



## CONTRIBUTIONS OF WATERMELON PRODUCTION TO WELFARE STATUS OF RURAL FARMING HOUSEHOLDS IN OYO STATE, NIGERIA

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### ABSTRACT

The study assessed the contributions of watermelon production to welfare status of rural farming households in Oyo State, Nigeria. Multi-stage sampling technique was used to select 265 farming households across Ibarapa Areas of Oyo State. Data were collected on respondent's socio-economic characteristics, production characteristics and contributions of watermelon production to welfare status. Data were analysed using descriptive statistics such as frequency distribution, percentage and mean while inferential tools such as chi-square and Pearson Product Moment Correlation (PPMC) were used for hypothesis testing at  $p \leq 0.05$ . Results indicate that majority (66.04%) of the respondents were married with mean age, household size, farming experience, farm size and income from watermelon production estimated at 44 years, 6 persons, 7.6 years, 6.2 hectares and ₦98,790.85, respectively. Respondents were strongly involved in land clearing (71.32%), planting operation (64.53%), watering (51.70%) and sorting of watermelon (50.19%). Benefits derived by respondents from watermelon production include additional income generation (82.64%), vitamin supplements (66.04%) among others. Contributions of watermelon production to welfare status as perceived by the respondents include expenditure of household items ( $\bar{x} = 3.33$ ), purchase of more farming inputs ( $\bar{x} = 2.99$ ) and acquisition of more farming tools ( $\bar{x} = 2.95$ ). Nearly half (47.55%) of the respondents perceived contributions of watermelon production to welfare status as high. Major constraints faced in watermelon production were high cost of input (1.73), inadequate capital (1.66) and poor seasonal rainfall (1.58). Significant relationship existed between perceived contributions of watermelon production to welfare status and benefit derived ( $r = 0.338$ ) and level of involvement in watermelon production ( $r = 0.692$ ). It was concluded from the study that watermelon contributes significantly to welfare status of the respondents in the study area. The study therefore recommends that farm input such as pesticides, fertilizers and planting materials should be made readily available at subsidized rate for watermelon farmers. This will improve their production and in the long run improves the welfare status of the farming households.

**Keywords:** Contributions, Production, Welfare status, Rural farming households.

### INTRODUCTION

Food supply in Nigeria has not been able to keep pace with population growth rate due to the fact that majority of the farmers in the rural areas are smallholders who depend largely on simple implements for crop production (Ekong, 2010) and they grow different kinds of vegetables and fruits, including watermelon. Recent reports indicated that exotic fruits such as



watermelon production generate higher profit (Yusuf *et al.*, 2016), provide more employment and income to the farmers than those of indigenous vegetables. Shortages of horticultural produce especially fruits are often very acute because of low levels of technology in production, harvesting and storage as well as increasingly high demand for fruits (Dhaliwal, 2017). Production of fruit crops such as watermelon has been low despite its nutritional and commercial value. This low production of watermelon calls for a close examination of the profitability of producing the crop, analysis of the resources used in its production and its ability to transform the welfare of the farmers involved watermelon production. Consumers have realized that watermelon is not just a summer fruit due to its health benefits but could provide additional income for sustaining the households (Baxley, 2018). Agricultural Marketing Resource Centre (2018) reported that one cup of diced, fresh watermelon provides 21% of the daily requirement of vitamin C, 18% of vitamin A, significant levels of vitamin B6, lycopene, antioxidants and amino acids which at long run serve as nutritional supplements and reduced cost of buying drugs.

In a study by Oguntola (2016), among five other exotic vegetables examined in Ibadan city of Oyo State, Nigeria, watermelon was reported as the most preferred and economic viable fruit thereby improving farmers' welfare. The fruit and the seeds are used as a domestic remedy for urinary tract infection, control of blood pressure and possibly prevent stroke, and also can treat eye problems, dry skin, eczema, cancer, hepatic congestion, catarrh and psoriasis with overall high economic value. Dauda *et al.* (2008) reported that despite all these nutritional benefits from watermelon, the production of the fruit is still low in Nigeria. It is against this background that some farmers are into watermelon production so as to increase their income generating activities and thereby improve their households' welfare.

Unlike in advanced countries where watermelon is utilized for the production of juices, nectars and fruit cocktails, it is eaten as raw fruit in both rural and urban centres in Nigeria. From the East to the Central and far North in Nigeria, the youth are predominant in watermelon production because of its quick returns on investment. Thus, it contributes immensely to the household welfare of both young and older farmers. In recent time however, there has been continuous decline in watermelon output and in worst situation total crop failure is recorded which constituted great economic losses. This has greatly affected many rural households that depend on watermelon production for their well-being. It affects rural economic and social systems as youths are leaving farms to cities to do commercial motorcycling and other petty jobs to ensure sustainable standard of living therefore leaving behind women and old people in the farms thereby affecting the economic and sustainable development of the rural areas (Dauda *et al.*, 2008).

Watermelon farmers depend on the income generated from the crop to send their children to school, provide shelter and improve their standard of living. As a household food, it is the most affordable and suitable dietary sources of vitamins and minerals. It includes other bioactive compounds, that are important protective food and highly beneficial for the improvement of diets, provision of vitality of health and prevention of diseases (Gray, 2005; HonCode, 2018). To date, many studies focused on the importance of traditional practices related to African vegetables such as watermelon, its nutritional value, the socio-cultural uses of watermelon include income generation, household food, and as gift to relatives but little are known on its contributions to rural household welfare in Nigeria. The knowledge of availability of aggregated farm level resources in watermelon production and its contribution to welfare of rural dwellers is paramount and germane. Based on the above assertion, the study investigated



contributions of watermelon production to welfare status of rural farming households in Oyo State, Nigeria. This study aims at finding solution to the following research questions:

- i. What are the socio-economic characteristics of the respondents in the study area?
- ii. What are the levels of involvement of the respondents in watermelon production in the study area?
- iii. What are the benefits derived from watermelon production by the respondents in the study area?
- iv. What are the constraints to watermelon production in the study area?

The hypothesis stated in null form was tested for the study:

H0<sub>1</sub>: There is no significant relationship between socio-economic characteristics of the respondents and contribution of watermelon production to welfare status.

H0<sub>2</sub>: There is no significant relationship between the level of involvement in watermelon production and contribution of watermelon production to welfare status.

H0<sub>3</sub>: There is no significant relationship between benefits derived from watermelon production and contribution of watermelon production to welfare status.

H0<sub>4</sub>: There is no significant relationship between constraints and contribution of watermelon production to welfare status.

## **MATERIALS AND METHODS**

### **The Study Area**

Oyo State is located in the South-West geopolitical zone of Nigeria. It was one of the three States carved out of the old Western State of Nigeria in 1976 (NPC, 2006). Oyo State consists of 33 Local Government Areas with population of 5,591,589 people. Oyo State covers an area of 35,745sq kilometre; it is bounded in the South by Ogun State, to the North by Kwara State, to the West partly by Ogun State and partly by the Republic of Benin, while to the East by Osun State. The population of the study comprised all rural households that are into watermelon production in Oyo State, Nigeria.

### **Sampling Procedure**

Multi-stage sampling procedure was used to select the respondents across the study area. First stage involved purposive selection of Ibarapa areas (Ibarapa East, Ibarapa North and Ibarapa Central Local Government areas) due to high production of Watermelon. Twenty percent (20%) of the wards in each local government area was randomly selected for easy administration of interview guide and management of data. This gives six (6) wards (2 wards from each local government areas). A total of 758 registered farmers were in the selected wards. Furthermore, thirty-five percent (35%) of registered farmers in these wards were randomly selected making 265 respondents.

## **RESULTS AND DISCUSSION**

Result in Table 1 shows that majority (64.9%) were within age category of  $\leq 50$  years while the mean age of the respondents was estimated at 44 years. This implies that majority of the respondents were in economic productive age. The result was in line with Adekunle *et al.* (2017) who reported that majority of rural farmers in Southwest Nigeria are less than 50 years and were still within economically active age.

Distribution of the respondents based on religion is as shown in Table 1. Results show that majority (46.79%) of the respondents were Muslims. This could offer a great opportunity for watermelon-related information sharing among the faithful. This was in line with Egbe



(2014) that interpersonal communication helps in gaining information, building a context of understanding, establishing identity and identifying interpersonal needs among faithful.

**Table 1:** Respondents based on Socio-economic characteristics of watermelon farmers (n = 265)

Variables	Frequency	Percentage	Mean
<b>Age</b>			
Less than 30	18	6.79	44
30 - 40	52	19.62	
41 – 50	102	38.49	
51 – 60	83	31.32	
Above 60	19	3.77	
<b>Religion</b>			
Christianity	112	42.26	
Islam	124	46.79	
Traditional	29	10.95	
<b>Marital status</b>			
Single	40	15.09	
Married	175	66.04	
Widow/Divorced/Separated	50	18.87	
<b>Sex</b>			
Male	239	9.81	
Female	26	90.19	
<b>Educational qualification</b>			
No Formal	29	10.95	
Primary	114	43.02	
Secondary	94	35.47	
Tertiary	28	10.57	
<b>Household size</b>			
Less than 4	102	38.49	6
4 – 8	148	55.85	
Above 8	16	5.66	
<b>Type of livelihood activities</b>			
Trading	32	12.07	
Livestock Farming	15	5.66	
Crop Farming	160	60.38	
Crop/Food processing	46	17.36	
Artisan	12	4.53	
<b>Contact extension agent</b>			
Yes	202	76.23	
No	63	23.77	
<b>Total</b>	<b>265</b>	<b>100.00</b>	

Source: Field Survey, 2021

Sex distributions of the respondents revealed that majority (90.19%) of the respondents were male. This finding was buttressed by work of Ajewole (2015) that male dominate watermelon production than their female counterpart in Nigeria.

In terms of respondents' marital status, majority (66.04%) of the respondents were married. This implies that most watermelon farmers were responsible adults. This is in line



with Adekunle *et al.* (2017) that being married implied that the respondents were matured and responsible for catering for the households as well as having a clear knowledge of wellbeing.

Results on educational qualification of the respondents revealed that 43.02 percent, 35.47 percent and 10.57 percent of them had primary education, secondary education and tertiary education, respectively, while 10.94 percent of the respondents had no formal education. This shows that majority of the respondent had primary education. The result was in conformity with Egbe (2014) which reported that majority of rural farmers in Oyo state had between 4 to 10 years of formal education. It was also buttressed by Mgbada (2010) that asserted that a high level of education among farmers would make them more responsive to many agricultural programmes and policies, thereby making them to be productive with the available resources.

As shown in Table 1, majority (55.85%) of the respondents had household size of 4–8 members with mean household size estimated at 6 persons. This is in line with the finding of Mohammed (2011) that large household size on the other hand has a positive implication on family labour availability for farming enterprises. The distribution of respondents based on their livelihood activities revealed that majority (60.38%) of the respondents were into crop farming. The result corroborates the work of Enoch (2018) who reported that the major economic generating activity of rural household is food crop production.

### **Production Characteristics of the Respondents in the Study Area**

As shown in Table 2, farm experience distribution of the respondents shows that majority (49.06%) of the respondents had between 5–10 years farming experience. This is in line with the finding of HonCode (2018) that farming experience is among the factors that influenced farmers' productivity.

Results on farm land used for watermelon production revealed that majority of the respondents (67.17) percent has between 2 – 4 hectares of farm land for watermelon production, 23.40 percent has less than 2 hectares while 9.43 percent have above 4 hectares of land for watermelon production. This corroborates the classification of Ajewole (2015) which categorise Nigerian farmers into: small scale (0.1 – 5.99ha); medium scale (6.0 -9.99 ha); and large scale holding with above 10 hectares (Table 2). Also, the finding was further buttressed by Boswell (2016) who reported that Small-scale farming among the rural farmers in Southwest Nigeria are attributed to their inadequate access to land for farming.

The distribution of the respondents based on income from watermelon production is as shown in Table 2. Results indicate that majority (72.08%) of the respondents make ₦50,000 - ₦100,000 income from watermelon production. Income from watermelon production goes a long way in influencing farmers' welfare.

In terms of the distribution of watermelon cultivation, the result shows that, majority (75.85%) of the respondents in the study area cultivated watermelon solely while 24.15 percent of the respondents cultivated watermelon along with other crops. Respondents' distribution based on source of labour is as revealed in Table 2. Results show that, majority (75.85%) of the respondents made use of both family and hired labour during watermelon cultivation.





**Table 2:** Distribution of Respondents based on their Production characteristics (n = 265)

Variables	Frequency	Percentage	Mean
<b>Farming experience (years)</b>			
Less than 5	101	38.11	7.6
5 - 10	130	49.06	
11 – 15	34	12.83	
<b>Farm land used(ha)</b>			
Less than 2	62	23.40	3.8
2 – 4	178	67.17	
Above 4	25	9.43	
<b>Income from Watermelon Production</b>			
Less than 50,000	22	8.30	98,790.85
50,000 – 100,000	191	72.08	
Above 100,000	52	19.62	
<b>Watermelon cultivation</b>			
Sole cultivation	201	75.85	
Mixed cultivation	64	24.15	
<b>Source of Labour</b>			
Self/family labour	22	8.30	
Hired labour	42	15.85	
Both	201	75.85	
<b>Total</b>	<b>265</b>	<b>100</b>	

Source: Field Survey, 2021

### Level of Involvement in Watermelon Production in the study area

Distribution of respondents based on level of involvement in watermelon production in the study area was presented in Table 3. Majority (71.32%) of the respondents were strongly involved in land clearing.

**Table 3:** Respondents based on level of involvement in Watermelon Production (n = 265)

Stages in watermelon production	Level of Involvement					
	Strongly involved		Partially involved		Not involved	
	Freq.	%	Freq.	%	Freq.	%
Land clearing	189	71.32	65	24.53	11	4.15
Planting	171	64.53	91	34.34	3	1.13
Watering	137	51.70	38	14.34	90	33.96
Weeding	33	12.45	95	35.85	137	51.70
Harvesting	133	50.19	129	48.68	3	1.13
Sorting	108	40.75	150	56.60	7	2.64
Washing	132	49.81	91	34.34	42	15.85

Source: Field Survey, 2021

Also in Table 3 results, 64.53 percent, 51.70 percent and 50.19 percent of the respondents were strongly involved in planting operation, watering and sorting of watermelon in the study area, respectively. This result is similar to that of HonCode (2018) who reported that most farmers in Nigeria are financially constrained and thus, they make use of family



labour to carry out some selected farming activities such as weeding, land preparation in agricultural production. Ogbonna (2013) also buttressed this finding that majority of farming households in rural areas are majorly involved in pre-planting farming operation such as land preparation and clearing, as well as weeding and harvesting.

### **Benefits Derived from Watermelon Production in the study area**

Table 4 revealed distribution of respondents based on the benefits derived from watermelon production in the study area. Majority (82.64%) reported that watermelon helps in additional income generation to great extent. Also, 66.04 percent, 61.13 percent, 52.08 percent and 52.07 percent of the respondents claimed that the benefits derived from watermelon production includes serving as vitamin supplements, employment opportunity through production/marketing, contribution to household food security and ensuring financial stability of farmers in the study area.

**Table 4:** Respondents based on benefits derived from Watermelon Production (n = 265)

<b>Benefits derived from Watermelon Production</b>	<b>Great Extent</b>		<b>Minimal Extent</b>		<b>No Extent</b>	
	<b>Freq.</b>	<b>%</b>	<b>Freq.</b>	<b>%</b>	<b>Freq.</b>	<b>%</b>
Watermelon helps in additional Income generation	219	82.64	46	17.36	0	0.00
Derived Nutritional Benefit through consumption in the households	115	43.40	138	52.08	12	4.53
Watermelon production helps contributed to household food security	138	52.08	98	36.98	29	10.94
Involvements in watermelon production helps in the accessibility to credits facilities from their association	85	32.08	114	43.02	66	24.91
It provides employment opportunity through production and marketing	162	61.13	93	35.09	10	3.77
Sales from watermelon ensures financial stability in the households	138	52.07	102	38.49	25	9.43
Watermelon production didn't really help in meeting the household's expenditure on food items	67	25.28	157	59.25	41	15.47
Watermelon serves as vitamin supplements	175	66.04	83	31.32	7	2.64
Used in making local Medicines	56	21.13	124	46.79	85	32.08
Income from watermelon production helps in paying house Rent	117	44.15	114	43.02	34	12.83
Provide additional income to purchase of food Stuff for the household	114	43.02	93	35.09	58	21.89
It helps in payment of Children's School Fees	128	48.30	102	38.49	35	13.21
Provide additional money for payment for other households need	127	47.92	127	47.92	11	4.16

Source: Field Survey, 2021



Furthermore, 52.08 percent, 47.92 percent and 46.79 percent (Table 4) of the respondents perceived the benefit from watermelon production as minimal extent in term of its nutritional benefit through consumption in the households, for payment of other household needs and in preparation of local medicines in the study area, respectively.

### **Perception Level on Contribution of Watermelon Production to Welfare Status**

Table 5 presents the perception index of the contributions of watermelon production to welfare status of the respondents. Nineteen (19) perception statements were constructed to determine the farmers' perception on contributions of watermelon production to welfare status. Table 5 showed that 47.55 percent of the respondents were highly favoured by the perception statements on contribution of watermelon to their welfare status. The result goes in line with HonCode (2018) which state that actual adoption of watermelon for production depended heavily on the perceived economic well-being of farmers.

**Table 5:** Perception Index (PI) on contributions of Watermelon Production to the Welfare Status of the Respondents (n = 265)

Perception Index	Frequency	Percentage
HPI	126	47.55
API	83	31.32
LPI	56	21.13
<b>Total</b>	<b>265</b>	<b>100.0</b>

HPI= High Perception Index, API= Average Perception Index, LPI= Low Perception Index  
Source: Field Survey Data, 2021

### **Perceived Contributions of Watermelon Production to Welfare Status of the Respondents**

The distribution of the respondents based on perceived contributions of watermelon production to welfare status of respondents in the study area was presented on Table 6. In term of physical assets, the perceived contributions of watermelon production using the weighted mean score (WMS) for each perception statements showed that watermelon production assisted in the expenditure of household items was ranked 1<sup>st</sup> with WMS of 3.33, the farmers were able to purchase more farming inputs came 2<sup>nd</sup> with WMS of 2.99 as well acquisition of more farming tools which came 3<sup>rd</sup> with WMS of 2.95.

Also, the WMS for the perceived contribution of watermelon to financial asset of the respondents showed that it has helped the farmers in meeting family financial obligations (3.11) was ranked 1<sup>st</sup> while contribution of money for Savings/thrift ranked 2<sup>nd</sup> with weighted mean score of 2.94, as well as being able to pay children school fees through income from sales of watermelon ranked 3<sup>rd</sup> with WMS of 2.92. Also, additional income generated from watermelon was used for loan/debts servicing was ranked 4<sup>th</sup> with WMS of 2.73.





**Table 6:** Contributions of Watermelon Production to Respondents Welfare Status (n = 265)

<b>Perceived contributions of Watermelon Production to their Welfare Status</b>	<b>SA</b>	<b>A</b>	<b>U</b>	<b>D</b>	<b>SD</b>	<b>WMS</b>	<b>Rank</b>
	<b>Freq (%)</b>	<b>Freq (%)</b>	<b>Freq (%)</b>	<b>Freq (%)</b>	<b>Fre (%)</b>		
Human/Physical Assets							
I am able to purchase more farming inputs	109(41.29)	87(32.95)	47(17.80)	17(6.44)	4(1.52)	2.99	2nd
I am able to acquire more farming tools	153(57.74)	66(24.91)	19 (7.17)	24(9.06)	3 (1.13)	2.95	4th
I am able to pursue my educational needs	55(20.75)	140(52.83)	50(18.87)	19(7.17)	1 (0.38)	2.84	5th
Assist in the expenditure on household items	116(43.77)	81(30.57)	60(22.64)	6 (2.26)	2(0.75)	3.00	1st
Assisted in buying clothing material for the households	75(28.30)	143(53.96)	32(12.08)	7(2.64)	8(3.02)	2.98	3rd
Financial Assets							
I am able to contribute money for Savings/thrift	77 (29.06)	120(45.28)	51(19.25)	16(6.04)	1(0.38)	2.94	2nd
I am able to Pay children school fees through income from sales of watermelon	119(44.91)	33(12.45)	88(33.21)	14(5.28)	11(4.15)	2.92	3rd
Money generated from watermelon was used for loan/debts servicing	59 (22.26)	136(51.32)	23(8.68)	4(16.23)	43(16.23)	2.73	5th

Weighted Mean Score (WMS)

Source: Field Survey Data, 2021



**Table 6:** Contributions of Watermelon Production to Respondents Welfare Status (n = 265)  
**Cont'd.**

Perceived contributions of Watermelon Production to their Welfare Status	SA	A	U	D	SD	WMS	Rank
	Freq (%)	Freq (%)	Freq (%)	Freq (%)	Fre (%)		
Help in meeting family financial obligations	106(40.00)	114(43.02)	6(2.26)	13(4.91)	26(9.81)	3.11	1st
Accessibility to loan from association	74(27.92)	127(47.92)	19(7.17)	25(9.43)	20(7.55)	2.76	4th
Natural Assets							
Watermelon production contribute to increase soil fertility	2 (0.75)	35 (13.21)	0 (0.00)	109(41.13)	119(44.91)	3.30	2nd
Watermelon helps in reducing soil degradation	93 (35.09)	146(55.09)	23(8.68)	0 (0.00)	3(1.13)	3.25	3 <sup>rd</sup>
It prevents soil erosion	113(42.64)	118(44.53)	25(9.43)	6 (2.26)	3 (1.13)	3.31	1 <sup>st</sup>
Serve as cover crop on the farm	133(50.19)	27(10.19)	86(32.45)	27 (10.19)	19 (7.17)	2.82	4 <sup>th</sup>
Social Asset							
Able to pay for proper Health Care Services	46 (17.36)	146(55.09)	16(6.04)	3 (1.13)	16 (6.04)	2.61	2 <sup>nd</sup>
Their associate has boosted by prestige	37 (13.96)	50 (18.87)	138(52.08)	37 (13.96)	3 (1.13)	2.41	4 <sup>th</sup>
Income from watermelon was used for sponsoring relative education	43 (16.23)	135(50.94)	42 (15.85)	45 (16.98)	0 (0.00)	2.45	3 <sup>rd</sup>
Payment for electricity bill	27 (19.19)	108(40.75)	122(46.04)	7 (2.64)	1 (0.38)	2.62	1 <sup>st</sup>
Income from watermelon sale was used for building modern house.	44 (16.60)	21 (7.92)	109(41.13)	82 (30.94)	9 (3.40)	2.39	5 <sup>th</sup>

Weighted Mean Score (WMS)

Source: Field Survey Data, 2021

### Constraints to Watermelon Production in the Study Area

Table 7 shows the constraints faced by the respondents in watermelon production in the study area. Majority (72.83%) of the respondents claimed that inadequate capital/credit facility

was a major constraint facing watermelon production. Also, other constraints affecting watermelon production include middlemen problem (71.32%), poor seasonal rainfall (61.89%), lack of storage facilities (56.60%) and high cost of input (51.70).

**Table 7:** Distribution of Respondents based on Constraints faced by the Respondents in Watermelon Production in the study area (n= 265)

Statements	Major constraint Freq (%)	Minor constraint Freq (%)	Not a constraint Freq (%)	WMS	Rank
Inadequate capital/credit facilities	193 (72.83)	54 (20.38)	18 (6.79)	1.66	2 <sup>nd</sup>
Lack of access to fertile land	6 (2.26)	131 (49.43)	128 (48.30)	1.46	8 <sup>th</sup>
Pest and disease	90 (14.34)	38 (14.34)	137 (51.70)	1.52	6 <sup>th</sup>
Lack of technology	137 (51.70)	82 (30.94)	46 (17.36)	1.34	11 <sup>th</sup>
Market problem (no access to market information, agro-industries & guaranteed market)	133 (50.19)	129 (48.68)	3 (1.13)	1.53	5 <sup>th</sup>
Inadequate transportation	108 (40.75)	150 (56.60)	7 (2.64)	1.27	10 <sup>th</sup>
Lack of seed procurement/input	42 (15.85)	91 (34.34)	132 (49.81)	1.21	12 <sup>th</sup>
Poor seasonal rainfall	164 (61.89)	78 (29.43)	23 (8.68)	1.58	3 <sup>rd</sup>
Middlemen problem	189 (71.32)	65 (24.53)	11 (4.15)	1.37	9 <sup>th</sup>
Lack of storage facilities	150 (56.60)	90 (33.96)	25 (9.43)	1.48	7 <sup>th</sup>
Poor technical know-how	60 (22.64)	200 (75.47)	5 (1.89)	1.47	8 <sup>th</sup>
High cost of input	137 (51.70)	95 (35.85)	33 (12.45)	1.73	1 <sup>st</sup>
Inadequate extension service	11 (4.15)	51 (19.25)	202 (76.60)	1.21	13 <sup>th</sup>
Climatic change (unpredicted rainfall pattern and flooding)	189 (71.32)	58 (21.89)	18 (6.79)	1.54	4 <sup>th</sup>
Limited agricultural extension services support	3 (1.13)	91 (34.34)	171 (64.53)	1.18	15 <sup>th</sup>

Weighted Mean Score (WMS)

Source: Field Survey Data, 2021

In addition, among these constraints faced in watermelon production, cost of input was ranked 1st with the WMS of 1.73 and inadequate capital was ranked 2nd with WMS of 1.66 while poor seasonal rainfall and poor market structure were ranked 3rd and 4th with WMS of 1.58 and 1.53, respectively. Inadequate extension service has reduced ranked 13th with WMS of 1.21, lack of input procurement was ranked 14th with WMS of 1.20 while limited agricultural extension service support was ranked 15th with WMS of 1.18.

This agrees with the findings of Adeoye *et al.* (2011) and Adekunle *et al.* (2017) that inadequate credit is a major constraint to watermelon production in Nigeria. It also corroborates the findings of Ekerete and Asa (2014) that the most severe constraints to watermelon marketing and production in Nigeria include losses resulting from fruits spoilage, lack of preservation facilities, high cost of transportation and lack of credit facilities. This corroborates the report by Adojutelegan *et al.* (2015) that lack of capital, poor markets, perishable nature of watermelon and lack of technology for large scale production were the serious constraints faced by farmers during the cause of production of watermelon.

### Test of Hypotheses

**H0<sub>1</sub>:** There is no significant relationship between the selected socioeconomic characteristics of the respondents and contribution of watermelon production to their welfare status.



The test of significant relationship between selected socio-economic characteristics (age, household size, years spent in school, years of experience in watermelon farming, income from watermelon production, total hectares of land for farming and farm size allocated for watermelon farming) of the respondents and contribution of watermelon production to their welfare status was presented in Table 8. Pearson Correlation analysis revealed that age ( $r = 0.329$ ,  $p < 0.05$ ), household size ( $r = 0.430$ ,  $p < 0.05$ ), years spent in school ( $r = 0.229$ ,  $p < 0.05$ ), years of experience in watermelon production ( $r = 0.302$ ,  $p < 0.05$ ), income from watermelon production ( $r = 0.604$ ,  $p < 0.05$ ) and farm size for watermelon production ( $r = 0.203$ ,  $p < 0.05$ ), had significant relationship with contribution of watermelon production to farmers' welfare status. This implies that the age of the household head, household size, years of education, years of experience in watermelon farming, income from watermelon production and total farm size allocated to watermelon production in hectares strongly have a positive significant influence on watermelon production to their welfare status. Therefore, the null hypothesis was rejected.

**Table 8:** Correlation analysis showing Relationship between selected socio-economic characteristics of the respondents and contribution of watermelon production to their welfare status of the respondents (n=265)

Socio-economic characteristics	r-value	p-value	Remark	Decision
Age	0.329	0.040	S	Reject $H_0$
Household Size	0.430	0.032	S	Reject $H_0$
Years spent in School	0.229	0.011	S	Reject $H_0$
Years of Experience in Watermelon Production	0.302	0.020	S	Reject $H_0$
Income from Watermelon	0.604	0.031	S	Reject $H_0$
Farm size for Watermelon Production	0.230	0.009	S	Reject $H_0$
Total Farm size for farming	0.078	0.321	NS	Accept $H_0$

S = significant; NS = not significant

Source: Field Survey, 2021

**H0<sub>2</sub>: There is no significant relationship between involvement in watermelon production and contribution of watermelon production to their welfare status.**

Pearson correlation coefficient revealed the relationship between the level of involvement in watermelon production and contribution of watermelon production to their welfare status in the study area and was presented in Table 9. The r-value of 0.692 and p-value of 0.05 showed that there was strong positive significant relationship at 0.05 significant level between them. This implies that the higher the contribution of watermelon production to the respondents' welfare, the more farmers' level of involvement in watermelon production. Therefore, the null hypothesis is rejected.



**Table 9:** Correlation analysis showing Relationship between the level of involvement in watermelon production and contribution of watermelon production to their welfare status of the respondents in the study area (n = 265)

Variable	r-value	p-value	Remark	Decision
Level of involvement in watermelon production and contribution of watermelon production to their welfare status	0.941	0.011	S	Reject H <sub>0</sub>

S = significant; NS = not significant

Source: Field Survey, 2021

**H0<sub>3</sub>: There is no significant relationship between benefits derived from watermelon production and contribution of watermelon production to their welfare status**

The test of significant relationship between benefits derived from watermelon production and contribution of watermelon production to their welfare status by the respondents in the study area was presented in Table 10. Pearson Correlation analysis revealed that there exists a positive significant relationship between them ( $r=0.338$ ,  $p<0.05$ ). This implies that the respondents enjoyed enough benefit from watermelon production which at long run contributed positively to the welfare status in the study area. Therefore, the null hypothesis was rejected.

**Table 10:** Correlation analysis showing relationship between benefits derived from watermelon production and contribution of watermelon production to their welfare status in the study area (n = 265)

Variable	r-value	p-value	Remark	Decision
Benefits derived from watermelon production and contribution of watermelon production to their welfare status	0.338	0.017	S	Reject H <sub>0</sub>

S = significant; NS = not significant

Source: Field Survey, 2021

**H0<sub>4</sub>: There is no significant relationship between constraints and contribution of watermelon production to their welfare status**

The test of significant relationship between constraints and contribution of watermelon production to their welfare status in the study area was presented in Table 11. Pearson Correlation analysis revealed that there is no significant relationship between them ( $r = 0.109$ ,  $p>0.05$ ). This implies that the constraints encountered associated with watermelon production were not significantly correlated with contribution to welfare status of the respondents in the study area. Therefore, the null hypothesis was accepted.





**Table 11:** Correlation analysis showing Relationship between constraints and contribution of watermelon production to their welfare status to the respondents (n = 265)

Variable	r-value	p-value	Remark	Decision
Constraints and contribution of watermelon production to their welfare status	0.109	0.117	NS	Accept H <sub>0</sub>

S = significant; NS = not significant

Source: Field Survey, 2021

## CONCLUSION AND RECOMMENDATIONS

The study concluded that majority of the respondents were male, married with secondary education. Also, crop farming was the major livelihood activities of the respondents in the study area while some of the respondents also engaged in occupations such as livestock farming, trading and artisan. Islam was the major religion believes of the respondents while majority of the respondents had either of primary, secondary or tertiary education in the study area.

Also, majority of the respondents were strongly involved in land clearing, harvesting and planting operation in watermelon production while few of them were partially involved in sorting, washing and weeding operations in the study area. The major benefit derived from watermelon production as claimed by respondents includes it helps in additional income generation, contributed to household food security and serve as vitamin supplement in the households with majority of the respondents encountered various constraints in watermelon production such as high cost of input, inadequate capital, poor seasonal rainfall, market problem structure and pest/disease. It can also be concluded from the study that watermelon contribute significantly to welfare status of the respondents in the study area. The hypothesis of the study shows that there exists a significant relationship between benefits derived from watermelon production and perceived contributions of watermelon production to their welfare status.

Recommendations are as follows:

1. Policies and programmes that will stimulate the interest of young people into watermelon farming as a business should be put in place by all the tiers of government.
2. Watermelon farmers should come together to form cooperative societies to pull fund together, access agricultural loans from financial institutions and increase their farm produces to improve their annual income and welfare status.
3. Since watermelon contribute to welfare status of the farmers in the study area, farm input such as pesticides, fertilizers and planting materials should be made readily available or subsidized for watermelon farmers which will improve the production and at long run improves the welfare status of the farmers.

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