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Original Research Article

Gender roles and information needs on sweet potato production by small scale farmers in Abia State, Nigeria

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Abstract

The study examined gender roles and information needs on sweet potato production by small-scale farmers in Abia State, Nigeria. The specific objectives were to: identify socio-economic characteristics of the farmers, ascertain sources of information on the sweet potato activities and ascertain gender roles in sweet potato production activities. A multistage sampling technique was used to select 120 respondents for the study. Data were collected from primary source through questionnaires. Data collected were analyzed and presented using frequency, percentage and mean score. The findings showed that the mean age of farmers (male and female) and farming experience were 25 and 23 years, 5 and 6 years respectively. Farmers used National Root Crops Research Institute (NRCRI), fellow farmers and Abia State Agricultural Development Project (AADP) as their major source of information on sweet potato production technologies. Sweet potato production activities were dominated by female while land clearing and ridge making by male. In terms of ranking as regard to female farmers, NRCRI, fellow farmers, AADP and input dealers were ranked as the first four major sources of information used by the farmers in the area. Other channels like extension agent, cooperative, radio, television, internet and university were ranked as the 5th, 6th, 7th, 8th, 9th, and 10th sources of information used by the farmers respectively. The study recommended that: The roles of women in agriculture should be straightened and encouraged since they dominated the activities of sweet potato production in this study and this could as well help to balance the gender gap in the contemporary society. Extension agents should be well remunerated so they will be able to disseminate information need to farmers with utmost priorities. Organization of capacity building programmes on information disseminating enshrined in extension curriculum should be strengthened to benefit more farmers.

Keyword: Gender, roles, information needs, sweet potato, small scale farmers

INTRODUCTION

Nigeria is one of the largest producers of sweet potato in sub-Saharan Africa with annual production estimated at 3.46 million tons per year (Ugonna et al., 2013). Sweet potato is an important food security and early maturity crop that can be intercropped with some crops like yam and maize. It can also be a mono crop based on the intentions of the farmer. A brief analysis of potato production in various countries of Africa reveals that Egypt is African's number one potato producers, followed by Malawi while Nigeria is known as the fourth biggest producer in Africa (Ugonna et al., 2013).

In Nigeria, more than 85% of the sweet potato production is done by farmers who maintain small farms and carry out their operations manually with traditional

farm tools such as hoes and machetes (Okonkwo. Amadi and Nwosu, 2009). According to Ugonna, Jolaoso and Onwualu (2013), the main sweet potato growing area in Nigeria is Jos Plateau and this could be attributed to its altitudes which range from 1200 to 1400m and summer temperature that rarely exceed 35^{c} which make the temperate climate suitable for potato production.

Sweet potato has been identified to be the fourth most important root crop in Nigeria after cassava, yam and cocoyam (Okonkwo, Amadi and Nwosu, 2009). Sweet potato offers a particularly significant potential for increasing food production and income in Nigeria. Like other agricultural crops, it has a role to play in the developing economies by providing job opportunities to farmer through the increment of their income. Sweet potato is consumed without much processing in most parts of the tropics. It is either eaten boiled, roasted or fried. In countries like the United States, it is dehydrated into chips, canned, cooked and frozen, creamed and used as pie fillings. It could also be dried and ground into flour to make biscuits, bread and other pastries. Sweet potato can be pounded together with yam to give a delicious meal. Despite the fact that sweet potato is a crop that is being consumed in all parts of the country, yet its level of production still remains low(Mathew and Fatimo, 2008).

Matth and Fatimoh (2008) opined that for food production to keep pace with rapid population growth and demand for food, a new and creative approach to agricultural development must be developed. Nigerians should exploit their unexploited food resources thereby sponsoring the rural farmers who constitute the backbone of the Nigerian agricultural sector through making financial aids available to them. Rural farmers produce about 80 percent of the total national agricultural outputs by using traditional methods under rain-fed conditions. Since these farmers can contribute about 80 percent of the total agricultural output with crude implements, it is assumed that more percentages, in terms of agricultural output would be achieved if they adopt agricultural mechanization, hence the policy by government to arrest hunger and poverty would be achieved.

Sweet potato has a particularly significant potential for increasing total food production and income in Nigeria. The roots can be slightly fermented in water for 2-3 days to reduce the sweetness, then sun dried , milled and mixed with either yam or cassava flour for eating as fufu. The leaves and tender shoots are used as vegetable. The leaves contain about 8% starch, 4% sugar, 27% protein and 10% ash. However, the leaves are much richer than the root in protein, mineral and vitamins and therefore, more nutrients than some crops like yam, cassava etc. Also, it contains about 56mg carotene per 100g dry matter (Ajakaiye and Akande, 1999; Uzuegbu et al., 2015).

Information is an essential resource in modern agriculture. The advent of computers and improvements in telecommunications offers farmers and extension workers, ample new opportunities to obtain technical and economic information quickly and use it effectively for their decision-making. The modern farmer is an entrepreneur who tries to grow right crops and animals in the most profitable way. The amount of information a farmer can and should use for his management decision is increasing rapidly.

Previously the mass media gave generalized advice to farmers, but with modern Information Technology, extension can provide for each farm and farmer without visiting the farm personally (Cyber Extension in Rural Development, 2011). Agricultural information services contribute significantly to agricultural production. Through agricultural information farmers can adopt new technologies or farming systems, know when to plant and harvest, which crop to produce and which animal to rear and where to sell. It is also through agricultural information that farmers can know where to acquire bank loans and other farming inputs, as well as how to control pests and diseases. Such information will consequently increase agricultural production and improve the standard of living of farmers (Adio et al., 2016).

Information has received a wide range of acceptance as an essential resource of this century. It has been described as a simulating creativity, resulting in new outcomes and processes. All human societies depend very much on information for existence that is information is life. The proper identification and use of information sources are prerequisites for objective decision making. Consequently, the possession of awareness and use of appropriate information guarantee individual and organizational functioning. The major function of information is to increase the knowledge of the user, to reduce his level of uncertainty or reduce the varieties of choices available to the users of information. For information to be effective, it must be accurate, timely and relevant (Adio et al., 2016). Ayanyemi (2006) referred information as an essential resource for individual growth and survival. An informed mind is an enriched mind and if one is not informed he will be deformed. Therefore, information is a common term. It is often in the mouth of people, attracting diverse and ambivalent meanings and interpretations. Uhegbu (2007) reported that hardly can one mention the word ‘information’ without referring to somebody; the educated understand information from their various backgrounds. Anything human beings interact with or observe can be a source of information (Bates, 2012). The information source is a medium in which knowledge and/or information is stored. In other words, it is understood as something that contains and/or stores information (Bitso, 2012). Sources of information are tools that can possibly meet the information needs of different categories of users. They are the information carriers. There are different sources of information but what matters are ‘what’ sources are available and relevant to the different

categories of users and what sources of information are useful for their different seeking behaviour, and mainly for utilization in order to accomplish tasks/needs.

Information sources are various means by which information is recorded for use by an individual and organization. Sources of information are: radio, television, extension workers, cooperative societies, friends and colleagues, newspapers and magazines, books/leaflets, phones, libraries and institutes. Also, observation of people organizations, speeches, documents, picture and art work can also be described as information sources (Adio et al., 2016).

Information services are the activities performed to facilitate any stage of the life cycle of information. The life cycle includes the creation, organization, use and disuse. Information services can be defined as services which provide (serves) data, knowledge, and information that are of interest to users. The interaction is that an information service collects (retrieves), manages (structures) and stores data. Productivity is measured as the ratio of agricultural input to output however; individual products are measured by weight and their densities. Measuring overall agricultural output are difficult because the output is usually measured as market value of final product; which excludes intermediate materials that goes to production such as corn feed used in the meat industry.

Information is a processed and organized data for meaningful purpose which could be in different forms or sources. Every rational person needs some form of information for his / her day to day activities. Therefore, an emphasis on agricultural information importance cannot be overruled, because information had been described as man's accumulated knowledge in all subjects, in all forms and from all sources that could help users of such information to improve and develop intellectually on their activities (Adio et al., 2016). There is no doubt that information is very important in all aspects of agricultural development from planning to the production stage in the farm. It is obvious that those factors that limit agricultural information development are the difficulties in accessing information for research and development activities. Agricultural information supposed to be made available to research scientists, extension workers, farmers and other users, so that they can all engage in agricultural development and food production (Adio et al., 2016). This means that they require different types of information at the right time in order to make the right decision.

Tadesse (2008) defined agricultural information as the various sets of information and messages that are relevant to agricultural production activities of farmers such as crop production and protection, animal production and management, and natural resource production and conservation. For the purpose of this study agricultural information therefore refers to agriculture related data which are transformed into meaningful and useful contexts or forms for effective decision making in agriculture or farming related activities.

There are various types of information on agriculture related activities. These could include information on crop production and protection, livestock production, agro-forestry, pest and diseases control, fertilizer availability and application, agricultural credit facilities, market prices, improved seeds varieties, rainfall gauge and so on. Oduwale and Ikhizma (2003) identified various types of agricultural information, such as information on pest and diseases control, services available from government and private organizations, marketing farm produce, credit and loan facilities to farmers, utilization of fertilizer etc. Aina, Kaniki, Ojambo (1995) and Ekoja (2000) defined agricultural information as published and unpublished knowledge on all aspects of agriculture which are inter disciplinary in nature and have universal application. They classified the types of agricultural information into the following categories.

Technical/scientific information

This type of information is obtained from researches and development work conducted in universities, agricultural research institutes, agricultural colleges and private agricultural research organizations.

Commercial information

Information under this category gives enlightenment on the marketing of agricultural produce in order to maximize profits.

Socio/cultural information

This involves information on traditional agricultural practices, local cultures, norms/values and background information and training done in different communities as well as on the availability of labour etc.

Legal information

This type of information educates all stakeholders in agriculture on legislated laws on production and distribution of agricultural produce.

Information on rural women

This type of information will be useful to train rural women on proven technology in agriculture, food production, processing, and preservation, storage, utilization and

marketing and how to improve their standard economically, and socially.

General Information

These are information of general interest to farmers for example handling of flood, fire and other disasters.

The information sources for farmers depend on the type of work and services they perform. Information sources are tools or information carriers that meet the information needs of extension workers. Many studies have been conducted to determine the type of information sources of agricultural extension workers. Alfred and Odefadehan (2007) identified various information sources of extension workers to include organizations, individual associates, local, national and international seminars, workers, trainings, print and electronic media, telecommunication, and internet service. Koyenikan (2011) categorized the above mentioned information sources as formal and informal sources. According to him, the formal sources include state radio stations, local and international print media (such as newspapers, newsletters, and journals) and seminars/workshop, while the informal sources are farmers, family friends and personal assessments and judgment. Another related study carried out by Farooq, et al (2010) specifically highlighted the role of Agricultural Research Institutes and Agricultural Officers as information sources while Rama and Joan (1996) identified agent in the office, agents in other countries, extension specialists, immediate supervisor, news agencies, state/federal agencies, school teachers and administrators as prominent information sources to agricultural extension workers. However, Mugwisi, Ocholla and Mostert (2012), after emphasizing the position of libraries, internet, colleagues, personal and departmental collections, workshops and seminars, argued that farmers preferred print sources face to face interaction.

According to Ajuwon and Odeku (2012), information sources come in great diversity and various forms such as print and non-print forms. Print connotes books, periodicals, bibliographies, maps, indexes and abstracts, photographs, government documents, technical reports etc. It can also be in electronic form. Non-print materials include audio visual, multimedia, microfilms, electronic books, journals, images, texts/records from the internet, web documents etc. These information sources can be found in human archives, libraries and the internet.

Idowu (2002) conducted a study on use of agricultural information source among agricultural farmers and extension workers in Nigeria. The findings described the researchers' scenario as that of being informational deprived, which implies a situation where researchers have too much information and are unable to pick out the right sources. The policy implication of the findings showed that to improve the performance of agricultural researchers and extension workers, the provision of information sources as well as the facilities to enhance their use is very important in the research institutes and information dissemination systems. In an era of knowledge economy, information plays an increasingly important role in every sphere of the developmental process.

Aina (1991) stated that farmers need agricultural information for the purpose of understanding how to apply fertilizers, insecticides for pests and disease control, planting materials, and credits and loans

In West Africa, one serious constraint to agricultural development is the limited access to agricultural information (Anthott, 1993 in Agwu, Ekwueme and Anyanwu, 2008). This has given rise to calls for establishment of sustainable agricultural extension policy. However, the concept of information in general and of agricultural information in particular, as a resource for development is only just beginning to gain ground in West Africa. Government policy makers, planners and administrators are increasingly recognizing the fact that information is indispensable to the development process. In spite of this growing realization, the essential social and information mechanisms and infrastructural facilities are not yet sufficiently developed in West African Countries to foster the generation, storage, preservation, repacking, retrieval, dissemination and utilization of information (Hannah, 1991). However, effective communication is seen as an essential tool for the establishment and maintenance of good social and working relationships and it enables people to exercise control over their environment (Anyanwu, 1992). The purpose of communication is to bring about change of attitude, knowledge, skills and aspiration of the receivers.

In Nigeria, various communication media are being used to transmit agricultural information to farmers in line with national policy on agriculture. The communication media include farm magazine, leaflets, newsletters, newspapers, pamphlets, radio and television, among others (Dare, 1990). Among them, radio is the most preferred tool of mass communication in Nigeria (Agwu, Ekwueme and Anyanwu, 2008) observed that radio programmes are usually timely and capable of extending messages to the audience no matter where they may be as long as they have a receiver with adequate supply of power. The absence of such facilities such as road, light and water are no hindrance to radio. Similarly, such obstacles like difficult topography, distance, time and socio-political exigencies do not hinder the performance of radio. He further observed, that illiteracy is no barrier to radio messages since such messages can be passed in the audience own language. Another advantage of radio programme is that it can be done almost anywhere through the use of a tape recorder (Nwuzor, 2000). It is probably because of these advantages of radio that many governments accord high priority to it as a means of

reaching farmers.

Contrary to the a priory expectation of the above findings, Adio et al. (2016) opined that the only available information sources and services that could be considered adequate for the farmers in the selected local government areas of the state were town crier 363 (90%), relations 357 (89%) and film shows 332 (82%). However other information sources and services such like conferences and workshop, extension workers or agent and contact, television, Non-Governmental Organization (NGOs), mobile phones were rated low, this implies that they are not adequately available to farmers in the area. This also indicates that the only information sources and services available for utilization in production practices in the areas were town criers, relations and film show; while others like conferences and workshops Non – Governmental organization were inadequate to balance farmers' need.

In the same vein, research conducted by Udemezue(2014) in Anambra State, Nigeria, observed that majority (77.5%) of the respondents sourced information on improved technologies from friends/neighbours, 70.0% sourced information from cooperatives, 54.2% of the respondents also sourced information from radio, while 48.3 percent and 42.5% of the respondents sourced information on improved production technologies from their fellow farmers and USAID, respectively. Similarly, 32.2%, 25.8% and 21.7% of the respondents sourced information on improved production technologies from community leaders, extension agents, and NGOs respectively. The remaining 19.2%, 6.0% and 5.8% of the respondents sourced information from print media, universities, television and the Internet, respectively. The farmers used friends/neighbours and cooperative often probably because they have easy access to them than other information sources. It could also be their frequent participation in the social organization. This result is in line with a study that found during the acceptance stage of adoption of technologies, Japanese farmers were mostly influenced by such information sources as agricultural cooperatives and friends/neighbours (Agbamu, 2006). Since friends/neighbours and cooperatives dominated the information sources used by the respondents in the area, it would be appropriate to deliver new technologies to farmers in the state through friends/neighbours and cooperatives. However, research carried out by Okeke (2018), revealed that greater percentage of the sweet potato farmers sourced their information from research institute and fellow farmers while some other farmers did not source information from any source rather they relied strongly on their farming experience. This implies that many of the farmers did not source their information from any source but depend on their personal knowledge and experience. Therefore, it is an indication that no single source of information could be effectively deliver extension message to farmers in her study area, rather all sources of information are required to effectively deliver information to the farmers and processors their by increasing the performance of the farmers in food production. Since information has seen as a factor of production that become a very important feature in Nigerian agricultural sector in the modern world, therefore, farmers' accessibility to various sources of information need to be increased in order to enhance the levels of adoption of improved sweet potato production which in return will boost food security in the country. Abia State is one of the leading States in terms of sweet potato production in the South-Eastern Nigeria. The State contributes about 25% of the total sweet potato production in the South-Eastern region because of its proximity to the National Root Crops Research Institute (NRCRI), Umudike where sweet potato production is one of its mandate crops (Ekwe and Onunka,2006). The authors further noted that improved production technologies of sweet potato were jointly developed by the International Institute of Tropical Agriculture (IITA) and the National Root Crops Research Institute (NRCRI), Umudike to eliminate constraints faced by farmers use of local technologies in pursuance of food security efforts in Nigeria. Therefore, it is logical to conclude that the location of National Root Crops Research Institute in Abia has made the State a research center for sweet potato production and hence one of the leading States in the South-East in terms of sweet potato production and processing.

Gender participation is a term that describes the roles and activities of males and females according to the traditions and beliefs of a particular culture (Olagunju et al., 2013). In developing countries, men and women participation in traditional agriculture performing different roles and these roles are gender specific, complementary and reciprocal in natural activities like bush clearing, land preparation, weeding, harvesting, processing and marketing as well (Brearley, 2005). Once the contribution of men and women are taken into account equitably when allocating productive resources, agricultural production can also be on the increase, women are involved in the production and processing of certain food crops such as sweet potato, cassava, yam etc and are also responsible for weeding, harvesting, transplanting, processing, storage and marketing of their crops (Tewe et al., 2003).

Gender issues have been a topical issue in agricultural research and development, and most often focusing on the differences between sexes in production (Amengor, 2015). According to him, a lot of factors may lead to agricultural productivity differences between men and women in the developing world. However, provided that all things remain constant, the quantity of inputs like fertilizer, seeds, labour etc. apply by male and female may vary. Because men and women may have different agricultural productions as a result of crop choice that differs by gender and can also be influenced by cultural

norms as well as other considerations like lack of resources to cultivate specific crops and the culturally specified division of labour (Nkedi-kizza et al., 2002; Peterman, 2010). For example, cultural norms deter women fraternity from engaging in physical farming practices in Ghana, just like in Ethiopia women are forbidden from wing the phough because such work is perceived to be very physically strenuous and can cause damages to their system. However, even if men and women have the same agricultural production function, shadow prices of inputs and credit may lead the women's production frontier to lie beneath the man's frontier; this implies that women are less productive.

Gender inequality remains a problem that has characterized the Nigerian agricultural climate. In Southern part of Nigeria women are meant to do most of farm work and have ownership of the farms while in the Northern part, men do most of the farm work and ownership of farms. Given that gender roles are culture specific, it was observed that in the middle belt region of Nigeria women make ridges and mounds while in the eastern part of the country that is certainly a job for men (Olagunju, Fakayode, Babatunde and Ogunwole-Olapade, (2013). Gender differences have implication for farming responsibilities as it influences the farming activities performed. The allocation and distribution of farm incentives are done with gender bias. According to Ajao, Ajetomobi and Olarinde (2004), Policy makers and administrators work with baseless assumption that women play supportive role to the men who are the actual farmers. In view of this, female farmers like their male counterpart, need all the necessary training and support to enhance their output (Olagunju and Ogunniyi, 2008). Gender is defined by the Food and Agriculture Organization (FAO, 1997) as the relations between men and women, both perceptual and material. It is not determined biologically, as a result of sexual characteristics of either women or men, but is constructed socially. It is a central organizing principle of societies, and often governs the processes of production and reproduction, consumption and distribution. According to FAO definition, gender issues focus on women and on the relationship between men and women, their roles, access to and control over resources, division of labour, interests and needs. Gender relations affect household security, family well-being, planning, production and many other aspects of life (Bravo-Baumann, 2000).

Gender is a key factor in explaining the variation in access to social services in rural low-income communities just like Nigeria. It would therefore be useful to separately analyze accessibility of male- and female-headed households to social support services in sweet potato production. Much as women are greatly involved in the sweet potato value chain in some parts of Nigeria, factors such as culture, traditions, gender roles and responsibilities, and land ownership could be affecting the access of women sweet potato farmers to agricultural information or credit in the country. Observations of gender-based access to agricultural information, extension services or credit have been observed in Sudan, Malawi, Nigeria and Kenya. The fact that women are often involved in household chores gives them little time to receive extension services, unlike their male counterparts (Okonya and krosche, 2014). Little or no detailed individual information on empirical studies on women sweet potato farmers' access to and use of agricultural information, credit and extension services in Uganda is available. The lack of such information is therefore an obstacle to reducing gender bias in access to social services and consequently hinders poverty reduction and economic development programs. The contribution of women to food security cannot be overlooked. There is a need for access to proper and relevant agricultural information, credit and extension services if sweet potato production is to be increased. An understanding of gender differences in accessibility may go a long way in explaining barriers to technology adoption and factors facilitating sweet potato production.

With respect to gender analysis of agricultural productivity, Udemezue (2017) found that the majority of studies conducted from the mid-1980s to 2014s show that female farmers are equally productive as male farmers, once inputs and other background characteristics are controlled. In some traditional settings such as Ghana, farming has been predominantly described as a man's responsibility due to its tedious and laborious nature. Gender issues in agricultural production have become an important subject of investigation, ever since questions were raised on whether women and men benefit equally from economic development. However, it has been observed that women are under nourished, under-educated, overworked, under-paid and hence poorer than their male partner as a result of gender inequality (United Nation, 1995).

According to David and Madu (2013) gender analysis is important for the following reasons: to ensure wider impact of gender on household food security and poverty reduction and this implies that we need to understand the social system supporting sweet potato production. Little is known about gender roles and responsibilities and its analysis will aid to uncover the unknown and to bridge the strong assumption that men predominate in production and women engage in sales and processing. Gender analysis also helps to know some crops that are gender specific in some locations and gives insight about gender participation on those crops. Sweet potato production perceived to be gender specific in some traditional settings while some perceived it as a unisex farming that could be engaged by everybody irrespective of the sex classification. This is because sweet potato production goes through processes from land preparation to harvesting and storage as well as processing, packaging and marketing and each stage may be gender

specific in some areas. Despite the importance of gender analysis, there are still some challenges facing gender in the contemporary society and these necessitate the importance of this study. The objectives of this study were to ascertain sources of information among sweetpotato farmers and identification of gender roles of sweet potato production activities in the study area.

METHODOLOGY

The study area for this research was Abia State. Abia state is one of the five States in the South-east geopolitical zone with capital at Umuahia. It shared boundary with Cross River in the East, in the West with Imo state, in the North with Enugu State, and Ebonyi State, and in the South with Rivers and Akwa Ibom states. The State is made up of seventeen local government areas; Aba North, Aba South, Arochukwu, Bende, Ikwuano, Isiala ngwa North, Isiala Ngwa South, Isuikwuato, Obioma Nwa, Ohafia, Osisioma Ngwa, Ugwunagbo, Ukwa East, Ukwa West, Umuahia North, Umuahia South and Umunneochi (Mbanaso, 2010). It comprises three agricultural zones (Aba, Ohaofia and Umuahia) by the State Agricultural Development Programme (ADP). .It occupies an estimated land area of 5,582.2 square kilometers (Abia State Ministry of Commerce and Industry, 1998 in Mbanaso, 2010).

The population of the state is about 2,833,999 (National Population Census, 2006). The state is situated in the rain forest zone with a mean annual rainfall of about 2400mm which could be stretched from the period of February to December (Unanma, Odurukwe, Okereke and Ene, 1985). Agriculture is the mainstay of the people of the state and the state produces crops like cassava, sweet potato, yam, cocoyam, rice, plantain, banana, maize, palm produce, rubber, melon, garden egg, and livestock such as poultry, goat, sheep and rabbit. However, sweet potato is one of the major crops grown in the area because of their proximity to National Root Crops Research Institute, Umudike.

Population and Sampling Procedure

The target population for this study was all the sweet potato farmers in Abia State. Multistage sampling technique was used for this study. In the first stage, two zones out of the three zones that makeup three agricultural zone in the state was purposively selected due to their perceived active engagement in sweet potato production. They were Ohafia and Umuahia zones.

In the second stage, two blocks each from the selected zones were used for the study. Ohafia agricultural zone comprises twelve extension blocks such as Abam, Umuna, Uzuakili/Ozuitem, Ohafia West, Ohafia East, Ohafia South, Abiriba, Nkporo, arochukwu, Isuikwuato, Isuochi/Nneato, and Uturuchieze. Here Umuna and Uturuchieze blocks were selected from Ohafia zones. Umuahia agricultural zone also has thirteen extension blocks as follows: Ntigha, Ohuhu South, Ohuhu North, Ibeku, Umuahia Urban, Nvosi, Ikwuano North, Ikwuano South, Olokoro Umuahia, Isiala ngwa, Mbawsi, Omoba and Owerrinta. Out of these blocks, Olokoro Umuahia and Ibeku were selected from Umuahia zone. This gave a total of four blocks that was used for the study.

In the third stage: Two circles each from the selected block were purposively selected based on the popularity in sweet potato production. These circles include Okoko item and Alayi circle from Umuna block, while Uturu and Achara circle from uturuchieze of Ohafia agricultural zones. Under Umuahia zone, Apumiri and Amakama circle were selected from Olokoro Umuahia block while Ajata/Iyienyi and Okwoyi/Ukome circles were also selected from Ibeku block. This gave a total of eight(8) circles that was used for the study.

In fourth stage, 15 sweet potato farmers were selected from the list of information in each circle using simple random sampling techniques and this gave a total sample size of 120 respondents.

Data were collected from primary source through interview schedules. Data collected on socio-economic characteristics were presented using frequency, percentage and mean score. Objective 1 and 2 were achieved using frequency, percentage and mean score

RESULTS AND DISCUSSION

Socio-economic characteristics of sweet potato farmers

Entries in Table 1 show that 33.3% and 41.7% of the farmers (female and male) were within the age range of 21-30 years and 31-40 years respectively. Similarly,33% of male farmers were within the age range of 41-50 years while that of the female counterparts were 18.3%. The implication to this, is that sweet potato production activities is more or less masculine activities that dominated by younger females than the males and this can bring about relegation on sweet potato production. Those who were within the age range of 51 years and above for both sex account for 8.3% and 16%.The average mean age of the farmers was 24 years and 23 years. This implies that young people of active age dominated the activities of sweet potato production technologies in the study area but younger female farmers were the most dominants of the practice. This finding agrees with Olagunju, Fakayode, Babatunde and Ogunwole-Olapade (2013) who noted that majority of sweet potato farmers in Osun State were in the active productive years. Majority (50%) of the female farmers were married while 36.7% of the male counterparts were

Table 1. Socio-economic characteristics of the farmers

Variables	Male			Female		
	Frequency	Percentage (%)	Mean (M)	Frequency	Percentage (%)	Mean (M)
Age:						
21-30	15	25.0	25.00yr	25	41.7	23.00yrs
31-40	20	33.3		15	25.0	
41-50	20	33.3		11	18.3	
51 and above	5	8.3		9	15.0	
	60	100.0		60	100.0	
Sex						
Marital Status:						
Single	14	23.3		20	33.3	
Married	22	36.7		30	50.0	
Divorced	10	16.7		2	3.3	
Widowed	14	23.3		8	13.3	
Household Size:	51	85.0		57	95.0	
1-5	98	13.3	10.00	1	1.7	5.00
6-10	1	1.7		2	3.3	
11 and above						
Farm Size:	45	75.0		52	86.7	0.61ha
0.1-1ha	10	16.7	0.70ha	5	8.3	
1.1--2ha	5	8.8		3	5.0	
2.1-3ha						
Farming Experience:	53	88.3		55	91.7	
1-10 years	7	11.7	5.00yrs	5	8.3	6.00yrs
11-20 years						
Occupation:						
Farming	10	16.7		52	86.7	
Civil servant	50	83.3		8	8.3	
Land Acquisition:	33	55.0		49	81.7	
Renting	10	16.7		5	8.3	
Inheritance	10	16.7		4	6.7	
Purchasing	7	11.7		1	1.7	
Gift						
Educational Level:	12	20.0		11	18.3	
No formal education	12	20.0		27	45.0	
Primary	25	41.6		20	33.3	
Post primary	11	18.3		2	3.3	
Tertiary						
Extension Visit	65	88.3		55	91.7	
Yes	5	7		7	11.7	
No						
Source of Labour:						
Family labour	43	71.7		48	80.0	
Hired labour	15	25.0		25	41.7	
Exchange labour	10	16.7		10	16.7	
Family, hired, and exchange	15	25.0		13	21.7	
Income (N):						
10,000-20,000	9	15.0		11	18.3	
21,000 – 30,000	3	5.0		2	3.3	
31,000-40,000	2	3.3		3	3.3	
41,000-50,000	2	3.3		2	3.3	
51,000-60,000	3	5.0		2	3.3	
61,000-70,000	2	43.3	N25,000.00	6	10.0	N30,000.00

Table 1. Continue

71,000-80,000	5	8.3	28	46.7
81,000-90,000	6	10.0	4	6.7
91,000 and above	4	6.7	3	5.0
Social Participation:				
Yes	16	26.7	38	63.3
No	44	73.3	22	36.7

Source: Field Survey, 2018.

married. However, 23.3% of the male farmers were single while 33.3% of the female farmers were also single. Similarly, 16.7% and 23.3% of the male farmers were divorced and separated while 3.3% and 13.3% of the females were divorced and separated respectively. The implications of this finding is that married people seem to be more committed to tasks and so increased productively and less wastage is expected. The finding is in line with Ezeano (2015) who said that majority (87.5%) of the sweet potato farmers were married people. However, greater proportion (95% and 85%) of male and female farmers had 1-5 household members with mean size of 10 persons and 5 persons respectively. This implies that farmers enjoyed a relatively large family size which is a source of labour in the farm production. Similarly, 13.3% and 1.7% of the male farmers had 6-10, 11 and above household members while 1.7% and 3.3% of their female counterpart had 6-10, 11 and above household members. Results in table 1 indicate that 75% and 86.7% of male and female farmers cultivated 0.1-1 hectare while 16.7% and 8.3% of them cultivated 1-2 ha respectively. However, 8.3% and 5.0% of male and female farmers cultivated 2.1-3.0ha. The average farm size for both male and female farmers was 0.7ha and 0.6ha respectively. Shaibu, Aliyu and Bakshi (1997) in Mbanaso (2010) grouped farm holdings in Nigeria into three broad categories: small-scale (less than 6 hectares in farm size) medium-scale (6-9.99 hectares) and large-scale (10 hectares and above). This implies that all the sweet potato farmers were small scale farmers. This finding is inconsonance with Mbanaso (2010) who found small-scale farmers predominating the activities of sweet potato production in the South-East Zone. Majority (88.3% and 91.7%) of male and female farmers had between 1-10 years faming experience while 11.7% and 8.3% of them had 11-20 years of farming experience. The mean years of farming experience were 5 years and 6 years. However, most of the researchers used years of farming experience of farmers in lieu of management as a factor of production (Abdulkarim et al., 2015). Therefore, it is believed that the higher the years of farming experience of a farmer, the more the management ability of such a farmer in making farm decision. This finding agreed with Abdulkarim et al, (2015) which saw long farming experience as a sinequanon to farm management and decision making. This implies that farmers had long period of farming experience. This could increase their knowledge-experience and subsequent adoption of sweet potato production technologies. Similarly, (86.7%) of the females were full time sweet potato farmers while, majority (83.3.%) of the males were civil servant. The implication could be that men in the study area see sweet potato enterprise as a supplementary occupation to their livelihood. The finding reveals that male farmers choose sweet potato production as other source of income to support their salaries. This finding is in line with Ezeano (2015) who saw sweet potato enterprise as a source of income to augment civil servant salaries of some sweet potato farmers in South-East agro-ecological zone, Nigeria. Greater proportion (45%) of the female farmers completed primary school while about 41.6% of the male famers completed post primary school. Similarly, 20% and 18.3% of the farmers (male and female) did not have formal education while 18.3% and 3.3% of the respondents (male and female) completed tertiary institution. Education has always been known to play a positive role in the adoption of improved technologies among farmers (Udemezue, 2014). Therefore, the high number of literate people among the respondents indicates that majority of them are in a better position to adopt new technologies disseminated to them provided they are feasible to their culture. This finding agrees with Ezeano (2015) who noted that the intensity of adoption of improved technologies is related to level of education. Entries in Table 1 also show that majority (83.3% and 91.7%) of the respondents (male and female) had contact with extension agents while 8.3% and 11.7% of the respondents (male and female) did not have contact with extension. Since a good number of respondents had contact with extension agents, this implies that farmers are expected to be more exposed on the relevant technologies like sweet potato variety. Table 1 further shows that 80% of female used family labour as their source of labour, 71.7% of male farmers used family labour as their means of labour while 41.7% and 25% of female and male farmers used hired labour as their source of labour respectively. The fact that family labour was mostly used by the respondents; this could reduce the cost of running sweet potato production as well as increasing their income. This result agrees with Ezeano (2015) who said that majority of sweet potato farmers

Table 2. Percentage distribution of respondents based on sources of information on sweet potato production technologies

	Female		Male	
Information Sources	**%**	**Rank**	**%**	**Rank**
NRCRI	80.3	1st	65.1	1st
Fellow farmers	65.1	2nd	50.1	4th
AADP	56.4	3rd	54.1	2nd
Input dealers	52.0	4th	40.2	6th
Extension agent	30.6	5th	28.3	7th
Cooperative	25.1	6th	25.3	8th
Radio	19.3	7th	52.1	3rd
Television	12.5	8th	15.5	9th
Internet	10.2	9th	48.2	5th
University	5.3	10th	10.2	10th

Source: Field Survey, 2018.

used family labour as their source of labour in the South East agro-ecological zones. Moreover, figures in table 1 indicate that majority 81.7% of male acquired land by inheritance while about 83.3% of female farmers acquired land by rent. About 5% of male farmers acquired land through purchase while 11.7% of the female also acquired land through the same processes. Since majority (83.3%) of the female farmers acquired land by rent, this could reduce their capacity to increase farm size. This could as well impair the adoption of new technologies disseminated to farmers. Results in Table1 show that 15% and 18.3% of male and female farmers realized N10,000-20,000 annually from sweet potato enterprise. However, 5% and 3.3% of male and female farmers realized between N21,000 – 30,000, 3.3% and 3.3% of the male and female farmers generated between N41,000 – 50,000 annually from the crop. Similarly, 8.3% and 46.7% of the male and female respondents generated between N71000 – 80,000. The average annual farm incomes from sweet potato production were N25000 and N30,000 only. Their finding showed that farming constituted the major share of the female farmers while that of the male counterpart is just supplementary. The implication of this is that the adoption of agricultural technologies could be easy in as much as it could improve their standard of living. On the other hand, majority (73.3%) of the male farmers did not belong to social organization while 63.3% of the female farmers belonged to social organization. However, 26.7% of male farmers participated in social organization while 36.7% did not belong to social organization. Participation in social organization could be advantageous to farmers because farmers' social organizations offer an effective channel for extension contact with large numbers of farmers as well as opportunities for participatory interaction with organizations (Mbanaso, 2010). This could also increase farmers' update of new practices such as sweet potato production technologies.

Sources of Information on Sweet potato Production

Table 2 shows that majority (80.3%) of female farmers sourced information on sweet potato production from National Root Crops Research Institute(NRCRI) while 65.1% of the male farmers sourced their information from the same NRCRI. Similarly, 65.1%, 56.4%, 52%, 30.6%, 19.3% and 12.5% of the female farmer sourced information on sweet potato technologies from fellow farmers, AADP, input dealers, extension agent, cooperative, radio, television, internet and university. On the other hand, about 50.1%, 54.2%, 40.2%, 28.3%, 25.3%, 52.1%, 15.5%,48.2% and 10.2% of the male counterpart sourced information on the variety from fellow farmers, Abia State Agricultural Development Project(AADP), input dealers, extension agents, cooperative, radio, television, internet and university therein. Television and university were the list source of information. This could be attributed to the fact that most of the farmers do not have access to television and university. The farmers used NRCRI, fellow farmers, and AADP often probably because they have easy access to them than other information sources. Proximity of the farmers to NRCRI and AADP could also facilitate the adoption of the variety and various sources of information related to the technologies. Since NRCRI, fellow farmers and AADP dominated the information sources used by the respondents in the study area, it would be appropriate and just to deliver new technologies to farmers through NRCRI, fellow farmers and AADP respectively.

In terms of ranking as regard to female farmers, NRCRI, fellow farmers, AADP and input dealers were ranked as the first four major sources of information used by the farmers in the area. Other channels like extension agent, cooperative, radio, television, internet and university were ranked as the 5th, 6th, 7th, 8th, 9th, and 10th sources of information used by the farmers respectively. The reason could also be their frequent contact with NRCRI, fellow farmers and AADP, among others at their convenient

Table 3. Gender roles on sweet potato production activities

Activities	Female Frequency	%	Male Frequency	%
Land clearing	22	36.7	51	85.0
Ridge making	25	41.7	58	96.7
Planting	55	91.7	39	65.0
Weeding	56	93.3	45	75.0
Fertilizer application	47	78.3	30	50.0
Harvesting	57	95.0	35	58.3
Grading techniques Bagging	55	91.7	45	75.0
	50	83.3	38	63.3

Source: Field Survey, 2018**.**

time. Such sources of information require that the respondents will relax and utilize the message that is relevant to their day to day sweet potato production technologies. This finding disagrees with Agbamu (2006) in Udemezue (2014) who stated that in the stages of adoption of technologies, farmers were mostly influenced by such information sources like cooperatives, radio and friends/neighbours.

Gender roles on sweet potato production activities

Entries in table 3 show that majority (85%) of male respondents were involved in land clearing activities while 36.7% of the female respondents were also involved. Ridging was done by 96.7% of the male and 41.7% of the female. This implies that men dominated and feature well in the activities like land clearing and ridging than female counterpart. This finding is in line with Olagunju et al (2013) in the study of gender analysis of sweet potato production in Osun State that land clearing and ridging for sweet potato production were done mostly by men. On the other hand, planting was done by 91.7% of the female and 65% of the male. Similarly, 93.3% and 75% of female and male participated in weeding. Majority (78.3%) of the female were involved in fertilizer application while 75% of the male were also involved in fertilizer application. Harvesting activity was done by 95% of the female and 58.3% of the male. Similarly, 91.7% and 75% of the female and male were involved in sorting/grading techniques. Bagging was mostly done by 83.3% of female and 63.3% of the male farmers.

CONCLUSION AND RECOMMENDATIONS

Sweet potato production activities were dominated by female except land clearing and ridge making dominated by males. Majority of the farmers sourced information on sweet potato production from NRCRI, and fellow farmers. Majority of female farmers engaged into sweet potato farming as their major occupation while male farmers used it as a supplementary occupation. In terms of ranking as regard to female farmers, NRCRI, fellow farmers, AADP and input dealers were ranked as the first four major sources of information used by the farmers in the area. Other channels like extension agent, cooperative, radio, television, internet and university were ranked as the 5th, 6th, 7th, 8th, 9th, and 10th sources of information used by the farmers respectively. The study recommended that; There is need to improve the life of female sweet potato farmers to meet the various extension services need in sweet potato production. The roles of women in agriculture should be straightened and encouraged since they dominated the activities of sweet potato production in this study and this could as well help to balance the gender gap in the contemporary society. Extension agents should be well remunerated so they will be able to disseminate information need to farmers with utmost priorities. Organization of capacity building programmes on information disseminating enshrined in extension curriculum should be strengthened to benefit more farmers.

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