHORT technology. Year variety was first adopted was found to be significant 0.027 at  $p=0.005$ . The study concluded that there was low rate of adoption and thus recommended that there should be proper follow up and monitoring after technology has been disseminated to farmers.

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### Introduction

Unquestionably one of the oldest fruits to be produced, plantains (*Musa paradisiaca* L.) have played a vital role in agricultural production throughout the world. It is one of the most widely cultivated tropical crops in the world because of its subsistence and commercial use. According to Olojed [1]. It is a vital staple crop in many parts of Nigeria, including Edo State [2]. It is a rich source of carbohydrates, vitamins, and minerals, and plays a significant role in the food security and livelihood of rural communities as it helps to reduce poverty by promoting food security, jobs, and income diversification in both rural and urban settings (Source please).

Not only that, plantain has recorded lots of breakthrough in the health industry. According to indigo herbs plantain leaves has helped in the treatment of various illness ranging from lungs and respiratory tract related problems, boosting the immune system because it contains vitamins A and C, as well as the high tannin content, give astringent qualities that prevent infection and minimize inflammation by depriving germs of food (Source please ma). Also, due to its high mucilage content and anti-inflammatory qualities, plantain leaves are an excellent herb for a variety of digestive issues. It is also Excellent at stopping bleeding and healing bruises, plantains can also be used to treat boils, ulcers, bug bites, nettle, bee, and wasp stings, and puncture wounds (source please). Plantains are a useful treatment for acute gastritis,

enteritis, enterocolitis, and chronic colitis, according to the Russian Ministry of Health and it is called "mother of all herbs" in the European and Asian union (source plantain).

Improved plantain varieties, certified planting supplies, field management techniques like desuckering, fertilizer treatment, pest and disease control, post-harvest processing, and value addition are some of the technologies that may boost plantain yields, lower production costs, and enhance the earnings and standard of living of plantain growers. Increasing the productivity of plantain through the adoption of improved technologies is essential for achieving food security and alleviating poverty in plantain-growing regions. Not only that, Plantain farming systems will become much more productive, profitable, and sustainable with the development and adoption of various plantain technology. Developing effective ways to expand plantain technologies to additional farming communities requires an understanding of the awareness levels, adoption levels, farmer restrictions, and technology adoption impacts [3].

There is limited information available on the awareness and adoption of improved plantain production technologies among smallholder farmers, which has in turn affected not only the productivity of these farmers but has also made plantain less utilized due to traditional plantain cultivation. The root cause of poor productivity is linked to other elements that enable higher production per unit area, including technology, appropriate agricultural practices, inputs, producer education, and technical support [4].

The main objective of the study therefore is to assess the awareness and use of plantain technology in Owan, Ovia North East Local Government of Edo state, Nigeria while the specific objectives were to:

- Identify the Socioeconomic Characteristics of the respondents
- Analyse the farming activities of respondent’s household
- Determine the awareness and utilization of plantain technologies by respondents

**Hypothesis**

There is no significant relationship between socioeconomic characteristics of respondents and awareness and use of plantain technology in the study area

**Methodology**

The study was conducted in Edo State Nigeria. Owan community was purposively selected for the study due to the influx of the production of Plantain/ Banana in the area and also because of NIHORT interaction (dissemination of technologies and capacity building of stakeholders) with some of the farmers a few years back. Owan community is situated in Ovia Northeast local government area of Edo states. A total number of thirty (30) respondents was randomly sampled for the study representing 40% of the total population of farmers that were trained then. Primary data was collected using a structured questionnaire administered through personal interviews with the respondents. The questionnaire captured information on the socio-economic characteristics of the respondents, their farming activities, awareness and use of various plantain technologies disseminated by NIHORT. Descriptive (frequencies, percentages and means) and Inferential statistics (Chi- Square) were used to analyze the data.

**Results and Discussion**

**Socioeconomic characteristics of the respondents**

Table 1: Most (60.0 %) of the respondents were females. This implies that women are always available when it comes to developmental projects especially horticultural produce production, post-harvest management and value addition while their males counterpart may be busy doing other things [5].

All (100.0%) the respondents were married, as well with the highest number of (76.7%) having family size ranges between 5-9, most of the respondents are within the age range of 56-65 in the community (33.3%). The large family size is peculiar to rural communities (source please). The findings further shows that most 63.3% of the respondents have secondary school leaving certificate, indicating that they can easily welcome innovations if introduced to them. Also, most (73.3%) respondents belong to farmer’s association. This is an indication of strong ties and easy flow of information within and without the community. The result further shows that the farmers do not cultivate plantain alone but also intercrop plantain with crops like cassava, cocoa, palm, maize, pear, Irvingia, orange, banana, yam, potato, cocoyam, Implication of this is that farmers in Nigeria are not sole croppers, which is a characteristics of small holder farmers. Forty-three percent and 66.7% owned between 0-19 acres of land and most (70.0%) of them cultivated a plantain farm between 0-19 acres and above average (50.0%) got their land through inheritance [6].

**Table 1: Socioeconomic Characteristics of the Respondents**

Variables	Frequency	Percentage
Sex		
Male	12	40.0
Female	18	60.0
Marital Status		
Single	0	0.0
Married	30	100.0
Divorced	0	0.0
Widowed	0	0.0
Family size		
<-5	2	6.7
5-9	23	76.7
10-14	5	16.7
>15	0	0.0
Age		
26---35	2	6.7)
36-45	8	26.7
46-55	9	30.0
56-65	10	33.3
66-75	1	3.3
>75	0	0.0
Education		
No formal Education	3	10.0
Secondary	19	63.3
Tertiary	6	20.0
Others	2	6.7
Membership of Organization		
Yes	22	73.3
List of crop planted		
Plantain	6	20.0
Cassava	3	10.0
Cocoa	15	50.0
Palm	2	6.7
Maize	5	16.7
Pear	1	3.3
Irvingia	1	3.3
Orange	1	3.3
Banana	1	3.3
Yam	4	13.3
Potato	2	6.7
Cocoyam	2	6.7
Total land area owned		
0-19	21	70.0
20-39	5	16.7
40-59	1	1
>59	3	3
Land Tenure		

Inherited	15	50.0
Purchased	11	36.7
Rented	4	13.3
Year technology was first adopted		
0-9	3	10.0
10-19	18	60.0
20-29	5	16.7
>29	4	13.3

• Figures in Parenthesis are percentages  
Source: Field survey, 2023

### Farming Activities of the Respondent's Household

Table 2 showed that majority (96.7%) of the respondents are farmers, while 83.3% were traders with 40.0% having a farming experience of between 20-39 years. This implies that the respondents are mainly farmers but they still involved in trading of their produce.

Findings revealed that plantain/banana constituted 83.3% of crops cultivated by the respondents. Other crop cultivated include cocoyam, yam, cassava, Irvingia, maize, pineapple, plantain, potato and palm while cocoa cultivation was cultivated by 43.3% of the respondents. The result further reveals that 86.7% of the respondent's plant agbagba variety of plantain in Owan community.

**Table 2: Farming Activities of the Respondents' Household**

Variables	Frequency	Percentage
Major occupation		
Farming	29	96.7
Secondary Occupation		
Trading	25	83.3
Others	5	16.7
Years of farming experience		
<10	2	6.7
10-19	9	30
20-39	12	40
40-59	6	20
>59	1	3.3
Is Plantain/Banana the major crop you plant		
Yes	25	83.3
What variety of plantain and banana do you produce		
Agbagba	26	86.7
Others	4	13.3

Source: Field survey, 2023

### Awareness and use of Plantain/ banana Technologies among Respondents

Table 3 revealed that most of the respondents (63.3%) were aware of the improved varieties while 16.7% adopted the technology. Also 60.0% of the actors were aware of certified improved suckers and 16.7% equally used it, while 40.0% of respondents

from the community were aware of pre nursery establishment and management technology while 10.0% used it, furthermore 40.0% of the respondents also knew about nursery establishment technology and 6.7% utilizes it. The respondents were also aware of the following technologies split corm technology, direct sucker planting, appropriate plant population and planting, spacing technology, desuckering, compost making and application, fertilizer application, manuring, weed control, pest and disease control method on plantain, irrigation with the aid of treadle-pump, IPM technology and value addition technology. While split corm technology was used by 23.3%, direct sucker planting (26.7%), appropriate plant population and planting (30%), spacing technology (40.0%) among others. Findings imply that despite the high rate of awareness of the various components of the technology on Plantain, farmers hardly use the technologies except few.

Majority (73.3%) of the stakeholders that used the technology experience significant increment in the level of production after using NIHORT technology. Also, 43.3% from Owan made use of innovations on plantain production and there were increments in the natural, human, financial/ economic, as well as social assets tremendously among the very few that adopted the technology in Owan community.

**Table 3: Awareness and Adoption of Plantain/ banana Technologies among Respondents**

Practices	Awareness		Utilization	
	Yes	No	Yes	No
Identification of improved varieties	19(63.3)	11(36.6)	5(16.7)	25(83.3)
Utilization of certified improved suckers	18(60.0)	12(40.0)	5(16.7)	25(83.3)
Pre nursery establishment and management	12(40.0)	18(60.0)	3(10.0)	27(90.3)
Nursery establishment and management	12(40.0)	18(60.0)	2(6.7)	28(93.3)
Split corm	13(43.3)	17(56.6)	7(23.3)	23(76.3)
Direct Sucker	22(73.3)	8(26.6)	8(26.7)	22(73.6)
Appropriate plant population and planting	21(70)	9(30.6)	9(30.0)	21(70.0)
Spacing	23(76.7)	7(23.3)	12(40.0)	18(60.0)
De-suckering	19(83.3)	11(36.6)	7(23.3)	23(76.3)
Compost making and application	17(56.7)	13(43.3)	8(26.7)	22(73.3)
Fertilization application	16(53.3)	14(46.6)	8(26.7)	22(73.3)
Manuring	16(53.3)	14(46.6)	7(23.3)	23(76.3)
Weed control	23(76.7)	7(23.3)	15(50.0)	15(50.0)
Pest and disease control method on plantain	19(63.3)	11(36.6)	11(36.7)	19(63.3)
Irrigation with the aid of treadle-pump and watering can	15(50.0)	15(50.0)	7(23.3)	23(76.3)
Integrated Pest Management (IPM)	12(40.0)	18(60.0)	6(20.0)	24(80.3)
Processing or value addition	23(76.7)	7(23.3)	19(63.3)	11(36.6)
Is there any significant increase in your production level after adoption of the innovation?				
Yes				22(73.3)

Source: Field survey, 2023

### Test of Hypothesis

There is no significant relationship between Socioeconomic characteristics of respondents and awareness and use of plantain technology in the study area

Table 4 revealed that, almost all the variables are not significant to the awareness and use of plantain adoption but at 0.05 the year variety was first adopted is significant to the awareness and use of plantain technology in Edo state.

**Table 4: Significant Relationship between Socioeconomic Characteristics of Respondents and Awareness and use of Plantain Technology in the Study Area**

Socioeconomic variables	Chi- square variables	Df	Cc	Decision
Sex	16.498	11	.124	NS
Family size	87.444	88	.497	NS
Age	220.000	198	.136	NS
Education	37.905	33	.255	NS
Membership of organization	11.520	11	.401	NS
Total land area owned	195.289	176	.152	NS
Size of plantain farm	192.444	176	.188	NS
Year variety first adoption	140.352	110	.027	S
Major occupation	7.226	11	.781	NS
Year of Farming experience	170.444	154	.173	NS

Source: Computation from field survey, 2023

### Conclusion

The study concluded that majority of the farmers in the study were female, with large family size and all married. Although the farmers are not sole croppers but all the farmers cultivate plantain and banana as their major crop. Also, the study reveals high level of awareness about the technology, but the adoption rate was low. However, the few farmers that adopted the technology has significant increase in their level of production and their livelihood as a whole.

### Recommendation

To increase the rate of adoption of these technologies, the institute should strengthen extension services to provide regular training and technical backup to plantain farmers. However, extension effort should focus on demonstrating the benefit of the technologies through pilots farms in the locality to stimulate wider adoption. Access to inputs and incentives from government and training will also enhance plantain and banana productivity among farmers.

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