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FACTORS AFFECTING CHOICE OF TRAINING NEEDS AREA ON ORANGE FLESHED SWEETPOTATO VALUE ADDITION BY FARMERS IN ABIA STATE

¹Eluagu C.J and Ejechi, M.E

National Root Crops Research Institute, Umudike, PMB 7006, Umuahia, Abia State, Nigeria.

Corresponding Authors' email: chinweeluagu@gmail.com, Phone: 08064144735

ABSTRACT

The study was carried out to assess the factors affecting choice of training needs area on orange fleshed sweetpotato value addition by farmers in Abia state. Data were collected from a sample size of 120 farmers with the use of structured questionnaire. Frequencies, percentages and means were used for data analysis. The results show that majority (50.8%) of the farmers were female majority (78.3%) of the respondent were married; (43.33%) of the respondents fell within the age range of 60-69 years, (42.50%) of the respondents had secondary education. (46.67%) had household size of 4-6 persons. The results also show that Orange fleshed sweet potato farmers were aware of orange fleshed sweetpotato flour(82%), orange fleshed sweet potato drinks (juice) (65.8%), orange fleshed sweet potato flakes (70%), orange fleshed sweet potato chips (85%), orange fleshed sweet potato flour (82.5%), orange fleshed sweet potato meat pie (80.83%) and orange fleshed sweet potato cakes (77.50%). In contrast, the result further showed that most of the farmers are not aware of orange fleshed sweet potato drinks (juice) (34.2%), orange fleshed sweet potato flakes (30%), orange fleshed sweet potato chips (15%), orange fleshed sweet potato flour (17.5%) orange fleshed sweet potato meat pie (19.17%) and orange fleshed sweet potato cakes (22.50%). The result also shows that Flour (94.2%), (Orange fleshed sweetpotato drinks/juice (91.7%), Packaging (91.7%), Chips (89.2%), Skills for operating processing machines (89.2%), Flakes (86.7%), Meat Pie (85.8%), Selection of varieties for product processing (84.2%), are areas of training needs of the farmers'. It was recommended that more awareness creation, training programmes through research institution and extension agents should design programmes to train more sweetpotato farmers how to process orange fleshed sweetpotato roots into value added products for improved wellbeing.

Key words: Sweetpotato, Awareness, Value addition, Farmers, Training needs

Introduction

Sweet potato is an important food security promoted crop in Nigeria. The recognition of its relative health benefits has resulted in fresh consumption as well as the utilization of processed products such as sweet potato chips, fries and pre-cut, flour, and pureed sweet potatoes. Sweet potato in the fresh form has a limited shelf-life. Storage of fresh sweet potato as a form of value addition to extend the season has been practiced in a number of tropical countries with varying degrees of success. Huntrods (2009) and Westby et al. (2003) noted that unprocessed sweet potato has short shelf life leading to storage losses and reduced food security thus processing, freezing or drying may extend shelf life thereby benefiting producers and processors through increased market feasibility.

Value addition is a process of changing or transforming a product from its original state to a more valuable state through creating value, innovation or industrial innovation at an advanced stage (Mmasa, 2013). According to Abidin (2004), bulkiness and perishability affect post-harvest system of sweet potatoes as it has a shelf-life of about one week after harvesting, hence, it becomes imperative to process sweet potato into storable products. Sweet potato

value addition has to do with deliberate activity to change the form of the raw sweetpotato into a more refined or usable form thereby increasing its value. Sweetpotato can be processed and utilized in various ways for both household and market purposes. Some of the processed products can be preserved for future use either alone or as additives to other foods. Nxumalo (1998) and Nungo (2004) submitted that the roots can be processed into dry chips and used in that form or milled into flour. The flour can be used in enriching other different products such as weaning foods or used in combination with wheat flour to make other high value products such as cakes, biscuits, porridge, chinchin and other food products. It can be processed into sweetpotato juices, beverages, soups, baby food, ice cream and various snack and desert items for human consumption.

For farmers to take up post-harvest value addition of their products, certain measures must be in place like trainings, provision of incentives etc. Sweet Potato (SWP) commonly referred to as yam in some parts of the United States of America is a large, starchy, sweet tasting, tuberous root, cash and food crop. It is a versatile, drought resistant, high yielding crop with a short maturity period of three to five months adapting

well to wide ecological conditions (Laurie et al. 2012). It is a versatile, drought resistant, high yielding crop with a short maturity period of three to five months adapting well to wide ecological conditions (Laurie et al. 2012).

Skills are vital for an economy to grow and compete particularly in an era of economic integration and technological advancement. Training needs of rural farmers are very essential for the uptake of improved developed technologies or instance, training of rural farmers on value addition of Orange fleshed sweet potato at the National Root crops Research Institute Umudike. Training is a direct means of providing workers / farmers with the skills relevant to evolving needs of the economy. Interestingly skill development is an important factor in the drive to enhance orange fleshed sweetpotato production; processing and utilization which will stimulate economy, alleviate people out of poverty and also ensure food nutrition and security (Oguzor, 2017). The specific objectives of this work are to describe the socio-economic characteristics of the orange fleshed sweetpotato farmers in the study area, determine the orange fleshed sweetpotato products the farmers are aware of in the study area, determine the areas of training needed by orange fleshed sweetpotato farmers for improved

production and to determine factors affecting choice of area of training needs.

Methodology

The study was conducted in Abia State. The state has three Agricultural Zones with 38 extension blocks and 27 circles (ADP, 2004). It has a population of 2,833,999 made up of 1,234,193 males, 1,599,806 females, and a population density of about 578 persons per square kilometer. The three agricultural zones (Umuahia, Ohafia, Aba) of the State was involved in this study. A total of 120 respondents was randomly selected using multi stage stratified random sampling technique. One block in each zone was purposively selected because of their involvements in orange fleshed sweetpotato farming, giving a total number of three blocks. Four circles from each block was purposively selected for the same reason giving a total of 12 circles, Ten (10) orange fleshed sweetpotato farmers were randomly selected giving total sample size of 120 farmers for the study. In analyzing the data obtained, descriptive statistics was used for objective 1 and 2, three point likert scale rating was used for objective 3 while ordinary least square regression was used to achieve objective 4.

Results and Discussion

Table 1: Distribution of respondents according to their socio-economics characteristics

Socio-economic variables	Frequency	Percentage	Mean
Age			58.1833
40 – 49	14	11.67	
50 – 59	38	31.67	
60 – 69	52	43.33	
70 – 79	16	13.33	
Sex			
Female	59	49.2	
Male	61	50.8	
Education			
Non formal education	9	7.50	
Primary	28	23.33	
Secondary	51	42.50	
NCE/ND	25	20.83	
B.Sc./PG	7	5.83	
Household Size			5.8729
1 – 3	13	10.83	
4 – 6	56	46.67	
7 – 9	51	42.50	
Marital Status			
Single	26	21.7	
Married	94	78.3	
Farm size			1.1542
0.1 – 0.9	35	29.17	
1.0 – 1.9	55	45.83	
2.0 – 2.9	26	21.67	
3.0 and above	4	3.33	

Results from Table 1 show that 11.67% of the respondent fell within the age range of 40-49, 31.67% were of the age bracket of 50-59 years while

43.33% of the respondent were in the age category of 60-69 years, 13.33% were at the age of 70-79 years. This implies that young people of active age (75%)

dominated the production of sweetpotato in the study area. This findings is in agreement with Olagunji, Fakayode, Babatunde and Ogunwole- Olapade (2013) who noted that majority of sweet potato farmers in Osun State were in their active productive years.

On the sex of farmers, the result indicated that 49.2% were female farmers while 50.8% were male farmers. This implies that both male and females farmers were involved in sweet potato production on almost the same proportion.

Educational level of respondents indicated that 7.50% of the respondents had no formal education, 23.33% had primary qualifications while 42.50% had secondary qualification and 20.83% had NCE/OND, 5.8% had B.Sc/PG qualifications. This means that majority of the farmers were literate, as about ninety two percent of them had one form of formal education or the other. The high proportion of literate people among the farming population implies that majority of them are in a better position to be aware of, understand and adopt the sweet potato production and ultimately value addition technologies. Education also enhances farmer potential to process information and make the best out of any situation hence enable them to minimize risk and face uncertainties (Tura *et al.*, 2010).

For household size, farmers that had between one to three people made up 10.83% of the respondents, those with four to six members constituted 46.67%,

while those household with seven to nine persons constituted 42.50%. This means that the farmers had relatively large-sized households since they believe that getting married and having children is an alternative source of labour employed in sweet potato production.

For marital status, the study findings showed that 21.7% of the respondents were single and 78.2% were married. This implies that majority of sweet potato farmers in the study area were married. This result concurs to the findings of Ejechi (2020) who found out that 78.1% of sweet potato farmers were married in Ebonyi state.

The result for farm size indicated that 29.17% of the respondents cultivated between 0.1-0.9 hectare, 45.83% cultivated between 1.0-1.9 hectares of farm land, 21.67% cultivated between 2.0-2.9 hectares while 3.33% cultivated 3 hectares and above. Majority of sweet potato farmers in the study area are small scale farmers because majority 67.5% of them cultivated between 1-3 hectares of land. This position is in agreement with the findings of studies by Ejechi (2020) who found small-scale farmers predominating the activities of sweet potato production in the Ebonyi tate of south east zone of Nigeria. The result also corroborate with the findings of Omoare (2014) who stated that sweet potato farmers in Osun and Kwara states operated mostly on a small scale.

Table 2: Distribution of respondents based on awareness of Orange Fleshed Sweet Potato Value added Products

S/N	Products	Aware	Not aware
1	Orange Fleshed Sweet Potato drinks (Juice)	79 (65.8)	41 (34.20)
2	Orange Fleshed Sweet Potato flakes	84 (70.0)	36 (30.00)
3	Orange Fleshed Sweet Potato chips	102 (85.0)	18 (15.00)
4	Orange Fleshed Sweet Potato flour	99 (82.5)	21 (17.50)
5	Orange Fleshed Sweet Potato Meat pie	97 (80.83)	23 (19.17)
6	Orange Fleshed Sweet Potato Cakes	93 (77.50)	27 (22.50)

Note: The figures in parenthesis are the percentages.

The result in able 2 showed the awareness level of sweet potato value addition in the study area. The findings revealed that most of the Orange fleshed sweet potato farmers were aware of orange fleshed sweet potato drinks (juice) (65.8%), orange fleshed sweet potato flakes (70%), orange fleshed sweet potato chips (85%), orange fleshed sweet potato flour (82.5%), orange fleshed sweet potato meat pie (80.83%) and orange fleshed sweet potato cakes (77.50%) among these products, sweet potato chips and sweet potato flour were usually used by sweet potato farmers. The reason adduced for this is that the two products (sweet potato chips and sweet potato flour) can be easily prepared and processed using traditional processing technique. In contrast, the result further showed that most of the farmersre not aware of orange fleshed sweet potato drinks (juice) (34.2%), orange fleshed sweet potato flakes (30%), orange

fleshed sweet potato chips (15%), orange fleshed sweet potato flour (17.5%) orange fleshed sweet potato meat pie (19.17%) and orange fleshed sweet potato cakes (22.50%). This implies that the awareness of these orange fleshed sweet potato value added products are high in the state. This might be because of the presence of National Root Crops Research institute in the state that developed all these technologies and disseminated them to farmers. There is also need to train farmers on appropriate use of these technologies which will aid quick adoption. Rural farmers even though they are aware of these value added products from orange fleshed sweet potato, they do not have good knowledge of orange fleshed sweet potato value addition because it is an underutilized and neglected crop despite its prospective economic importance and nutritive value.

Table 3: Distribution of respondents based on areas of training needed in OFSP value addition

Competences in Orange value addition	Highly Needed	Needed	Not needed	Mean	Std. Deviation
Skills for operating processing machines.	321 (89.2)	22 (9.2)	2 (1.7)	2.875	0.379
Selection of varieties for products processing.	303 (84.2)	36 (15.0)	1 (0.8)	2.833	0.357
Value added products processing OFSP (Drinks/Juice)	330 (91.7)	20 (8.3)	-	2.917	0.278
Flakes	312 (86.7)	28 (11.7)	2 (1.7)	2.850	0.322
Chips	321 (89.2)	24 (10.0)	1 (0.8)	2.883	0.301
Flour	339 (94.2)	12 (5.0)	1 (0.8)	2.933	0.282
Meat pie	309 (85.8)	6 (5.0)	11 (9.2)	2.717	0.219
Packaging	330 (91.7)	14 (5.8)	3 (2.5)	2.892	0.181
Grand mean				2.863	

Note: The figures in parenthesis are the percentages (Source 2020)

Table 3 shows that Flour (94.2%), (Orange fleshed sweetpotato drinks/juice (91.7%), Packaging (91.7%), Chips (89.2%), Skills for operating processing machines (89.2%), Flakes (86.7%), Meat Pie (85.8%), Selection of varieties for product processing (84.2%), are areas of training needs. However ranking the training needed shows that training on how to process

orange fleshed sweet potato into flour, Drinks/ Juice and Packaging are the most important training needs of the respondents in the study area. Therefore training needs of farmers targeted towards processing (Value addition) in the study area should be considered and the area of needs should be treated as the utmost priority.

Table 4: Ordinary least square regression estimates of the factors affecting choice of area of training

Variables	+Linear	Exponential	Semi-log	Cob Douglas
Constant	25.756 (21.195)***	3.263 (55.283)***	25.613 (19.970)***	3.256 (52.242)***
Personal preference	-0.575 (-1.474)	-0.027 (-1.428)	-1.509 (-1.432)	-0.071 (-1.391)
Marketability of the products	0.246 (2.134)**	0.012 (2.041)**	0.617 (1.748)*	0.030 (1.743)
Non availability of roots for processing	-0.068 (-0.195)	-0.003 (-0.198)	-0.837 (-0.914)	-0.038 (-0.860)
Proximity to the training venue	-0.922 (-2.502)**	-0.043 (- 2.324)**	-1.257 (-2.079)**	-0.059 (- 2.033)**
Easy access to information or timely information about the training.	0.787 (2.883)***	0.036 (2.698)**	1.612 (2.527)**	0.074 (2.422)**
Transportation	-0.979 (-2.196)**	-0.045 (-2.186)**	-1.952 (-2.436)**	-0.089 (-2.330)**
Simple to use	0.964 (2.373)**	0.044 (1.836)*	1.661 (1.683)*	0.075 (1.562)
Relative advantage	-0.247 (-0.681)	-0.012 (-0.654)	-0.872 (1.123)	-0.040 (-1.058)
Low cost	0.116 (0.309)	0.005 (0.277)	0.712 (0.894)	0.031 (0.801)
R-Square	0.778	0.745	0.670	0.645
Adjusted R-Square	0.633	0.601	0.536	0.511
F-ratio	5.041	4.985	3.919	3.851

HO Accepted at 5%. The figures in parenthesis are the t-values

***, **, * = significant at 1%, 5% and 10% respectively.

Table 4 shows the results of ordinary least square regression analysis of the factors affecting choice of area of training. The linear function was chosen as the lead equation based on the magnitude of the coefficient of determination, F-ratio and the number of significant variables.

From the result, the co-efficient of determination (R^2) of 0.778 entails that 77.8% of variations in training needs were explained by the assumed factors. The F-ratio of 5.041 which was significant at 1% significant level indicates the goodness-of-fit of the model. The null hypothesis was accepted at 5% level of significant.

From Table 4, marketability of the products, proximity to the training venue, easy access to information or timely information about the training, transportation, and simple to use were the significant factors affecting choice of area of training.

The coefficient of Marketability of orange fleshed sweet potato value added products (0.246) was positive and significantly related to choice of training area at 5% level of significance. This implies that an increase in the ability of orange fleshed sweet potato farmers to market their value added products will also increase their choice area of training in value added products from orange fleshed sweet potato. Arias *et al.*, (2013) found out that, Market access is an important aspect for farmers in Tanzania to raise their incomes, reduce poverty, and improve general welfare also Farmers' access to markets improves production and productivity since markets create a pull for the production systems.

The coefficient of proximity to the training venue (-0.922) was negative and significantly related to the choice of training area at 5% level implying that the closer the training venue to the farmers, the lesser the willingness of the farmers to choose area of training because often times rural farmers are very skeptical to change, they tend to reject technologies when they are brought to their door step with the notion that the new training or technology will adulterate most of their farming norms and values of the rural social system. They value those technologies that they will suffer to access. For instance, some rural farmers reject the use of fertilizer in growing their crops with the notion that it causes rot in crops most especially yams. In orange fleshed sweet potato value addition training, most farmers see preparing orange fleshed sweet potato into flour for confectionery as not good because the colour usually changes to light black colour, it is not appealing to them.

Coefficient of easy access to information (0.787) was positive and highly significant to the choice of training area. This implies that the greater the ease of access to information, the more the choice of training areas. This situation is mostly applicable with farmers in group. Group membership exposes farmers to timely information about training. Most farmers who are members of different farmer groups are likely to

+ = the lead equation

participate in value addition training. This can be attributed to the fact that farmers in groups get to exchange ideas and influence each other leading to adoption of processing techniques. This is in line with the findings of (Alam *et al.*, 2006) who stated that informal sources were more useful as source of information about farming. Access of information through group membership ensures collective production, marketing, training ensuring pooling of resources together and reduction of information asymmetry thus reducing transaction costs and ensuring economies of scale.

Coefficient of transportation to market (-0.979) was negative but significantly related to choice of training area at 5% level. This implies that an increase in transportation to the area or market where sweet potato value added products are sold will discourage farmers from engaging in Orange fleshed sweet potato value addition training because after receiving the training but they find it hard to link up with urban markets where these products are sold because of high transportation. The aim of training is defeated. Afolayan (2009) noted that road transport is the most common and complex network. It covers a wide range, physically convenient, highly flexible and usually the most operationally suitable and readily available means of movement of agricultural goods and passenger traffic over short, medium and long distances. Transport is a burning component of post-harvest crop management. After all, every harvested crop needs to be transported, either directly from the field to the market, or to the packing house and storage.

The coefficient of Simplicity in usage (0.964) was positive and significant to choice of area at 5% probability level. This implies that the simpler Orange fleshed sweet potato value addition training is, the more likely the choice of the training area, and thus the higher and faster up take of the technology. In line with aprior expectation, innovations or trainings that are relatively simple to use will tend to be more readily adopted than those that are complex. Simple technologies diffuse faster and thus adoption rate is also high because every farmer (educated and non-educated) can understand the training and use them.

Conclusion and Recommendation

In conclusion therefore, the study discovered that marketability, easy access to information, simplicity in usage were the most significant factors affecting the area of choice of training. Sweet potato is high in nutritive value, outranking most carbohydrate foods in vitamins, minerals, protein and energy content. Some sweet potato varieties especially the orange fleshed ones are high in beta carotene which is a precursor to vitamin A and is very important in nutrition and health of humans. Owing to its perishable nature, it becomes imperative to add value to the crop especially the orange fleshed sweetpotato. Training of rural farmers

on value addition of orange fleshed sweet potato is very essential for increased production and income generation of farmers. It was recommended that more awareness creation, training programmes through agricultural research institutions and extension agents should be conducted to train more sweetpotato farmers on how to process orange fleshed sweetpotato roots into value added products for improved wellbeing.

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