

## Gender Differentia Among Fish Farmers Within Ilorin Metropolis, Kwara State, Nigeria

**Ayeloja, A. A<sup>1\*</sup>, Jimoh, W. A<sup>1</sup>, Adebisi, G. L<sup>2</sup> and Amusat, M.A<sup>3</sup>**

<sup>1</sup>Department of Aquaculture and Fisheries, University of Ilorin, PMB 1515 Ilorin, Kwara State, Nigeria (\*ayeloja2@gmail.com; ayeloja.aa@unilorin.edu.ng).

<sup>2</sup>Department of Agricultural Extension and Management, Federal College of Animal Health and Production Technology, Moor Plantation, Ibadan, Nigeria.

<sup>3</sup>Department of Processing and Storage Engineering, National Centre for Agricultural Mechanization, P M B 1525, Ilorin, Nigeria.

### ABSTRACT

Gender differentia among fish farmers within the Ilorin metropolis, Kwara State, Nigeria was studied with the aim of evaluating the level of involvement of the different gender in fish production activities, accessing their access to credit, and the constraints faced by them. A multistage sampling technique using a structured questionnaire was adopted for this study, the sample size was 210 using a structured questionnaire. Data were analyzed using SPSS 16.0. 61.90% of respondents were male while 52.5% and 49.2% of female and male respondents respectively were in their active age group of  $\leq 30$  years. Females were more involved in fish marketing (42.90%) and fish processing (48.75%). There exist a significant association ( $p < 0.05$ ) between gender and level of involvement in fish marketing ( $\chi^2 = 9.20$ ,  $p < 0.05$ ), access to land ( $\chi^2 = 10.69$ ,  $p < 0.05$ ), and fish production activities ( $\chi^2 = 11.83$ ,  $p < 0.05$ ). Access to credit was poor. Constraints faced include poor access to credit facilities, inadequate information, high cost of feed production, and poor water quality. It is therefore recommended that access to credit facilities banks of agriculture, microfinance banks, and commercial banks should be improved on while fish farmers are also encouraged to form cooperative societies as it will improve the capacity building of farmers and ease their credit acquisition for farming activities.

**Keywords:** Fish farmers, Gender, Differentials, Catfish, Feed and fish production, Ilorin.

### 1. INTRODUCTION

Agriculture has been described as the natural engine room for economic development and a reliable key to industrialization for developing countries of the world (Igbochi, 2000; Olagunju, 2005). Many people in the developing nation including Nigeria see fish as important delicacy as it addresses the nutritional and livelihood security of many people supplying good quality polyunsaturated fatty acids (PUFA's), protein, minerals and vitamins which are essential for good health of man (Ayeloja et al., 2019). Ayeloja et al. (2017) also stated that fish is a much cherished among many Africans due to it's a highly protein content, it's palatability and it's acceptability by people of different religions. Ayeloja et al. (2020) also stated that fish are more consumed than other animal protein sources due to its high nutritional value and low price when compared to other animal protein sources. The status

of women in our society over the ages and all over the culture had always been considered inferior to men (Akinpelu et al., 2013), they are regarded as weaklings capable of doing nothing except childbearing and home making (Enomouh, 1995). Female stakeholders in the fisheries sector were, until recently, invisible in the statistics collected and provided to fisheries managers and policymakers. In recent times, more literature has been directed to making women's roles more visible. Williams (2008); and Weeratunge et al. (2009) describe the diverse gendered division of labor in fishing communities, and their involvement and importance in fisheries processing and trade. In many African nations, it is often assumed that men are farmers while women are farmers' wives and helpers that is why fish production is traditionally considered as masculine enterprise, women's role in fisheries is complementary (Akinpelu et al., 2013). Women play a major role in aquaculture production around the world as labourers and managers of the production process. These roles are very much restricted and often ignored. However, there is paucity of information on gender participation in fish production within Ilorin Metropolis, thus the need for this research. This study aims at describing the socioeconomic characteristics of the respondents, assess the level of involvement of the different gender in fish production activities, evaluate their access to credit and constraints faced by them.

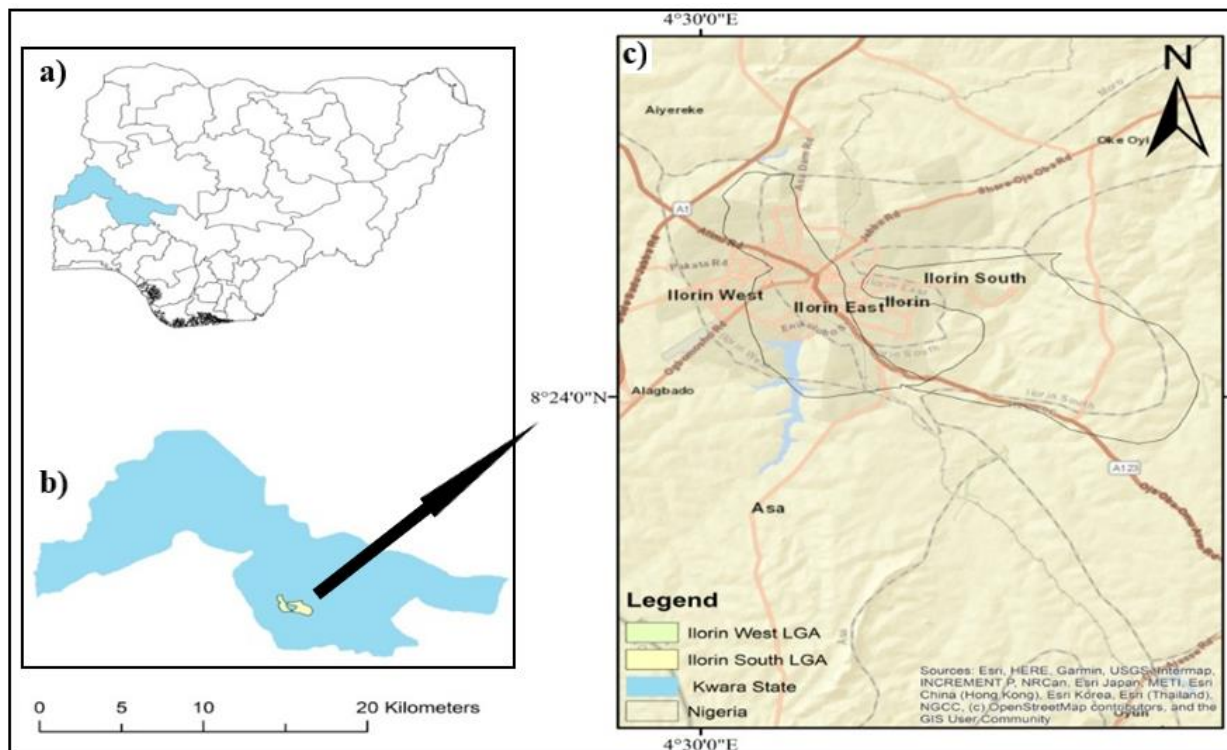


Figure 1. Map of Nigeria (a), Kwara State (b), and Ilorin west and Ilorin south (c).

## **2. METHODOLOGY**

The study was carried out within Ilorin Metropolis. Ilorin is the state capital of Kwara in north central Nigeria. It is located 8.50' latitude and 4.54' longitude and it is situated at elevation 320 meters above sea level. As of the 2006 census, it had a population of 777,667, making it the 6th largest city by population in Nigeria. Two local government areas – Ilorin South and Ilorin West were selected. The study area Ilorin South is a Local Government Area in Kwara State, Nigeria. Its headquarters are in the town of Fufu. It has an area of 174 km<sup>2</sup> and a population of 208,691 at the 2006 census. The postal code of the area is 240. Ilorin West is a Local Government Area in Kwara State, Nigeria. Its headquarters are in the town of Wara Osin Area. It has an area of 105 km<sup>2</sup> and a population of 364,666 at the 2006 census.

Primary data was collected with the use of structured questionnaire administered to fish farmers in the area. The primary data collected include the socio-economic characteristics of Catfish farmers in the study area, level of involvement in various fish production activities, the source of finance for Catfish farm and constraints faced by catfish farmers.

### **2.1. Sampling and Sample Size**

Multistage sampling procedure was adopted for the study. The first stage involved purposive selection of two L.G.As (Ilorin west and Ilorin South) while the second stage involved selection of four wards using random technique which gave a total of eight wards from the 2 local government. Five communities under each ward were randomly selected which gave a total of forty communities. The third stage involved the selection of five catfish farms from each community using simple random technique which made a total sum of two hundred and ten respondents.

### **2.2. Statistical Analysis**

Data collected were analyzed appropriately using SPSS 16.0 version. The frequency distribution and mean were used to describe socioeconomic characteristics of the respondents.

## **3. RESULTS AND DISCUSSION**

Table 1 shows the age distribution of the respondents and indicates that 61.90% were male while 38.10% were female. The observed higher number of male fish farmers compared to female fish farmers in this study area could be due to the fact the study was conducted in the North-Central part of Nigeria where the culture abhors female involvement in outside jobs.

Table 1. Distribution of socioeconomic characteristics (Source: Field Survey, 2019).

<b>Variable</b>	<b>Female (n = 80)</b>		<b>Male (n = 130)</b>	
	<b>Frequency</b>	<b>Percentage</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Age (years)</b>				
≤30	42	52.5	64	49.2
31-40	20	25.0	42	32.3
41-50	13	16.3	15	11.5
51-60	3	3.8	4	3.08
>60	2	2.5	5	3.9
<b>Primary occupation</b>				
Fish farming	30	37.5	70	53.9
Fish marketing	17	21.3	20	15.9
Civil servant	14	17.5	23	17.4
Trading	8	10.0	7	5.4
Teaching	5	6.3	5	3.9
Artisan	6	7.5	5	3.9
<b>Income/month (N)</b>				
10,000-20,000	20	25.0	30	23.1
21,000-40,000	23	28.3	36	35.4
41,000-60,000	24	30.0	32	24.6
61,000-80,000	6	7.5	10	7.7
81,000-100,000	7	8.8	12	9.2

Akinpelu et al. (2013); and Nwabueze (2010) reported similar findings that women have not been fully involved in sustainable aquaculture development in Nigeria. The result of this study also indicated that majority of male respondents fall within the age group 21-30 years (45.38%), while the least (3.08%) was recorded for the age range of 51 - 60 years. Meanwhile, 41.25% of female respondents fall within the age group of 21-30 years. Most of the male respondents (45.38%) are also in the same age group with their female counterparts (21-30 years of age), while minority (2.50%) of the female respondents were found to be 61 years and above. This implies that majority of the fish farmers irrespective of their gender are in their most active age. This is in concord with the report of Sani et al. (2007) who stated that majority of farmer within the age range of 41 to 50 years are still in their active age and more receptive to innovation. Polson and

Spencer (1991) also stated that age was positively correlated with adoption of fish farming technologies with younger farmers being more likely to try new technologies than older farmers and harvesting more fish per year than the older farmers. Similar findings were also reported by Akinpelu et al. (2013) in their study of ‘Gender Analysis of Processing Activities among Commercial Catfish Processors within Ibadan Metropolis, Oyo State South-Western Nigeria’. Table 1 also reveals that fish farming was the primary occupation of the fish farmers (female 37.50%, male 53.85%). This study also indicates that 35.38% of the male respondents have their estimated monthly income to be between 21,000 naira and 40,000 naira while few of them (7.69%) have their estimated monthly income to be between 61,000 and 80,000 naira. However, only 28.75% of the female respondents have their monthly income to be between 21,000 and 40,000 naira while 7.50% of them have their estimated monthly income to be between 61,000 and 80,000. This reveals that majority of the female respondents also experienced average income generation from fish farming like their male counterparts.

Table 2. Distribution of respondents by gender and level of involvement in various fish production activities (Source: Field Survey, 2019).

<i>Fish production activities</i>	<i>Female</i>			<i>Male</i>		
	<i>Always (%)</i>	<i>Seldomly (%)</i>	<i>Never (%)</i>	<i>Always (%)</i>	<i>Seldomly (%)</i>	<i>Never (%)</i>
Breeding	30(37.50)	28(35.00)	22(27.50)	61(46.92)	43(33.08)	26(20.00)
Siphoning	20(25.00)	41(25.00)	19(23.75)	52(40.00)	46(35.38)	32(24.62)
Land Preparation	28(35.00)	36(45.00)	16(20.00)	44(33.85)	65(50.00)	21(16.15)
Pond Construction	26(32.50)	36(45.00)	18(22.50)	41(31.54)	61(46.92)	28(21.54)
Grass cutting & clearing	31(38.75)	32(40.00)	17(21.25)	52(40.00)	56(43.08)	22(16.92)
Liming	23(28.75)	39(48.75)	18(22.50)	39(30.00)	71(54.62)	20(15.38)
Pond stocking	39(48.75)	24(30.00)	17(21.25)	67(51.54)	46(35.38)	17(13.08)
Netting	40(50.00)	37(46.25)	3(3.75)	61(46.92)	48(36.92)	21(16.15)
Water quality monitoring	45(56.25)	27(33.75)	8(10.00)	79(60.77)	30(23.08)	21(16.15)
Treatment of fish diseases	24(30.00)	47(58.75)	9(11.25)	48(36.92)	61(46.92)	21(16.15)
Fish feed production	23(28.75)	27(33.75)	30(37.50)	61(46.92)	46(35.38)	23(17.70)
Fish sorting	34(42.50)	41(51.25)	5(6.25)	57(43.85)	59(45.38)	14(10.77)
Fish feeding	46(57.50)	23(28.75)	11(13.75)	79(60.77)	39(30.00)	12(9.23)
Desilting/ Demudding	14(17.50)	51(63.75)	15(18.75)	41(31.54)	60(46.15)	29(22.31)
Fish harvesting	34(42.50)	33(41.25)	13(16.25)	54(41.54)	65(50.00)	11(8.46)
Fish processing	22(27.50)	39(48.75)	19(23.75)	52(40.00)	52(40.00)	26(20.00)
Fish marketing	34(42.50)	26(32.50)	20(25.00)	36(27.69)	70(53.85)	24(18.46)

The results on table 2 indicates that majority of males are usually more involved in breeding activities (61%), grass cutting and clearing (52%), pond stocking (67%), water quality monitoring (79%), fish feed production (61%) and fish feeding (79%) while both the male and female respondents are usually involved in breeding (37.50% and 46.90%), pond stocking (48.75% and 51.54%), netting (50.00% and 46.92%), water quality monitoring (56.25% and 60.77%) and fish feeding (57.50% and 60.77%). However, females were more involved in fish marketing (42.50% and 27.69% respectively) as well as fish processing (48.75% and 40.00% respectively) than males. This result established that women play a crucial role in fish processing and marketing; Paris and Chi (2005) expressed similar opinion that women play crucial role in fisheries as their main activities include fish processing and marketing.

Table 3. Distribution of respondents by Gender's Access to Credit for fish production (Source: Field Survey, 2019).

<i>Credit source</i>	<i>Female</i>		<i>Male</i>	
	<i>Yes (%)</i>	<i>No (%)</i>	<i>Yes (%)</i>	<i>No (%)</i>
Bank	37(46.25)	43(53.75)	36(27.69)	94(72.31)
Friends	36(45.00)	44(55.00)	69(53.08)	61(46.92)
Cooperatives/ Contribution	30(37.50)	50(62.50)	51(39.23)	79(60.77)
Personal Savings	73(91.25)	7(8.75)	119(91.54)	11(8.46)
Government	12(15.00)	68(85.00)	22(16.92)	108(83.08)

Results on table 3 also reveal that fish farmers' access to credit was low in the study area irrespective of gender as majority (91.3% of female, 91.5% of male) finance their business through their personal savings while 37.5% of female and 39.2% of male have access to credit facility through cooperative societies and Contributions. Only 15.0% of female respondents and 16.9% of male respondents was able to source for credit facilities through government lending. This implies that most catfish farmers in the state are not enjoying the benefits of cooperative organization, government lending and bank loans. Ayeloja et al. (2021) opined that lack of adequate access to credit facilities such as short-term loans, bank loans, high interest rate as well as ignorance are some of the constraints faced by fish farmers in Nigeria. Ayo-Olalusi et al. (2010) also reported that lack of access to credit facilities is one of the major constraints faced by women fish mongers in Liverpool fish market, Lagos, Nigeria, while Ezike and Adedeji (2010) reported that low access to credit facilities is a major problem that the female gender face in their business.

Table 4. Distribution of respondents by Constraints faced by each gender in fish production (Source: Field Survey, 2019).

<i>Variable</i>	<i>Female</i>			<i>Male</i>		
	<i>Major constraint (%)</i>	<i>Minor constraint (%)</i>	<i>Not a constraint (%)</i>	<i>Major constraint (%)</i>	<i>Minor constraint (%)</i>	<i>Not a constraint (%)</i>
Inadequate information	38(47.50)	25(31.25)	17(21.25)	66(50.77)	45(34.62)	19(14.62)
Accessibility to market	22(27.50)	39(48.75)	19(23.75)	46(35.38)	62(47.70)	22(16.92)
Seasonality of production	32(40.00)	35(43.75)	13(16.25)	55(42.31)	44(33.85)	31(23.85)
Inadequate transportation	31(38.75)	31(38.75)	18(22.50)	46(35.38)	59(45.38)	25(19.23)
Poor fish seeds	31(38.75)	34(42.50)	15(18.75)	47(36.15)	46(35.38)	37(28.46)
Inadequate manpower	31(38.75)	24(30.00)	25(31.25)	35(26.92)	56(43.08)	39(30.00)
Poor water quality	33(41.25)	29(36.25)	18(22.50)	50(38.46)	41(31.54)	39(30.00)
Inadequate water supply	23(28.75)	32(40.00)	25(31.25)	59(45.38)	47(36.15)	24(18.46)
Constraints in accessing land	37(46.25)	24(30.00)	19(23.75)	40(30.77)	69(53.08)	21(16.15)
Poor technical knowledge	25(31.25)	37(46.25)	18(22.50)	34(26.15)	70(53.85)	26(20.00)
Inadequate fishing gear	31(38.75)	34(42.50)	15(18.75)	37(28.46)	59(45.38)	34(26.15)
Unavailability of fish feed ingredient	25(31.25)	35(43.75)	20(25.00)	36(27.69)	67(51.54)	27(20.77)
High cost of fish production	36(45.00)	33(41.25)	11(13.75)	61(46.92)	41(31.54)	28(21.54)
Lack of storage facilities	37(46.25)	26(32.50)	17(21.25)	49(37.69)	54(41.54)	27(20.77)
Lack of contact with extension agents	30(37.50)	36(45.00)	14(17.50)	45(34.62)	64(49.23)	21(16.15)

The result of the various constraints faced by each gender in fish production (Table 4) in the study area showed that highest proportion of the female respondents (47.50%) saw inadequate information as a major constraint thus the need for more effective extension service who will further serve as intermediary for disseminating agricultural innovation and technical assistance to fish farmers which will result in high productivity of the farmers. Rogers (2003) expressed similar opinion. The Extension workers serve as intermediary for disseminating agricultural innovation and technical assistance to the farmers. 46.25% of the female also considered lack of storage facilities a major constraint this is like findings of Akinpelu et al. (2013). The result of this study also indicates that 45.00% of the female responded saw high cost of feed production as a major constraint while 46.25% of the female respondents had constraints in accessing land. 50.77% of male respondents also saw inadequate information as a major constraint while 42.31% of male respondents considered seasonality of production as a major constraint. Ike et al. (2009) reported that high cost and often unavailability of fish feed concentrate make fish farming unproductive.

The effect is that farmers stop feeding their fish when the price of feed is high and resumes only when they can afford the cost. 50.77%, 45.38%, 46.92% and 42.31 of male respondents saw inadequate information, inadequate water supply, high cost of feed production and seasonality of production as major constraints respectively. Esonu (1991) also stated that poorer fish farmers resort to the use of poultry mash during period of high cost of feed is a major constraint in fish production. This study also established that poor water quality is a very serious constraint to fish production by both female (41.25%) and male (38.46) respondents in the study area. Sanusi and Danasabe (2015) also reported similar findings where it was stated that poor water supply was a constraint to fish farming in Niger State, Nigeria.

Table 5. Relationship between Constraints faced by the Farmers in fish production in the study area (Source: Field Survey, 2019).

	Gender	Income/ month	Government	Inadequate information	Inadequate manpower	Constraints in accessing land	Poor technical knowledge	Lack of contact with extension agents	Lack of storage facilities
Gender	1	0.01 <i>0.92</i>	0.03 <i>0.72</i>	0.06 <i>0.36</i>	-0.07 <i>0.35</i>	-0.05 <i>0.45</i>	-0.02 <i>0.79</i>	-0.01 <i>0.88</i>	-0.05 <i>0.46</i>
Income/ month		1	0.20* <i>0.00</i>	-0.04 <i>0.58</i>	-0.01 <i>0.94</i>	0.12 <i>0.08</i>	0.03 <i>0.63</i>	-0.07 <i>0.37</i>	-0.04 <i>0.55</i>
Government			1	0.12 <i>0.08</i>	0.19* <i>0.01</i>	0.20* <i>0.00</i>	0.10 <i>0.14</i>	0.08 <i>0.23</i>	-0.07 <i>0.35</i>
Inadequate information				1	0.18* <i>0.01</i>	0.28* <i>0.00</i>	0.29* <i>0.00</i>	0.16* <i>0.03</i>	0.15* <i>0.04</i>
Inadequate manpower					1	0.32* <i>0.00</i>	0.23* <i>0.00</i>	0.06 <i>0.41</i>	0.28* <i>0.00</i>
Constraints in accessing land						1	0.16* <i>0.02</i>	0.14* <i>0.04</i>	0.23* <i>0.00</i>
Poor technical knowledge							1	0.23* <i>0.00</i>	0.39* <i>0.00</i>
Lack of contact with extension agent								1	0.21* <i>0.00</i>
Lack of storage facilities									1

**Note:** Italics indicate p values.

The result on table 5 shows the relationship between constraints faced by catfish farmers in the study area. It was observed that significant correlation exists between income of fish farmers and government intervention ( $r = 0.20$ ,  $P < 0.00$ ). Significant correlation also exists between



government intervention and inadequate manpower ( $r = 0.192$ ,  $P < 0.01$ ), and constraints in accessing land ( $r = 0.196$ ,  $P < 0.00$ ). There was also significant positive correlation between inadequate information and inadequate manpower ( $r = 0.18^*$ ,  $P < 0.01$ ), constraints in accessing land ( $r = 0.28^*$ ,  $P < 0.00$ ), poor technical knowledge ( $r = 0.29^*$ ,  $P < 0.00$ ), lack of contact with extension agents ( $r = 0.16^*$ ,  $P < 0.03$ ) and lack of storage facilities  $r = 0.15^*$ ,  $P < 0.04$ ). Significant correlation also exists between inadequate manpower and constraints in accessing land ( $r = 0.32^*$ ,  $P < 0.00$ ), poor technical knowledge ( $r = 0.23^*$ ,  $P < 0.00$ ) and lack of storage facilities ( $r = 0.28^*$ ,  $P < 0.00$ ). There was also significant positive correlation between constraints in accessing land and, poor technical knowhow ( $r = 0.16^*$ ,  $P < 0.02$ ), lack of contact with extension agents ( $r = 0.14^*$ ,  $P < 0.04$ ) and lack of storage facilities ( $r = 0.23^*$ ,  $P < 0.00$ ). Significant correlation exists between poor technical knowledge and lack of contact with extension agents ( $r = 0.23^*$ ,  $P < 0.00$ ) and lack of storage facilities ( $r = 0.39^*$ ,  $P < 0.00$ ). Significant correlation exists between lack of contact with extension agents and lack of storage facilities ( $r = 0.21^*$ ,  $P < 0.00$ ).

Table 6. chi-square analysis between gender and primary occupation, level of income, access to credit, constraints faced (Source: Field Survey, 2019).

<i>Variable</i>	$\chi^2$	<i>Df</i>	<i>p-Value</i>	<i>Decision</i>
Gender and primary occupation	7.09	5	0.21	NS
Level of income per month	1.29	4	0.82	NS
Access to credit	0.45	1	0.50	NS
Lack of fish storage facilities	1.95	2	0.38	NS
Fish feed production	11.83	2	0.00*	S
Fish processing	3.40	2	0.18	NS

**Note:** NS = Not Significant; S = Significant.

The result on Table 6 indicates that sex of respondent significantly affects their level of involvement in fish marketing ( $\chi^2=9.20$ ,  $p<0.05$ ). The study also shows that access to land ( $\chi^2=10.69$ ,  $p<0.05$ ) has a significant relationship with level of involvement in fish production activities. The study also reveals that fish feed production by respondents affect their involvement in fish production activities ( $\chi^2=11.83$ ,  $p<0.05$ ).

#### 4. CONCLUSION

This study reveals that fish production activities such as (breeding, siphoning and fish feed production) carried out within Ilorin metropolis are dominated by male while the female is more

involved in fish marketing and processing. The two genders are faced with similar constraints during fish production activity including inadequate access to credit facility which make majority of them to use personal savings for fish production; other constraints faced by the farmers include inadequate information, high cost of feed production and poor water quality. It is therefore recommended that fish farmers should be encouraged to form cooperative societies, since cooperative helps in capacity building and easy credit acquisition for farming activities. Also, there is need to improve farmers access to credit through bank of agriculture, micro finance banks and commercial banks which should be located at both urban and rural areas. There is also need for relevant government agency to provide abundant good quality water needed for fish production. Need for more extension workers and access to adult education program which will improve farmers' skills and abilities is also advocated. Programmes should be put in place by relevant government agencies to encourage full participation of women in fish production activities to achieve improved development of aquaculture and hence, economic emancipation of women. This will consequently translate into better living conditions of the female folks in Kwara state, Nigeria. Females should be encouraged with intervention programmes by NGOs and other relevant bodies that will lead to gender equality in fish production which will eventually lead to improved food security.

## 5. REFERENCE

- Akinpelu, O. M., Ayeloja A. A., George, F. O. A., Adebisi, G. L., Jimoh, W. A & Idowu, S. D. 2013. Gender Analysis of Processing Activities among Commercial Catfish Processors within Ibadan Metropolis, Oyo State South-Western Nigeria. *Journal of Aquaculture Research and Development*, **4**: 176, doi:10.4172/2155-9546.1000176.
- Ayeloja, A. A., George, F.O.A., Jimoh, W. A & Abdulsalami, S. A. 2017. Effect of processing methods on consumer's acceptability and proximate composition of yellow croaker (*Larimichthys polyactis*). *Journal of Agriculture and Social Research*. **17(1)**: 24-29.
- Ayeloja, A.A., George, F.O.A., Akinyemi, A.A & Atanda, O.O. 2019. Polycyclic aromatic hydrocarbon and microbial load of naturally preserved smoked African mud catfish *Clarias gariepinus* (Burchell, 1822). *Ghana Journal of Agricultural Science (GJAS)*, **54 (2)**: 15-25, doi: <https://dx.doi.org/10.4314/gjas.v54i2.2>.

- Ayeloja, A.A., Jimoh, W.A., Adetayo, M.B & Abdullahi, A. 2020. Effect of storage time on the quality of smoked *Oreochromis niloticus*. *Heliyon*, **6(1)**: 6e03284, doi: <https://doi.org/10.1016/j.heliyon.2020.e03284>.
- Ayeloja, A. A., Adebisi, G. L & Oyebode, L. A. 2021. Contribution of fish farming to the socio-economic status of fish farmers in Oyo State, Nigeria. *Ghana Journal of Agricultural Science*, **56(2)**: 75-84.
- Ayo-Olalusi, C.I., Anyanwu, P.E., Ayorinde, F & Aboyweyere, P.O. 2010. The Liverpool fish market in Lagos State, Nigeria. *African Journal of Agricultural Research*, **5**: 2611-2616.
- Enomouh, E.O. 1995. Encouraging the Education of Women in Nigeria as a Panacea For Facing Challenges of Our Time. A Paper Presented at The National Conference on Education Technology and Development of Education in Nigeria for Today and Tomorrow. Federal College of Education (T) Asaba November, **16**: 22-25.
- Esonu, W. 1991. Yields of the Africa catfish *clarias gariepinus* (Burahell) from a low input homestead concrete pond. *Aquaculture*, **55**: 87-91.
- Ezike, K.N & Adedeji, A.A. 2010. Economic analysis of catfish production in Akure South Local Government Area of Ondo State, Nigeria. *Proceedings of the 44th Annual Conference of Agricultural Society of Nigeria. Lagoke Akintola University of Technology Ogbomosho, Oyo State, Nigeria*.
- Igbochi, G. 2000. Animal Production and Agriculture in the New Millennium, a Keynote address given at the annual conference of Society of Agriculture Production, held at Michael University of Agriculture, Umudike, 20th March.
- Ike, S.E., Onyishi, G.C., Ukwuaba, G.C & Oluason, V.A. 2009. Farm evaluation of profitability and farmer's acceptability of Bambara Nut waste as major protein supplement in fish diet in hetrobranchus and tilapia spp polyculture. *Proceedings of National Farming System Research Network held at Umudike*. pp 127-129.
- Nwabueze, A. A. 2010. The role of women in sustainable aquacultural development in delta state. *Journal of Sustainable Development in Africa*, **12**: 284-293.
- Olagunju, G. 2005. Turning forming into gold mine: *An evaluation of the presidential initiative in cassava*, <http://www.nigeraifirst.com>.

- Paris, T & Chi, T.T. 2005. The impact of row seeder technology on women labor: A case study in the Mekong Delta, Vietnam. *Gender Technology and Development*, **9(2)**: 158-183. <https://doi.org/10.1177/097185240500900201>.
- Polson, R.A & Spenser, S.C. 1991. The technology adoption process in subsistence agriculture: The case of cassava in South-western Nigeria. *Agricultural Systems*. **36(1)**: 65-78.
- Rogers, E.M. 2003. Diffusion of innovation. *Fifth (Edition) New York Free Press*, 551p.
- Sani, R.M., Musa, S.A., Daneji, M.I., Yakasai, M.T & Ayodele, O. 2007. Cost and Returns Analysis in Poultry Production in Bauchi and Gombe metropolis area. *Continental Journal of Agricultural Economics*, **1**:14-19.
- Sanusi, S.M & Danasabe, K.M. 2015. Problems and prospects of small-scale fish farming in Minna agricultural zone of Niger State, Nigeria, and its implications on increased fish food security. *Int. J. Agric. Res. Rev.*, **3**: 157–160.
- Weeratunge, N., Snyder, K. A & Sze, C. P. 2009. Gleaner, fisher, trader, processor: Understanding gendered employment in the fisheries and aquaculture sector. Paper presented at Workshop on gaps, trends and current research in gender dimensions of agricultural and rural employment: differentiated pathways out of poverty. Rome, 31 March - 2 April 2009. Food and Agriculture Organization of the United Nations (FAO), International Fund for Agriculture Development (IFAD), International Labour Organisation (ILO). 32p.
- Williams, M.J. 2008. Why look at fisheries through a gender lens? *Development*, **51**: 180-185.