Vol. 4, No. 8 August 2014 ISSN 2225-7217
ARPN Journal of Science and Technology

http://www.ejournalofscience.org

Group Dynamics and Innovation Dissemination among Female Cassava Farmers in Ikwuano Local Government Area of Abia State, Nigeria

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ABSTRACT

The study was conducted in Ikwuano Local Government Area (LGA) of Abia State, Nigeria. A sample size of 270 respondents generated through multi- stage sampling method was used for the study. Primary data generated by the use of structured questionnaire, Focus Group Discussion (FGD) and participant observations were analyzed using descriptive statistics and Relative Credibility Index (RCI). The results revealed that a very high proportion (66.7 %) of the respondents were farmers, 61.1,74, 70.3, and 74 % respectively were within the age brackets of 18 – 53 years of age, married, had 5 – 20 years of schooling, and had farm – sizes of 0.1 – 0.9 hectares respectively. The study further revealed that the Extension Agents was the most credible sources of technologies disseminated and Fellow Farmers were the most preferred channels of technology dissemination. Lack of funds, lack of farm- decision making power, lack of farm- lands, high cost of inputs, high labour cost, scarcity of agro- inputs, and low- extension contacts among others were identified as the major factors limiting the dissemination of cassava – based technologies in the study area. The study recommends the incorporation of indigenous knowledge and practices in the generation and transfer of cassava based technologies for effective dissemination and sustainable cassava production in the study area.

Keywords: *Ikwuano, Cassava Based Technology Dissemination and Indigenous Knowledge & Practices.*

1. INTRODUCTION

Women play significant role in agriculture. They constitute more than 2/3 of the workforce in agricultural production (Food and Agricultural Organization (FAO) 1985). According to Sabo (2006) about 70 % of women constitute the total agricultural workers, 80 % of food producers, and over 90 % of those who process basic food stuff, are women and they also undertake 60 – 90 % of rural marketing (Sabo, 2006). Nigeria is the largest cassava producing nation in the world. Total production in 2005 was 38 million metric tonnes showing an increase of 100 % over 19 million metric tonnes in 1990 (FAO, 2006). Amazingly, the production of cassava in Nigeria is in the hands of small scale farmers, who depend on rain-fed agriculture at a very high subsistent level (Mbanasor, 2012). Cassava is also the 3rd most important sources of calories in the tropics after rice and maize. It is very vital for both food security and income generation for the small scale farmers (FAO, 2008). International Fund for Agricultural Development (IFAD) (2003) reported that cassava has been recommended to be promoted as poverty fighter across Africa to be facilitated by Pan – African cassava initiative. This was due to the fact that cassava is consumed daily as the main dish in forms like gari, fufu, and chips. Ajieh and Uzokwe (2007) reported that cassava production is in the hands of women farmers who rely predominantly on simple tools like hoes and cutlasses powered by human efforts. They further, noted that these women farmers depended so much on Indigenous Knowledge Systems and practices in their farming activities. Akpabio (2003) reported that technology development and transfer have been the main focus of agricultural extension in Nigeria. Technology transfer has been defined by Rogers (2003) to include information and knowledge on agriculture, nutrition, health and environmental management practices which collectively help to improve farmers' wellbeing. Models like individual group and mass media are recognized as effective tool in promoting significant levels of technology use among small scale farmers. The use of group models has been advocated by several authors (Nneoyi et al, 2008; and Obinna and Chukwu, 2013) because it is largely dependent on interactions between and within the groups and the changes from such interactions. However, Nneoyi et al (2008) asserted that models like individual teaching methods (face – to- face discussion and home visit) though applauded as the best it does not lend to wide spread and timely information dissemination. Heinrich (1993) reported positive impacts of farmers' local organizations and dynamism in facilitating rural agricultural development in many developing countries but not in Africa because of cultural, religious, institutional and most importantly due to lack of effective beneficiary participation occasioned by weak local institutional support (Heinrich, 1993). Similarly, Chukwu et al (2008) revealed that extension – farmer ratio in Abia State was 1: 1490 as against 1: 500 recommended by the World Bank. This high ratio resulted in many small scale farmers not being reached by extension agents. In 2013, the National Root Crops Research Institute (NRCRI) Umudike in collaboration with the International Institute for Tropical Agriculture (IITA) developed and released to Nigerian farmers two new improved cassava varieties TMS 98/2132 and TMS 01/ 1206 respectively. These varieties showed high resistance to major pests and diseases that affect cassava in Nigeria (NRCRI, 2003). Based on the foregoing, the study sought to assess group dynamism and innovation dissemination among female cassava farmers in Ikwuano LGA of Abia State, Nigeria. The specific objectives were to:

(i) Examine the socio- economic and cultural characteristics of the respondents in the study area.
(ii) Determine sources and perceived credibility of cassava based technology disseminated among the female cassava farmers in the study area,
(iii) Ascertain farmers' preferred channels of innovation dissemination on cassava – based technologies in the study area, and
(iv) Limitations to female cassava farmers in the study area.

2. METHODOLOGY

The study was conducted in Ikwuano Local Government Area (LGA) of Abia State, Nigeria. Ikwuano LGA is a major food producing area in Abia State. It is located between 5° 24'N to 5° 30' E latitudes and 7° 31' N to 7° 37' E longitudes covering an area of 31,000 ha. (Chukwu et al., 2013) The area represents the typical degraded humid forest ecology in the Southeast Agro-ecological Zone of Nigeria. The area is characterized by bi- modal annual precipitation totaling over 2000mm, air temperature ranging from 22 to 31° C and high relative humidity (77%) during the wet season. The vegetation is predominantly lowland rainforest. (Chukwu and Ifenkwe 1995), this makes it possible for cassava to be planted virtually at any time of the year. The major crops grown are yam, cassava, maize and rice; others include plantain, banana and vegetables among others. Major cash crops include oil- palm, kola nut, cocoa, rubbers, and cashew. Livestock management is also very predominant. Agriculture is the main occupation of the people. Cassava occupies about 68.7 % of the total annual farm holding per household in Abia State (Abia ADP, 2006). In the study area Abia ADP is the major organization that provides extension services to the farmers. A multi- stage sampling technique was used in selecting the sample size of 270 respondents. Firstly, Oboro and Oloko communities were randomly selected from the four component communities namely Oboro, Ibere, Aram and Oloko communities that make up Ikwuano LGA of Abia State. Secondly, another random method was used to select six villages from the two selected communities. Thirdly, through another randomized method forty five (45) respondents were each selected from the six villages to give a total of 270 respondents. Primary data used were generated through structured questionnaire which were administered through the chairpersons of the women groups and in addition Focus Group Discussion (FGD) participant observation were conducted among the female cassava farmers in the study area. Data were analyzed with the aid of descriptive statistics such as frequency tables, means, percentages and ranks. In addition, the Relative Credibility Index (RCI) was used in determining the most credible source of cassava based technology disseminated among the female cassava farmers in the study area.

The formula for

$$RCI = X / Y \times 100/ n \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where

X = number of cassava farmers who believed that the technology source was the most credible.
Y = number of cassava farmers who believed that the technology source was the least credible.
n = total sampled numbers of female cassava farmers in the study area.

3. RESULTS AND DISCUSSION

3.1 Socio- Economic and Cultural Characteristics of the Respondents

Table 1 revealed that 61.1 % of the respondents were within the age brackets of 18 – 53 years of age. About 74 % of the respondents were married, while about 70. 3 % of them had between 5 – 20 years of schooling. Equally, 66.7 % of the respondents had farming as their primary occupation, 44.4 % had household size of 7 persons and above, and a very high proportion (74 %) of them owned between 0.1 – 0.9 hectares of farmlands (Table 1). This was corroborated by Mbanasor (2012) who asserted that cassava production in Nigeria was in the hands of small scale farmers who depended on rain- fed agriculture at a very high subsistent level. Table 1 further, revealed that 96.3 and 70.4 % of the respondents acquired their farmlands through lease and co- operatives respectively, while, none (0%) of the respondents acquired farmland through inheritance. This was corroborated by Ekong (2010) who postulated that women do not have title- right to lands in South -Eastern part of Nigeria. About, 65 % of the respondents had between 11 – 30 years of farming experience (Table 1). These results are indication that the female cassava farmers depended much more on agriculture and with their indigenous knowledge of the environment and other natural resources they sustain their production. This is in line with Obinna and Unamma (2013) who asserted that women are better managers of natural resources and environment. Table 1 further revealed that majority (55.5 %) of the respondents had monthly income of N18, 000.00 – N55, 000.00 and about 92.6 % were members of social organizations. About, 59.2 % of the respondents had rarely or none extension contacts, while only 40.7 % had extension contacts every forth nightly or once every month (Table 1). Eighty five percent of the respondents visited other farms within the village while, 74.1 and 55.6 % respectively visited other farms within and outside the LGA respectively. Only 7.4 % of the respondents visited other farms outside the State (Table 1). All these findings indicate that due to group dynamism and interactions among the women in the study area they could observe and copy from one another's farms. This is in line with Nneoyi et al, (2008) who asserted that models like individual group and mass media are recognized as effective tool in promoting significant levels of technology use among small scale farmers.

Table 1: Socio- Economic and Cultural Characteristics of the Respondents

n = 270

S/No	Variables	Frequency	Percentages
01	**Age**		
	18 – 29 years	40	14.8
	30 – 41 years	50	18.5
	42 – 53 years	75	27.8
	54 – 65 years	60	22.2
	66 and above	45	16.7
02	**Marital Status**		
	Single	40	14.8
	Married	200	74.1
	Widowed	20	7.4
	Divorced/ Separated	10	3.7
03	**Years of Schooling**		
	No formal education	30	11.1
	< 5 years	45	16 . 7
	5 – 10 years	70	25.9
	11 – 15 years	90	33.2
	16 – 20 years	30	11.1
	21 and above	5	1.9
04	**Primary Occupation**		
	Farming	180	66.7
	Trading	70	25.9
	Civil Servant	10	3.7
	Others	10	3.7
05	**Household Size**		
	1 – 3 persons	60	22.2
	4 – 6 persons	90	33.3
	7 and above	120	44.4
06	**Farm Size**		
	< 0.1 ha	50	18.5
	0.1 – 0.4 ha.	60	22.2
	0.5 – 0.9	90	33.3
	1 – 1.4 ha.	60	22.2
	1.5 and above	10	3.7
07	***Sources of Farmlands**		
	Thro. Inheritance	Zero	Zero
	Outright purchase	70	25.9
	Thro. Lease	260	96.3
	Thro. Co-operatives	190	70.4
08	**Farming Experience**		
	< 10 years	40	14.8
	11 – 20 years	50	18.5
	21 – 30 years	80	29.6
	31 – 40 years	65	24.1
	41 and above	55	20.4
09	**Monthly Income**		
	< N18,000.00	60	22.2
	N18,000 – N36,000	90	33.3
	N37,000 – N55,000	60	22.2
	N56,000 – N84,000	40	14.8
	N85,000 – above	20	7.8
10	**Membership to Organizations**		
	Yes	250	92.6
	No	20	7.4
11	**Frequency of Extension Contacts**		

	None	70	25.9
	Rarely	90	33.3
	Forth nightly	80	29.6
	Once every Month	30	11.1
12	***External Orientation**		
	Visit to other farms within the village	230	85.2
	Visit to other farms within the LGA	200	74.1
	Visit to other farms outside the LGA	150	55.6
	Visit to other farms outside the state	20	7.4

Source: Field survey 2013
*= multiple responses recorded

3.2 Credibility and Sources of Cassava Based Technologies Disseminated

Table 2, revealed that out of twelve sources of cassava based technologies disseminated, extension agent was the most credible with Relative Credibility Index (RCI) equals to 2.96 and was ranked 1st . Equally, Table 2 revealed that fellow farmers, co-operatives, Research Institutes, Input Agencies, Radios, Friends/Relatives, NGOs/CBOs, Churches, Televisions, Phone Calls, and Internet had RCI of 2.72, 1.06, 1.02, 0.87, 0.54, 0.46, 0.399, 0.218, 0.156, 0.084 and 0.0296 respectively, and were ranked 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, and 12th respectively. The implication of these results were that in as much as that the extension – farmer ratio (1: 4950)in the study area was high as asserted by Chukwu et al, (2013) as against 1: 500 extension- farmer ratio bench mark as recommended by the World Bank. The most credible source of cassava based technologies disseminated remained the extension agent. This indicates that the respondents in the study area still recognized and appreciated the extension agent as the most reliable scientific source of technology disseminated.

This is in-line with the Nigerian Government approval in establishing the Agricultural Development Programme (ADPs) as the official sources of disseminating improved technologies to farmers (Unamma, 2014) . Fellow farmers being rated 2nd with RCI = 2.72, implied that the respondents also attached much importance to the indigenous knowledge system which are passed on from one generation to another, through fellow farmers. This collaborated Anaeto et al, (2012) who asserted that solutions to agricultural production problems must proceed from understanding the dynamics within the local context and local capacities, that such dynamics include the role of indigenous knowledge and practices in sustainable agricultural production.

Table 2: Distribution of the Respondents According to Their Perceived Credibility and Sources of Cassava Based Technologies Disseminated
n= 270

S/ No	Sources	Most Credible (X)	Least Credible (Y)	Relative Credibility Index (RCI)	Ranks
01	Extension Agents	240	30	2.96	1st
02	Fellow Farmers	220	50	2.72	2nd
03	Co-operatives	200	70	1.06	3rd
04	Research Institutes	198	72	1.02	4th
05	Input Agencies	190	80	0.87	5th
06	Radios	160	110	0.54	6th
07	Friends/ Relatives	150	120	0.46	7th
08	CBO/ NGOs	140	130	0.399	8th
09	Churches	100	170	0.218	9th
10	Televisions	80	190	0.156	10th
11	Phone Calls	50	220	0. 084	11th
12	Internet	20	250	0.0296	12th

Source: Field Survey 2013.

Respondents' Preferred Channels of Cassava Based Improved Technologies Disseminated.

Table 3 revealed that fellow farmer was rated the most preferred channel for technology transfer on cassava based innovation among the respondents with a mean score of 3.6 and ranked 1st. Equally, Table 3 revealed that Demonstration, Small Plot Adoption Technique (SPAT), Extension Agents , Co-operatives, Input Agencies, NGOs/CBOs, Radios, Research Institutes, Churches, Phone Calls, and Internet were ranked 2nd ,3rd , 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, and 12th respectively (Table 3) . The implications of these results were that the respondents

had the easiest access to their fellow farmers as to hear, see, and watch what they do in their farms than other channels. Demonstration being ranked 2nd this collaborated with Laired (1985) who postulated that majority (75 %) of knowledge held by adults is learned through seeing, hearing and doing is next most effective with about (13 %) while other remaining senses accounted for 12 %. It was based on this premises that SPAT was ranked 3rd with mean score of 3.2.

Table 3: Distribution of Respondents According to Their Preferred Channels of Innovation Dissemination.
RATINGS **(n = 270)**

S/No	Channels	V/M/P (4 pts.)	P (3 pts)	N/V/M/P (2pts.)	N/P (1pt.)	Total	Mean	Ranks
01	Fellow Farmers	180	60	30	-	960	3.6*	1st
02	Demonstration	100	90	60	70	900	3.3*	2nd
03	SPAT	150	50	40	30	860	3.2*	3rd
04	Extension Agents	70	100	80	20	760	2.8*	4th
05	Co-operatives	60	80	60	70	670	2.5*	5th
06	Input Agencies	60	60	70	80	640	2.4	6th
07	CBOs/ NGOs	40	60	70	100	580	2.2	7th
08	Radios	40	50	70	110	560	2.07	8th
09	Visit to Research institutes	30	50	80	110	540	2.00	9th
10	Churches	30	40	40	160	480	1.8	10th
11	Phone Calls	20	40	60	150	470	1.7	11th
12	Internet	20	30	40	180	430	1.6	12th

Source: Field Survey 2013.

V/M/P = Very Much Preferred, scored 4 points.
P = preferred, scored 3 points.
N/ V/ M/ P = Not Very Much Preferred, scored 2 points.
N/P = Not Preferred, scored 1 point.
Rankings are in order of preference, most preferred 1st and least preferred 12th respectively.
*= Signifies means that are significant.

3.3 Factors that Influenced the Dissemination of Cassava Based Technologies.

Table 4 revealed that 92.6 % of the respondents indicated lack of fund, 88.9, 77.8, 74.1, 74, 70 and 29.6 % respectively indicated lack of power on farm making decision, lack of farm- lands, high cost of farm input, high labour cost, scarcity of agro- inputs, low extension contacts and high technical contents of technologies disseminated respectively as factors influencing the dissemination of cassava based technology in the study area (Table 4). The implication of these results are that seven out of eight factors are very significant and therefore, pose serious problems towards dissemination of cassava based technologies, they should be addressed in order to improve the dissemination and eventually the adoption of cassava based technologies by female farmers in the study area.

Table 4: Distribution of Respondents According to Limiting Factors.
n = 270

Factors	*Frequency	Percentage (%)
Lack of farm lands	210	77.8
High cost of inputs	200	74.1
High technical content of technology	80	29.6
Lack of funds	250	92.6
High cost of labour	200	74.1
Lack of farm decision making power	240	88.9
Low extension contacts	189	70.0
Problems of agro- inputs	200	74.0

Source: Field Survey 2013.
*= Multiple responses recorded.

4. CONCLUSION

The study revealed that a very high proportion (66. 7 %) of the respondents had farming as their primary occupation. It also revealed that 61.1, 74, 70.3, and 74 % respectively of the respondents were within the age brackets of 18 – 53 years, married, had between 5 – 20 years of schooling, and had farm sizes of between 0.1 – 0.9 hectares respectively. The study further, revealed that extension agents was the most credible sources of cassava based technologies disseminated in the study area. Equally, the study revealed that fellow – farmers were the most preferred channels of dissemination of cassava based technologies because of their high regards and confidence on their indigenous knowledge practices. The study finally revealed that lack of funds, farm power making decision, farm- lands, high cost of inputs, high cost of labour, scarcity of agro-inputs, and low extension contacts among others as the major factors limiting the dissemination of cassava based technologies in the study area. The study recommends the incorporation of indigenous knowledge and practices in the generation and transfer of cassava based technologies by research institutes and ADPs for effective dissemination and sustainable cassava production in the study area.

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