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GENDER DIFFERENTIATED HOUSEHOLD SOCIOECONOMICS AND RELATIVE PARTICIPATION IN COCOYAM PRE-PLANTING OPERATIONS AMONG SMALLHOLDER FARMERS IN ABIA STATE, NIGERIA

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ABSTRACT
This study was designed to determine the relative partiscipation of men and women in cocoyam pre-planting operations in Abia State. The study adopted descriptive survey using a questionnaire instrument structured on a 4-point measuring scale, the reliability of which was determined by Cronbach's alpha which yielded a reliability co-efficient of $r\alpha = 0.85$. Multistage probability and proportionate sampling procedure was used to select a sample of 480 farmers from 24 communities in Abia State, made up of 240 male and 240 female farmers. Data were collected with the assistance of male and female community leaders and extension workers. The data were analyzed using descriptive statistics and inferential statistics of Z-test. Two relevant null hypotheses were specified and tested. The pooled mean of 2.95 (as against the cult-off point of 2.50) obtained from the 4-point likert measuring scale indicated that women participated more than men in the pre-planting operations. Also, the hypothesis of no mean significant difference between men's labour and women's labour contributions (in mandays) per hectare was not accepted because Zcal = -5.830 was greater than Ztab = 1.960. By the same token, the hypothesis of no mean significant difference between men's and women's overall participation was rejected because Zcal = -5.410 was greater than Ztab = 1.960. Recommendations were made with particular emphasis placed on the wide divergence observed in the socioeconomic characteristics of male and female farmers and their labour contributions in cocoyam pre-planting operations.

Keywords: Gender, Participation, Pre-planting, Cocoyam and Abia State

Introduction

Participation in agricultural production in general and cocoyam production in particular, is differentiated along gender lines in most of Southeast Nigeria cropping systems. Cocoyam has been generally describrd as a woman's crop because of its low yield per hectare and its production that has remained at the subsistence level. Added to this, the nutritional and medicinal qualities as well as role of cocoyam in household food security were not quite known until recently Men would want to engage in agricultural activities that yield more economic returns (Chukwu, 2015) and confer social and economic prestige. This is why it appears that yam production is very much subscribed by men in constrast to other arable crops in the region (Arua, 1981). The crops that are tagged woman's crop in the region, cocoyam being the chiefest of such, are usually subjected to marginal allocation of productive resources, especially land. FRN (2006) observed that women do not have right to agricultural land and thus depend on their husbands' allocation for cocoyam cultivation. Most times their husbands only allow them to cultivate their cocoyam under their established oil palm, rubber, cocoa plantations and waste lands (Dike, 2016). Yam is one arable crop regarded exclusively as a man's crop in Southeast Nigeria, yet common knowledge holds that, apart from site selection, bush clearing, mound making, and staking of yam, the remaining 60 -70% of other activities are carried out by women in the men's farms. It is known that the pre-planting operations

demand so much of human energy which the menfolk is naturally endowed with more than the womenfolk. In other words the supportive role women render to men in yam production, for instance after the pre-planting operations, are expected to be reciprocated in the reverse order in the production of cocoyam and other major crops regarded as womens' crops. The concern of this study therefore, is to ascertain whether men play sufficient complementary roles in support of women in the pre-planting operations in cocoyam production. The objective of the study was to determine relative gender participation in pre-planting operations in cocoyam production in the 2016 croping season in Abia State.

Methodology

The study was conducted in Abia State which lies within the tropical rainforest belt of Nigeria. This region is naturally endowed with optimum temperature, rainfall and relative humidity that support the production of cocoyam. Descriptive survey method was adopted to determine gender participation in cocoyam production in the study area. Abia State has 17 Local Government Areas with 7,200 cocoyam farmers registered with the Ministry of Agriculture (Planning, Research and Statistics, Abia State Ministry of Agriculture, 2016) who made up the research population. The survey was carried out in the 2016 cropping season, from April to June, 2016 when cocoyam pre-planting operations were going on

Sample and Sampling Procedure

Multistage probability and proportionate sampling procedure was employed to select 480 farmers as the sample size comprising 240 male and female 240 farmers. Simple probability sampling technique was first used to select 8 Local Government Areas out of 17 in Abia State. Secondly, 3 communities were selected from each of the sampled 8 Local Government Areas representing 24 communities. Finally, 10 male and 10 female farmers were randomly sampled from the selected 24 communities which made up the 480 respondents; 240 men and 240 women, respectively.

Instrumentation

Structured questionnaire was the instrument for data collection which was contructed on a 4-point measuring scale of Strongly Agree [SA], Agree [A], Disagree [DA], and Strongly Disagree [SDA]. The instrument was validated by experienced researchers in the College of Agricultural Economics, Rural Sociology and Extension, Michael Okpara University of Agriculture, Umudike. Their suggestions and corrections informed the final production of the questionnaire for a pilot test. The pilot study was conducted by administering the questionnaire to 10 male and 10 female farmers in Okigwe L.G.A in Imo State which was outside the study area.Instrument reliability was determined by Cronbach's alpha (rα) which was suited to determining the reliability of instrument constructed on a 4-point or Likert scale (Nwocha, 2006). Data generated from the pilot test was subjected to this reliability test which yielded the reliability result of rα = 0.85, indicating that the instrument was statistically reliable. The instrument was administered to the respondents through research assistants comprising women and men community leaders and extension agents who ensured proper data collection and prompt return of completed questionnaire.

Analytical Techniques

Descriptive analytical measures such as frequency, percentage, mean, and standard deviation were used to estimate responses to the 4–point judgement expected from respondents, while the Z-test inferential statistic was used to measure relative labour contribution and overall participation by gender. Thus the Z-test was used to test the two null hypotheses of no significant mean difference at 0.05 level of significance, thus;

$$Z = \frac{X_1 - X_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

Where:

$\bar{x}_1$ = mean level of labour for male farmers
$\bar{x}_2$ = mean level of labour for female farmers
σ_1^2 = standard error of labour for male farmers
σ_2^2 = standard error of labour for female farmers
n_2 =number of male farmers
n_2 = number of female farmers

Results and Discussion

Socioeconomic Characteristics of the Respondents

Some considerable detail of the relevant socioeconomic characteristics of the sampled farmers are presented in Table1. On the average, the farmers were aged, with mean ages of 58

years for males and 56 years for females. The distribution also shows that majority of them were indeed above 50 years of age, which goes to confirm that the farming population in the study area is atrophying, and some deliberate public policy action is needed to both revese the trend and to make agricultural production more technology-driven. Majority of the famers were married but the proportion that was single was higher among women than men. Perhaps widows were more in number than widowers.

Level of education had a mixed variation across both sexes. At the secondary education level, the men appear to have some advantage over the women, although the women were apparently better of at the primary school level. This trend was consistent with the distribution of the respondents by years of formal education. The mean number of years of formal schooling spent by male famers was slightly higher (9.38 years) than female farmer (8.85 years) with mean deviation of 0.08 year for each of the groups. It takes about 6 years to attain full primary education in Nigeria and in the study area in particular. Thus an average of about 9 years with little or no mean deviation is suggestive of a population that is slightly above primary education in general. With such a low level of education on the average, the local farmer would not be capable to access and appropriate relevant information on the immense nutritional, medicinal and industrial usefulness of cocoyam crop. They are also likely to be tied to the old notion that cocoyam is a woman's crop.

Majority of the male and female famers (84.17% and 82.50% respectively) did not belong to any agricultural cooperative society. By implication, majority of the famers could not share experience and information with their fellow farmers in their locality. However, the high ratio of membership of other cooperative societies and community based organizations, 85.83% for men and 82.92% for women, was recorded. Some of the organizations would likely have rotatory financial contribution (thrift) as part of their beneficial social safety net packages for members, which could help them access finance/credit for farming. But the general implication of this finding is that with more effort made by public agencies in-charge of cooperative development and administration, the famers are quite likely to embrace agricultural cooperativazation. The low extension contact recorded among the farmers has much to say in connection with the low agricultural cooperative membership as against the seemingly heavy membership of non-agricultural organizations. With greater extension contact, the farmers are likely to learn more about the benefits and skills of agricultural cooperative management even as they obtain training on farming techniques.

Persistence of gender bias against cocoyam was observed among the men farmers, most of whom had no cocoyam holding of theirs as individual farmers. Okoye, B. C. (2006) and Okoye *et al.* (2009). The result obtained in this study regarding farm size shows that male farmers had 0.53 hectare holding and female farmers 0.33 hectare holding on the average. This result does not in any way contradict the result obtained by Okoye, B.C. (2006) and Okoye *et al.* (2009), who obtained an average farm size of 0.27 hectare among smallholder cocoyam farmers in Anambra State, Nigeria. If the result was brought down to average farm size, definitely the values might even be much less than that reported by the previous studies, for the fact that cocoyam production appears to receive relatively more emphasis in Anambra State than Abia State.

The distribution of farming experience and that of occupation are quite in agreement with each other. Majority of the respondents were farmers (69.16% for men and 72.08% for women). While more women were engaged in trading, more men were engaged in artisanship as major occupations. But by and large, greater proportion of the sample was engaged in some form of micro-farming or the other. For both men and women, the mean number of years of farming experience was about 19 years, although men had a slightly higher average of 19.96 years as against women (18.91 years).

Gender Distribution of Labour Requirement for Cocoyam Pre-Planting Operations

In a study of this nature, participation would best be analyzed in terms of actual engagement in the associated activities. The labour requirements for the various pre-planting operations were therefore estimated on per hectare basis and it was found that 75 mandays approximately was needed to pre-plant a hectare of cocoyam. As

Table 2 indicates, men contributed only 22 mandays (29.33%), while women contributed as much as 53 mandays (70.66%) of the 75 hours. Across all the operations women had the larger chunk of the burden. In relative terms however, it could be said that men's contribution was slightly appreciable in selection of plots, bush clearing and somewhat in making of mounds and ridges. Men had an equal share of the burden in section of plots (planting sites) probably because land belongs to the man traditionally and he had to decide what crop to be grown on which plot of land. Moreover, cocoyam is scarcely grown as a sole crop nither is it often grown as a base crop in Abia State and most of Southeast farming systems. Echebiri (2004) confirmed that greater proportion (80%) of cocoyam cultivation in Abia State was done in a mixed cropping system, followed by inter-cropping (12%) while mono cropping constituted only 3%.

Testing the null hypothesis of no mean significant difference between labour input (in mandays per hectare) between male and female farmers in cocoyam pre-planting operations

Table 3 presents the Z-test result of the null hypothesis of no significant difference between labour input (in mandays per hectare) between male and female farmers in cocoyam pre-planting operations in 2016 farming season. The Z-calculated of -5.830 as against Z-tabulated of 1.960 indicates that the null hypothesis did not apply. Therefore, it was held that there was significant difference between the labour contributions of women and men (in mandays) in the pre-planting operations for cocoyam operations. This result is in tandem with Echebiri (2004), Okoye, B. C. (2006) and Okoye *et al*. (2009), who earlier found that female farmer dominated cocoyam production in southeast Nigeria.

The result in Table 4 shows that women participated more than men in pre-planting operations in cocoyam production with the pooled mean of 2.95 against their men counterparts. This result is based on the cut-off point of X = 2.50. The implication is that the men have not yet appreciated the aboundant economic and nutritional benefits of cocoyam as to justify their full participation in assisting their female counterparts in cocoyam production. This further goes to affirm that the wrong notion that cocoyam production is a female enterprise may still be subsisting in Abia State. If this is true, it further suggests conformity to the assertions contained in Dike, F. (2016) and Chukwu (2015) which hold that cocoyam is still regarded as a woman's crop in most parts of Southeast Nigeria.

Specifically, majority (79.58%) of the respondents agreed that women participated more than men in site selection, many women (73.54%) participated more than men in packing and cleaning the debris from land clearing to allow for land preparation and tillage. Women also participated (58.75%) than men in tillage operations such as making of mounds, ridges and beds for planting cocoyam setts. However, this last ratio suggests that men show significant interest in relieving women in the tasking operation of tilling the land for cocoyam production. Nevertheless, the empirical confirmations presented by Nweke (1980) and Okorji (1983) have not quite changed after almost four decades.

The result in Table 5 shows that women had constraints participating in cocoyam production with the pooled mean of 2.94 in favour of their men counterparts and this result was based on the cut-off mark of X = 2.50. Therefore, men had more access with X = 3.24 to agricultural land; X = 2.88 to finance/credit and X = 2.89 to extension education and contact. These results agree with FAO (2012), Dike (2016) and Chukwu (2015) that women do not have fair access to their husbands' lands and most times are deprived access to credit and extension services to improve their production capacity, increase income and wellbeing. These problems have by implication contributed to the persistent level of poverty among most rural women farmers.

Testing the null hypothesis of no mean significant difference between male and female farmers overall participation in cocoyam pre-planting operations

Table 6 shows that the result of the hypothesis of no significant mean difference between male and female farmers' participation in pre-planting operations in cocoyam production tested at 0.05

level of significance was not accepted because the Zcal = - 5.41 was much greater than Ztab = 1.96. The huge discripancy from this result was in favour of women against their male counterparts, and hence agrees with Chukwu (2015) and Dike (2016) that men rarely venture into cocoyam production because of its low economic returns and its recourse as a woman's crop.

This implies that men show apathy in participating fully with women in pre-planting operations in cocoyam production, irrespective of the fact that women usually support their male counterparts with substantial labour in the production of the crops that are regarded as men's crops (Nweke, 1980; Okorji, 1983).

Conclusion

About five issues of critical policy significance arise from the results and conclusion. it is time farmers in Southeast Nigeria and Abia State in particular were properly mobilized to form Producers Cooperative Societies targeted at raising interest and technical knowledge of specific crops in areas that have competitive advantages for such crops. Public policy in farm sector development must be directed towards mitigating the wrong notion that cocoyam is a woman's crop and does not command as much economic benefit as other tuber crops. Issues of land right need to be revisited in favour of women crop growers especially in rural areas. The Land Use Act of 1978 and the patrilineal inheritance practices prevalent in Southeast Nigeria have failed to recognize the significant role rural women play in agricultural production. There is need to invigorate Nigeria's agricultural extension apparatus especially in root crop production.

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Table 1: Distribution of farmers by socioeconomic characteristics and gender

Socioeconomic Characteristics	Class Mid-point	Male Farmers Frequency	Male Farmers Percent	Female Farmers Frequency	Female Farmers Percent
Age (Years)					
30-39	34.5	24	10.00	29	12.10
40-49	44.5	37	15.42	48	20.00
50-59	54.5	56	23.33	52	21.66
60-69	64.5	87	36.25	83	34.58
70-79	74.5	29	12.08	23	9.58
80-89	84.5	7	2.92	5	2.08
Total		240	100	240	100
Mean age		58		56	
Mean deviation		10.37		10.53	
Marital Status					
Married		186	77.5	172	71.66
Single (not ever married)/ diviorced/widowed/separated)		54	22.5	68	28.33
Level of Education					
No of formal education		18	7.50	22	9.16
Primary		139	57.92	147	61.25
Secondary		74	30.88	63	26.25
Tertiary		9	3.75	8	3.33
Years of Formal Education					
1-5	3	28	11.66	23	9.58
6-10	8	98	40.83	113	47.08
11-15	13	69	28.75	69	8.25
16-20	18	27	11.29	13	5.42
Total *		222	92.50	218	90.83
Mean		9.38		8.85	
Mean deviation		0.08		0.08	
Membership of Farmers Co-operative Society					
Yes		38	15.83	42	17.50
No		202	84.17	199	82.50
Total		240	100	240	100
Membership of other Co-operative/Societies					
Yes		206	85.83	199	82.92
No		34	14.17	41	17.08
Total		240	100	240	100
Size of Holding					
No of male/female		14	5.84	149	62.07
Mean size of holding		0.53		0.33	
Mean deviation		0.09		0.015	
Primary Occupation					
Farming		166	69.16	173	72.08
Trading		17	7.08	31	12.92
Artisanal		43	17.92	28	11.67
Civil Service		11	4.58	4	1.67
Others		3	1.25	4	1.67
Total		240	100	240	100
Farming Experience					
Mean		19.96		18.91	
Mean deviation		0.55		0.43	
Extension Contact					
Yes		43	17.91	46	19.16
No		197	82.08	194	80.83
Total		240	100	240	100

***Source Field data 2016**

Table 2: Gender distribution of labour (in mandays) by cocoyam pre-planting operation

S/No.	Pre-Planting Operation	Total Labour in mandays		Male		Female	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1.	Selection of planting site	4	5.33	2	2.67	2	2.67
2.	Bush clearing	20	26.67	7	9.33	13	17.33
3.	Clearing the farm of refuse and debris prior tillage	12	16.00	3	4.00	19	12.00
4.	Making of mounds and ridges	26	34.67	7	9.33	14	25.33
5.	Selection and preparation (slicing) of cocoyam sett and seeds	13	17.33	3	4.00	10	13.33
	Total man days (ha)	**75**	**100**	**22**	**29.33**	**53**	**70.66**

Source: field survey, 2016

Table 3: Z - test of no mean significant difference on labour (mandays per hectare) of male and female farmers participating in pre-planting operations

Sex	N	$\bar{X}$	Sd	Df	Z_{cal}	Z_{tab}
Male	22	4.4	2.00	74	-5.830	1.960
Female	53	10.6	3.20			
Total	75					

Source: Field survey, 2016

Table 4: Distribution based on frequency, percentage, mean and standard deviation of the male and female cocoyam farmers participation in pre-planting operations

S/N	Pre-Planting Operations	SA (%)	A (%)	D (%)	SD (%)	∑fx	$\bar{X}$	SD	Remark
				N = 480					
1.	Women participate more than men in the selection of planting site for cocoyam	228 (47.50)	154 (32.08)	74 (15.41)	24 (5.00)	1546	3.22	1.10	Agree
2.	Women participate in bush clearing more than men in cocoyam production	115 (23.95)	139 (28.95)	143 (29.79)	83 (17.29)	1246	2.60	1.03	Agree
3.	Women participate more than men in packing the debris	141 (29.38)	212 (44.16)	103 (21.45)	24 (5.00)	1430	2.98	0.84	Agree
4.	Women participate in making of mounds, beds and ridges more than men	126 (26.25)	156 (32.50)	130 (27.08)	68 (14.16)	1300	2.71	1.01	Agree
5.	Women participate more than men in dressing the cocoyam seeds for planting	229 (47.70)	162 (33.75)	73 (15.20)	16 (3.33)	1564	3.26	0.70	Agree
	Pooled Mean						**2.95**	**0.94**	

Source: Field Survey, 2016

Table 5: Distribution based on frequency, percentage, mean and standard deviation of the problems of gender participation in the cocoyam production in Abia State

		N = 480							
S/N	**Problems of Gender Participation**	**SA (%)**	**A (%)**	**D (%)**	**SD (%)**	**∑fx**	**$\bar{X}$**	**SD**	**Remark**
1.	Men have more access to extension services more than women	134 (27.90)	198 (41.25)	107 (22.29)	41 (8.54)	1385	2.89	0.91	Agree
2.	Men have more access to finance/credit for agriculture activities compared women	123 (25.63)	211 (43.96)	112 (23.33)	34 (7.08)	1383	2.88	0.87	Agree
3.	Men had more access to education that will enhance their agricultural productivity more than women	126 (26.25)	135 (28.13)	181 (37.71)	38 (7.92)	1309	2.73	0.94	Agree
4.	Men have easy access to land for agricultural production more than women	229 (47.71)	168 (35.00)	55 (11.46)	28 (5.83)	1558	3.25	0.88	Agree
	Pooled mean						**2.94**		

Source: Field Survey, 2016

Table 6: Z-test of no mean significant difference in male and female farmers participation in pre-planting operations in cocoyam production in Abia State

Sex	**N**	**$\bar{X}$**	**SD**	**df**	**Z_{cal}**	**Z_{tab}**
Male	240	2.97	0.91	478	-5.41	1.96
Female	240	3.40	0.83			
Total	**480**					

Source: Field Survey, 2016