IJVOCTER: International Journal of Agricultural and Home Economics Education (IJAHEE) Volume 9, Number 1 (June, 2022)
ISSN: 2449-1519 www.ijvocter.com

Agritourism as an Effective Strategy for Teaching of Fish Processing By Agricultural Education Lecturers in Colleges of Education in North-Central, Nigeria

Lan, M. T., Prof. Agbulu, O. N., Ekele, G. E. & Wever, D. G.

Department of Agricultural Education, Joseph Sawuan Tarka University, Makurdi-Benue State, Nigeria

Abstract

This study was on Agritourism as effective strategy for teaching of fish processing by Agricultural Education Lecturers in Colleges of Education in North-Central, Nigeria. Specific objectives were to identify relevant content of fish processing methods that can be used in agritourism and facilities that can be used to teach fish processing in Agritourism. Two research questions guided the study. The study adopted instrumentation design. The population for the study was 163 respondents. There was no sampling. The instrument titled: Fish Processing Method and Facilities Questionnaire (FPMFQ) was adopted from intensive literature reviewed and was validated by three experts in Fishery Department of Joseph Sarwuan Tarka University Makurdi. The instrument was trial tested and the data collected was analyzed using Cronbach Alpha method. A reliability coefficient of 0.97 was obtained. The instrument was used to collect data with the help of 5 research assistants. The data collected was analyzed using mean and standard deviation. The result revealed that all the 41 items on content of fish processing methods were relevant. Eleven items on facilities that can be used in teaching students were necessary. It was therefore concluded that agritourism be established where experts can teach students fish processing using the right method and facilities. Recommendation was made that facilities necessary for fish processing be made available by government or non-governmental organizations at the agritourism centre for competency development.

Keywords: Agritourism, fish processing and Agricultural Education Lecturers

Introduction

Agriculture is the hub of economic development in Nigeria and is the base on which social development of the nation hinges. Though agriculture existed long ago, and is practiced by a large group of people, food still remains a major problem to a greater population of Nigerians (Omorogiuwa, 2014). To curb this, the Federal Government of Nigeria introduced agriculture into the curriculum content of primary, secondary and tertiary levels of education. Agriculture is offered at all these levels of education with the ultimate aim, amongst others, to arouse students' interest in agriculture, broaden their knowledge horizon and develop their skills in agricultural practices to enable them take up careers in agriculture in order to address the issues of unemployment and reduce poverty in the country. This can be done if the curriculum of agricultural education is effectively followed in the course of teaching. Though the objectives are laudable, the realization of these objectives by both the teacher and the student becomes very difficult due to the predominance of cognitive learning in the class without the psychomotor skill development as resources, materials and facilities needed for practice are unavailable. Again, the non-flexibility of agricultural education curriculum discourages the enrichment of the content and psychomotor skill development with related materials and knowledge from the surrounding environment by both teachers and students (Akinwade, Olorundary & Uphai, 2016). Thus, teaching is mostly theoretical rather than competency based (Egbule, 2004). To achieve the desired aim of agricultural education, teachers are resulted to adopting several strategies that can aid in the implementation of the curriculum, strategies that appeal to cognitive, psychomotor and affective domain of the learners such as agritourism.

Agritourism has several definitions depending on the author as various authors have varied definitions. Lobo (2000) viewed agritourism as a visit to agricultural farm, horticultural or agribusiness operation for education, recreation or active involvement in the activities of the farm or operation. Barbieri (2013) stated that agritourism is any activity that is recreational, educational or leisure in nature that is programmed on a farm or other agricultural operations to attract visitors. Agritourism activities could involve direct participation in agricultural activities like harvesting fruits, milking a cow or indirect activities such as enjoying a meal on farm site, farmer markets among other recreational activities such as farm accommodation (bed and breakfast) attending a wedding in a vineyard, food services, horse riding, bird watching, hot air balloon rides and rock climbing could be included in agritourism (Blacka, *et al.,* 2001).

In the context of this study, agritourism refers to any activity carried out on a farm, horticultural or agribusiness operation to attract students or visitors for educational purposes. It can be an educational strategy that makes use of farm, horticultural or agribusiness operations to attract students for active teaching and participation in the activities to increase their knowledge, skills and attitude in agricultural production and processing to enhance employment and economic security. Agritourism activities ranges from educational programme/tours, pick one's own produce, agricultural fairs, market gardens, vocation farms where the students have the opportunity for on-farm learning about the production processes involved in agricultural produce and the integration of other peoples culture (Nelson & Pade, 2005). Other agritourism activities as enumerated by Schilling, *et al.,* (2012) are hay ride, corn mazes, petting zoos and others, Entertainment) bed and breakfast (accommodation), farm picnics, horseback riding, hunting, fishing, bird watching (outdoor recreation) among others. These activities have several importance.

As an educational tool, agritourism enables the students to understand better the production, processing and distribution of agricultural products as they physically take part in all these processes. The students are able to identify the sources of healthy food and its importance to the body. Again, they learn through agritourism how the environment is preserved (Petroman *et al.,* 2016). In the submission of Santeramo and Barbieri (2017) agritourism makes it possible for hands on experience by students on actual agricultural production processes. Similarly, Barbieri (2013) stated that agritourism enables the students who have never had the opportunity to see the sources of the food they eat to identify where the fresh unprocessed food comes from and reconnect with the rural life. The authors further reiterated that agritourism encourages concrete learning rather than abstract learning and at the same time incorporate recreational activities with the learning process thus increasing the enthusiasm with which the students learn thereby discouraging boredom. Despite these benefits, agritourism is yet to be introduced in Nigeria. In developed countries like; United States of America, Australia, China and others, agritourism have been introduced in their educational curriculum and is used extensively in collaboration with other teaching and learning methods in order to increase knowledge and skills in agricultural education and create more job opportunities for their people such as ginger production and processing, fish production and processing among others.

In the view of Pinoyentre (2015) fish processing is a way of preserving fish and at the same time improving their quality. Fish processing should ensure maximal use of raw materials and production of value-added products without any loss of quality (Adeyeye, 2016). In the view of Asogwa (2016) fish decay if harvested and not processed within 8 hours. The author reiterated that due to high temperature, high relative humidity, decomposition rate of fish is high such that the need for processing cannot be over emphasized. Without processing, there cannot be long shelf life and desirable quality and nutritional value maintained. Processing should crave for best market quality, health safety products, apply the most appropriate methods and reduce waste to the minimum. Fish processing methods as numerated by Asogwa (2016) and Adeyeye, (2016) are as follows; (i) Cleaning (ii) Boiling (iii) Frying (iv) Drying (v) Salting (vi) Smoking and Freezing. The method adopted by the fisher man depends on the quantity of fish, processing method, competencies in fish processing and available facilities/materials. According to George, Ogbolu, Olaoye, Obasa, Idowu and Odulate, (2014) fish processing equipment's include galvanized iron sheet supported by planks, drum oven, black clay oven, red clay oven, brick kiln and government model kiln. The authors further enumerated other materials such as; fuel wood and charcoal for traditional processing.

Mechanization of fish processing is low in Nigeria, this has led to prevalence of low quality fish in the market and seasonal glut during dry hot season before rains start to fall in guinea savannah areas. The decrease in quality of fish supplied in the market and high cost of available fish when out of season has discouraged a large number of people from buying of fish while fish protein is nutritionally better than other animal protein which is characterized by high cholesterol. Therefore, there is need to teach students how to process fish using the most common methods and facilities/materials that are easily available. This can be successfully done at agritourism centre where there are trained technical personnel and facilities which enable both cognitive, psychomotor and affective learning through hands on experiences. Agritourism will encourage the development of competencies in the students that can make them take to fish processing for both economic gains and prolong shelf life of the commodity. This therefore, calls for the need for development of content and identification of facilities that can be used to teach fish processing in agritourism.

Specifically, the study sought to:

1. identify relevant content of fish processing methods that can be used in agritourism.
2. identify facilities that can be used to teach fish processing in agritourism.

Research Questions

1. What are the appropriate content of fish processing methods that can be used to teach students in agritourism?
2. What are the facilities/materials that can be used to teach students fish processing in agritourism?

Methodology

The study adopted instrumentation design. The area of study was North-central Nigeria which comprises Benue, Kogi, Kwara, Nasarawa, Plateau and Niger States including the Federal Capital Territory, Abuja. The population for the study was 163 respondents made up of 47 Agricultural Education lecturers in Federal Colleges of Education and 116 Agricultural Education lecturers in State Government owned Colleges of Education within the study area. These respondents were chosen because they are responsible for the implementation of agricultural education curriculum at the federal and state Colleges of Education respectively. The sample size for this study was 163 respondents, the study employed complete enumeration of the respondents (census survey), and therefore there was no sampling because the population could be effectively managed by the researcher. The instrument for data collection was a structured questionnaire made up of 41 items developed through intensive review of literature in line with the objectives of the study. The instrument titled: Fish Processing Method and Facilities Questionnaire (FPMFQ) was validated by three experts in Fishery Department of Joseph Sarwuan Tarka University Makurdi. The instrument had two parts. Part A and B. Part A sought demographic information about the respondents while part B solicited information from the respondents based on the objectives of the study. Part B was divided into two sections according to the objectives of the study. The instrument had a four point rating scale of highly relevant (HR), averagely relevant (AR), slightly relevant (SR) and not relevant (NR) and highly necessary (HN), averagely necessary (AN), slightly necessary (SN) and not necessary (NN) with a corresponding value of 4,3,2 and 1 respectively. The validated instrument was trial-tested on 17 agricultural education lecturers in Colleges of Education Zing, Taraba State. The data collected was used to determine the reliability of the instrument. Cronbach Alpha method was used to analyze the data and a coefficient of 0,97 was obtained which indicated a high internal consistency. Five (5) research assistants who are familiar with the study area aided in the distribution and collection of the instrument from the respondents. One hundred and sixty three (163) copies of the questionnaire were administered to the respondents but 153 copies were returned. Data was analyzed using mean and standard deviation, a mean of 2.50 was used as cut-off point for decision making. Any item with a mean of 2.50 or above was considered as relevant or necessary while any item with a mean below 2.50 was considered not relevant or not necessary.

Results

Research Question 1: What are the appropriate contents of fish processing methods that can be used to teach students in agritourism?

s/n	Items	$\overline{X}$	σ	Decision
	Fish Processing methods			
1.	Cleaning with water	3.902	.340	Relevant
2.	Boiling with water and salt.	3.863	.381	Relevant
3.	Salting, could be brine salting or dry salting	3.954	.210	Relevant
4.	Frying-immersed in heated oil.	3.843	.399	Relevant
5.	Smoking-hot smoking, open fire smoking or cold fire smoking method	3.863	.345	Relevant
6.	Drying-natural sun drying or mechanical drying.	3.837	.405	Relevant
7.	Freezing-Use of freezers and electricity.	3.843	.446	Relevant
8.	Canning-Processed fish put into cans, sealed and subjected to heat.	3.758	.596	Relevant
	Grand Mean	**3.858**	**.390**	**Relevant**
	Smoking fish			
9.	Salt the fish in water for about 30 minutes.	3.882	.362	Relevant
10.	Dry the fish on iron splits.	3.876	.369	Relevant
11.	Place the fish in a windy place or sun for 30 minutes.	3.863	.345	Relevant
12.	Get an oil drum to make the smoking store.	3.876	.369	Relevant
13.	Cut out the top of the drum to open it.	3.850	.456	Relevant
14.	Make holes of about 8 inches below the rim of the drum to place the splits near the bottom.	3.863	.381	Relevant
15.	Create rectangular opening near the bottom to control the fire.	3.882	.396	Relevant
16.	Close the openings with a small door or steel pick plate.	3.928	.306	Relevant
17.	Make fire and regulate the fire to give only smoke.	3.902	.340	Relevant
18.	Place the fish on the splits for smoking.	3.961	.195	Relevant
19.	Cover the fish with a sack or palm fronds.	3.863	.445	Relevant
20.	Direct the smoke to the fish by closing the fire control opening	3.915	.323	Relevant
21.	Check the smoke fire at regular intervals while the fish is turned side by side also.	3.902	.340	Relevant
22.	Remove the fish from fire when the colour turns golden yellow.	3.915	.323	Relevant
23.	Allow the fish to cool for about one hour before packaging them.	3.928	.306	Relevant
24.	Package the fish in cartons or dry leaves and reinforce with bamboo sticks.	3.843	.502	Relevant
	Grand Mean	**3.891**	**.360**	**Relevant**
	Fish curing methods			
25.	Drying, smoking and drying.	3.824	.515	Relevant
26.	Brining, smoking and drying.	3.909	.289	Relevant
27.	Salting and drying.	3.902	.298	Relevant
28.	Salting, smoking and drying.	3.961	.195	Relevant

	Grand Mean	**3.899**	**.324**	**Relevant**

$\overline{X}$ = *Mean of the respondents,* σ = *population standard deviation*

The data presented in table 1 revealed that all the 28 items on the table above have mean value of 3.842 to 3.961 which was above the cut-off point of 2.50. This indicated that all the items are relevant content of fish processing. The standard deviation ranges from .195 to .596 which indicated that the respondents were not too far from the opinion of one another.

Research Question 2: What are the facilities/materials that can be used to teach students fish processing in agritourism?

s/n	Item	$\overline{X}$	σ	Decision
	Fish Processing Equipment			
1.	Freezers.	3.869	.469	Relevant
2.	Power source Electricity or sola.	3.889	.452	Relevant
3.	Knives.	3.895	.416	Relevant
4.	Basins.	3.856	.389	Relevant
5.	Iron racks for drying under the sun or smoking on fire.	3.856	.478	Relevant
6.	Firewood or charcoal.	3.830	.441	Relevant
7.	Smoking Kiln.	3.843	.488	Relevant
8.	Palm leaves, woven nets.	3.824	.461	Relevant
9.	Cartons.	3.758	.538	Relevant
10.	Pots	3.869	.375	Relevant
11.	Iron splits.	3.889	.452	Relevant
12.	Brine.	3.915	.323	Relevant
13.	Salt	3.928	.306	Relevant
	Grand Mean	**3.863**	**.430**	**Relevant**

$\overline{X}$ = *Mean of the respondents,* σ = *population standard deviation*

The data presented in table 2 revealed that all the 13 items had mean value range from 3.758 to 3.928 which was above the cut-off point of 2.50. This shows that all the items are necessary facilitates that can be used to teach students fish processing. The standard deviation range from .306 to point .488. This indicated that the respondents were not far from the opinion of one another in their responses.

Discussion

The findings in table one revealed that all the 28 items were relevant content of fish processing. This agrees with the findings of Asogwa (2016) who asserted that fish processing methods includes cleaning with water, boiling water and salt, salting, could be brime salting or dry salting, frying-immersed in heated oil, smoking-hot smoking, open fire smoking or cold fire smoking, drying-natural sun drying or mechanical drying, freezing-use of freezer and electricity. This agreed with Adeyeye (2016) who stated that cleaning, boiling, frying, drying, salting, smoking and freezing are relevant content of fish processing methods.

The result on table two shows that all the 13 items are necessary facilities that can be used in teaching students fish processing in agritourism. This result is in consonant with Costa (2018) who found out that equipment's such as kiln, pot, iron splits are very essential when processing fish. In the same vein Kinnunen (2012) stated that fish can be pack in cans and sealed, subjected to heat which help in fish preservation. He further added that material such as palm leaves, fire wood and charcoal are necessary when processing fish traditionally. The result also agrees with the findings of George, *et al.,* (2014) that fish processing equipment include galvanized iron sheet supported by planks, drum oven, black clay oven, brick kiln among others.

Conclusion

Agritourism is a strategy that encourages the development of knowledge skills and attitude in agricultural processes. It makes readily available materials/facilities and content that can be used in any agricultural process. To address the problems of loss of fish quality, market glut, increase protein consumption and reduce unemployment rate, to achieve these, agritourism centres should be established to enhance teaching fish processing, so that the content and facilities used can be replica of the work place environment.

Recommendations

Based on the findings of the study it was recommended that:

1. Relevant content of fish processing methods be taught by trained agricultural education lecturers in Colleges of Education in North-Central, Nigeria.
2. Agritourism should be established by government or non-governmental organizations where all the necessary facilities/materials are readily available to teach students fish processing.

References

Adeyeye, S.A.O. (2016), Traditional Fish Processing in Nigeria: A Critical Review. *Nutrition and Food Science*, 46(3):320-335.

Akinwade, A.S., Olorundare, A.S. &uphai, J. (2016). How Effective is The Nigerian Senior School Agricultural Science Curriculum? A Survey of Evidence from Content Development to Product. *European Scientific Journal* 12(1):395-404

Asogwa V.C. (2016). *Understanding Fishry in the Tropics*, Nigeria. International Technical and Vocational Education Review Ltd.

Barbieri, C. (2013). Assessing the Sustainability of Agritourism in the U.S: A comparison between Agritourism and other farm entrepreneurial ventures. *Journal of sustainable Tourism*. 21(2):252-270.

Blacka, A, Couture, P., Coale, C., Dodey, J., Hanking, A., Lastorica, A., Mihalik, B., Read, C.&Uysal, M. (2001). *Agritourism Virgina Cooperative Extension Publication*:310-003. Accessed at http://www.ext.vt.edu/pubs/agrictour/310-003.

Costa, O. (2018).*The Influence of Different Smoking Methods on the Quality and Stability of Smoked Fish* (SabastesNorvegicus). United Nations Fisheries Training Programme, Iceland (Final Project) Accessed at https://www.unuftp.is/static/fellows/document/osvaldo16prf.pdf.

Egbule, P.E. (2004).*Fundamentals and Practice of Agricultural Education*. Owerri, Totan Publishers LTD, 123.

George, F.O.A., Ogbolu, A.O., Olaoye, O.J., Obasa, S.O., Idowu, A.A &Odulate, D.O. (2014) Fish Processing Technologies in Nigeria: A Case of IbeJu-Lekki Local Government Area, Lagos State. *American Journal of Food Technology* 9(6):302-310

Kinnunen, R (2012).*Preserving Fish through Scanning.* Michigan State University Extension. Accessed at https://extension.msu.edu.

Lobo, R. (2000). Helpful Agricultural Tourism Definitions University of California Small Farm Centre, Cooperative Extension. Available at www.sfc.ucdavis.edu.

Nelson, R.L.&Pade, J.S. (2005).*Aquaponics, Hydroponics and Agritourism*. Paper Presented at International Conference and Exhibition on Soilless Culture, Singapore.

Omorogiuwa, O. (2014). The Role of Agriculture in the Economic Development of Nigeria. *European Scientific Journal* 10(4),1857-7881.

Petroman. I., Varga, M., Constantin, E.C., Petroman, C., Momir, B., Turc, B &Merce (2016) Agritourism: An Educational Tool for Students with Agro-Food profile. *Procedia Economics and Finance* 39(2016) 83-87.Accessed at https://www.sciencedirect.com

Pinoyentre (2015). Different Methods of Fish Processing. Pinoy Entrepreneur. Accessed at https://www.pinoy-entreprenour.com>