FARMERS' CONSTRAINTS TO PRODUCTION AND POST-HARVEST HANDLING OF SELECTED NEGLECTED FOOD CROPS IN SOUTH-EAST AND SOUTH-SOUTH NIGERIA

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ABSTRACT

The study was conducted to determine constraints to the production and post-harvest handlings of selected neglected food crops (Bambara nuts, Bread fruits and Bush mango) in South-east and South-south Nigeria. Production and post-harvest handling challenges have made some of the indigenous crops that are capable of improving food security in the nation to be neglected and underutilized by the farmers. The specific objectives of the study were to; ascertain the socio-economic characteristics of farmers of selected neglected food crops in the study area; determine the constraints militating against production of selected neglected crops; identify the challenges encounter during post- harvest handling of the selected neglected food crops and identify areas of research needs along production and post-harvest handling value chain of the neglected food crops in the study area. Purposive and snow-ball sampling procedure were used to sample 120 farmers of selected neglected crops in south-east and South-South Nigeria. A well-structured questionnaire was used to obtain information from the respondents and analyzed using percentage and mean. The results revealed that the mean age of the respondents in the study area was 43.3 years, majority (42.5%) of the farmers attended primary school. The mean for years of farmer's farming experience was 13.3years.The production constraints to farmers in the study area were lack of financial support (3.8), lack of improved cultural varieties (3.6),ignorance of the crop nutritional value (3.4) and susceptibility to pests and diseases (3.1) while the constraints to farmers during drying were, rain (75.8%), Animal (29.2%) and dust (75.8%). Majority of the farmers (68.3%) mentioned mold growth on stored crops as a major storage challenge All the farmers (100%) mentioned storage problem as area of research needs, while majority of the farmers (95%) suggested improvement on post-harvest handling on neglected crops in the study area., simple and effective storage and processing innovation should be developed by research institutes and made available in the study area.

Keywords: Production, post-harvest, neglected Crops

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INTRODUCTION

About three-quarters of Nigeria's work force engaged in agriculture for livelihood, and agriculture was the back bone of the economy for foreign earnings and source of revenue for the federation during the independent era in 1960. The sector experienced a decline in productivity growth after independence from the 1960s to the 1980s due to industrial development and neglect suffered by the agricultural sector, hence the contribution of agricultural productivity to GDP dropped from 63% to 3.7% between 1960 to 2007 (Dayo *et al.*, 2009). The reduction in agricultural productivity resulted in food insecurity and the importation of food to the nation, which characterized the nation as a developing country with a peasant economy.

For food and nutrition to be secured in Nigeria, potentiality of some neglected crops must be unpinned, the conventional methods towards production of some crops have to be changed and production needs to be diversified. The era of concentrating on a few major crops would not meet our rapid growing population's demand for food in future. Peace (2015) also stated that demand for food will increase globally by 2050 and available quantity by then may not meet the demand. Neglected crops are still in subsistence level of production and poorly commercialized in developing countries such as Nigeria and this result to underutilization of potential values of the crops (Olayemi *et al.*, 2021). Agricultural Production is a process of exploiting resources such as soil, water and energy for crops yield and the process also encountered many challenges such as land unavailability, infertile soil, diseases, weeds and insect pests resulting in loss of crop yield (Tirupaati & Appa, 2020). Production constraint has led to lack of farmers' interest in production of some of the neglected crops that are capable of improving food security in the nation. To encourage farmers to exploit the potential values in neglected crops, production constraints must be identified and tackled.

Post-harvest losses of food are a threat to food security in Nigeria and a great constraint to agricultural sector. Despite that our climates and soils support the production of different kinds of crops in large quantity, many of these crops produced do not reach the consumers' hands but lost as wastes along post-harvest handlings due to poor or lack of value addition on harvested crops, poor storage facilities and non-adoption of modern post-harvest technologies. William, (2022) reported that the total cost of post-harvest losses in Nigeria's agriculture industry is #3.5 trillion. According to Rockefeller (2015) in a developing country, post-harvest food loss reduces the income of 470 million smallholder farmers and downstream value chain actors by at least 15% and poor income result in poor standard of

living. Post-harvest losses also lead to malnutrition and abnormal growth in children. Elemasho *et al.*, (2017) and Roberta, (2017) reported that in a year 3.1 million of children below age of five die of malnutrition and 161 million of children are left with stunted growths rendering them potentially useless. Neglected food crops are not in exemption of post-harvest losses, the little quantity produced also pass through post-harvest handling stages with measurable losses in quality and quantity. Pauline *et al.*, (2015) reported that for neglected and underutilized crops to be promoted scientific research in the field of agronomy, breeding, post-harvest handling, value addition and linking farmers to markets are very essential. It is on this basis that this study assessed production and post-harvest handling constraints to farmers of selected neglected food crops in south-East and South-South Nigeria.

The study examined the production and post-harvest handling constraints of farmers of selected neglected food crops, in Southern Nigeria. The specific objectives were to; (i) ascertain the socio-economic characteristics of farmers of selected neglected food crops in South-East and South-South Nigeria; (ii) determine the constraints militating against production of selected neglected crops; (iii) identify the challenges encounter during post-harvest handling of the selected neglected food crops and (iv) identify area of research needs along production and post-harvest handling value chain of the neglected food crops in the study area.

METHODOLOGY

The study was carried out in South-east and South-south Nigeria (Akwa-Ibom, 4.9057^0N, 785370^0E), (Ebonyi, 6.2649^0N, 8.0137^0E) and (Rivers States, 4.8396^0N, 6.9112^0E) in May 2021. The population for the study involved producers of the selected neglected crops (Bambara nut, Bread fruits, and Bush-mango).A multistage sampling procedure was used to select respondents for the study. Three States, two States from the South-South (Akwa-Ibom and Rivers States) and one State from the South-East (Ebonyi) were purposively selected because the three selected crops (Bambara nut, Bread fruits and Bush-mango) are commonly grown there. The second stage involved liaising with Agricultural Development Programme (ADP) in each purposively selected State through their extension agents for the identification of four Local Government Areas where the production of these selected crops are known. Twelve (12) L.G.A.'s (Abak, Ibiono-Ibom, Itu, Oruk-Anam, Ezza-South, Ikwo, Ishielu, Ohankwu, Degema, Abua-Odual, Ahoda-East, and Asari-Toru.) in all the three States

and a community were purposively selected from each L.G.A. In each of the community snow-ball sampling procedure was used to sample 10 farmers for all the selected crops from each community, and a total of 40 farmers in a State and 120 respondents in all the 3 States selected. Data were collected from the respondents through the use of structured questionnaire that contained relevant questions based on the objectives of the study.

RESULTS AND DISCUSSION

Table 1 shows that the mean age of the neglected food crops farmers in the study area was 43.3 years, and 65% of the farmers were female and majority of the respondents (88.4%) were married. Most of the respondents (42.5%) attended primary school. The neglected crop farmers in the study area are well experienced with average of 13.3 years farming experience, meaning that they are conversant with the crops limitations and benefits. The house-hold mean was 7 persons per house-hold, indicating availability of family labor to support crop production. The finding also implies that the farmers of the neglected but important crops in the study area are in their active ages, more energetic and productive. The implication of the findings is that the younger people are very inquisitive, risk takers and always ready to accept innovation that could improve production and add value to their crops. This supports the findings of Elemasho *et al.,* (2017) who reported that, young farmers are more willing to adopt new innovation than elders because the young farmers are more open to innovations, willing to try new genes and they are not fear of taking risk.

Table 2 reveals the constraints to farmers on production of selected neglected crops in the study area and these include lack of national promotion policy, lack of financial support, ignorance of the crop nutritional values, Susceptibility to weeds, strenuous production, lack of improved cultural practices and varieties, susceptibility to pest and lack of storage facility have their mean greater than the grand mean 2.5 and they are all accepted as constraints against the production of neglected crops in the south-south region of Nigeria. The implication of this result is that the neglected crops will remain neglected if solutions are not provided to the constraints. Other constraints such as low yield, economically non profitable and cultural belief were rejected because they are not constraints to production in the study area. This contradicts the findings of David, (2021) who stated that one of the constraints to bread fruits production in Nigeria is cultural belief which permits free collection of bread

fruits in farm field. The changes could be due to priority giving to land ownership in Nigeria which does not permit trespassing.

Table 3 shows that 99.2% of the farmers had financial problems as current production constraints and 79.2% of the farmers were faced with land problem on where to plant their crops and 59.2% of the farmers mentioned pest as their current production constraints on the neglected food crops in the study area. This means that finance, land and pest are the current agronomic constraints in production of neglected food crops in the study area.

Entries in Table 4 indicates that majority (75.8%) of the farmers acknowledged rain interference during drying and 75.8% of farmers mentioned dust interrupting the drying process and 29.2% of farmers referred to animals getting in contact with crops during drying. The implication of this finding is on the final quality of the crops after drying may not be of high quality due to interruption by the factors mentioned above.

Table 5shows that majority(68.3%) of the farmers had mould challenges on their crops during storage, 55.8% of the farmers' experienced insect infestation and 25% complained of spoilage. The findings showed that mould and insect infestation are the major challenges experienced by the farmers in the study area during storage.

Table 6 indicates that majority (66.7%) of the farmers' associated insect infestation to the storage problem of selected neglected crops, and 54.2% of the farmers mentioned moisture absorption. The result showed the impact of atmospheric conditions on crops in the study area. This implies that Southern Nigeria is characterized by heavy rain fall and high humidity encouraging mold growth on any agricultural produce. This supports Oyewole *et al.*, (2014) who stated that June- July is a period of thick clouds and excessively wet in the Niger Delta and coastal low lands and these areas are marked by humidity with average values hardly below 82%.

Table 7 shows that majority (70.8%) of the farmers sold their produce early at low price to avoid the problem of storage challenges, while 69.2% of the farmers consumed the produce more than they sell. The research revealed that farmers in the study area sold out their crops early at a cheaper rate or consumed the produce more than they sell to avoid storage problems and this could result in low income earnings. This support Olayemi *et al.*, (2011) who reported, that farmers in the study area adopted early sales to avoid storage problems

Table 8 indicates that many of the respondents 65% of the farmers' population suggested domestication of crops. About 89.2% of the respondents mentioned supply of improved seedlings as an area of research needed in the study area while 77.5% of the respondents needed pest and diseases management and97.5% preferred Training on crop management. Improvement on post-harvest handling has a research need has 95% of the farmers' population and all the respondents 100% of the neglected farmers in the study area suggested more research on storage problems. Meaning that more attention is needed from the research centers in order to unpin the potentiality in neglected crops in the study area and increase production of food to ensure food security in the zone. This implies that for a nation to develop and be self-reliance in food production, recognition must be given to the research institutes. This agreed with Theophilus, (2020) who reported that Nigerians lack of involvement in research and innovation is leading the country to a failed state.

CONCLUSION

The study has shown that farmers of selected neglected food crops in the study area were experiencing production limitations due to lack of financial support, lack of improved cultural practices and varieties and high cost of production. While finance, land and pests were the current production challenges of farmers in the study area. Majority of the farmers faced challenges of rain and dust interference during drying while mold and insect infestation on the food crops were experienced during storage of the selected neglected food crops in the study area. The respondents required for more research on post-harvest value chain related areas such as development of storage facilities and processing technologies. The study recommended that extension officers in the study area should encourage the farmers to form cooperative to raise money for farm business, and simple and effective storage and processing innovation should be made available by the research institutes and introduce to the farmers in the study area by creating awareness.

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APPENDICES

Table 1: Socio-Economic Characteristics (N= 120)

Socio-Economic Characteristics	Percentage	Mean
Age (Years)	**%**	**Mean**
20-29	15	
30-39	35.8	
40-49	29.2	43.3
50-59	12.5	
60-69	4.2	
70-79	3.3	
Sex		
Female	65	
Male	35	
Years of formal Education		
6years	42.5	2.5 years
12years	33.3	
14years	17.5	
Non formal	6.7	
House-Hold Size		
1-5	29.2	
6-10	65.8	7.0
11-15	5	
Marital Status		
Single	5.8	
Married	88.4	
Widowed	3.3	
Divorced	2.5	
Years of Business Experience		
1-5	12.5	
6-10	37.5	13.3
11-15	31.7	
16-20	5.8	
21-25	12.5	

Source: NSPRI Field Survey, 2021

Table 2: Constraints of farmers to production of neglected food crops (N=120)

Farmers' Constraints	Mean
Lack of national promotion policy	3.6
Low yield	1.1
Economically non profitable production	1.1
Lack of financial support for production	3.8
Cultural belief	1.1
Lack of improved cultural practices and varieties	3.6
Ignorance of the crop nutritional value	3.4
Susceptibility to pest and diseases	3.1
Susceptibility to weeds	2.7
Strenuous production	3.0
Inadequate demand for the crop	1.1
Lack of storage facility	3.7
Lack of sufficient seedling/seeds	2.3
Insufficient labour	2.4

Source: NSPRI Field Survey, 2021 Grand Mean= 2.5. This is measured at ordinal level

Table 3: Current production constraints of selected neglected food crops (n= 120)

Current production constraints	Crops	Yes (%)	No (%)
Finance	Bambara nut	20.8	0
	Bread fruit	25	0
	Bush-mango	53.3	0.8
	Total	**99.2**	**0.8**
Land	Bambara nut	13.3	7.5
	Bread fruit	16.7	8.3
	Bush-mango	49.2	5
	Total	**79.2**	**20.8**
Pest	Bambara nut	19.2	1.7
	Bread fruit	0	25
	Bush-mango	40	14.2
	Total	**59.2**	**40.8**
Fertilizer	Bambara nut	16.7	4.2
	Bread fruit	0	25
	Bush-mango	19.2	35
	Total	**35.8**	**64.2**

Source: NSPRI Field Survey, 2021. % = Percentage

Table 4: Farmers challenges during drying of selected neglected food crops before storage (n= 120)

Factors	Crops	Yes (%)	No (%)
Animals	Bambara nut	18.3	2.5
	Bread fruit	6.7	18.3
	Bush-mango	4.2	50
	Total	**29.2**	**70.8**
Rain	Bambara nut	20.8	0
	Bread fruit	6.7	22
	Bush-mango	48.3	7
	Total	**75.8**	**24.2**
Dust	Bambara nut	20.8	0
	Bread fruit	6.7	18.3
	Bush-mango	48.3	5.8
	Total	**75.8**	**24.2**

Source: NSPRI Field Survey, 2021. % = Percentage

Table 5: Challenges experienced during storage of selected neglected food crops among farmers (n=120)

Challenges	Crops	Yes (%)	No (%)
Mould	Bambara nut	20.8	0
	Bread fruit	18.3	6.7
	Bush-mango	29.2	25
	Total	**68.3**	**31.7**
Insect infestation	Bambara nut	24	0.8
	Bread fruit	6.7	18.3
	Bush-mango	29.2	25
	Total	**55.8**	**44.2**
Spoilage	Bambara nut	0.8	20
	Bread fruit	18.3	6.7
	Bush-mango	5.8	48.3
	Total	**25**	**75**

Source: NSPRI Field Survey, 2021. % = Percentage

Table 6: Factors responsible for the storage challenges of selected neglected food crops during storage (n= 120)

Causes of storage challenges	Crops	Yes (%)	No (%)
Moisture absorption	Bambara nut	4	14.2
	Bread fruit	18.3	4
	Bush-mango	29.2	25
	Total	**54.2**	**45.8**
Insect	Bambara nut	20	0.8
	Bread fruit	4	18.3
	Bush-mango	40	14.2
	Total	**66.7**	**33.3**

Source: NSPRI Field Survey, 2021. % = Percentage

Table 7: Farmers constraints to post-harvest handling of selected neglected food crops (n= 120)

Challenges	Crops	Yes (%)	No (%)
Early sales	Bambara nut	15	5.8
	Bread fruit	18.3	6.7
	Bush-mango	37.5	16.7
	Total	**70.8**	**29.2**
Consumption	Bambara nut	20.8	0
	Bread fruit	6.7	18.3
	Bush-mango	41.7	12.5
	Total	**69.2**	**30.8**

Source: NSPRI Field Survey, 2021. % = Percentage

Table 8: Research needs along the production and post-harvest value chain of the neglected crops in South-South Region of Nigeria (n=120)

Research needs area for production of the neglected crops	Yes %	No %	Total %
Domestication of crops	65	35	100
Supply of improved seedling	89.2	10.8	100
Pest and diseases management	77.5	22.5	100
Training on crop management	97.5	2.5	100
Improvement on post-harvest handling	95	5	100
Storage problems	100	0	100

Source: NSPRI Field Survey, 2021. % = Percentage