FARMERS' PERCEPTION AND ADOPTION OF YAM MINISETT TECHNOLOGY IN ANAMBRA STATE, NIGERIA

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Abstract. This study examined farmers' perception and adoption of yam minisett technology. The study was carried out in Anambra State, Nigeria. A sample size of 120 yam farmers was used for the study. Data were collected using a structured and validated interview schedule. Data generated for the study were summarized using descriptive statistics such as frequency count, percentage and mean scores while the Sigma method was used for calculating adoption scores to ascertain the level of adoption for the various yam minisett technology items. Results of the study revealed that there were more male yam farmers (82 percent) than females. The mean age of respondents was 45years and the mean household size was 11 persons. Also, a mean farming experience of 12 years was found for the respondents. Results on perception of yam minisett technology reveal that respondents had favourable perception on four statements out of the thirteen statements used to investigate their perception. These were statements 5,6,11 and 12. The remaining 9 statements were not favourably perceived. They include statements 1-4; 7-10 and 13. There was a low adoption of 7 and an average adoption of 2 yam minisett technology items with an overall adoption score of 3.38, which indicates a low utilization of yam minisett technology by the yam farmers. The study recommends that more awareness should be created about the benefits of the technology and farmers should be trained on how to effectively use the technology.

Keywords: Yam minisett technology, adoption, perception, yam farmers

INTRODUCTION

Yam is among the principal root and tuber crops of the tropics consumed mainly by rural and urban communities. It is well adapted to diverse soils and environmental conditions and a wide variety of farming systems. Yam tuber size ranges from 100 mg to 10kg depending on the specie. The production pattern of yams reflects the agro-climate of an area. Yam grows for 6 – 10 months requiring about 1500mm uniform rainfall distribution. It is principally produced by small- scale and large- scale farmers using traditional tools and available inputs especially for weed and pest control.

It is a prestigious staple carbohydrates food celebrated among the Igbos of Nigeria, second to cassava in terms of land area under cultivation (Chukwu and Ikwelle, 2000). Yam is ranked third in the production list of root and tuber crops rating in developing countries after cassava and potato (FAO, 1993). According to Pamplona (2003), yam is a source of food and cash. It has industrial values and can be processed into various forms.

Yams also have high nutritional and medicinal values. Its commendable good nutritional profile include potassium 816 mg, Manganese 4.40 mg, Vitamin E 0.39 g, Vitamin K 2.6mg and Beta Carotene 83meg. These values are higher when compared with nutrient contents of major staple foods such as rice, wheat, potato, cassava, soybean, Sweet potato, sorghum, maize and plantain (Wikipedia, 2012). Its vitamin B6 is used as a supplement with respect to premenstrual and Menopausal syndrome in women. According

to the Food and Agriculture Organization (FAO), the average minimum daily energy requirement from yam is about 1800 kilocalories (7,500 kj) per person. Thus, yam is a good contributor to the daily energy requirement of Nigerians since the daily energy consumption per capita status for Nigeria is put at 2710 kilocalories (11,340 kilojoules).

Nigeria cultivates about 69% of the world's total hectare of yam, out of which the south eastern states, comprising Abia, Anambra, Enugu, Imo and Ebonyi provide 40% of the total land area (Onwueme, 1994). Table 1 shows the total land area cultivated by small holder farmers between 1999 and 2009 in the Southeast zone of Nigeria.

Table 1

Land area cultivated by yam farmers in the Southeast Zone, 1999 - 2009 ('000HA)

State	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Anambra	42.25	41.27	41.00	43.42	46.12	50.42	60.04	61.04	61.04	64.73	65.18
Abia	24.98	26.00	27.00	27.00	28.00	28.50	30.64	31.22	31.50	37.38	38.78
Ebonyi	44.07	41.23	42.00	42.00	44.08	54.88	70.01	89.22	89.27	98.14	104.88
Enugu	209.02	188.11	193.52	194.49	194.60	196.00	204.47	222.87	228.13	246.42	261.2
Imo	41.02	41.02	39.00	41.00	42.00	42.28	39.55	40.45	11.45	51.37	54.2

Source: NPAFS, FMA & WR Abuja 2010

A glean at entries in Table 1 reveals that the Southeast zone has potentials for the production of large quantity of yams on yearly basis. Yam farmers in the zone are however confronted by the twin problems of scarcity and high cost of seed yams. One of the measures that have been evolved to tackle these problems is the the yam minisett technology which was developed by the National Root Crops Research Institute (NRCRI), in collaboration with the International Institute of Tropical Agriculture (IITA).

The technology which has been transferred to farmers in Nigeria through the various State Agricultural Development Programmes (ADP_S) has the potential for overcoming seed yam scarcity. It has however been reported that the acceptance of the technology by yam farmers still remains questionable. This study was therefore conceived to examine the perception and adoption of the technology by yam farmers in Anambra State. Specific objectives of the study were to: a) describe the socioeconomic characteristics of yam farmers; b) ascertain farmers' perception on yam minisett technology and c) determine the level of adoption of yam minisett technology

METHODOLOGY

All the yam farmers in Anambra State formed the population of the study. Sample for the study was drawn through a multistage sampling technique. In the first stage, one extension block (LGAs) was randomly selected from the each of the four agricultural zones. This gave a total four extension blocks that were selected for the study. In the second stage, two (2) extension circles were randomly selected from each of the selected extension blocks; this also gave a total of eight extension circles. In the third stage, 15 respondents were randomly selected from each of the eight circles using a list of yam farmers provided by the extension agents covering the circles. This gave a total 120 yam farmers who served as respondents in the study. Data for the study were collected through a validated interview schedule. Respondents' perception on yam minsett technology was determined by developing some perceptual statements and respondents were asked to respond to the statements along a four- point Likert - type scale of strongly agree = 4; agree = 3; disagree = 2; and strongly disagree = 1. The mean value of the response options which is 2.50 was

taken as the cut = off point. Statements with mean score of 2.50 and above were therefore considered as those that respondents had favourable perception, while those statements with mean score of below 2.50 are those respondents did not perceive favourably. Adoption of yam minisett technology was determined by requesting the respondents to indicate the yam minisett items they have adopted. The percentage of adopters for each item was computed and used to calculate the adoption score using the Sigma method (Agbamu, 1995; Ajieh, 2010). For the purpose of the study, adoption level was grouped as follows: Low adoption (for items with score of 0-3.9); Average adoption (for items with score of 4-6.9); and High adoption (for items with score of 7-10)

Table 2

Sample composition

Agricultural Zones	Extension blocks	Extension circles	No of farmers selected
Aguata	Orumba north	Ezira	15
		Eziagu	15
Anambra	Ayamelum	Omor	15
		Anaku	15
Awka	Njikoka	Abagana	15
		Nimo	15
Onitsha		Odekpe	15
	Ogbaru	Atani	15

RESULTS AND DISCUSSION

Socioeconomic characteristics of respondents. Entries in Table 3 show the socioeconomic characteristics of respondents. Results reveal that 82 percent of the respondents are males, while 18 percent are females. This suggests that more male respondents participated in this study. Information on age of respondents show that 80 percent of the respondents were within the age bracket of 20 – 49 years, while the remaining 20 percent of the respondents fell within the ages of 50 and 69. The mean age of the respondents was 43 years. Data on respondents' household size reveal that 85 percent of them had household size of 2 – 13 persons, while 15 percent of the respondents had a household size of 14 – 21 persons. The mean household size of respondents in this study was found to be 11 persons. This is an advantage for family labour. Farming experience of farmers ranged between 1 and 25years with a mean farming experience of 12 years.

Respondents' perception on yam minisett technology. Information on Table 4 shows respondents' perception on yam minisett technology. Results reveal that respondents perceived four statements in favour of yam minisett technology out of the thirteen statements used to ascertain their perceptions. The four statements include; 5, 6, 11, and 12. The remaining nine statements were not favourably perceived by respondents. These include statements 1- 4, 7-10 and 13. A careful study of the information in the Table further reveals that all the nine statements that respondents did not perceive favourably are negative statements. This suggests that farmers in the study area are not favourably disposed to yam

minisett technology. Furthermore, an overall perception score of 2.32 which is a low perception further confirms the fact that the farmers do not favour yam minisett technology.

Table 3

Distribution of respondents according to their socio-economic characteristics (n=120)

Socio-economic characteristics	Frequency	Percentage	Mean
Sex			
Male	98	82	
Female	22	18	
Age (years)			
20 – 29	13	11	
30 – 39	25	21	
40 – 49	58	48	43
50 – 59	21	17	
60 – 69	3	3	
Marital status			
Married	104	87	
Single	16	13	
Household size			
2 – 5	14	12	
6 – 9	36	30	
10 – 13	51	43	11
14 – 17	15	12	
18 – 21	4	3	
Farming experience (years)			
1-5	16	13	
6-10	48	40	
11-15	28	23	12
16-20	15	12	
21-25	3	2	

Table 4

Mean scores of respondents' perception on yam minisett technology

Statements	Mean score	Rank	PC
1* Size of recommended tuber is scarce	1.67	A	NF
2* Size of minisett is too small	2.25	A	NF
3* Cutting tubers into minisett consumes time	2.20	A	NF
4* Minisett dust is expensive	2.42	A	NF
5. Minisett technology increases yield	2.84	A	F
6. Minisett technology controls weeds	2.60	A	F
7* Minisett technology is complex	2.35	A	NF
8* Recommended spacing is difficult to achieve	1.26	A	NF
9* Intercropping pattern is too complex	1.85	A	NF
10* Minisett technology involves many steps	2.12	A	NF
11* Minisett technology is costly to implement	3.24	D	F
12* Minisett technology breeds pest	2.68	D	F
13* Recommended planting depth too shallow	2.66	A	NF
Overall mean	2.32	D	NF

Key: A = agree; D = disagree; Rmk = remarks; F = favourable; NF = not favourable; *= negative statement

Respondents' Adoption of yam minisett technology. Data in Table 5 show the adoption scores for the adoption of yam minisett technology items. Results reveal that there was a low adoption of seven out of the nine yam minisett technology items. The seven items and their adoption scores include: Size of tuber for cutting (3.62); Cutting into minisett (3.84); Air drying of minisett (3.55); Application of minisett dust (3.84); Curing of minisett (3.55); Spacing (3.60); and Planting depth (3.70). There was an average adoption of only two technology items. These are: time of planting (4.42) and intercropping (4.24). An overall

low adoption score of 3.38 indicates that there is a low utilization of the technology by yam farmers in the area of study.

Table 5

Adoption scores for yam minisett technology items

S/N	Minisett technology items	No. of Adopters	Percentage of adopters	Adoption scores
1	Size of tuber for cutting	35	29	3.62*
2	Cutting into minisett size	34	28	3.84*
3	Air drying of minisetts	26	22	3.55*
4	Application of minisett dust	34	28	3.84*
5	Curing of minisetts	26	22	3.55*
6	Spacing	33	23	3.60*
7	Planting depth	28	25	3.70*
8	Time of planting	52	43	4.42**
9	Intercropping	45	38	4.24**
	Overall adoption score			3.38*

Key: *= Low adoption; **=Average adoption

CONCLUSION

Nigeria cultivates about 69 percent of the world's total hectare of yam, out of which the Southeast zone provide about 40 percent of the total land area. It has however been reported that there is a dwindling trend in the total land area cultivated in recent times due to the problem of scarcity and high cost of seed yams. This situation is compounded by the low adoption of yam the miniestt technology developed to overcome problems associated with seed yams. In order to enhance increased yam production in the southeast, there is the need to create more awareness among yam farmers on the benefits of the mimisett technology. Also farmers need to be given adequate training on how best to use the technology.

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