



AWARENESS AND ADOPTION OF IMPROVED FISH PROCESSING TECHNOLOGIES AMONG FISH FARMERS IN OBIO/AKPOR LOCAL GOVERNMENT AREA OF RIVERS STATE

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Abstract

The study investigated the adoption of improved fish processing technologies in Obio/Akpor Local Government Area of Rivers State. Multistage sampling technique was used. The first stage was purposive selection of seven (7) communities, while the next stage was snowball sampling technique used to select 10 fish farmers' from each community to give 70 sample size. Data were collected through structured questionnaire and descriptive statistics such as frequency and percentage were used for the analysis. The results revealed that 84.3% of the fish farmers were aware of information on fish processing technologies, and 18.6% of respondents got information on improved fish processing technologies from friends and family members and other fish farmers, respectively. The level of awareness on using charcoal smoking kiln, as improved fish processing, was 42.6%, and the adoption level was 51.5%. The study recommends that extension agents should be consistently trained on fish processing technologies by the subject matter specialists, through the government, and be readily available to disseminate the acquired skill and information to the fish farmers. Available channels of information should be adequately utilized in disseminating fish processing technologies to fish farmers.

Keywords: Adoption, awareness, fish farmers, fish, fish processing.

Introduction

Fish is one of the cheapest sources of dietary protein especially in isolated fishing communities (FAO, 2010) and its production a; source of employment as the fishery sector generates employment to over 70% of persons living in rural areas. It is also of medicinal value and further useful for industrial purposes such as in the production of fish meal (Odediran and Ojebiyi 2017). Fish is a major source of protein and its harvesting, handling, processing and distribution provide livelihood for millions of people in Nigeria. Fish is highly susceptible to deterioration without any preservative or processing measures, immediately the fish dies, a number of physiological and microbial deterioration set in and thereby degrade the fish. (Davies and Davies, 2009) resulting in economic losses. Fish spoilage occurs mainly as a result of bacterial metabolism of the fish muscle producing metabolites that decrease the quality of fish (Onyango *et al.*, 2017). The most common spoilage reaction is the production of biogenic amino of which trimethylamine is the most important (Kyrana and Vladimirov 2002).

Opara and Al Jufaili (2006) reported high incidence of fish losses as a major impediment to the realization of government goal towards increasing the contribution of the sector to the overall national economy. The use of appropriate technology which is a radical approach to stem up production and processing technique, has become subordinate to social need, and is of paramount importance.

Freshwater fish processing should assure best market quality, assure health safety of products, apply the most appropriate processing method and reduce wastes to the barest possible extent (Gani and Sogbesan, 2017). It is imperative to process and preserve some of the fish farmers harvested in the period of abundance, so as to ensure an all year round supply which will automatically reduce post-harvest losses,



increase the shelf-life of fish, and guarantee a sustainable supply of fish during off season with reasonable increase in the profit of the fish farmers.

Currently, less effort is put into the mechanization of fish processing as traditional methods are commonly used and some of these traditional fish processing methods are associated with contaminations which are mainly injurious to consumers (George et al., 2014). The study therefore aimed at examining awareness and adoption of fish processing technologies among fish farmers in Obio/Akpor of Rivers State, Nigeria.

Materials and Methods

Area of study

The study was carried out in Obio/Akpor Local Government Area in the metropolis of Port Harcourt, one of the major cities of Niger Delta, located in Rivers State. The Local Government Area covers 260km² and had a population of 464,789 at the 2006 census. Obio/Akpor is bounded by Port Harcourt (Local Government Area) to the south, Oyigbo to the east, Ikwerre to the North and Emuoha to the west. It is located between the latitude 4°, 45’N and 4° 60’N and longitude 6° 50’E and 8° 00’E. It is mainly made up by people of Ikwerre ethnic nationality. The major occupations of the people are arable crop farming, trading and fishing. Obio/Akpor has a total number of three kingdoms which are Apará, Evo and Akpor Kingdoms from which 54 communities are found. (“Obio/Akpor geographical location,” 2017)

Sampling procedure

Multistage sampling technique was used to select respondents for the study. The first stage was a purposive sampling of seven (7) communities that have more fish farmers than the others. The next stage involves the use of snowball sampling technique to select (10) fish farmers in each of the seven selected communities. Thus the total population size was 70 fish farmers.

Data collection and method of analysis

Questionnaire were used for data collection and supplemented with scheduled interview where respondents were illiterates. Data collected were analyzed using descriptive statistics such as frequency and percentage.

Results and Discussion

Table 1 show that 84.3% of the fish farmers were aware of improved fish processing technologies, while 11.4% were not aware. This is an indication that improved fish processing technologies have been disseminated to the fish farmers through various channels which is a good development towards reducing fish spoilage as advocated by researchers.

Table 1: Awareness of fish processing techniques

Variables	Frequency	Percentage (%)
Yes	59	84.3
No	8	11.4
No response	3	4.3
TOTAL	70	100

Source: field survey 2017

The result in Table 2 indicated that, 18.6% of respondents got their information on improved fish processing technologies from friends and family members, 18.6% from other farmers,; extension agents, 14.4% (the least) from radio, while 20% did not specify the source of their information. However, Ifejika *et al.*, (2008) reported extension agents as the major source of information on fish technologies. Adesehinwa (2007) reported that development of improved technologies must be backed up with efficient dissemination to enhance their adoption.



Table 2: Sources of information on fish processing technologies

Variables	Frequency*	Percentage (%)
Extension agent	10	14.4
Friends and family members	13	18.6
Other farmers	13	18.6
Private consultants	10	14.4
Television	3	4.3
Internet	11	11.4
No response	14	20.0
Radio	1	1.4
Television	3	4.3
Fish buyers	6	8.6

Source: Field survey 2017

* Are multiple responses.

The result in Table 3 shows that 42.6% of respondents were aware of charcoal smoking kiln, 12.8% were aware of refrigeration of fish, 11.4% were aware of gas fish dryer technology while 15.7% did not specify the improved technologies which they were aware of. High level of awareness of charcoal smoking kiln can be attributed to the fact that it is an indigenous technology compared to all others that are imported fish processing technologies. Nkeme *et al.* (2013) and, Odediran and Ojebiyi (2017) also reported high level of awareness of charcoal smoking kiln among fish processors.

Table 3: Awareness of fish processing technologies by farmers in the study area

Variables	Frequency*	Percentage (%)
Charcoal smoking kiln	30	42.6
Gas fish dryer	13	11.4
Refrigeration of fish	9	12.8
Electric fish dryers	5	7.1
Solar fish dryer	3	4.3
Kerosene fish dryer	3	4.3
No response	11	15.7

Source: field survey 2017

* Are multiple responses

Table 4 shows that 51.5% of the respondents adopted the charcoal smoking kiln, 10.0% adopted the refrigeration of fish while solar dryer and kerosene fish dryer were the least adopted processing technologies with 1.4%. Awareness is a major factor that usually determines adoption of technologies. Rogers (2003) added that the adoption of a technology can be affected by the way it is named and positioned.

Table 4: Adopted fish processing technologies in the study area

Variables	Frequency*	Percentage (%)
Charcoal smoking kiln	34	51.5
Refrigeration of fish	7	10.0
Gas fish dryer	2	2.9
Electric fish dryers	1	1.4
Solar fish dryer	3	4.3
Kerosene fish dryer	1	1.4
No response	22	31.4

Source: Field survey 2017

* Are multiple responses

Conclusion and Recommendations



Fish farmers were aware of fish processing technologies through friends, family members and other fish farmers. The levels of awareness and adoption of charcoal smoking kiln for fish processing were high among the respondents. Extension agents should be consistently trained on fish processing technologies by subject matter specialists who should be readily available to disseminate necessary information to the fish farmers. Available channels of information should be adequately utilized in disseminating fish processing technologies to fish farmers.

References

- Adesehinwa, A. O. K. And Bolorunduro, P. I. (2007): Existing fisheries technologies and approaches for dissemination in two maritime States of Nigeria: Effectiveness and constraints. *American-Eur. J. Agr. Environ. Sci.*, 2(3): 231-239
- Davies, R.M and Davies O.A. 2009. Traditional and Improved Fish Processing Technologies in Bayelsa State, Nigeria. *European Journal of Scientific Research* Vol. 2(4) pp 539 -548.
- Food and Agriculture Organization – FAO. 2010. Fisheries and aquaculture topics: Food security and fisheries. Topic Fact sheets. Text by Peter Manning, FAO. Fisheries and Aquaculture Department
- Gawi, G.O and Sogbesan, O.A .2017. Fish Processing and Preservation Techniques in Selected Fishing Communities along the Upper Benue River, Taraba State. *Poultry Fish Wildlife Sci.* 5(2) 1-4.
- George, F. O. A., Ogbolu, A. O., Olaoye, O. J., Obasa, S. O., Idowu, A. A. and Odulate, D. O. 2014. Fish processing technologies in Nigeria: A case study of Ibeju-Lekki Local Government Area, Lagos State. *Am. J. Food. Technol.*, 9(6): 302-310
- Ifejika, P.I., Ayanda, J.O., Nwabeze, G.O and Obetta, N. C. 2008. Contribution of Information Channels To Adoption Of Aquaculture Technologies Among Fish Farmers in Anambra State and Implication for Training. *Journal of Agriculture and Social Research (Jasr)* Vol. 8 (2): 1-6
- Kyran, V. R., and Vladimirov, L., 2002. “Sensory, chemical and microbiological assessment of farm-raised European sea bass (*Dicentrarchus labrax*) stored in melting ice”. *International Journal of Food Science and Technology*. Vol. 3: 319-328
- Nkeme, K. K., Ndaeyo, N. U. and Akpaeti, A. J. 2013. Chokor Smoker Kiln technology adoption in AkwaIbom State: Constraints and prospect. *Am. J. Res. Communication.*, 1(3): 89-96
- Obio/Akpor Geographical Location Information”, (2017). Retrieved from <https://en.m.wikipedia.org/wiki/Obio-Akpor> 2018
- Odediran, O.F. and Ojebiyi W.G. Awareness and Adoption of Improved fish processing Technologies among Fish Processors in Lagos State, Nigeria. *Research Journal of Agricultural and Environmental Management* Vol. 6(3): 46 - 54
- Opara, L. U. and Al Jufaili, S. M. (2006). Status of fisheries post harvest industry in the Sultanate of Oman: Part 2 Quantification of fresh fish losses. *Journal of Fisheries International* Vol. 1 (2-4): 150-156
- Onyango D. M., Sifuna A. W., Otuya, Owigar R., Kowenje C., Lung'ayia H.B.O., Oduor A. O. 2017. Evaluation of Fish Processing and Preservation Systems along the Shores of Lake Victoria towards Enhancement of Sun Drying Technology. *International Journal of Food Science and Nutrition Engineering* Vol. 7(5): 111-118
- Roger E M (2003). Diffusion of Innovations (5th edition) free Press New York pp156