



Women Participation in the Activities of Melon (*Colocynthis citrullus* L.) Value Chain Enterprises in Kwara State, Nigeria

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Abstract: The study examined women participation in the activities of melon value chain enterprises in Kwara State, Nigeria. Edu and Patigi local government areas in Kwara State were purposively selected for the study. Primary data were obtained using well-structured questionnaire which was administered on one hundred and twenty four (124) women farmers. Descriptive statistics was employed for data analysis. Results reveal that mean age was 36years, mean years of experience in melon value chain actor was 19years, main primary occupation were agricultural products processing (50.8%) and agricultural products selling (30.6%) and mean annual income was ₦446,277.44. Findings further reveal that all women farmers participated in washing, coring, drying, marketing and consumption activities and were less participated in activities such as cultivation of land, planting, weeding, harvesting/gathering of pods and breaking melon pods. Majority of the respondents added value through processing of melon (78.2%) and sorting of melon (80.6%). Most (90.3%) sold their melon in local market. Majority (85.5%) sourced for information on melon value chain enterprises from friends. Constraints identified in their order of severity were poor access to credit facilities (mean=2.96), high cost of chemical (mean=2.80) and inadequate capital (mean=2.74). The study therefore concludes that Kwara state women farmers' participation in melon value chain enterprises were more in processing, marketing, and consumption activities and were involved in various value addition in the processing of melon. The study suggests the need for women farmers to come together as cooperative groups with name affiliated to any of the melon value chain enterprises. Extension agent need to render more assistance in providing adequate information on improved processing skills especially through training in order to increase competency of women farmers in this area.

Keywords: Melon value chain activities, women participation, value addition to melon.

1. Introduction

Farming activities in rural areas of Nigeria are done by both men and women. Adisa and Okunade (2005) estimated that about 95 percent of the Nigeria farmers who are actually feeding the nation are women. Most of the tasks performed by men are ridging, gathering, cutting down of trees and some other rigorous activities while women contribution are many but are often assigned to carry out activities such as harvesting, processing, storing and marketing of agricultural products. Nevertheless, Banji *et al.* (2005) had ascertained that Nigerian women role in agriculture is influenced by socio-economic and cultural factors.

Women contribute significantly to vegetable production and have favourable attitude towards vegetable production in Nigeria (Adeyemi, 1992). This is because melon value chain enterprises as vegetable crop is profitable and has contributed to rural farmers' household food security and livelihood sustainability (Ibironke and Oyeleke, 2014). Some of cultural uses of melon are gift to relatives and weed suppressant in mixed crop farms (Ugwumba, 2010). Melon (*Colocynthis citrullus lanatus*) is commonly cultivated in West Africa (van der Vossen *et al.* 2004). In Nigeria, production of melon is common in the northern part because of large cultivable land mostly is mixed or sole cropping system (Yusuf *et al.* 2008).

In spite of women's involvement in farming, studies have shown that rural women are faced with constraints in their access to some factors of production, processing and marketing of vegetables as perishable product (Ajibola *et al.* 2015, Ani, 2004). Ofoh (2009) have stated that another important area that required urgent attention is the area of agro-processing, this is to reduce spoilage, waste and other losses in quantity and quality of farm produce between the time of harvesting and time of marketing/consumption. Specifically, quick deterioration of melon seeds has been identified as one its major problem (Bankole, 1993). Bankole *et al.* (2004) further pointed that the effect of fungal attack on melon seeds are decreased nutritive value, change in colour, increase in the peroxide value, reduced seed germination and mycotoxin production.

Women are hardly recognized as major participants in the agricultural value chain. Specifically, there is scarcity of research that unveiled women participation in melon value chain in the study area thus, the need for this study. This study was aimed to reveal the degree of participation and challenges of women farmers in production, processing, marketing, storage, packaging, consumption, and value addition practices of melon in the study area. The end result of this study is hoped to be helpful to government policy makers, extension institutions and relevant non-governmental organisations in planning and implementation of policies and programmes that will boost melon value chain enterprises among women in the study area.

The general objective of study is to examine women participation in the activities of melon value chain enterprises in Kwara State, Nigeria. The specific objectives were to; (i) highlight the socio-economic characteristics of women farmers the study area, (ii) identify the value addition practices in melon among women farmers, (iii) identify their sources of agricultural extension information on melon value addition practices in the study area, and (iv) determine constraints encountered by respondents.

2. Methodology

The study was carried out in Kwara State, North Central Nigeria. Edu and Patigi local government areas of the Kwara State are popularly known for melon farming activities and are regarded as major melon processors in the state. Edu and Patigi local governments are part of the sixteen local governments in Kwara State and are popularly known for its farming activities majorly in melon production and processing activities. The two local governments share boundaries with River Niger which has different villages serving its tributaries. The major Melon farming communities in Edu are Lafiagi and Tsaragi while the major melon farming communities in patigi are Lade and Rogu.

The population of the study comprises of all the women farmers who engage in melon production, processing, marketing and consumption in the study area. The four major melon producing communities (Lafiagi, Tsaragi, Lade and Rogu) in Edu and Patigi were purposively selected for the study. Of the four communities selected, 31 women farmers were randomly selected from each of the communities. A total of one hundred and twenty (124) respondents were selected for the study.

Primary data were collected with a structured questionnaire while secondary data were collected from related journal articles. Descriptive statistics such as frequency count, percentage, mean score and mean rank were used for data analysis.

3. Results and Discussion

Socio-economic Characteristics of the respondents

Results illustrated in Table 1 reveal that 19.4 per cent of the respondents were about 30 years old, 54.0 per cent were between 31-40 years, 25.8 per cent were between 41 – 50 years and 0.8 per cent was above 50 years old. The mean age of the respondents were found to be 36 years which implies that most of the women are still very active and energetic enough to contribute meaningfully in the melon value chain enterprises. Findings indicate that most (89.5 per cent) of the respondents were married which

implies that most of them were likely to be responsible women as they are in family relationship with their respective husbands. This

finding suggests that decision making regarding matter that concerns melon processing could be influenced by their husbands.

Table 1: Socio-economic characteristics of the respondents (N=124)

<i>Variables</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Mean Score</i>
Age (years)			36 years
30 and below	24	19.4	
31 – 40	67	54.0	
41 – 50	32	25.8	
Above 50	01	0.8	
Marital status			
Married	111	89.5	
Separated	11	8.9	
Widowed	2	1.6	
Divorced	0	0.0	
Religious Affiliation			
Christianity	9	7.3	
Islam	114	91.9	
Traditional	1	0.8	
Level of Education			
No formal education	87	70.2	
Adult education	5	4.0	
Primary school	9	7.3	
Secondary school	23	18.5	
Primary Occupation			
Production of agricultural produce	6	4.8	
Selling of agricultural products	38	30.6	
Processing of agricultural products	63	50.8	
Civil servant	5	4.0	
Trading in agricultural products	6	4.8	
Artisan activities	6	4.8	
Years of experience in Melon value chain (years)			19 years
10 and below	10	8.1	
11 – 20	69	55.6	
21 – 30	40	32.3	
31 – 40	4	3.2	
Above 50	1	0.8	
Average Annual Income from Melon processing (Naira)			
100000 and below	5	4.0	446277.44 Naira
100001 – 2000000	6	4.8	
200001 – 300000	26	21.0	
300001 – 400000	17	13.7	
400001 – 500000	25	20.2	
Above 500000	45	36.2	

Source: Field survey, 2013

Table 1 further reveal that 7.3 per cent were Christians, 91.9 per cent were Muslims and 0.8 per cent was traditional worshippers. This implies that respondents were practicing one of the three

major religion in Nigeria where peace and unity are hopefully been thought. This finding is in line with the report of Okwusi *et al.* (2013) which identified there is peaceful coexistence of the

three major religion practitioners in most parts of rural areas in Nigeria. It was observed that majority (70.2 per cent) of the respondents had no formal education. This implies that they are likely not able to read nor write which could have a decisive influence on the rate of adoption of improved technologies, mode of operations, marketing and overall activities involved in melon enterprises in the study area.

About 55.6 per cent had about 21-30 years of experience in melon value chain enterprises. The total mean years of experience was found to be 19 years which implies that most of them had secured wider years of experience in melon value chain activities which is an indication that they might have known all the technicalities, constraints, benefits and challenges involved in melon value chain enterprise chosen. This finding is in contrast with the report of Apata and Shittu (2012) which pointed out that many farmers in Southwestern Nigeria had low years of working experience in their primary occupation.

Furthermore, most (50.8 per cent) indicated processing of agricultural products as their primary occupation followed by selling of

agricultural products (30.6%). This finding is similar with Tsado *et al.* (2009) who found that higher percentage of women farmers were involved in agro-processing and marketing in Niger State Nigeria. The mean income was ₦ 446,277.44 with a range extending from ₦100,000 to ₦500,000 and above. Taking into consideration the present minimum wage (₦ 18,900) in State's Civil Services in Nigeria as benchmark, the average income of respondents is sufficient as major means for household sustainability. This finding corroborates Sodiya and Oyediran (2014) that melon production is profitable and it contributed to rural farmer's household food security in Oyo State Nigeria.

Women participation in the activities of melon value chain Enterprises

Table 2 (multiple responses) indicate that activities in melon value chain participated by all women were washing, coring, drying, marketing and consumption. Also, most (94.4%, 82.3%, 74.2% and 58.1%) of the respondents participated in shelling, bagging, packing of melon pods and storage of melon activities respectively.

Table 2: Percentage distribution of women participation in activities of melon value chain (N=124)

Activities	Frequency*	Percentages
Cultivation of land	2	1.6
Planting	31	25.0
Weeding	26	21.0
Harvesting/gathering of pods	46	37.1
Packing of melon pods	92	74.2
Breaking melon pods	47	37.9
Coring	124	100.0
Washing	124	100.0
Drying	124	100.0
Shelling	117	94.4
Bagging	102	82.3
Storage	72	58.1
Marketing	124	100.0
Consumption	124	100.0

*Multiple responses

Results in Table 2 further show that women farmers were less participated in the activities such as cultivation of land (1.6%), planting (25.0%), weeding (21.0%), harvesting/gathering of pods (37.1%) and breaking melon pods (37.9%). It was observed that these activities are tedious and may require a lot of energy to

perform. These activities may be left for their male counterpart to perform, so this finding suggests that women were more involved in less laborious aspect of melon value chain most especially at processing, marketing and consumption activities, while men counterpart are likely to be involved in more tedious aspect of

melon production. This finding corroborates with Odebode (2007) that adult males engaged in land clearing, planting and weeding, while adult females carried out the seed selection and post-harvest practices in melon production in Nigeria.

Value addition to melon processing for higher income

Result presented in Table 3 (multiple responses) indicates the types of value addition to Melon in the study area. The value addition techniques employed as indicated by respondents were processing of melon (78.2%) and sorting of melon (80.6%). The result therefore reveals that most of them normally sort out melon to make it more attractive for higher value. Sorting activity may involve the removal of stones, leaves of some plants, domestics' animals' faeces and

droppings, broken bottles and some other foreign materials from the melon.

It was observed in Table 3 that most (99.2 %) of the respondents packaged/stored up melon inside sacks while few (8.1%) of them stored melon inside basket. This finding implies that storage of melon inside sacks had been the most common and popular practice in the study area, probably because sacks are cheap and can be arranged in batches. Results in Table 3 also shows that melon was either sold before shelling (35.5%) or after shelling (94.4%). The result of indicate that most of the respondents claimed that they normally sell melon after shelling. This implies that many of them had realized the benefits inherent in adding value to product as it usually gives birth to high premium product.

Table 3: Value addition to melon among respondents

<i>Variables</i>	<i>Frequency*</i>	<i>Percentage</i>
Value Addition Employed		
Processing	97	78.2
Sorting	100	80.6
Packaging Methods		
Basket	10	8.1
Sacks	123	99.2
When melon is normally sold		
Before shelling	44	35.5
After shelling	117	94.4
Local forms of sales/consumption of processed and shelled melon		
Igbalo	46	37.1
Ogiri	58	46.8
Robo	29	23.4
Oil	25	20.2
Soup	74	59.7
Market place		
Within the village	21	16.9
Local market	112	90.3
Open market	32	25.8

*Multiple responses

Table 3 also indicate the forms in which processed melons are sold or consume. The forms include igbalo (37.1%), ogiri (46.8%), robo (23.4%), oil (20.2%) and soup (59.7%). The finding reveals that melon can be utilized for various purposes which may likely depend on the taste and preference of the consumers. The indication that processed melon for consumption is mostly in form of soup popularly called 'egusi

soup' further implies that soup preparation was the most popular purpose of producing melon in the study area. The locations for sales of melon among respondents were within the village (16.9%), local market (90.3%) and open market (25.8%). This finding therefore implies that most of the respondents normally sell their melon in the local markets close to them.

Extension information on melon processing among respondents

Results in Table 4 (multiple responses) shows respondents' sources of information indicated were friends (85.5%), extension agents (52.4%), radio (11.3%) and television (2.4%). The result reveals that most of the respondents had access to extension information on their chosen melon value chain enterprises through their friends. This implies that friends had been the major sources of information. Women farmers are likely rely on information especially from members of the community that they had tested and trusted over years rather than external sources which integrity could not be guaranteed.

Table 4 indicate areas where extension services had helped in melon production and processing. They include planting (62.1%),

processing (58.1%), storage (39.5%), shelling (53.2%), marketing (52.6%) and access to improved seed sources (22.6%). Finding therefore shows that the agricultural extension services in the study area is helpful in the melon value chain enterprise ranging from sources of inputs, production, storage, processing and even marketing activities. Of the good activity of extension information in the study area, Table 4 further shows that most (19.4 per cent and 12.9 per cent) of the respondents need extension services in processing and sources of improved seeds of melon respectively. This implies that information on value addition had not been fully apprehended by the respondents and still need to be popularized to improve the quality of the melon and invariably boost the income of the processors.

Table 4: Extension information on melon processing among respondents

Variables	Frequency*	Percentage
Sources of Extension Information on Melon production, processing or marketing		
Friends	106	85.5
Extension agents	65	52.4
Radio	14	11.3
Television	3	2.4
Areas of Extension Information received on Melon		
Planting	77	62.1
Processing	72	58.1
Storage	49	39.5
Shelling	66	53.3
Marketing	28	22.6
Improved seed source	28	22.6
Areas of Extension Needs		
Planting	5	4.0
Processing	24	19.4
Storage	5	4.0
Shelling	2	1.6
Marketing	2	1.6
Improved seed source	16	12.9
Not applicable	86	69.4

*Multiple responses

Constraints to melon value chain enterprises

Table 5 indicated constraints to melon processing in the study area. The constraint in their rank order of severity were poor access to credit facilities (wms =2.96), high cost of chemical (wms =2.80), inadequate capital (wms

=2.74), weed problems (wms =2.39), high cost labour (wms=2.31), unavailability of machine for processing (wms=2.25), rodents/ruminant attack (wms =2.15), high cost of fertilizer (wms =2.08), pest and disease infestation (wms=2.05), lack of water source for washing (wms =1.91)

transportation problems (wms=1.90), unavailability of extension training (wms=1.80), poor storage facilities (wms =1.72), lack of access to extension agents and services (wms =1.66), lack of labour supply (wms =1.61), inadequate time (wms =1.59), shortage of planting materials (wms = 1.52), poor market outlet (wms =1.49) and inadequate knowledge about processing techniques (wms =1.39). The finding implies that

poor access to credit facilities had been the major challenge in chosen melon value chain enterprises of women in the study area. Fabiyi *et al.* (2007) have identified similar constraints faced by women in agriculture to include little access to capital and other assets that make agricultural production easy and concluded that majority of the women farmers have financial problem and lack financial assistance.

Table 5: Distribution of respondents by constraints faced

Constraints	Highly severe	Moderately severe	Not severe	Wms	Rank
Poor access to credit facilities	119(96.0)	5(4.0)	0(0.0)	2.96	1 st
Inadequate capital	93(75.0)	30(24.2)	1(0.8)	2.74	3 rd
Poor storage facilities	1(0.8)	87(70.2)	36(29.0)	1.72	13 th
High cost of fertilizer	60(48.4)	14(11.3)	50(40.3)	2.08	8 th
Lack of water	27(21.8)	59(47.6)	38(30.6)	1.91	10 th
Transportation problem	25(21.0)	101(8.15)	18(14.5)	1.90	11 th
Lack of access to extension agents and services	30(24.2)	22(17.7)	72(58.1)	1.66	14 th
Weed problems	76(61.3)	20(16.1)	28(22.6)	2.39	4 th
Shortage of planting material	8(6.5)	48(38.7)	68(54.8)	1.52	17 th
Lack of labour	4(3.2)	68(54.8)	82(41.9)	1.61	15 th
Inadequate knowledge	0(0.0)	48(38.7)	76(61.3)	1.39	20 th
Poor health	0(0.0)	51(41.1)	73(58.9)	1.41	19 th
Inadequate time	2(1.6)	69(55.6)	53(42.7)	1.59	16 th
Unavailability of machine for processing	46(37.1)	63(50.8)	15(12.1)	2.25	6 th
Extension training not available	14(11.3)	71(57.3)	39(31.5)	1.80	12 th
Poor market outlet	5(4.0)	51(41.1)	68(54.8)	1.49	18 th
Pest and diseases Infrastructure	37(29.8)	56(45.2)	31(25.0)	2.05	9 th
Rodent/ruminant attack	45(36.3)	52(41.9)	27(21.8)	2.15	7 th
High cost of labour	49(39.5)	64(51.6)	11(8.9)	2.31	5 th
High cost of chemical	99(79.8)	25(20.2)	0(0.0)	2.80	2 nd

*WMS= Weight Mean Scores

4. Conclusions and Recommendations

Based on the finding, it was concluded that Kwara state women farmers' participation in melon value chain enterprises were more in processing, marketing, consumption activities and were involved in various value addition initiatives in processing of melon. Women were also faced with constraints in their chosen melon value chain enterprises. It was therefore recommended that:

i. Women farmers need more extension services in processing seeds of melon. Extension agent need to render more assistance in providing adequate information on improved processing skills especially through training in order to

increase competence of women farmers in the study area. Training involves acquiring information and developing abilities or attitudes, which will result in greater competence in the performance of work (Farinde and Ajayi, 2005). Training is mostly directed at improving the ability of individual to do their vocation more effectively and efficiently.

ii. Women farmers need more extension services on sources of improved seeds of melon. There is need for extension institutions in the study area to embark on massive awareness creation programme on how women farmers could access improved melon seed. Not just that,

there is need for training of women farmers on the planting management of the improved seed given to them. There is also need for this service to always be available and affordable with little or no distant to women farmers.

iii. Aside processing of melon as soup, other processed forms for consumption were quite low among respondents. Governments and other relevant agencies needs to encourage and provide enabling environment for rural entrepreneurship to strive in the study area so that women farmers could venture more into processing other forms of melon neglected by many. This assistant could include policy and relevant training that will boast agri-preneurship and provision of micro loan that can be easily accessible by women at little interest rate.

iv. Poor access to credit facilities ranked first of the constraints facing women farmers. There is need for women farmers to come together as cooperative groups with name affiliated to any of the melon value chain enterprises. In this way, they can pool resources together and help each other. It will also make it easy to access loan and any other credit facilities as a group.

v. High percentage of respondents had no formal education. Government and other relevant bodies should intensify effort to assist women farmers in the study area to improve their literacy skills through approach suitable for women farmers. This can in turn improve their information seeking behaviour for improve technology on melon value chain enterprises.

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