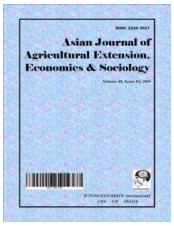

Asian Journal of Agricultural Extension, Economics & Sociology

29(1): 1-9, 2019; Article no.AJAEES.37645
ISSN: 2320-7027

Gender Role of Women in Fisheries Operations in the Fishing Communities of Doma Dam of Doma Local Government Area of Nasarawa State, Nigeria

A. A. Girei[1*], A. A. Kigbu[2] and A. Boyi[2]

[1]Department of Agricultural Economics and Extension, Faculty of Agriculture, Nasarawa State University, Keffi, Nigeria.
[2]Department of Fisheries and Aquaculture, Faculty of Agriculture, Nasarawa State University, Keffi, Nigeria.

Authors' contributions

All authors contributed in the research, read and approved the final manuscript.

Article Information

DOI: 10.9734/AJAEES/2019/37645
Editor(s):
(1) Dr. Roxana Plesa, University of Petrosani, Romania.
Reviewers:
(1) Velan Kunjuraman, Universiti Malaysia Sabah, Malaysia.
(2) Gitashree Phukan, Assam Agricultural University, India.
Complete Peer review History: http://www.sciencedomain.org/review-history/27926

Original Research Article

Received 23 October 2017
Accepted 27 January 2018
Published 22 December 2018

ABSTRACT

The study was conducted to determine the involvement of women in fisheries activities in three fishing communities (Yelwa, Agatu, and Water treatment plant) of Doma Dam in Doma Local Government area of Nasarawa State, Nigeria. A total of 50 women were selected through purposive sampling technique in three fishing communities of the study area. Primary data were collected through the use of a structured questionnaire and personal interview of the respondents. Simple descriptive statistics and ranking order were used to analyze the data. Results of the study showed that 54% of the respondents were within the active productive age of between 28 and 38 years. The majorities (92%) of the respondents are married, and about (80%) had a non-formal education. About 54% of the respondents are members of cooperative society, 42% had fishing experience of 3 - 10 years, while 60% of the respondents engage in trading as other activities that generate income apart from fishing activities. The result indicated that the respondents are engaged in fishing (98%), fish processing (100%) and fish marketing (100%). The major reasons

**Corresponding author: E-mail: agirejo@gmail.com;*

for the respondents' involvement in fisheries operation were to pay for children school/medical fees (86%), procurement of household assets (80%) and purchase of other goods for sale (6%). The major constraints faced by women in fisheries operation in the study area were inadequate extension service, inadequate storage facilities, poor marketing arrangement and lack of modern fish processing facilities thereby making their earnings low. Their major occupational hazards reported were redness/swelling of the eye (100%), skin rashes (4%) and pile (2%). Therefore, the study recommended that Government should enhance and upgrade fish processing facilities in the study area with the adoption of modern smoking facilities and technology. This will improve and add value to smoked fish which could increase patronage and income of respondents. Activities of respondents should also be made known and incorporated into the agricultural development programmes such as Fadama project, Badakoshi Agricultural Scheme and other related projects. This will help in improving the respondents' access to capital/credit and other equipment necessary for improving fisheries activities.

Keywords: Gender role; women; fisheries activities; communities; Doma Dam.

1. INTRODUCTION

The theme of gender equality in fisheries has been present in academic literature over 30 years. However, it has received more attention from sociologists and anthropologists than fisheries managers and policy-makers, who have mainly focused on fisheries resources and the harvesting segment of the value chain. The fact remains that conventional research and monitoring has been based on the collection of survey data on numbers of gear, canoes, fishers, landing data, ecosystems, productivity and economic performance rather than on social equity considerations [1].

Female stakeholders in the fisheries sector were, until recently, invisible in the statistics collected and provided to fisheries managers and policy-makers. In recent times, more literature has been directed to making women's roles more visible. Williams [2] and Weeratunge et al. [3] describe the diverse gendered division of labour in fishing communities and their involvement and importance in fisheries processing and trade. This was also evident in the Global Symposia on Women in Fisheries, the gender-aqua-fish forums on social media, and more recently, the Asian Fisheries Society's 4th Global Symposium on Gender in Aquaculture and Fisheries, held in Yeosu, the Republic of Korea on 1–3 May 2013, among a number of other meetings of the same gender.

The Nigerian fishing industry consists of three major sub-sectors, namely the artisanal, industrial and aquaculture. The awareness on the potential of aquaculture to contribute to domestic fish production has continued to increase in the country. This stems from the need to meet the much needed fish for domestic production and export. Fish species which are commonly cultured include *Tilapia spp, Heterobranchus bidorsalis, Clarias gariepinus, Chrysichthys nigrodigitatus, Heterotis niloticus, Ophiocephalus obscura, Cyprinus carpio* and *Megalo spp*. Fish culture is done in enclosures such as tanks. The aquaculture sub sector contributes between 0.5% and 1% to Nigeria's domestic fish production.

It is generally accepted that women participate actively in the rural economy due to their social and economic roles. According to Ani [4], women are the backbone of agriculture labour force producing 40% of the gross domestic product (GDP) and over 50% of food in developing nations. The rural economy in Nigeria is dominated by women through their participation in crop and animal production, marketing as well as processing [5]. Women have important roles as producers of food, managers of resources and as income earners [6]. Women are the mainstay of small scale agriculture. They supply the farm labour and are responsible for the family subsistence.

The participation of women in aquaculture extends to every aspect of fish farming like preparing fish, feeding the fish, cleaning of nets/cages and general maintenance and upkeep of the pond or cages [7]. Homestead fish farming is the most suitable option for women to be involved in, since it does not require them to be away from their homes for long periods which might force them to neglect their household or domestic responsibilities [7].

It is particularly suitable for women Nigeria where women seclusion is practiced. The home base

fishery establishments are usually operated by the family or household members. They are characterized by small-scale operation, low capital investment, simple labour-intensive technology.

Fish is a highly perishable product and susceptible to deterioration without any preservation or processing measures. Immediately fish dies a number of physiological and microbial deterioration sets in and thereby degrades the quality of fish. In Nigeria, women are the most dominant group involved in processing and preservation of fish. They are involved in marketing and thus their activity becomes relevant in ensuring food security. Despite their contribution to fisheries activities, women do not get adequate information or contact with extension agents for enlightenment on improved fish technologies, processing, and access to fishing operations such as processing techniques and thus affect their productivity.

It is in the realization of these facts that the research was carried out to describe the socioeconomic status of female fish processors and their involvement in fishing activities and examines the determinants of fish output in the study area.

1.1 Objectives of the Study

The objective of this study is to evaluate the role of women in fisheries activities in the fishing community of Doma Dam in Doma Local Government Area of Nasarawa State, Nigeria. The specific objectives were to:

1. Describe the socio – economic characteristics of women involved in fisheries activities in the study area.
2. Identify the various fisheries activities women are involved in the study area.
3. Determine the reasons for women involvement in fisheries operations in the study area.
4. Identify the various constraints and occupational hazards faced by women involved in fisheries operations.

2. METHODOLOGY

2.1 Description of the Study Area

The study was carried out in Doma dam. Doma dam is located South of Doma Local Government Area of Nasarawa State, Nigeria, and lies between latitude 7^0 and 9^0 33' N and longitude 7^0 and 10^0 32' E. The dam was constructed in 1985 by Lower Benue River Basin Development Authority (LBRBDA) with the aim of providing water for irrigation farming and to supply domestic water for humans and livestock watering to Doma town and its environment.

It is one of the thirteen (13) LGA's of the State and located at the Southern Zone of the Nasarawa Agricultural Development Programme (NADP). Doma been the LGA headquarter is about 22 km West of the State capital, Lafia. Doma has distinct wet (March – October) and dry (November – February) seasons. The average rainfall of the study area is approximately 107.6 mm and has high temperature throughout the year with annual mean ranging between 22.7°C and 36.8°C [8]. The soil texture is sandy loam which supports the production of varieties of crops such as cassava, yam, beniseeds, melon, rice, millet, maize, groundnuts, and sorghum among others. The LGA covers land area of 2,714 km^2 and has population of 139, 607 inhabitants [9]. Main tribes that live in the area are; Alago, Agatu, Migili, Eggon, Bassa, Tiv, Hausa/Fulani, and Mada. The LGA shares boarder with Lafia, Keana, Keffi and Kokona to the East, East-South, South-West and West respectively. The major occupation of the inhabitants is farming (Fish, Arable, Livestock, and Poultry).

The dam is situated 6km away from Doma town, the headquarters of Doma local government area. The dam has its source behind Kwarafin (Agatu) community where the stream was dammed downstream. The dam is surrounded by few hills and riparian vegetation. Three (3) fishing communities settled along the dam, namely Jukun, Agatu and Alago whose primary occupation is fishing. The three fishing villages were chosen for the study and were designated as station I, II and III respectively as indicated in Fig. 1.

2.2 Sampling Techniques

Three (3) fishing sites namely Yelwa, Agatu and Water treatment plant were purposively selected from the study area. The selection was based on their intensity in fish processing activities. Fifty (50) women fish processors were randomly selected from the three stations for the study.

2.3 Method of Data Collection

Primary data was used for the study. Data were collected with the aid of a structured questionnaire which was administered to the respondents. Data collected were on the socio-economic characteristics of the respondents, fisheries activities women are involved in the study area, reasons for their involvement in fisheries operations in the study area and constraints faced by women involved in fisheries operation in the study area.

2.4 Data Analysis

Descriptive statistics such as frequency distribution, mean and percentage was used to satisfy all the objectives (i, ii, iii and iv) respectively. A rank order was developed among the reasons for the respondents' involvement in fisheries activities and constraints faced by respondents.

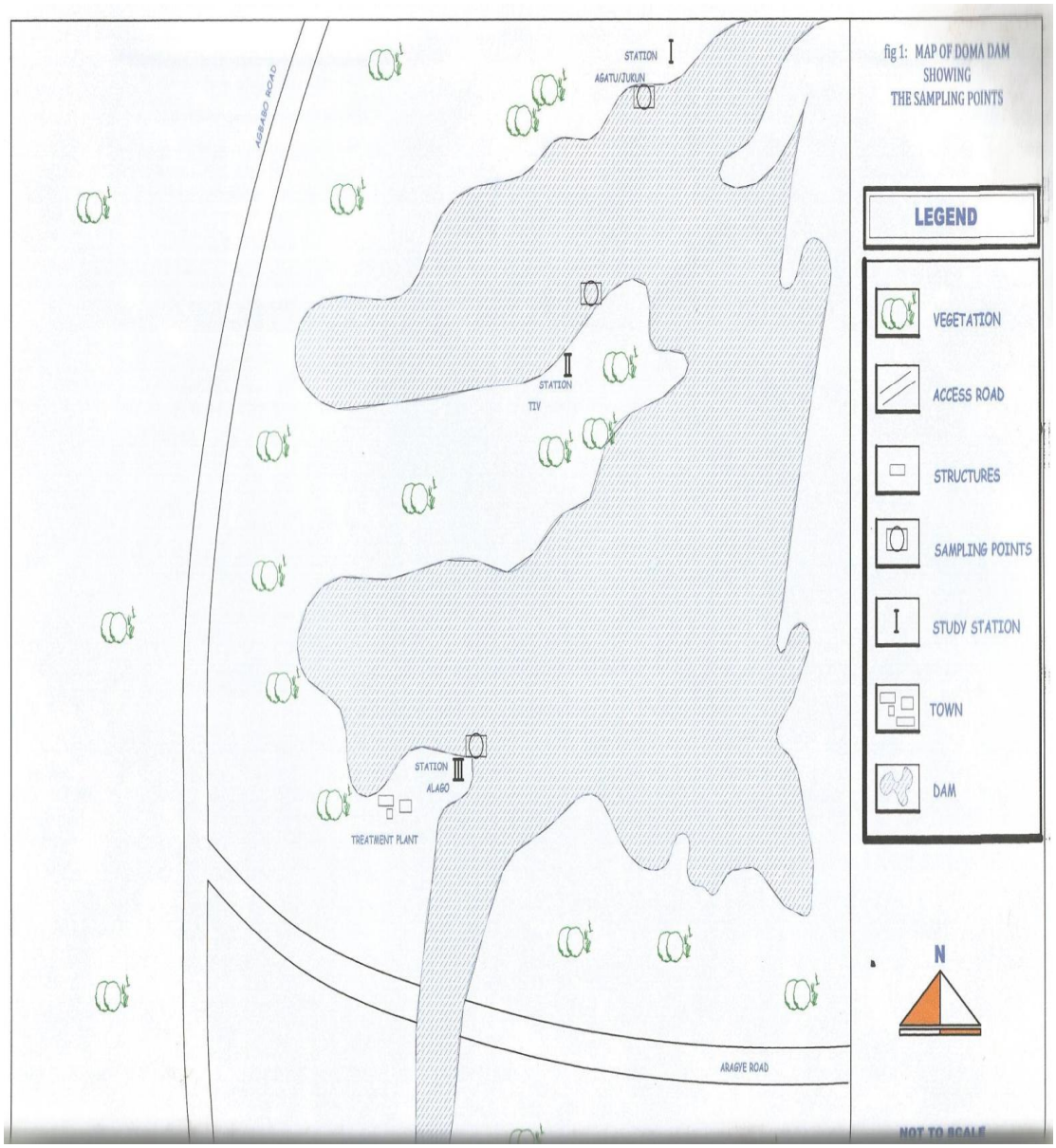

Fig. 1. Map Doma Dam showing the study fishing villages

3. RESULTS AND DISCUSSION

3.1 Socio-economic Characteristics of Respondents

The socio-economic characteristics of respondents in the study area are presented in Table 1. The result revealed that the highest age range of the respondents was 28-38 years which represented 54% of the sample and the proportion of married women involved in fisheries activities was highest (92%). Majority (80%) of the women had no formal education which indicated low level of formal education among the women while 8% were educated up to secondary school level. Majority of the respondents were Christian in faith representing 78% while 20% are Muslim and 2% follow traditional religion. Household size of the respondents was 7 inhabitants on the average and 54% of the respondents are members of a cooperative society. About 42% of the

Table 1. Socio-economic characteristics of respondents

Variable	Frequency	Percentage
Age (years)		
17 – 27	12	24
28 – 38	27	54
39 – 49	7	14
50 – 60	4	8
Total	50	100
Marital Status		
Single	3	6
Married	46	92
Widowed	1	2
Total	50	100
Educational Status		
Primary education	6	12
Secondary education	4	8
No formal education	40	80
Total	50	100
Religion		
Islam	10	20
Christianity	39	78
Traditional	1	2
Total	50	100
Household size		
1 – 3	7	14
4 – 7	32	64
8 – 11	11	22
Total	50	100
Membership of cooperative society		
Yes	27	54
No	23	46
Total	50	100
Fishing experience (Years)		
3 – 10	21	42
11 – 18	15	30
19 – 26	5	10
27 – 34	6	12
35 – 42	3	6
Total	50	100
Other income sources of the respondents		
Farming	20	40
Trading	30	60
Total	50	100

Source: Field survey, 2016

respondents have 3 – 10 years' experience in fishing business. Some of the respondents (60%) were engaged in trading while 40% are also engaged in other farming activities.

3.2 Fisheries Activities Respondents are Involved in

Several activities are available in fisheries operation among which the respondents are involved in. The results in Table 2 revealed that the respondents are involved in fish processing, marketing and fishing. The results also revealed that the major species commonly available to the respondents is Tilapia fish and is processed locally by smoking and salting using traditional smoking kiln.

3.3 Reasons for Involvement in Fisheries Operation

Numerous reasons are behind the involvement of the respondents in fisheries operation in the study area. The result is presented in Table 3 which revealed that the major reason for involvement in fisheries operation is to pay for children school fees and medical fees which rank first, followed by the need to purchase household assets, purchase other goods for sale and to generate savings for thrift society.

3.4 Constraints Faced by Women Involved in Fisheries Operation

The constraints faced by women involved in fisheries operation as expressed by the respondents are presented in Table 4. The result revealed that the major constraints faced in fisheries operation are inadequate extension service, inadequate storage facilities, poor marketing arrangement and lack of modern fish processing facilities. All the respondents were unanimous in indicating the various challenges which if addressed will possibly lead to higher yield, quality, efficiency in the fishing activities and thereby leading to greater productivity and encouragement of new entrants to join the industry resulting to more and sustainable employment and income generation and livelihood improvement.

3.5 Occupational Hazards of Fish Processing

The occupational hazards of fish processing in the study area are presented in Table 5.

Table 2. Fisheries activities respondents are involved in

Activities	Frequency	Percentage
Fishing		
Yes	49	98
No	1	2
Total	50	100
Fish processing		
Yes	50	100
Total	50	100
Fish marketing		
Yes	50	100
Total	50	100
Both (processing and marketing)		
Yes	50	100
Total	50	100
Species of fish commonly available		
Tilapia only (Gargaza)	50	100
Total	50	100
Processing methods adopted		
Smoking	50	100
Salting	38	76
Total	88	100
Type of smoking kiln used		
Traditional smoking kiln	50	100
Total	50	100

*Source: Field survey, 2016; *Multiple response were allowed*

Table 3. Respondents reasons for involvement in fisheries operation

Reasons	Frequency	Percentage	Rank
Generate saving for thrift society	2	4	4th
Pay for children school/medical fees	43	86	1st
Procure household assets	40	80	2nd
Purchase other goods for sale	3	6	3rd

*Source: Field survey, 2016; *Multiple response were allowed*

Table 4. Constraints faced by women involved in fisheries operation

Constraints	Frequency	Percentage	Rank
Inadequate extension services	50	100	1st
Inadequate storage facilities	50	100	1st
Poor marketing arrangement	50	100	1st
Lack of modern fish processing facilities	50	100	1st

*Source: Field survey, 2016; *Multiple response were allowed*

Table 5. Occupational hazards of fish processing

Constraints	Frequency	Percentage
Skin rashes/eczema	2	4
Redness/swelling of the eye	50	100
Pile	1	2

*Source: Field survey, 2016; *Multiple response were allowed*

The results obtained revealed that three (3) major occupational hazards were reported. The result revealed that all the respondents were suffering from redness/swelling of the eye, 4% were suffering from skin rashes/eczema, while 2% of the respondents were suffering from pile.

3.6 Discussion

The socio-economic characteristics of women involved in fish processing in this study include age, marital status, educational status, household size, religion, and membership of the co-operative society, years of experience in fisheries operation and other activities that generate income apart from fisheries. 54% of the women are involved in fisheries operation which indicated higher proportion of adult women. Additionally, 92% of women engaged in fisheries activities in the study area are married, while 6% and 2% are single and widowed respectively. This shows that married women are more involved in fisheries activities in the study area. The study agrees with the result obtained by Hassan et al. [10]. 12% of the respondents were educated up to primary level, 8% had secondary education, 80% of the respondents had no formal education which signifies that they are illiterates. This result agrees with the findings of Aqeela et al. [11] who reported that two third of the one billion illiterate persons in the world are women and girls.

The findings also revealed that majority of the respondents (78%) are Christians and 20% are Muslims while minority (2%) of the respondents follows traditional religion. The household size of the respondents also showed that the household size ranged between 4 – 7 representing 64% of the respondent's household size as this household size could be the source of fishing labour to the women in the study area. 54% of the respondents are members of cooperative society but do not have access to credit from NGOs, Badakoshi Agricultural Scheme, money lenders and relatives. The respondents were almost excluded from loans from commercial banks because of lack of collateral. The respondents reported that their access to institution loan was further restricted by their lack of education, lack of familiarity with loan providers and restriction on their mobility. 62% of the respondents participate in trading as other occupation that generates income apart from fisheries. Others (42%) engage in farming for generating income. This is because, as the population is increasing in the community, there is increasing pressure in fishing in the dam, which is resulting in a decline in catch per unit effort; hence decline in income generated from fisheries business.

From the result, it was revealed that 98%, 100%, 100%, 100% of the respondents are involved in fishing, fish processing, fish marketing and both processing and marketing respectively. Also, 100% of the fish commonly available to the respondents is Tilapia (Gargaza) and the majority (100%) adopt smoking as means of processing and preservation using traditional smoking kiln while 76% applied salt before smoking to improve taste and shelf-life.

The result also revealed that 86% of the respondents involve themselves in fisheries operation so as to enable them pay their children school/medical fees, 80% to purchase household assets, 6% to purchase other goods for sale and 4% to generate savings for thrift society.

In fisheries operation, the constraints involved according to the findings are inadequate extension service (100%), inadequate storage facilities (100%), poor marketing arrangement (100%) and lack of modern fish processing facilities (100%) respectively. The respondents lack of access to modern technology of processing fish to add value to their products as being advocated by Federal Ministry of Agriculture on value-added chain system to agricultural products reduce their income as they are still using traditional tools and practices for fish processing.

The study reported five major occupational hazards namely; skin rashes/eczema, redness/swelling of the eye, pile, asthma and rheumatism. Redness/swelling of the eye was dominant (100%) among the respondents as it occurs as a result of constant and direct contact of smoke followed by skin rashes/eczema (4%) and pile 2% respectively. The result of this study is in line with the findings of Chavan et al. [12] who associated skin diseases as diseases that affect fishermen during fish drying practices. Using of the modern smoking method which releases less smoke can reduce the risk of these diseases as reported by Davies [13].

4. CONCLUSION

The result obtained from this study indicates that women are actively involved in fisheries activities (fishing, processing and marketing) as their major source of income as their men counterpart in the community. However, they are also engaged in petty trading and farming to support their income from fisheries operations as fish stock in the dam is decreasing due to fishing pressure as evident from low catch. Their fisheries operation is being hampered due to lack of extension services, inadequate storage facilities, poor marketing arrangement and lack of modern fish processing facilities thereby making their earnings low. Lack of accessibility to some of these productive resources is making them to earn low income. If some of their constraints can be addressed by relevant government agencies it will boost their morale in fisheries production.

5. RECOMMENDATIONS

In the effort to enhance the involvement and performance of women in fisheries activities in Nigeria and to also reduce post-harvest losses and increase food security in the nation, the following are recommended.

1. There is need to enhance and upgrade fish processing facilities in the study area with the adoption of modern smoking facilities and technology. This will improve smoked fish quality which could help to minimize postharvest losses and add value to fish products as advocated by Federal Government.
2. Activities of respondents should be made known and incorporated into the agricultural developmental programmes such as Fadama project, Badakoshi Agricultural Scheme and other related programmes. This will help in improving the respondents' access to capital/credit and other equipment necessary for improving fisheries activities.
3. The government should institute development programs for rural women. Women in both rural and urban areas should be educated to fully participate in sustainable aqua-cultural development. Access to credit facilities at an affordable and feasible interest rate is needed by women in order to consolidate their position in aquaculture development, especially in the area of aqua-food processing and safety.
4. Women should be considered in planning and policy making, especially regarding aquaculture. It should be noted, however, that information on the roles of women in fisheries activities is limited. There is a need to publicize the role women play in fisheries activities and this also should be seen as a tool for women empowerment and rural transformation. This will encourage the participation of more

women in fisheries business as this can alleviate poverty.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Arenas MC, Lentisco A. Mainstreaming gender into project cycle management in the fisheries sector. RAP Publication 2011/15. Bangkok, FAO. 2011;92.
2. Williams MJ. Why look at fisheries through a gender lens? Development. 2008;51: 180–185.
3. Weeratunge N, Snyder KA, Sze CP. 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;32.
4. Ani AO. Women in agricultural and rural development. Priscaquilla Publishers, Maiduguri, Nigeria; 2004.
5. Adeyokunnu TO. Women in agriculture in Nigeria. ST/ECA/ARCN/81/11: Economic Commission for Africa, Addis Ababa, Ethiopia; 1981.
6. Agnes R, Lynn R, Christine P. Women: The key to food security, food policy report. The International Food Policy Research Institute, Washington, D.C. 2005;1-14.
7. Food and Agricultural Organization FAO. A Review Study of the Sungai Merbok floatingCago culture project. Project Code TCP/MAI./403 Technical Report 2, Rome; 1985.
8. Nasarawa State Ministry of Information-NSMI (NSMI). Information Bulletin; 2005.
9. National Population Commission-NPC. National Population Census Figures; 2006.
10. Hassan HI, Kigbu AA, Mohammed R. Women's experiences in small scale fish processing in Lake Feferuwa fishing community, Nasarawa State, Nigeria. Livestock Research for Rural Development; 2011.
11. Aqeela S, Tanuir AM, Mohammed Z. Gender participation in livestock production activities and their consumption trend of proteinous diet in Tehsil Fatch Jung. Pakistan Journal of Agricultural Science. 2005;42:3-4.
12. Chavan BR, Yakupitiyage A, Kumar S. Socio-economic analysis of fishermen at Coastal Fishery Management in Maharashtra India. Asia Pacific Journal of Rural Development. 2009;19(2):31-45.
13. Davies RM. Development of appropriate technology of fish processing in Nigeria. A paper presented at a one-day workshop on intensive fish farming on Thursday, 24th February; 2005.

Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sciencedomain.org/review-history/27926