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TRAINING NEEDS ON AQUACULTURE VALUE ADDITION AMONG FISH FARMERS IN BORGU LOCAL GOVERNMENT AREA, NIGER STATE, NIGERIA

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ABSTRACT

The study assessed the training needs of fish farmers on value addition in Borgu Local Government Area, Niger State, Nigeria. Data were collected from fish farmers using interview guide. Descriptive statistics was used to describe the data while Chi-square and Pearson's Product Moment Correlation were employed to test relationship between variables. Respondents in this study were male dominated, in their productive ages (mean age of 38) and largely well educated (52% had tertiary education). Important training needs of respondents on value addition were improved smoking technology ($\bar{x}$ = 2.61), as well as improved packaging and labeling ($\bar{x}$ = 2.30), improved short duration storage technology ($\bar{x}$ = 2.29) and catching techniques ($\bar{x}$ = 2.20). Farmers' stocking rate (r = 0.266, P = 0.017) and number of ponds (r = 0.243, P = 0.030) had a significant relationship with the training needs of farmers on fish value addition. The study therefore recommended that robust training programme and advisory services be made available by extension for fish farmers in areas of fish smoking, types packaging and storage material in order to enhance their utilization of value addition initiatives in fish farming.

Keywords: Fish farming, value addition initiatives, constraints

INTRODUCTION

Fisheries occupy a unique position in the agricultural sector of the Nigerian economy. With an average contribution of 4.3% to total agriculture GDP between 1960 and 2011 and provision of at least 50% animal protein, fisheries contributes to economic growth by enhancing food security and improving livelihood of fish farmers and their households (Essien and Effiong, 2010). According to the 2016 Nigeria Fisheries Statistics report **(**Fishery Committee for the West Central Gulf of Guinea FCWCGG, 2016)**,** annual fish demand is estimated at 3.32 million metric tonnes. This is an unsurprisingly high number considering Nigeria's teeming population of about 186 million people, but domestic production produces only about 1.12 million metric tonnes (FCWCGG, 2016). This leaves a deficit of 2.2 million metric tonnes, which is largely supplied through fish importation. This therefore opens up a multitude of possibilities and opportunities for Nigerian fish farmers.

Despite the gap, many of the aquaculture production are wasted due to losses from post-harvest, hence the need for value addition. Value addition initiatives define the agribusiness chain which encompasses production, processing, preservation/storage and marketing of an agricultural produce. It entails the transformation of an agricultural product into forms with higher value and diversified utilities (Popoola et al., 2015). Such transformation creates utilities in time, location and form. It is the creation of time, location and form utilities that characterise value adding (Lynton and Pareek, 1990).

The potential of value addition initiatives within the agricultural sector is enormous. According to Dunlap (2006), apart from improving the profit potentials of farmers, value addition initiatives offer entrepreneurial farmers an opportunity to identify and pursue new products and new markets. The relatively underdevelopment of value addition initiatives in fish farming in Nigeria seems to be critically affecting the maximisation of the prospects in the sector which

the huge gap between demand and supply generates (Lynton and Pareek, 1990).

Training plays an important role in the advancement of human performance in a given situation (Sajeev et al., 2012). Training is a process of acquisition of new skills, attitude and knowledge in the context of preparing for entry into a vocation or improving ones productivity in an organisation or enterprise (Sajeev et al., 2012). Effective training requires a clear picture of how the trainees will need to use information after training in place of local practices what they have adopted before in their situation. Lynton & Pareek (1990) stated that training consists largely of well organised opportunities for participants to acquire necessary understanding and skill (Barbazette, 2006).

Farmer training is directed towards improving their job efficiency in farming. The kind of education referred to as training is not for knowing more but behaving differently. Knowles et al., (2005) opined that farmer training is education that most often takes place outside formal learning institutions. It differs from education in schools because it is geared towards adult learning, it is the foundation for a systematic theory about adult learning, noting that the approach to adult education will be via the route of situations, not subjects.

Despite the large available market for fishery and aquaculture products, many subsistence fish farmers still encounter difficulties in selling their products profitably (Otitolaiye, 1999). Several visible pointers have revealed that a major reason why fish farmers seem not to have been able to harness the potential in the sector is due to the inadequate use of value addition initiatives (Olorunfemi, et al., 2017).

A significant quantity of fish is lost due to the absence of adequate technology and the know-how to prevent post-harvest losses in most tropical countries including Nigeria (Smith, 2009).Although profits are being made by fish farmers but buyers of fish who are involved in fish processing generate more income than the fish farmers themselves. Farmers that utilize both product and process value added innovation generate more income and are able to compete favourably in the market and keep pace with competitors (Brewin, et al., 2009). A very low percentage of fish farmers were involved in processing and preserving their fish produce (Adefalu, et al., 2013).

It is based on this backdrop that this study was carried out to describe the personal characteristics of the fish farmers and determine their production variables. This study also determined the training needs of the fish farmers on fish value addition andascertained the constraints to use of value addition among them.

MATERIALS AND METHODS

Study Area

The study area is Borgu Local Government Area, Niger State Nigeria. The area is one of 25 Local Government Areas (LGAs) in the state, with the headquarters in New Bussa. The area has an area of land of about 16,200sqkm and a population of 172,835 as at the 2006 census and shares boundaries with Benin Republic to the west, Agwara local government to the south. Borgu Local Government lies between latitude $9^{o}53'N$ and longitude $4^{o}31'E$ (Ross, 2010).. The occupations of the people in the area include crop and livestock farming, civil services, trading, artisans, carpentry, tailoring, mechanics e.t.c. The major languages spoken in the area are Bissan and Hausa. Others include Boko Yoruba, Nupe, Igbo, KambariLaru, Duka and Lopa. The people belong to different religions but dominated by Islam and Christianity (Ross, 2010). The LGA comprises of 10 wards. The wards include New Bussa, Konkoso, Rafi, Dogongari, Pissa, Wawa, Babanna, Shagunnu, Dugga and Karabonde.

Experimental Design

Three (3) communities were purposively selected in the study area and they include New Bussa, Munai, and Fakun. Forty percent of the population of the fish farmers was taken in each of the selected communities. Thus, 22 fish farmers were randomly selected in New Bussa, 28 farmers in Munnai and 30 fish farmers were selected in Fakun which gave a total of 80 (eighty) fish famers as the sample size of the study. An interview guide based on the objectives of the study was used to gather data from the fish farmers. Personal characteristics of the respondents such as sex, religion, marital status and educational level were measured at the nominal level while age, household size, annual income from fish and years of experience in fish

farming were measured at interval level. Training needs of farmers on value addition were measured at ordinal level by requiring the respondents to indicate their level of training need such as highly needed, moderately needed and less needed from a list of training needs on value addition. The needs were rated as follows: Very important need=3, Important need = 2, Not important need = 1. The cut off mean was two. Responses with mean values greater than or equal to two were regarded as important training needs, while responses with mean values less than one were regarded as unimportant training needs.

Data Analysis

Data gathered were analyzed using descriptive statistics such as frequency and percentages, means and standard deviation. While inferential statistics such as Chi-square and Pearson's Product Moment Correlation were used to test for the hypothesis of the study.

RESULTS

Table 1 shows that majority (77.5%) of the respondents were male. The Table also reveals that 52% of the respondents were 31-40 years of age while the mean age was 38 years. The Table shows that most (76.3%) of the fish farmers were married. Majority (97.6%) of the respondents were educated. As shown in the Table, majority (73.0%) of the farmers generated ₦100, 000-500,000 annual income from fish farming. The mean annual income from fish farming was ₦480, 476.20. The table also reveals that majority (70.0%) of the fish farmers had less than 6 years of experience in fish farming while the mean years of experience was 5 years.

Table 1: Personal characteristics of respondents

Variables	Frequency	Percentage (%)	Mean ($\bar{x}$)	Standard Deviation
Sex				
Female	18	22.5		
Male	62	77.5		
Age (years)				
21-30	15	18.8	38	7.86
31-40	42	52.5		
41-50	19	23.8		
52-60	4	5.0		
Marital status				
Single	13	16.3		
Married	61	76.2		
Divorced	1	1.3		
Widow/er	5	6.2		
Education level				
No Formal Education	2	2.5		
Primary Education	9	11.3		
Secondary Education	27	33.7		
Tertiary Education	42	52.5		
Household Size (persons)				
< 5	1	51.2		
6-10	29	36.2		
11-15	10	12.5		
Income from Fish (Naira)				
100,000-500,000	46	73.0	480,476.2	372,478.0
500,001-1,000,000	14	22.2		
1,000,001-1,500,000	2	3.2		
>1,500,000	1	1.6		
Years of Experience				
<6	56	70.0	5.24	3.74
6-12	19	23.8		
13-18	5	6.2		

Table 2 shows that half of the farmers had pond size 8×10m. The table also reveals that 51.4% of the respondents had stocked 2000-4000 fish per stocking. The table shows that most (76.6%) of the farmers had 1-5 ponds. The mean number of ponds was about 4. The Table further reveals, Majority (62.5%) of the respondents stocked twice in a year.

Table 3 shows that the important training needs of farmers on aquaculture value addition include smoking technology ($\bar{x}$ = 2.61), improved packaging and labeling technology ($\bar{x}$ = 2.30), improved short duration storage technology ($\bar{x}$ = 2.29), catching techniques ($\bar{x}$ =2.20), gutting techniques ($\bar{x}$ =2.16), improved washing techniques ($\bar{x}$ =2.10) and sorting techniques ($\bar{x}$ =2.09). The unimportant training needs of farmers on aquaculture value addition are bleeding techniques ($\bar{x}$ =1.95), fish paste production ($\bar{x}$ =1.81), curing techniques ($\bar{x}$ =1.95), oven drying techniques ($\bar{x}$ =1.96), grilling of fish ($\bar{x}$ =1.93), improved salting and sun drying techniques ($\bar{x}$ =1.91) and others.

Table 4 reveals the constraints the fish farmers encounter in their use of value addition. The means were used to rank the constraints according to their order of severity as indicated by the respondents, Water shortage ($\bar{x}$ =2.44) was ranked 1st, high cost of input ($\bar{x}$ =2.38) was ranked second while inadequate access to capital ($\bar{x}$ =2.23) was ranked third (Table 4). Other constraints that were considered as serious constraints include high cost of labour ($\bar{x}$ =2.20), inadequate knowledge and skill in fish farming ($\bar{x}$ =2.18) and difficulty in getting fish seed ($\bar{x}$ =2.10). The constraints that were not considered as serious constrains include irregular power supply ($\bar{x}$ =1.89), inadequate market channels ($\bar{x}$ =1.86) and unstable government policy ($\bar{x}$ =1.85).

Table 2: Production variables of the respondents

Variables	Frequency	Percentage (%)	Mean ($\bar{x}$)	Standard deviation
Size of pond				
8x10m	40	50.0		
10x10m	16	20.0		
12x10m	24	30.0		
Number of ponds				
1-5	59	76.6	4.17	3.34
6-10	14	18.2		
11-15	4	5.2		
Fish per stocking				
< 2000	32	40.0	2798.13	2235.14
2000- 4000	41	51.4		
4000-6000	5	6.3		
>6000	2	2.6		
Number of stocking per year				
One time	5	6.3		
Two times	50	62.5		
Three times	17	21.3		
Four times	8	10.0		

Table 3: Training needs of the respondents on value addition

Training needs	Mean	Standard deviation
Catching techniques	2.20*	0.818
Sorting techniques	2.09*	0.732
Bleeding techniques	1.95	0.727
Gutting techniques	2.16*	0.818
Improved washing techniques	2.10*	0.866
Improved short duration storage technology	2.29*	0.845
Smoking technology	2.61*	0.665
Fish paste production	1.81	0.748
Fish flakes production	1.89	0.746
Canning technology	1.89	0.779
Grilling of fish	1.93	0.742
Oven drying techniques	1.96	0.754
Improved salting and sun drying techniques	1.91	0.732
Frying techniques	1.86	0.742
Curing techniques	1.95	0.692
Improved packaging and labeling technology	2.30*	0.770

Table 4: Constraints to value addition among the respondents

Constraints	Mean	Standard deviation
Water shortage	2.44	0.691
High cost of input	2.38	0.736
Inadequate access to capital	2.23	0.711
Inadequate knowledge and skill	2.18	0.689
High cost of labour	2.20	0.802
Difficulty in getting good fish seed	2.10	0.805
Inadequate market channels	1.86	0.775
Unstable government policy	1.85	0.781
Irregular power supply	1.89	0.746

Table 5 shows that stocking rate (r = 0.266, P = 0.017) and the number of ponds (r = 0.243, P = 0.030) had a significant relationship with the training needs of farmers. Other personal and production variables such as sex (χ^2= 5.882, P = 0.053), religion (χ^2= 1.957, P = 0.376), marital status (χ^2= 4.210, P = 0.648), educational level (χ^2= 10.708, P = 0.098), age (r= 0.101, P = 0.371), household size (r= 0.037, P = 0.747) and other did not have any significant relationship with the training needs of the farmers on aquaculture value addition at the significant level of P < 0.05.

Table 5: Relationship between personal characteristics and training needs of the respondents

Variables	χ^2	Df	P
Sex	5.882	2	0.053
Religion	1.957	2	0.376
Marital status	4.210	6	0.648
Educational level	10.708	6	0.098
	r- value		
Age	0.101		0.371
Household size	0.037		0.747
Income from fish	-0.037		0.745
Years of experience	0.065		0.569
Pond size	-0.152		0.179
Stocking rate	0.266*		0.017
Number of stocking	0.073		0.519
No of ponds	0.243*		0.030

** P < 0.05 Df: Degree of freedom*

DISCUSSION

Personal Characteristics of Respondents

Fish farming is a male dominated venture in the area. This may be due to the tedious nature of some aspects of fish farming such as culturing which a lot of females may not be able to cope with. This is consonant with the findings of Falola, *et al.*, (2012) who reported that males were mostly involved in fish farming than females. The mean age of 38 years implies that they are in their economically active years hence giving them the privilege to leverage on this attribute for a high degree of prospects and viability in value added production. This result is corroborated by Egbufor *et al.* (2012) who reported that able bodied young men were the ones largely and actively involved in fish farming. Most (76.3%) of the fish farmers were married implying that they had family responsibility ties that would require more financial commitment which may serve as an impetus to adopt recommended fish farming practices that can enhance more income. Most (97.6%) of the respondents were educated suggesting that fish farming is dominated by educated persons in the study area. Being literate will likely confer on the fish farmers' capacity to learn and be positively disposed to relevant information that can enhance their competencies in fish farming and use of value addition initiatives. The finding agrees with the observation of Adefalu *et al.*, (2013) and Ogunlade (2007) that most of the fish farmers in Kwara and Osun States, Nigeria, respectively, were educated. The mean annual income from fish farming was ₦480,476.20. On the average, the fish farmers have been into fish farming for about 5 years implying that most of them had some level of experience in fish farming. Riddler and Hishamunda (2001) observed that experience was a risk management factor in fish farming.

Production Variables of the Respondents

Half of the farmers had pond size 8×10m and stocked between 2000-4000 fish per stocking while most (76.6%) of the farmers had 1-5 ponds. The average number of ponds was 4 showing relatively high involvement in fish farming by the farmers. It is important to note here that average of 2 trucks of smoked fish are transported out of the study area to other markets in the country every weekend. Majority (62.5%) of the respondents stocked twice in a year, a situation which makes it possible for them to harvest twice in a year. Isyagi et al., (2009) had earlier found that 62.5% of the farms in Nsukka Local Government Area of Enugu State, Nigeria had a production cycle of six months in which period the catfish under good management is expected to reach table size. Adeyemo et al., (2011) observed that it takes an average of eight months to produce catfish in Ibadan, Nigeria.

Training Needs of the Respondents on Value Addition

Important training needs of farmers on aquaculture value addition include smoking technology ($\bar{x}$ =2.61), improved packaging and labeling technology ($\bar{x}$ = 2.30), improved short duration storage technology ($\bar{x}$ = 2.29), catching techniques ($\bar{x}$ =2.20), gutting techniques ($\bar{x}$ =2.16), improved washing techniques ($\bar{x}$ =2.10) and sorting techniques ($\bar{x}$ =2.09). Smoking technology is one of the most common methods of adding value to fish in many parts of the country. This may be the reason for the desire of the farmers to have adequate knowledge and skill in this area. Respondents need training on improved packaging and labeling technology as well as understanding different types of packaging materials. Good packaging of processed fish will ensure the proper handling of processed fish, attract customers and prevent infestation of pests thus increasing the income of the fish farmers because such products command higher prices. This agrees with findings of King (2001) who opined that packaging formed an important part of food processing because it facilitates handling during storage, controls insect infestation of dried fish and distribution within the market chain. Our findings on farmers' areas of need for value addition in aquaculture, should therefore gear up extension services to rise to the challenge of being the pillar in disseminating value added initiatives, innovation, and technologies to the fish farmers for better profit maximization.

Relationship between Selected Variables

Constraints to Aquaculture Value Addition among Fish Farmers

Serious constraints to the aquaculture addition among the farmers include water shortage ($\bar{x}$ =2.44), high cost of input ($\bar{x}$ =2.38) and inadequate access to capital ($\bar{x}$ =2.23) which were ranked 1st, 2nd and 3rd respectively. This implies that the availability of water is highly essential in processing of the fish. Furthermore, it is envisaged

that high cost of input will reduce the return of the farmers on the business venture. The finding is this study is in line with Adefalu *et al.*, (2013) where they reported the lack of sufficient capital as a major challenge in fish farming. Ogunlade (2007) also revealed that the major constraints facing fish farmers were capital and security. The implication of all these is that the fish farmers' in the study area need government and stakeholders intervention on the challenges militating against their use of value addition initiatives. This will enhance the aquaculture sector to be a more profitable enterprise thus encouraging lots of old and new entrant fish farmers to tap into the potentials in the sector.

Stocking rate (r = 0.266, P = 0.017) and the number of ponds (r = 0.243, P = 0.030) had a significant relationship with the training needs of farmers. This implies that the higher the stocking rate and number of ponds the higher the needs of the respondents on value addition at the significant level of $P < 0.05$. It then implies that the need for training of farmers on aquaculture value addition is dependent on the volume of investment.

CONCLUSION AND RECOMMENDATIONS

In this study, it was observed that the major areas of need for training in value addition among the farmers were smoking technology ($\bar{x}$ =2.61), improved packaging and labeling technology ($\bar{x}$ = 2.30), improved short duration storage technology ($\bar{x}$ =2.29), catching techniques ($\bar{x}$ =2.20), gutting techniques ($\bar{x}$ =2.16) and improved washing techniques ($\bar{x}$ =2.10). Similarly, among other factors, farmers' constraints included water shortage, high cost of input and inadequate capital. Farmers' training needs on fish value addition is influenced by the volume of investment in the fish farming.

In the light of the current findings, it is recommended that a robust training programme for fish farmers in the major areas be organized for mediating capacity deficiencies indicated in order to enhance the utilization of value added initiatives in the study area. Secondly, government is advised to provide credit to the fish farmers in order to increase their scale of production thereby arousing their desire for value addition initiative.

REFERENCES

Adefalu, L.L., Aderinoye-Abdulwahab, S.A., Bello, O.G., Olorunfemi, O.D. and Oba, S.A. (2013). Information needs of fish farmers in Ilorin Metropolis, Kwara State, Nigeria. *Nigeria Journal of Agricultural and Food Environment*. 9(2): 1-5.

Adeyemo, O.K., Ganiyu, O.I. and Olugasa, B.O. (2011). Comparative evaluation of productivity and cost effectiveness of Catfish fingerling production in Earthen Pond and Recirculation System in Ibadan, Nigeria. *Nigerian Veterinary Journal*, 32 (1), 5–8.

Barbazette, J. (2006). Training Needs Assessment: Methods, Tools, and Techniques. San Francisco: Pfeiffer.

Brewin, D.G., Monchuk, D.C. and Patridge, M.D. (2009). Examining the adoption of product and process innovations in the Canadian food processing industry. *Canada Journal of Agricultural Economics.* 57: 75–97 available at https://doi. org/. Accessed on 15/12/2016.

Delgado, C. L., Wada, N., Rosegrant, M.W., Meijer, S. and Ahmed. M. (2003). Fish to 2020. Supply and demand in changing global market. Pp226.

Dunlap, A. (2006). Checklist for Starting Value-Added Agriculture Enterprise. The Value-Added and Alternative Agriculture Start-Up. NC State University, College of Agriculture and Life Sciences. 2pp. Available online: www.agmrc.org. Accessed on 15/12/2016.

Egbufor, E.R., Ahmed, M.A. and Lorica, A. (2012). Improving developing country food security through aquaculture development - lessons from Africa. Food Policy 27, 125-141.

Essien, A. I. and Effiong J. O. (2010). Economic Implications of Fish Landings in Nigeria: a Case Study of Ayadehe and Oku Iboku Fishing Communities in Itu Local Government Area of Akwa Ibom state, Nigeria. *International Journal of Economic Development Research and Investment,* 1(2 & 3): 10.

Falola, S.A., Oladosu, I. O. and Okunade, E. O. (2012). Perception of Village Extension Agents in Disseminating Agricultural Information in Oyo Agricultural Zone of

Oyo State. *Journal of Social Science*, 12(3): 187 - 191.

Federal Department of Fisheries. (2008). Fisheries Statistics of Nigeria, 4th Edition. Federal Department of Fisheries, Abuja. Pp.41.

Federal Ministry of Agriculture and Rural Development. (2011). Aquaculture transformation plan. Federal Ministry of Agriculture and Rural Development. September 9, 2011. Available at http:// systemseng.jp/cp-bin/wordpress/wpcontent/uploads/2016/02/Fihseries-in-Nigeria-2013-.pdf. Accessed on 15//4/2018.

Fishery Committee for the West Central Gulf of Guinea. (2016). Nigeria Fisheries Statistics – 2016 Summary Report**.** Available at https://earthjournalism.net/stories /nigeria-importing-fish-amidst-abundant-ocean-resources-the-paradox-of-a-nation Accessed on 2/12/2019.

Isyagi, A. N., Veverica, K. L., Asiimwe, R. and Daniels, W. H. (2009). Manual for the Commercial Pond Production of the African Catfish in Uganda.P.222.

King M.A. (2001). Artisanal Containers and Transportation for Smoked-Dried Fish in Nigeria. In: Proceedings of the 16th Annual Conference of the Fisheries Society of Nigeria (FISON), Maiduguri, 4th – 9th Nov., 2001. Pp 17 - 25.

Knowles, M.S., Holton, E.F and Swanson, R.A. (2005). The Adult Learner: The Definitive Classic in Adult Education and Human Resource Development. 6th Edition. California: Elsevier Science and Technology Books, P. 391.

Lynton, R.P and Pareek, U. (1990). Training for Development. New Delhi: Vistaar Publications. McGhee W, Thayer PW1961. Training in Business and Industry. New York: John Wiley and Sons.

Nyambi, T.A. (1980). The importance and economics of aquaculture. In: Proceedings of the First Cross River State Fisheries Conference, Calabar, May, 28-30, 1980

Odetola, T and Etumnu, C. (2016). Contribution of Agriculture to Economic Growth in Nigeria. Paper presented at the 18th Annual Conference of the African Econometric Society (AES) Accra, Ghana at the session organized by the Association for the Advancement of African Women Economists (AAAWE), 22nd and 23rd July, 2013.

Ogunlade, O.I. (2007). Farmers' perception of the relevance of Agriculture Technologies in South-Western Nigeria. *Journal of Human Ecology*, 21(3), 191 - 194.

Olorunfemi, O.D., Adekunle, F.O., Oladipo, T.O. and Oladele, O.I. (2017). Training needs of fish farmers on value addition initiatives in Kwara State, Nigeria. *Sarhad Journal of Agriculture*, 33(1): 14-21.

Otitolaiye, J.O. (1999). Economic analysis of fisheries production in Nigeria. *Journal of Fisheries Technology*. Vol.1 No.1 Pp34-38.

Popoola, T.O. Adebayo, K.., Sodiya, C.I., Adebowale, A.A. and Adeoye, A.S. (2015). Utilization of cassava peels value addition strategies by cassava processors in Southwest Nigeria. *Journal of Sustainable Development* Vol. 12. No.1, p 45

Riddler, T. and Hishamunda, U.D. (2001). The development of aquaculture and culture-based fisheries in Niger Republic: the social and cultural contexts.

Sajeev, M. V., Singha, A.K. and Venkatasubramanian, V. (2012). Training Needs of Farmers and Rural Youth: An Analysis of Manipur State, *India J Agri Sci*, 3(2): 103.

Smith, M.A.K. (2009). Economic importance of animal husbandry. In: Agriculture General. National Open University of Nigeria Lecture Modules, AGR 201, Victoria Inland, Lagos, Nigeria. Pp 113-156.