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GENDER ANALYSIS ON ACCESS TO PRODUCTION RESOURCES AMONG GARDEN EGG FARMERS IN UMUAHIA AGRICULTURAL ZONE, ABIA STATE, NIGERIA

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ABSTRACT
This study examined the gender analysis on access to production resources among garden egg farmers in Umuahia Agricultural zone, Abia State, Nigeria. Specifically, the study described the socioeconomic characteristics of the respondents, ascertained level of knowledge of garden egg production technologies and examined access to production resources of garden egg across gender. Multistage sampling procedure was employed in the selection of 128 respondents for the study. Data collected through structured questionnaire were analyzed with descriptive statistics. Results indicated that both the male and female garden egg farmers respectively had common knowledge of eight out of the twelve garden egg production technologies listed. Results indicated that production resources such as land ($\bar{X}$=4.40), agro chemicals like herbicides ($\bar{X}$=4.17), pesticides ($\bar{X}$=4.05), labour for land preparation ($\bar{X}$=4.13), planting ($\bar{X}$=4.03) and weeding/fertilizer application ($\bar{X}$=4.02) were highly accessible to the male farmers, while labour for only weeding/fertilizer application ($\bar{X}$=4.03) and harvesting ($\bar{X}$=4.06) had mean above 4.0 are readily accessible to the female garden egg farmers. Furthermore, the study revealed that both male and female farmers enjoyed access to inputs such as improved garden egg variety ($\bar{X}$=3.98 and $\bar{X}$=3.58), inorganic fertilizer ($\bar{X}$=3.97 and $\bar{X}$=3.97) and organic fertilizer ($\bar{X}$=3.55 and $\bar{X}$=3.42). The results generally indicated low level of access to production resources among the female farmers. Giving women the same access as men to agricultural resources could increase production on women's farms. The study recommended investment in rural training by the government and entrepreneurship development experts more especially in access and resource management should mainly be targeted to the female garden egg farmers for sustained utilization of technologies.

INTRODUCTION

Garden egg (*Solanum gilo*) is an important food crop in several African countries, precisely originated from Tropical Africa. Garden egg derived its name from the shape of its fruit – shaped like chicken eggs (Chen, Li, and Kail, 2001). This vegetable in recent times is gaining increasing popularity in the world because of its economic, nutritional and medicinal importance. It is the main source of income for producing households in West Africa and it is

consumed on daily basis by urban families. In Nigeria, Garden egg is called "gauta" in Hausa, "afufa or anara" in Igbo and "igba" in Yoruba. It is cultivated extensively in the North (Chinedu, Olasumbo, Eboji, Emiloju, Arinola and Dania, (2011) while in other parts of the country (Nigeria), southeast and Abia state in particularly has carved a niche in the production of special type of garden egg called anaraNgwa (Ngbede, Usifo, Onyegbule and Ohaneje, 2013). Garden egg is massively eaten raw, accompanied by groundnut paste or cooked; very popular as the leaves and fruits are used in the preparation of different local or indigenous delicacies such as the local *ugba* salad made of oil bean slices (*Ugba* in Igbo) and tapioca or *abacha* (processed cassava slices) (Chinedu *et al.,* 2011). This production is done using low level of technology which leads to low output and subsequently low income leaving the women poor. Despite the importance and contribution of vegetable to national development in terms of its health and economic benefits, women vegetable farmer's yield in Nigeria falls below global yield due to decline in unit of input such as capital, land, labour, management and other constraints.

Gender relations influence control over the assets and resources that are needed to derive benefits from development interventions, such as improved technologies, institutions, and policies. When these interventions reinforce the prevailing norms that limit women's control over decisions about productive assets and resources, this can have deeply restrictive effects on women's uptake of all types of agricultural innovations, and such effects are felt across technologies, crops, regions, and cultures (CGIAR, 2016). It is estimated that if women had access to the same productive resources as men, they could increase yields on their farms by 20-30%. This could in turn reduce the number of hungry people in the world by 12-17 % (FAO, 2016). Evidence grows that the transfer and uptake of improved production/processing technologies in agriculture can affect women and men differently within households and communities due to differences in power, roles and access rights (Tina, 2016). Recognizing the gender role in increasing productivity, many development interventions have disclosed the need to close the gender gap in access to and utilization of production resources, and address the specific needs of all individuals across gender line. Still, not much is known about gender roles in the utilization of technologies which improve vegetable crop (garden egg) productivity. This study was therefore designed for Gender analysis on access to production resources among garden egg farmers in Umuahia South agricultural zone Abia State, Nigeria. The specific objectives of the study were to; examine socioeconomic characteristics of the respondents in the study area across gender; ascertain level of knowledge of garden egg production technologies among farmers and examine roles on access to production resources of garden egg across gender in the study area.

METHODOLOGY

The study was conducted in Umuahia agricultural zone of Abia State. The zone is made up of five Local Government Areas: Ikwuano, Isiala Ngwa North, Isiala Ngwa South, Umuahia North and Umuahia South Local government areas. The zone is further delineated into thirteen (13) agricultural extension blocks namely: Ntigha, Omoba, Owerenta, Isialangwa, Nbawsi, Nvosi, Ibeku, Umuahia Urban, Ikwuano North, Ikwuano south, Olokoro, Ohuhu, Ubakala and Umuokpara. There are eight circles in each block.

Sample and Sampling procedure

Multi stage sampling procedure was used to select the respondents. Firstly, Umuahia agricultural zone was chosen because of high presence of fruits and vegetable farmers in the area, proximity to the researcher and thoroughness of work.

In the second stage, four blocks were randomly selected out of the thirteen blocks in the zone. The third stage involved random selection of two circles from each zone, making it eight circles. In the fourth and final stage, sixteen (16) respondents made up of 8 male and 8 female farmers were randomly selected from each circle, making it one hundred and sixty (128) respondents for the study.

Data Analysis

Analysis of the qualitative data placed emphasis on what was actually said by the respondents and FGD participants. The information was content-analyzed to draw out salient issues. To accomplish **objective i**, descriptive statistics were employed to analyze the socio-economic characteristics of the farmers. Objectives ii, which was to ascertain the level of knowledge of garden egg production technologies among farmers, was achieved using mean counts. Responses from four-point rating scale were used to calculate the mean scores. Variables with mean score of 2.5 and above, implied that they were positive, while those with mean score of less than 2.5 were negative. Objectives iii, which was to examine roles on access to production resources of garden egg across gender, was achieved using mean counts. Responses from Five-point Likert-type scale were used to calculate the mean scores. Variables with mean score of 3.0 and above implied that they were positive, while those with mean score of less than 3.0 were negative.

RESULTS AND DISCUSSION

Socioeconomic Characteristics of Male and Female Garden Egg Farmers

Results in Table 1 on socio-economic characteristics of the garden egg producers showed that the mean age of male (49.36) farmers was higher than the females (42.48) with number of years of education 12.09 and 12.43 years respectively. This simply indicated that the farmers were still young, active, agile and within the productive age. This age ranges were expected to be in the position to effectively and efficiently utilize available resources to maximize outputs. The similar results of 12-years level of education were obtained by Nwaiwu *et al.*, (2012) in their study on determinants of net returns from garden egg (solanum melongena) production in South East Nigeria implying that most of the farmers at least had secondary education. This feature puts them in the position to be able to understand and adopt available innovations that encourage increases in garden egg production. As noted by Okoye (2015) that basic education enhances the overall quality of the farmer by providing him/her with basic numeric and literacy skills, thus it is expected that the farmers had better access to production resource.

The result showed an average household size of 6 persons with farming experience of approximately 9 years for both male and female farmers in the study area. This is an indication of moderate household size with many years of farming experience. Production tends to increase if there are more members in the household. Family size is an important source of family labour since it implies a reduction in the cost and availability of labour (Okoye, 2018). Furthermore, the study finds an average farm size of male farmers (0.84ha) higher than the female farmers (0.56ha) in the production of garden egg. This shows that although the male farmers had more farm holdings than the female, they generally had small land holdings. The mean monthly income for the male farmers (N80, 343. 75) was higher than the female farmers (N56, 093.75). This is expected as male farmers have more farm holdings than the female in the study area.

Table 1: Average Socioeconomic characteristics of the respondents in the study area across gender

Variables	Male	Female	Pooled
No of observations	**56**	**56**	**128**
Age (years)	49.36	42.48	45.98
Years of education(years)	12.09	12.43	12.27
Household size(nos of persons)	6.00	6.00	6.00
Farming experience(years)	8.59	8.89	8.73
Farm size (hectare)	0.84	0.56	0.72
Income (Naira)	80,343.75(63922.63)	56,093.75(35,899.92)	68,218.75(53048.18)
Dummy (%)			
Marital status (Married)	90.60	84.00	90.60
Primary occupation (farming)	64.90	53.10	62.00
Belonged to cooperative society	50.00	60.90	55.90
No extension contact	62.50	56.30	59.40
Access to agric. loan/credit	21.90	17.20	19.50

Source: Field survey, 2021

Interestingly, the result also shows that more of the female (60.90%) farmers belonged to cooperative society than the male (50.00%) while about 62.50% and 21.90% of the male and 56.30% and 17.20% of the female farmers reported no extension contacts and have access to agric. loan/credit respectively. Married farmers have advantage over others since the spouse and children serve as major sources of labour as they lend helping hand in farms and play major roles in production (Harun, 2014).

Level of knowledge of garden egg production technologies among farmers by gender

Table 2 showed the rating scale analysis of level of knowledge on garden egg production technologies among the male and female garden egg farmers. Grand mean of 3.35 for male farmers against 3.29 for female farmers indicated that though there was generally higher level of knowledge of garden egg production technologies among the farmers, the male farmers recorded higher level of knowledge than their female counterparts. This may be as a result of disparity in training, extension contact earlier recorded. Following the discussion, USAID (2009) noted that smallholder farmers with averagely 5 hectares or fewer may have less training, use more diverse cropping systems, and be less familiar with production technologies. Moreover, their goals often differ from those of larger-holder farmers since they may be producing for subsistence as well as for limited local market sales to generate income, and they may have less information to technologies available.

However, the result found disparity in water management technologies as male farmers (3.05) were more knowledgeable in water management technology than the female farmers (2.09). On the other hand, the females were more knowledgeable in processing and preservation of garden egg produce (3.05) than their male (2.29) counterparts and this information may have impact on access to the production resources required for effective utilization of the technologies.

Table 2: Rating Scale Analysis of Level of Knowledge of Garden Egg Production Technologies among Male and Female Farmers

Garden egg improved production technologies	HK(4)	MK(3)	LK(2)	NK(1)	Total	Mean
MALE						
Mechanized land preparation techniques	24(96)	23(69)0000	12(24)	5(5)	194	3.03
Improved seed selection	36(144)	23(69)	3(12)	2(2)	227	3.55
Seed dressing	46(184)	12(36)	4(8)	2(2)	230	3.59
Planting methods	46(184)	16(48)	1(2)	1(1)	235	3.67
Fertilizer application	27(108)	32(96)	5(10)	0(0)	214	3.34
Weed management	30(120)	27(81)	4(8)	3(3)	212	3.31
Water management	18(72)	34(102)	9(18)	3(3)	195	3.05
Pest and disease control	35(140)	23(69)	5(10)	1(1)	220	3.43
Harvesting	40(160)	16(48)	5(10)	3(3)	221	3.45
Processing and preservation of produce	5(20)	28(84)	12(24)	19(19)	147	2.29
Marketing of produce	31(124)	29(87)	1(2)	3(3)	216	3.38
Grand mean						3.35
FEMALE						
Mechanized land preparation techniques	21(84)	28(84)	7(14)	8(8)	190	2.97
Improved seed selection	36(144)	24(72)	4(8)	0(0)	224	3.50
Seed dressing	40(160)	20(40)	1(2)	3(3)	205	3.20
Planting methods	36(144)	23(69)	3(6)	2(2)	221	3.45
Fertilizer application	3(132)	30(90)	0(0)	1(1)	223	3.48
Weed management	30(120)	28(84)	3(6)	3(3)	213	3.32
Water management	6(24)	21(63)	11(22)	26(26)	134	2.09
Pest and disease control	30(120)	31(93)	2(4)	1(1)	218	3.40
Harvesting	34(136)	24(72)	0(0)	6(6)	214	3.34
Processing and preservation of produce	27(108)	25(75)	4(4)	8(8)	195	3.05
Marketing of produce	38(152)	21(63)	5(10)	0(0)	225	3.52
Grand mean						3.29

Source: Field survey, 2021. Values in parenthesis are the lickert frequency values. High knowledge (HK), Moderate knowledge (MK), Low knowledge (LK) and No knowledge (NK)

Access to production resources of garden egg across gender in the study area

Data from Table 3 indicated that production resources such as land (4.40), agro chemicals like herbicides (4.17), pesticides (4.05), labour for land preparation (4.13), planting (4.03) and weeding/fertilizer application (4.02) were highly accessible to the male farmers while labour for only weeding/fertilizer application (4.03) and harvesting (4.06) had mean above 4.0 were readily accessible to the female garden egg farmers. Furthermore, the study revealed that both male and female farmers enjoyed access to inputs such as improved garden egg variety (3.98 and 3.58), inorganic fertilizer (3.97 and 3.97) and organic fertilizer (3.55 and 3.42), however show strong disparity in access to simple farm machineries (3.29 and 1.95) and Tractor/ mechanization facilities (2.98 and 2.36) for male and female farmers respectively.

The results generally indicated low utilization of garden egg production technologies due to low level access to production resources especially among the female farmers. Women made up majority of the farmers in sub- Saharan Africa; moreover, technology is a broad relationship between inputs and outputs. In this context, therefore, technology adoption is

defined as the use of new tools or techniques that relate inputs to outputs and the allocation of inputs (Foster & Rosenzweig, 2010). It is then pertinent to enhance farmers' access to production resources for effective utilization of agricultural technologies especially among the female gender.

Table 3: Access to Production Resources among Male and Female Garden Egg Farmers (Rating Scale Analysis)

Input	VLE5	LE4	M3	LE2	VLE1	T	M
MALE							
Land	32(160)	10(40)	19(57)	2(4)	1(1)	282	4.40
Input							
Improved garden egg variety	29(145)	11(44)	18(54)	6(12)	0(0)	255	3.98
Inorganic fertilizer (NPK 15:15:15)	29(145)	10(40)	19(57)	6(12)	0(0)	254	3.97
Organic fertilizer (poultry dung)	13(65)	18(72)	26(78)	5(10)	2(2)	227	3.55
Agro chemical							
Herbicides	35(175)	16(64)	7(21)	1(2)	5(5)	267	4.17
Pesticides	24(120)	25(100)	11(33)	2(4)	2(2)	259	4.05
Labour							
Land preparation	29(145)	22(88)	7(21)	4(8)	2(2)	264	4.13
Planting	25(125)	24(96)	7(21)	8(16)	0(0)	258	4.03
Weeding/fertilizer application	31(155)	18(72)	7(21)	1(2)	7(7)	257	4.02
Harvesting	23(115)	21(84)	14(42)	4(8)	2(2)	251	3.92
Farm machineries							
Simple farm equipment	12(60)	17(68)	21(63)	6(12)	8(8)	211	3.29
Tractor/ mechanization facilities	21(105)	4(16)	8(24)	15(30)	16(16)	191	2.98
Grand mean							**3.53**
FEMALE							
Land	5(25)	17(68)	12(36)	29(58)	1(1)	188	2.93
Input							
Improved garden egg variety	22(110)	9(36)	24(72)	2(4)	7(7)	229	3.58
Inorganic fertilizer (NPK 15:15:15)	30(150)	10(40)	19(57)	2(4)	3(3)	254	3.97
Organic fertilizer (poultry dung)	23(115)	10(40)	28(84)	1(2)	2(2)	219	3.42
Agro chemical							
Herbicides	26(130)	15(60)	13(39)	6(12)	4(4)	235	3.67
Pesticides	21(105)	13(52)	1(3)	21(42)	8(8)	210	3.28
Labour							
Land preparation	25(125)	15(60)	19(57)	2(4)	3(3)	249	3.89
Planting	26(130)	14(56)	16(48)	1(2)	7(7)	243	3.79
Weeding/fertilizer application	34(170)	10(40)	14(42)	0(0)	6(6)	258	4.03
Harvesting	29(145)	14(56)	19(57)	0(0)	2(2)	260	4.06
Farm machineries							
Simple farm equipment	3(15)	1(4)	15(45)	16(32)	29(29)	125	1.95
Tractor/ mechanization facilities	8(40)	3(12)	18(54)	10(20)	25(25)	151	2.36
Grand mean							**3.19**

Source: Field Survey, 2021. Values in parenthesis are the Likert frequency values. Key: Very High Extent (VLE), Large Extent (LE), Moderate (M), Low extent (LE), Very Low Extent (VLE)

The study found both the male (2.36) and female (2.98) farmers recording low access to tractor/mechanization in the study area. This was an indication of high level of traditional farming in the study area. However, this may be as a result of high cost of accessing and/or unavailability of tractor and other mechanization facilities and services. This may also be the

reasons for small hectare of farm size in garden egg production found in the study. However, Onomu *et al.,* (2020) noted that supply of mechanical power has been recommended as a sure way of finding a solution to problematic farm power challenges. The aforementioned study also highlighted that the supply of mechanical power was limited by many factors including limited investment in mechanization. Moreover; small-holders do not have the capacity to own their personal tractor, resulting in low use of tractor services among smallholders (Challa, 2014).

CONCLUSION AND RECOMMENDATIONS

The study finds most of the production resources more accessible by the male farmers than the female. Such production resources as access to land, agro chemicals such as herbicides, pesticides, labour for land preparation, planting and weeding/fertilizer application as production resources highly accessible by the male farmers only while weeding/fertilizer application and harvesting for female. The study therefore calls for gender equality and empowerment that centered towards accessibility of production resources to farmers to ensure sustainable agricultural development efforts. Empowering farmers, particularly rural women through improved access to key productive resources at subsided rate and other agricultural services will go a long way to ensure improved livelihood and food security.

An understanding of technology/resource utilization pattern among men and women farmers in the study area is essential for designing appropriate policies to improve the overall development of rural sector as well as the livelihood of both male and female households. Furthermore, increase in access and utilization of production resources across gender line is one of the necessary conditions for sustainable level of development in the rural areas.

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