

## ANALYSES OF GENDER ROLES IN CASSAVA PRODUCTION AMONG SMALL-HOLDER FARMERS IN IMO STATE, NIGERIA

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### ABSTRACT

This study investigated gender roles in cassava production in Imo State, Nigeria. Purposive and multi-stage random sampling techniques were used in the selection of male and female cassava farmers. A sample size of 240 respondents comprising of 120 male and 120 females were involved in this study. Instrument for data collection was a set of structured and pre-tested questionnaire. Descriptive statistics were used to analyze the data generated. Results from this study had shown that men, women and youths played complementary roles in various operations involved in cassava production. While men dominated heavy labour operations such as land clearing and tillage, women dominated other operations like planting, weeding, harvesting and preparing food for farm use. Youths rarely had access to and control of finances for cassava production. Five variables namely occupation, farm size, distance from farm to market (km), level of weekly production, and monthly income from cassava business determined participation of the respondents in cassava production. In line with the finding of this study, it is recommended that policy issues targeted at increasing cassava production in the state should advocate for more involvement of the males in especially those roles dominated by women and allowing youths greater access to and control of finances for cassava production.

**Keywords:** Gender, Men, Women, Youths, Cassava production, and Socioeconomic characteristics

### Introduction

Cassava (*Manihot esculenta* Crantz) is a staple food crop that contributes about 15% of the daily dietary energy intake of most Nigerians and supplies about 70% of the total calories intake of about 60 million people in Nigeria (Ezulike *et al.*, 2006). In Nigeria, wide adoption of high-yielding cassava varieties, better pest management and value addition technologies have resulted in a sharp rise in its production. In Imo State, it is one of the most important food crop cultivated and consumed widely. In most parts of rural Nigeria, division of labour within the household is gender-specific and according to age. Gender refers to socially constructed roles, opportunities and value associated with women, girls, boys and men. It is an acquired identity that is learned, changes over time and varies widely within and across cultures (GICHD, 2014). Usually these socially constructed role differences between men and women are for the purpose of allocating powers, duties, status, responsibilities and roles in any given social milieu or context (USAID, 2005). Gendered power relations permeate social institutions so that gender is never absent as it deals with the social relationship between men and women and how these relationships are negotiated in the

production of goods and services (Ironkwe *et al.*, 2007). Such gender relations exist in agricultural production where men and women have different roles, priorities, opportunities and constraints. Lack of gender consideration has often led to failure of different popular projects in the past (Chukwu and Nwaiwu, 2012).

In cassava production, men and women perform different functions and roles (Nweke *et al.*, 2001; FAO, 2007). These roles vary widely and are in many instances determined by culture and tradition (Ironkwe and Asumugha, 2007). Most of the operations in cassava production are carried out mainly by women (Boserup, 1987; Ironkwe *et al.*, 2008) who incidentally are disadvantaged in accessing resources and opportunities to increase production (Durno and Stuart, 2005, Onyemauwa, 2012) due to cultural, religious and institutional barriers. Agricultural production in Nigeria and especially in Imo State is yet to reach its potentials due to gender and social inequalities (Ironkwe *et al.*, 2016). There is also lack for disaggregated data on gender which could help in understanding gender differences, influence of diverse groups, contributions and challenges faced by diverse

groups in cassava production. In addition, there are poor planning, monitoring and evaluation development programmes targeted at different gender and social groups to increase productivity due to scarcity of necessary gender specific data (Ukeje, 2004; Ironkwe and Asumugha, 2007). This inadequate data and statistics in these areas have given rise to stereotype assumption on the contributions of men and women, and diverse groups in cassava production. This consequently has negatively influenced agricultural policies and programmes geared towards increased productivity. This paucity of empirical disaggregated data on gender necessitated this study on gender roles in cassava production in Imo state Nigeria.

### Methodology

This study was carried out in Imo State in South Eastern Nigeria. The state lies within latitudes 4°45'N and 7°15'N of the Equator and longitudes 6°50'E and 7°25'E of the Greenish Meridian with an area of 5,100 sq km. (NPC, 2006). A purposive and multi-stage sampling technique was used to select two hundred and forty (240) cassava farmers consisting of 120 males and 120 females. Instrument for data collection was a set of structured and pre-tested questionnaire. The primary data included socio-economic characteristics of respondents like age, education, marital status, household size, farm size, quantity of roots produced, farming experience and membership of cooperative societies. Descriptive statistics such as mean, percentage, and frequency distribution and Probit regression model were used to analyze the data generated from the study. This model is stated thus;

$$Y_{ij} = \alpha_j + \beta_j \sum_{k=1}^s H_{ijks} + \epsilon_{ij} \quad (1)$$

Where the  $H_{ijks}$  are vectors of the explanatory variables of the determinants of the  $j$ th farmers decision to participate in Cassava production and processing;  $Y_{ij}$  is a vector of binary variables such that  $Y_{ij} = 1$  if the  $j$ th farmers decides to participate in Cassava production and processing, and 0 otherwise. Since  $Y_{ij}$  can only assume two different values for the decision yes or no, represented by 1 or 0, the expected probability can be defined as follows:

$$E(Y_{ij}) = E \left[ \alpha_j + \beta_j \sum_{k=1}^s H_{ijks} + \epsilon_{ij} \right]$$

$$= \alpha_j + \beta_j \sum_{k=1}^s H_{ij} E(H_{ij})$$

The explicit model is specified thus:

$$Y = f(X_1 + X_2 + X_3 + X_4 + X_5 + X_6 + X_7 + X_8 + X_9 + X_{10} + X_{11} + X_{12} + X_{13}) + e \quad (2)$$

Where:

$Y$  = Participation (1 = Yes, 0 = No)

$X_1$  = Age (years)

$X_2$  = Educational level (years spent in school)

$X_3$  = Occupational Status (1=full time farmer, 0=part-time farmer)

$X_4$  = Marital status (1=married, 0=otherwise)

$X_5$  = Household size (number of members)

$X_6$  = Farm size (ha)

$X_7$  = Distance of farm to market (km)

$X_8$  = Weekly level of production (kg)

$X_9$  = Quantity processed weekly (kg)

$X_{10}$  = Monthly income from cassava business (N)

$X_{11}$  = Farming experience (yrs)

$X_{12}$  = Cooperative membership (member = 1, otherwise = 0)

$X_{13}$  = Gender (1=Male, 0=Female)

$\epsilon_i$  = error term

### Results and Discussion

#### Socio-economic Characteristics of Cassava

##### Producers in Imo State

The distribution of male and female cassava producers and processors in Imo state Nigeria according to their age is presented in Table 1. It is evident from the table that majority of the males (69.0%) and of females (70.0%) were within the age range of 20 to 49 years while 31.0% and 30.0% were within the ages of 50 years and above. The mean ages of male and female respondents were 40.6 and 41.3 years respectively. This result indicated that cassava farmers and processors were mostly of middle age (30-59 years) hence, they are within the active and productive work segment of the population. Age is known to be a primary latent characteristic affecting agricultural production and processing. Being aged (>60 years) is known to reduce the ability of a farmer to bear risk, be innovative (Nwaru, 2004); and effectively withstand the rigours, strain and stress involved in agricultural production (Onyenucheya and Ukoha, 2007). Most (97.0% of males and 95.5% of females) of the respondents were literate at various levels with only a small proportion (3.0% for males and 5.0% for females) with no formal education. Cassava production and processing can be enhanced by the increased level of education of individual members of the household. According to Okoye *et al* (2004), education has the capacity to influence people to accept new technology and change their attitude to the desired technology. Higher level of education generates additional intellectual capital stock which may in turn, lead to increased potential for skills acquisition during participation (Lapar *et al.*, 2003). Moreover, the time taken to process and act on information decreases with education (Pingali *et al.*, 2005). Majority (74.0% males and 77.0% females) were married. The preponderance of the married people could create potential for increased farm labour supply which would contribute positively to cassava production and processing. Oni, (2016) also found that majority (87.0%) of those involved in Cassava production were married. Amadi *et al.* (2016) observed that the married class has access to extra financial, moral and physical supports from

their spouses that could improve their production activities. Furthermore, Nze *et al.*, (2017) noted that married women engage in cassava production and processing to utilize the different end products of cassava which can serve for both household and commercial uses. Majority (83.0% for male and 77.0% for female) had household sizes ranging from 4-9 persons.

Due to the labour intensive and subsistence nature of Nigerian agriculture, the significance of the size of farm households cannot be overemphasized. Awoniyi *et al.* (2009) also noted that large household sizes assist in providing family labour for cassava farmers, thus leading to a more efficient use of resources and higher output. The mean household size of 7 reported in this study suggests availability of family labour in the study area. The availability of substantial family labour may reduce the cost of labour, thereby improving the chances of increasing agricultural production. Many of the respondents (52.0% males and 55.0% females) had farms whose sizes were less than one hectare. is a clear manifestation of the land tenure by inheritance which is prevalent in the study area.

This is in agreement with the report of Onumadu and Onuoha (2015) who noted that the sizes of the land cultivated by majority of male and female farmers are within the range of 0.1 - 2.0ha. Moma *et al.*, (2014) reported an average farm size of less than one hectare by women cassava farmers in Bitiyili in the south of Cameroon. Less than a hectare average farm size The fragmentation of land into small sizes for sharing to family members makes it difficult for an average farmer in the study area to operate on a large scale basis. Ugwumba *et al.*, (2010) revealed that small sizes of farms amongst smallholders in south Eastern Nigeria call for some form of land integration policy.

About 48.0% of males had between 1-10yrs of experience while 46.0% of females had between 11-20 years of experience in cassava production and processing. Though female respondents have slightly higher farming and processing experience (15.0 yrs) compared to males (14.0 yrs). Both groups were established and knowledgeable in cassava production and processing. Farming and processing experience affect farm and processing managerial know-how and decision-making process. Khanna (2001) also noted that higher farming experience attainable through increased years of farming leads to higher rates of adoption of new agricultural innovation. Distribution of respondents according to membership of cooperative societies showed that only 20.0% males and 18.0% female's belonged to cooperative societies indicating that majority of the respondents do not. This finding is consistent with the report of Onyemauwa, (2012) which showed that about 72.0% of the respondents do not belong to, and take part in, cooperative activities. Incidentally, most agricultural

technologies are provided to farmers who belong and take part in cooperative activities. Their non-participation in cooperative activities will likely constrain their production and processing activities (EATA, 2012; FAO, 2012; Tahirou *et al.*, 2015).

### **Gender Roles in Cassava Production**

The distribution of respondents according to roles in cassava production is presented in Table 2. Data presented show that majority of the male (86.0%) and females (77.0%) indicated that men select site for cassava production suggesting that the responsibility lies with men. This finding is in tandem with the land tenure system in the study area which vests ownership and authority over land on men. Majority of male (65.0%) and female (60.0%) respondents indicated that the responsibility for land clearing rests mainly on men with women and youths playing fewer roles. Udemezue and Onwuneme (2017) also reported that men did most of land clearing for cassava production in Anyamelu LGA of Anambra state. Many male (42.0%) and female (41.0%) respondents indicated that burning after slashing was carried out mainly by men but with increasing involvement of women and youths. Uzokwe and Ofuoku (2006) also reported the increasing involvement of women in stubble burning in Delta State in the last decade. Men (39.0% males and 41.0% females' responses) followed by youths (25.0% males and 29.0% females) do most of land tilling and preparation but women (19.0% males and 22.0% females) are also involved substantially. This finding is in agreement with similar research reports (IBC, 2018; Ezeibe *et al.*, 2015; Mgbakor and Nwamba, 2013). IBC (2018) noted that tillage is a heavy labour task hence men and their sons with inherent physic do most of the job. However, Ovwigho and Ifie (2008) did not find any significant difference between the involvement of women and men in land preparation for cassava production in Ughelli South LGA of Delta State thereby corroborating the report of Uzokwe and Ofuoku (2006) in the same State. Nweke, (1999) pointed out that the strength intensity of a farm operation will vary depending on type of fallow, soil type, seed bed type, crop and field distance.

Women and to a much fewer extent youths did most of cassava planting operation as indicated by 51.0% and 13.0% of male and 42.0% and 15.0% of female respondents respectively. The trend was similar in weeding as indicated by 60.0% and 20.0% of male and 58.0% and 18.0% of female respondents respectively. These findings are in agreement with many previous reports (Lenis *et al.* 2009, Udemezue and Onwuneme, 2017; Atser *et al.*, 2017) which found women to be mostly engaged in planting and weeding. Both group of respondents indicated that herbicide application was mainly the prerogative of men and youths with 40.0 and 32.0% respectively from male and 44.0 and 23.0% respectively from female respondents. Harvesting was carried out by all (men women and youths) with

women having a slight edge. The trend in response was the same for both male and female respondents. Ezeibe *et al.*, (2015) however reported that women dominated the activity of cassava harvesting in Abia state.

Both male and female respondents are in accord as shown in figure (1) that women play a pivotal role in preparing food and taking it to those engaged at the farm. This finding is in tandem with the traditional role of women in the study area to cook for their families. This is a very important operation usually overlooked when accessing labour input in the farms.

Access implies the opportunity to use resources and control suggests that one has the ability to define the use of resources and to impose that definition on others. In general, women and men have different levels of access to and control over the resources needed for their work (FAO, 2011). Distribution of male and female respondents according to their indication of who has access to and control of inputs for cassava production and processing are presented in figures 2 and 3 respectively. Both group of respondents indicated that women and men have the most access to and control of inputs with youths playing an insignificant part. Male respondents gave men an edge (54.0%) over women (50.0%) in access to inputs while female respondents indicated that women have greater access (58.0%) than men (48.0%). The finding in this study that both men and women had access to inputs is consistent with the report of Nweke *et al.*, (2002) from a COSCA study carried out in 5 African countries with significant cassava production and consumption. The access to and control of inputs observed in this study is in line with Valdivia and Gilles (2001) that the greater the access to and control of resources by women, the more empowered they are. This empowerment in turn increase the welfare expenditure at the household level because women's expenditure patterns normally benefits the family.

Both male and female respondents indicated that men have more access to and control of finance than women and youths (Figures 4 and 5). Youths are the most disadvantaged in these. Butterworth, *et al.*, (2008) also reported that men have more access to formal capital because they have collateral in the form of land and houses. Women, who lack ownership of these assets, rarely take formal loans. Further reasons expressed by women for not taking bank loans related to the low level and inconsistency of their income stream

#### **Determinants of participation in cassava production by Respondents (Pooled)**

The Probit estimates of determinants of participation in cassava production by respondents are presented in Table 3. The model posted a  $\chi^2 = 20.81^{**}$ , log likelihood (-94.448782) and pseudo  $R^2$  value of 0.5992 indicating its suitability. In the model, five out of

twelve explanatory variables were statistically significant at given levels and these variables were occupation ( $P = 0.0001$ ), farm size ( $P = 0.035$ ), Distance from farm to market (km) (0.043), Level of weekly production ( $P = 0.0001$ ), and monthly income from cassava business ( $P = 0.008$ ). Coefficient of occupation (0.008) was positive and significant implying that full time farming as an occupation enhanced respondents' participation in cassava production. The coefficient (0.286) of farm size was positive and significant which implies that the higher the farm size, the greater the tendency for respondents to participate in cassava production. Distance from farm to market negatively affected the tendency of respondents to participate in cassava production as indicated by the negative probit regression coefficient of -0.055. Level of weekly production positively and significantly affected respondent's participation in cassava production as shown by the value of the probit regression coefficient (.0001). The coefficient (4.09e-06) of monthly income from cassava business was positive and was significant, indicating that an increase in farm income of respondents will increase their participation in cassava production.

#### **Conclusion**

This study investigated gender roles in cassava production in Imo State, Nigeria. Men, women and youths played complementary roles in various operations involved in cassava production. While men dominated in heavy labour operations such as land clearing and tillage, women dominated in other operations like planting, weeding, harvesting and preparing food for farm use. Youths rarely had access to and control of finances for cassava production. Participation of the respondents in cassava production was determined by five variables namely occupation, farm size, distance from farm to market (km), level of weekly production, and monthly income from cassava business. In line with the finding of this study, gender gaps in cassava production exist in the study area. In order to address these gaps, male and female cassava farmers in the area should be allowed unrestricted access to productive resources as a way of exploiting their potentials in cassava production through the establishment of gender based cassava development programmes. Policy issues targeted at increasing cassava production in the state should advocate for more involvement of the males in and increased access to and control of finance by youths.

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**Table 1: Socioeconomic Characteristics of Cassava Farmers in Imo State**

<b>Age (yrs)</b>	<b>Male</b>		<b>Female</b>	
	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
<20	0	0	2	1.66
20-29	20	16.66	13	10.82
30-39	45	37.49	42	34.99
40-49	18	14.99	27	22.5
50-59	28	23.37	26	21.67
>60	9	7.49	10	8.36
<b>Mean (years)</b>	<b>40.63</b>		<b>41.29</b>	
<b>Years in school</b>				
0	4	3.35	6	5
1-6	40	33.33	28	23.34
7-12	43	35.83	45	37.51
13-16	29	24.17	26	21.67
≥17	4	3.32	15	12.48
<b>Mean(years)</b>	<b>10.26</b>		<b>11.45</b>	
<b>Marital status</b>				
Single	22	18.33	12	10.00
Married	89	74.17	92	76.67
Widowed	9	7.50	15	12.50
Separated	0	0.00	1	0.83
<b>Household size</b>				
1-3	3	2.5	6	5.0
4-6	48	40.0	42	35.0
7-9	51	42.5	50	41.67
10-12	14	11.67	18	15.0
13-15	4	3.33	4	3.33
<b>Mean</b>	<b>7.19</b>		<b>7.23</b>	
<b>Farm size (ha)</b>				
< 1ha	62	51.66	66	54.99
1-3 ha	48	39.98	45	37.52
>3 ha	10	8.36	9	7.49
<b>Mean(ha)</b>	<b>1.25</b>		<b>1.13</b>	
<b>Root production (kg)</b>				
<500	96	79.98	97	80.82
500-1000	19	15.84	16	13.33
>1000	5	4.18	7	5.85
<b>Mean(kg)</b>	<b>190.83</b>		<b>182.00</b>	
<b>Experience (Years)</b>				
1-10	57	47.49	44	36.67
11-20	43	35.85	55	45.84
21-30	15	12.5	12	10.0
>30	5	4.16	9	7.49
<b>Mean(years)</b>	<b>13.89</b>		<b>15.43</b>	
<b>Membership of Coop Societies</b>				
Yes	24	20.00	22	18.33
No	96	80.00	98	81.67

Source: Field survey 2017

**Table 2: Distribution of male and female respondents according to gender roles in Cassava Production**

Gender Roles	Male		Female	
	*Freq.	Percent	*Freq.	Percent
<b>Site Selection</b>				
Men	103	85.84	92	76.67
Women	30	25	34	28.33
Youths	2	1.67	1	0.83
<b>Land Clearing</b>				
Men	78	64.99	72	60
Women	16	13.33	23	19.17
Youths	28	23.33	21	17.5
<b>Burning</b>				
Men	50	41.67	49	40.84
Women	28	23.34	37	30.83
Youths	20	16.67	12	10
<b>Land preparation</b>				
Men	47	39.16	49	40.84
Women	23	19.17	26	21.67
Youths	30	25	35	29.17
<b>Planting</b>				
Men	9	7.5	11	9.17
Women	61	50.83	50	41.67
Youths	15	12.5	18	15.01
<b>Weeding</b>				
Men	7	5.84	9	7.49
Women	72	60.01	70	58.33
Youths	24	20	22	18.33
<b>Herbicide application</b>				
Men	48	40.33	53	44.17
Women	19	15.96	25	20.83
Youths	38	31.93	27	22.5
<b>Harvesting</b>				
Men	21	17.5	17	14.17
Women	31	25.83	27	22.5
Youths	12	10	8	6.66

Source: Field survey 2017, N = 120 (Males), 120 (Females) 240 (Pooled), \*Multiple responses

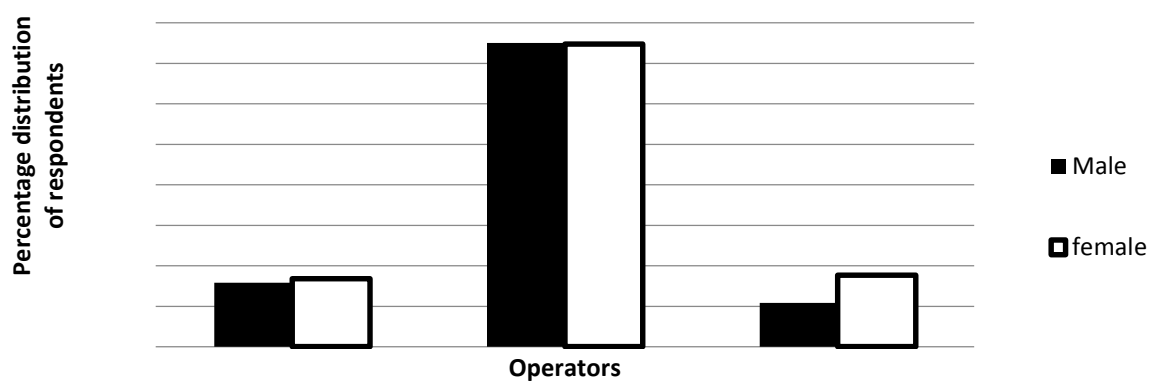
**Table 3: Probit regression estimates of determinants of participation in cassava production among farmers (Pooled) in Imo State, Nigeria**

Variables	Coefficient.	Standard error	Z value	P> z
Constant	-0.680	0.642	-1.06	0.289
Age (yrs)	-0.002	0.012	-0.19	0.846
Education (yrs)	0.005	0.022	0.22	0.824
Occupation	0.008	0.001	6.89	0.000
Marital status	-0.060	0.262	-0.23	0.818
Household size	-0.060	0.045	-1.33	0.182
Farmsize (ha)	0.286	0.135	2.11	0.035
Distance farm to market (km)	-0.055	0.028	-1.99	0.043
Level of production wkly (kg)	0.0001	0.00002	4.08	0.000
Quantity processed wkly (kg)	-0.001	0.0008	-0.87	0.384
Monthly income from cassava business	4.09e-06	1.27e-06	3.22	0.008
Years in cassava farming & processing	0.004	0.016	0.24	0.808
Membership of cooperative society	0.168	0.277	0.61	0.544
Gender	-0.213	0.215	-0.99	0.321

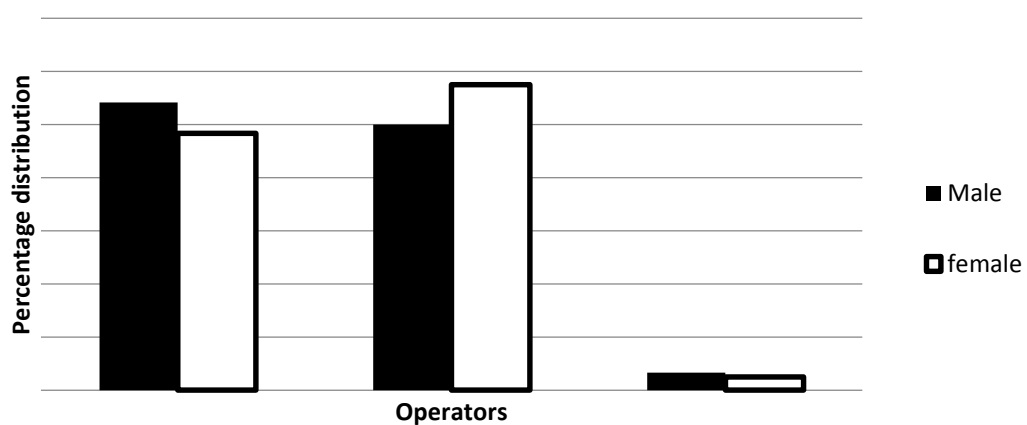
*Pseudo R2 = 0.5992*  
*Log likelihood = -94.448782*  
*chi<sup>2</sup>(13) = 20.81\*\**  
*Number of observations = 240*

Source: STATA 13, \*\* Significant at 5%

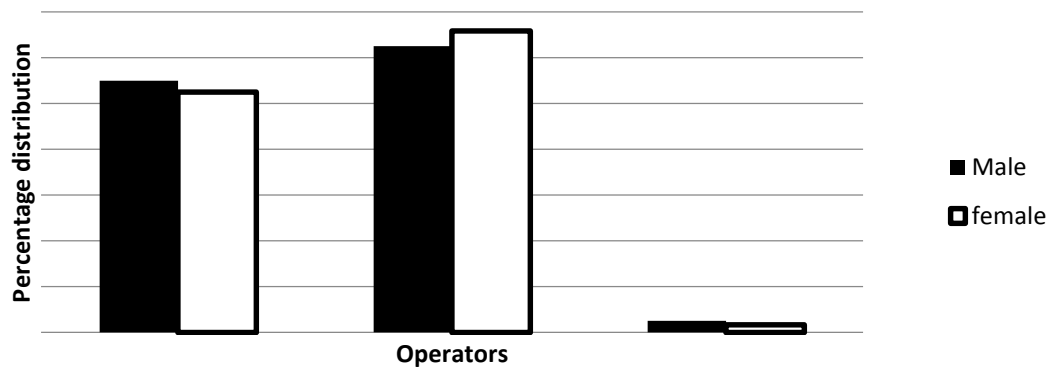




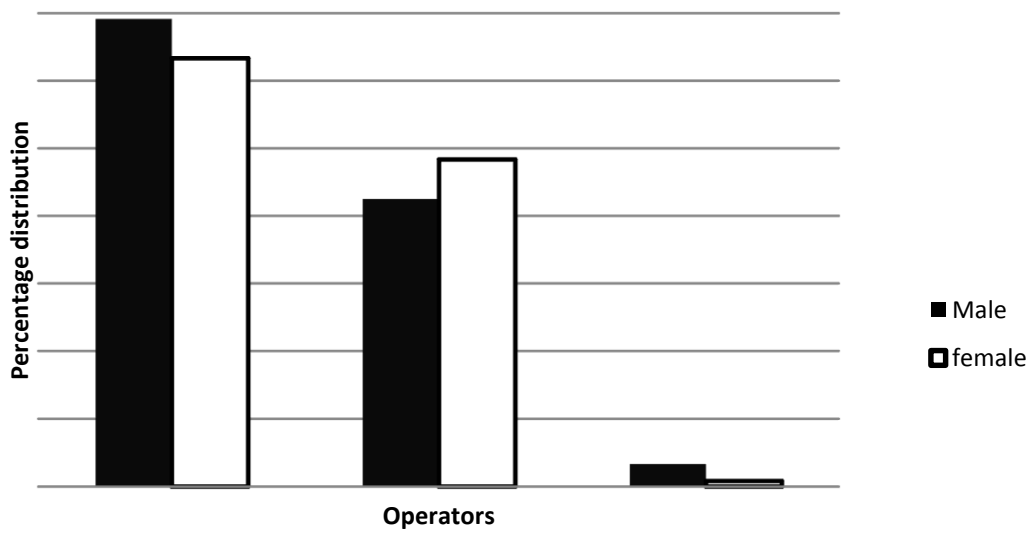
**Fig 1: Distribution of Respondents According to Who Prepare food and water for labour in cassava production**



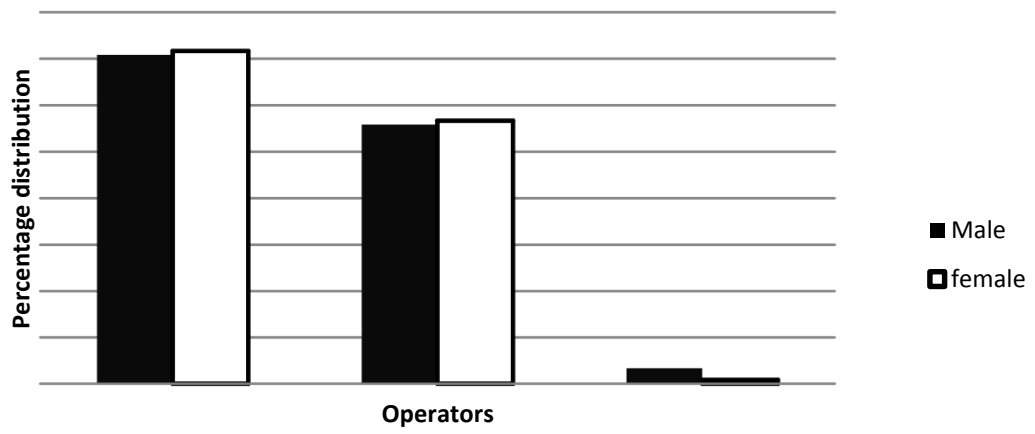
**Fig 2: Distribution of Respondents According to their Access to inputs**



**Fig 3: Distribution of Respondents According to their Control of inputs**



**Fig 4: Distribution of Respondents According to their Access to finance**



**Fig 5: Distribution of Respondents According to their Control of finance**