

Adoption of Improved Management Technologies among Poultry Farmers in Igabi Local Government Area, Kaduna State, Nigeria

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Abstract:- The study investigated the adoption of improved management techniques among poultry farmers in Igabi Local Government Area of Kaduna State. Data were collected randomly through the use of well-structured questionnaire and personal oral interview from seventy two (72) poultry farmers. Descriptive statistics such as mean score, percentage and frequency table were used to analyse the data. The findings indicated that majority (68.06 %) of the respondents were male, while about 76% of the farmers were between the ages of 20-49 years old. Awareness of the improved management technologies were 100 % for both vaccination and improved feeding technologies among the farmers respectively. The mean score showed that 75.70 % of the poultry farmers had good awareness of the technologies, 72.40% of the farmers had interest in the improved technologies and 66.67 % claimed to have evaluated these improved poultry management technologies. Vaccination had the highest adoption level of 100 where about 66.49 % of the poultry farmers had adopted one or more of these technologies, 19.27% were at trial stage while 14.41 % of the farmers failed to adopt one or any of the improved management technologies in the study area. Improved technologies were too expensive (95.83%), lack of credit/funds to adopt (93.06%), lack of government support (77.78%) and lack of training (66.67%) were the major constraints affecting adoption of poultry management technologies in the study area. In view of the findings, the study highlighted the need for government to address the issue of credit availability through an institutionalize frame work aimed at linking farmers to formal sources of credit, if the quantum of poultry production is to keep pace with the protein requirement of the population. The study also recommended that farmers should establish cooperative society so that they can pool their resources and knowledge together in solving most of the problems identified in this study.

Keywords: Awareness, Adoption, Poultry Farmers, Improved, Management Techniques, Constraints

I. INTRODUCTION

Livestock production constitutes an important component of the agricultural economy in developing countries and it is an instrument to socio – economic change, improved income and quality of rural life in Nigeria (Okumadewa,1999). It is an important source of protein , presently producing about 36.5% of total intake of Nigerians. In livestock production, poultry occupies a prominent position in providing animal protein as it account for 25 % of local

meat production in Nigeria (Okunola and Olofinsawe, 2007). In Nigeria, poultry represent an appropriate system to feed the fast growing population and to provide income for small scale farmers. The development of the poultry industry in Nigeria has been described as the fastest means of bridging the protein deficiency gap prevailing in the country. It has been reported that most Nigerian diets are deficient in animal protein which results in poor and stunted growth as well as increase in spread of diseases and consequently death (FGN/ UNICEF, 1994; Maziya-Dixon *et.al.*, 2004 and 2006). Poultry production has become a full time job for many Nigerians and it significantly contributes to the Gross National Product (GNP) (Umeh and Odo, 2002).Poultry production mainly meat and eggs represent important food for improving the national status particularly of the most vulnerable population (children and pregnant women).

The consumption of poultry products in developing countries has grown by 5.8 % per annum, faster than that of human population growth, and has created a great increase in demand (FAO, 2004). Poultry keeping is making an important contribution to the livelihood of the most vulnerable rural household in developing countries. In the study of income generation in transmigrate farming system in East – Kalimantan, Indonesia, family poultry generated about 53 % of the total income which was used for food, school fees, and expected expenses such as medicines (FAO, 2004).

Poultry production is no doubt one of the most important ways of alleviating the scourge of protein deficiency in Nigeria and other developing countries. This is true because poultry can be set up under different climatic conditions and its product is acceptable to all race and religious groups (Okon, 1983). Nutritionally eating an egg per day is a good way of putting proteins, fats, vitamins and minerals in human diets. According to Binuomote *et.al.*(2008) a medium size egg supplies about 80 calories of energy to our body. The author further asserted that egg contains not only a trace of carbohydrate , but it was also adjudged to be a replacement for meat as it contains all essential amino acid in adequate proportion required by the body for general growth and repair. It is also a source of vitamin A which protects against night blindness and prevents skin infection. In addition to meat and

egg, the poultry industry provides raw materials for the production of vaccines, mattresses and offer employment to many people (Bank, 1979). It has been described as the source of income to the poultry producers and serves as major ingredient in some food industries such as confectionaries (Adetimirin, 2000).

Adoption is regarded as a decision to make full use of an innovation or technology (Rogers, 1995). An innovation is an idea, method, object or practice, which is regarded, as new by individuals but which may not always be the result of recent research. Also, Ewuola (1985), notes that adoption is synonymous to transfer of technology. He defines transfer of technology as that which embraces all efforts to make sure that the farmers adopt new technology. Before any technology is adopted, it must pass through a process of adoption, which was explained by Van dan ban and Hawkins (1960) to comprised awareness stage (when an individual first heard about improved technology/innovation); the interest stage (an individual start having interest in the new practice, hence gathering more information about it); evaluation stage (an individual's start judgement, weigh up the merits and demerits of using the new technology/innovation); the trial stage (an individual test the technology / innovation on a small scale) and adoption stage (an individual decide to continue the full use of the new technology/ innovation). Based on the importance of poultry production to Nigerian economy as identified above there is need for the poultry farmers to adopt new improved management technologies in poultry production to boost their output as well as their income and to alleviate protein deficiency among the growing population. The study therefore sought to examine the socio-economic and institutional variables of the small scale poultry farmers; ascertain the level of adoption of the improved poultry management technologies and identify constraints limiting the level of adoption of these technologies among the farmers in study area.

II. MATERIALS AND METHODS

A. Study Area

The study was conducted in Igabi Local Government Area of Kaduna state. Igabi is one of the four local government area which constitute Kaduna metropolitan city, an important commercial and administrative centre in Northern Nigeria and comprises of different sets of people with diversified socio-cultural characteristics. Igabi local government is located in guinea savannah of Nigeria on latitude $10^{\circ} 32''$ N and longitude $7^{\circ} 17''$ E (Otegbeye, 2001). The headquarter of Igabi Local Government Area is Turunku. The population of Igabi local government area according to 2006 population census was estimated at 570,000 people (NPC, 2006). Annual rainfall is between 250mm-1000mm and usually begins early May and ends in October and the dry season is between October-April. The major crops produced in the area are cowpea, yam, cassava, maize, millet, guinea corn and cocoyam.

Livestock/animals that are reared in the Local Government Area are poultry, cattle, goat and sheep.

B. Sampling Techniques and Frame

Multi stage sampling technique was employed in this study. in the first stage Igabi local government area was purposively selected out of twenty three local government area in Kaduna state because the researcher resides in the area. At the second stage, six (6) villages which include Mando, Sabon Afaka, Rigasa, Sabon-Birin, Rigachikun and Turunku were also purposively selected from the local government area due to existence of poultry farmers in these areas. The final stage was random selection of twelve (12) poultry farmers from each of the six (6) selected villages/settlements. This gave the total number of seventy two (72) respondents

C. Data Collection

Primary data was used for the study. The primary data were obtained from poultry farmers in the study area with aid of well structured questionnaire and personal interview. The questionnaire was designed to collect information on socio-economic characteristics of the farmers, some institutional variables of the farmers, level of adoption, and constraints to the adoption of improved poultry management techniques that have been develop and disseminated to poultry farmers.

D. Analytical Tools

Descriptive statistics was used to analyze the data generated. Descriptive statistic such as percentage, frequency distribution, table and mean were used to describe socio – economic and institutional variables of the farmers, level of adoption of the improved management techniques and constraints impeding the adoption of these techniques by the farmers.

III. RESULTS AND DISCUSSIONS

E. Social-Economic Characteristics of Poultry Farmers in the Study Area.

1). *Gender of Respondents*: Table 1 shows that 68.05% of the poultry farmers are male while 31.94% were female. This implies that men dominate the poultry sector in the study area. This is in line with the finding of Aphunu and Akpobasa (2009) in the study of adoption of improved poultry management practices in Ughelli in which males also dominated poultry sector.

2). *Age of Respondents*: Table 2 indicates that 31.94 % of the respondents fall within the age group of 30-39 years old, 26.39% fall within 40-49 years old, 23.61% were 50 years and above while 18.06 % are within the age group of 20-29 years old. The result showed that about 60% of the respondents were between the age of 30-50 years which implies that majority of the respondent belong to the young and middle-aged group, that is, working class group that favours the learning of new technologies which in-turn will encourage greater adoption. This age group suggests that the

farmers have great energy for agricultural activities and play central role in productive enterprises (Durstun, 1996).

3).*Educational Status of Respondents:* Table 3 shows that 41.67 % of the respondents had post-secondary education, 37.09% have secondary school certificate, 8.77% have no formal education and about 7.02% have primary school education. This implies that 49.12% of the respondent has post secondary school education, 37.50% of the respondent had secondary education, while 11.11% of the respondent had primary education and about 9.72% had no formal education. It is very important to know the level of literate farmers since it variable influences the ability to properly comprehend new techniques and method required to bring about positive changes in knowledge, attitude skills and aspiration of the poultry farmer. This showed that 90.28 % of the farmers had one form of education or the other. This was in total agreement with the study of Olaniyi *et.al.*(2008) that reported that 94.4% of the poultry farmers had one form or the other formal education ranging from adult literacy to tertiary education.

F. Institutional Variables of the Poultry Farmers in the Study Area.

4).*Source of Finance to the Poultry Farmers:* The result in Table 6 shows that the major source of finance to the farmers was from personal savings (72.22%) which was in agreement with the work of Akanni (2007) that reported that the major source of finance to small scale poultry farmers in South Western Nigeria was from personal savings (60.75 %). Other sources of finance were cooperative society (11.11 %), agricultural development bank (6.94 %), money lender (5.26 %) and commercial bank (4.17%) and. This implies that most of the poultry farmers got their initial capital for their business which will help to be able to withstand any losses that might arise as a result of poor management, mortality or poor sales.

5). *Flock Size of Respondents:* The result of the number of poultry birds possessed by the farmers is presented in Table 7. The table revealed that 27.78 % of the farmers possessed 200 birds and above, 23.61 % have a range of 100 - 149 birds, 20.83 % have 150 -199 birds, 15.28 % have less than 50 - 99 birds and 12.50 % have less than 50 birds.The result implies that most or majority of the farmers in the study area are small scale producers. This result is in agreement the findings of Agwu *et.al.* (2008) that obtained an average flock size of approximately 28 birds in their study which signifies that the farmers are operating at small scale level.

Table 1: Frequency Distribution of the Poultry Farmer in the Study Area based on Gender

Gender	Frequency	Percentage %
Male	49	68.06
Female	23	31.94
Total	72	100

Table 2. Frequency Distribution of the Poultry Farmer in the Study Area based on Age

Age Range	Frequency	Percentage %
20-29	13	18.06
30-39	23	31.94
40-49	19	26.39
50 years and above	17	23.61
Total	72	100

Table 3: Frequency Distribution of Poultry Farmers in the Study Area based on Educational Qualification

Level of Education	Frequency	Percentage %
No formal education	7	9.72
Primary school education	8	11.11
Secondary school Education	27	37.50
Post-Secondary Education	30	41.67
Total	72	100

Table 4. Frequency Distraction of Poultry Farmer in the Study Area based on Marital Status

Marital Status	Frequency	Percentage %
Married	37	51.39
Single	24	33.33
Widow/widower	4	5.56
Divorcee	7	9.72
Total	72	100

Table5. Distribution of Respondents based on Years of Experience in Poultry Farming.

Years of Experience	Frequency	Percentage %
0-9	18	25.00
10- 19	20	27.77
20-29	13	18.06
30-39	10	13.89
40-49	9	12.50
50 years and above	2	2.78
Total	72	100

Table 6. Frequency Distribution of Respondents based on Source of Finance

Source of Finance	Frequency	Percentage %
Personal Savings	52	72.22
Cooperative Society	8	11.11
Money Lender	4	5.56
Commercial Bank	3	4.17
Agricultural Development Bank	5	6.94
Total	72	100

Table7. Frequency Distribution of Respondents Based on Flock Size

Flock Size	Frequency	Percentage %
Below 50	9	12.50
50 – 99	11	15.28
100 -149	17	23.61
150 – 199	15	20.83
200 birds and above	20	27.78
Total	72	100

8. *Frequency of Contact with Extension Agent:* Table 8 above shows that 12.50% has contact on weekly basis, 15.28% had contact with extension agents on once in two weeks, 18.06 of poultry farmer had contact on monthly basis while 20.83% and 22.22% had contact with extension agent once in two months and once in a year respectively and also 11.11% has never had contact with extension agent. It is evident that dissemination of poultry farm innovation was fair in the study area. This result differs from that of Oyeyinka *et.al.*(2011) that reported low contact between extension agents and the poultry farmers in Afijio local government area of Oyo State, Nigeria.

G. Level of Awareness, Interest and Evaluation of the Improved Management Techniques by the Farmers

The result in Table 9 showed that 75.70 % of the poultry farmers had awareness of the improved management technologies under study, 72.40 % of the farmers had interest in the adoption of these technologies and 66.67% of the poultry farmers in the study area had evaluated these improved management technologies. Awareness of vaccination and improved feeding were 100 % among the farmers respectively followed by record keeping (93.06%), improved heating source (90.27%), culling of sick birds (75.00%), technique of sexing birds and use of debeaking machine were 52.78 % respectively while detection of good breeds of chicken had the lowest awareness. This implies that majority of the poultry farmers in the study area had a good knowledge of the improved management techniques required to increase their production and yield thereby contributing to the alleviation of protein shortage in the country. This may also have contributed to the increase in the level of adoption of these technologies observed in this study. The 100 % awareness level and interest in the improved management technologies obtained in this study was in agreement with the findings of Ezeibe *et. al.* (2014) that reported that all the poultry farmers in Enugu state had awareness and interested in the adoption of vaccination of their birds as one of the improved management practices required in their poultry farming.

H. Level of Adoption of Improved Management Techniques by the Poultry Farmers

Results in Table 10 above shows that poultry farmer have adopted and were using a number of improved

management techniques in the study area. The mean score revealed that 66.49% of the poultry farmers were in the adoption stage of one or more of the improved management techniques. While 19.27% of the farmers were in trial stage and 14.41% of the farmers did not adopt one or any of the techniques. The adoption level were high for vaccination (100%), improved feeding (91.67%), improved heating source (75.00%), record keeping (72.22%), culling of sick birds (65.28%) and low for techniques of sexing (48.61%), use of debeaking machine (47.22%) and detection of good breeds (31.94%). The result clearly showed that most of the technologies were embraced and adopted by the poultry farmers. This if practice well by the farmers should lead to increase in the production of quality poultry products such as meat and egg which in turn may bring about reduction in the price of these products thereby making them available to poor individuals who are the majority in the country. The percentage level of adoption for culling birds, vaccination, debeaking and record keeping does not conform to those obtained by Ezeibe *et. al.* (2014) in their study.

Table 8. Frequency Distribution of Respondents based on Contact with Extension Agent.

Contact with extension Agent	Frequency	Percentage %
Weekly	9	12.50
Once in two weeks	11	15.28
Monthly	13	18.06
Once in two months	15	20.83
Once in a year	16	22.22
Other specify (NIL)	8	11.11
Total	72	100

Table 9: Percentage Distribution of the Farmers based on Level of Awareness, Interest and Evaluation of the Improved Management Techniques

Improved Management Technique	Aware (%)	Interest (%)	Evaluation (%)
Culling of sick birds	54(75.00)	54(75.00)	52(72.22)
Improved feeding	72(100.00)	72(100.00)	68(94.44)
Detection of good breeds	30(41.67)	26(36.11)	21(29.17)
Records keeping	67(93.06)	60 (83.33)	59(81.94)
Vaccinations	72(100.00)	72(100.00)	72(100.00)
Improved heating source	65(90.27)	64(88.89)	54(75.00)
Techniques of sexing birds	38(52.78)	35(48.61)	30(41.67)
Use of debeaking machine	38(52.78)	34(47.22)	28(38.89)
Mean Score	75.70	72.40	66.67

Table 10: Percentage Distribution of Farmers based on Level of Adoption of Improved Management Techniques (n=72)

Improved Management Technique	Tried (%)	Adopted (%)	Non Adopted (%)
Culling of sick birds	21(29.17)	47(65.28)	4(5.56)
Improved feeding	6(8.33)	66(91.67)	0(0.00)
Detection of good breeds	29(40.28)	22(31.94)	21(29.17)
Records keeping	11(15.28)	52 (72.22)	9(12.50)
Vaccinations	0(0.00)	72(100.00)	0(0.00)
Improved heating source	15(20.83)	54(75.00)	3(4.17)
Techniques of sexing birds	11(15.28)	35(48.61)	26(36.11)
Use of debeaking machine	18(25.00)	34(47.22)	20(27.78)
Mean Score	19.27	66.49	14.41

I. Constraints Limiting the Adoption of Improved Poultry Management Technologies in the Study Area.

Table 11 above presents the percentage score of constraints limiting the adoption of improved poultry management practices. The mean percentage score was calculated as 60.72 %. Any constraint above the mean score was perceived serious and hinders adoption, while that below the mean percentage score was perceived not too serious to affect adoption. The table reveals that high cost of improved practices was rated the most serious constraints (95.83%), followed by lack of credit to purchase the improved management technologies (93.06 %). This implies that majority of the farmers were resources poor farmers with no adequate financial resources to finance the acquisition of improved management technologies. According to USAID (2005) producers in developing regions often lack access to appropriate inputs and necessary technical production skills due to inadequate inputs and credit markets. Oluymi and Robert (2000) also asserted that access to credit is of core importance to all aspects of the poultry industry as these hinder expansion. Other serious constraints hindering adoption are lack of government support (77.78%), and lack of training (66.67%). Lack of awareness (37.50%), lack of information (37.50 %) and complexity of the improved management technologies (16.67%) were considered as constraints that do not affect or have little effect on the level of adoption of the technologies by farmers in the study area. These findings supported the findings of Aphunu and Akpobasa (2009) in which the reported improved practices are too expensive, lack of training, lack of credit/funds to adopt and lack of government support to be the serious constraints facing the adoption of poultry management practices in Ughelli of Delta State.

IV. CONCLUSION

The findings revealed that majority of the poultry farmers in Igabi Local Government Area were male (68.06%). The source of financing for poultry production was mainly through personal savings (72.22 %) which may have accounted for the

reason why they had low rate of adoption of some of the management technologies. The study also revealed that poultry farmers in the study area has adopted and were using a good number of the improved poultry management technologies. But the major constraints militating against adoption of improved poultry management practices were improved practices are too expensive, lack of credit/funds to adopts, lack of government support and lack of training .Based on the findings of the study, it is highly recommended that poultry farmers should form poultry co-operative association, so that they can pool their resources and knowledge together in solving most of the problems identified in the study, credit should be made available to the farmers through institutionalize frame work aimed at linking poultry farmers to formal sources of credit for an enhanced production and adequate and qualified extension agents should be made available to farmers to train them adequately to make them technically competent to handle modern farming practices.

Table 11: Percentage Distribution of Farmers based on the Constraints Militating Against the Adoption of Improved Management Techniques.

Constraints	Frequency	Percentage (%)	Ranking
Improved techniques are too expensive	69	95.83	1 st
Improved techniques are too complex	12	16.67	7 th
Lack of training	48	66.67	4 th
Lack of credit/funds to adopt	67	93.06	2 nd
Lack of government support	56	77.78	3 rd
Lack of information	27	37.50	5 th
Lack of awareness	27	37.50	5 th
Mean percentage score	=	60.72%	

REFERENCES

- Adetimirin, O.T. (2000): Analysis of Egg Marketing in Agege Local Government Area of Lagos State, Nigeria. Unpublished B. Tech. Project. Department of Agricultural Economics and Extension, Ladoko Akintola University of Technology, Ogbomoso, Oyo State, Nigeria
- Agwu, A.E. (2004): Factors influencing Adoption of Improved cowpea Production technologies in Nigeria *Journal of International Agricultural and Extension Education*, 11 (10): 81-88
- Agwu, A.E., Ekwueme J.N. and Anyanwu. A.C. (2008): Adoption of Improved Agricultural Technologies Disseminated via Radio Farmer Programme by Farmers in Enugu State Nigeria: *Journal of Biotechnology*, 7 (9):1277 – 1286.
- Akanni, K. A.(2007): Effect of Micro-Finance on Small Scale Poultry Business in South Western Nigeria. *Emiater Journal of Food and Agriculture*, 19 (2): 38-47
- Aphunu A, and Akpobasa B.I.(2009):Adoption of Improved Poultry Management Practices in Ughelli Agricultural Zone of Delta State. In *Proceeding of Nigerian Society of Animal Production* held at University of Uyo, Uyo, March 2009. Pp 250-253.
- Bank, S.(1979):“A Complete Handbook of Poultry Keeping”

- Wardlock Ltd. London.
- [7]. Binuomote, S.O., Ajetomobi, J.O. and Ajao, A.O. (2008). Technical Efficiency of Poultry Egg Producers in Oyo State, Nigeria. *International Journal of Poultry Science*, 7(12): 1227 - 1231
- [8]. Durston, J. (1996): Background Papers: Comparative International Analysis of Rural Youth Policy in Developing Countries: Coping with Diversity Change. pp 45-61. In: Expert Consultation on Extension Rural Youth Programmes and Sustainable Development. FAO, Rome.
- [9]. Ewuola, S. O. (1985). "An Analysis of The Effectiveness of Small Holder FarmersCredit Programme in Ondo State. Unpublished Ph.D. Thesis, University of Ibadan, Nigeria. EWLG, (1996). Esan-West Local Government Area in Picture. 18pp.
- [10]. Ezeibe, A.B.C., Okorji, E.C., Chah, J.M. and Abudei, R.M. (2014): Impact of Entrepreneurship Training on Rural Poultry Farmers Adoption of Improved Management Practices in Enugu State, Nigeria. *African Journal of Agricultural Research*, 9(20): 1604-1609.
- [11]. Federal Government of Nigeria/United Nation Children Emergency Fund (1994): Nutritional Status of Women and Children in Nigeria. In: ICN Report Nigeria, Lagos-Nigeria.
- [12]. Food Agriculture Organization (FAO) (2004): The State of the World Fisheries Aquaculture. 2002 FAO Fisheries Department, Rome. Pp 3-6, 14 -15, 18 -22 and 40.
- [13]. Maziya-Dixon, B., I.O. Akinyele, E.B. Oguntona, S. Nokoe, R.A. Sanusi and E. Harris.(2004). Nigeria food consumption and nutrition survey 2001-2003. International Institute of Tropical Agriculture.
- [14]. Maziya-Dixon, B., Onyezili, F., Oguntona, E.B., Harris, E., Sanusi, R., Nokoe, S., and Akinyele, I. (2006). Nigeria food consumption and nutrition survey 2001-2003 interviewer's manual. Ibadan, Nigeria: IITA, (136p).
- [15]. NPC, (2006): National Population Commission, Federal Office Office of Statistics. Census 2006.
- [16]. Okon. S.(1983): Minimum Cost Ratios and Optimum Marketing Weight in broiler Production with Ground nut Meal as Source of Protein. Unpublished M.Sc Thesis , Department of Agricultural Economics and Rural Sociology, Ahmadu Bello University, Zaria, Nigeria.
- [17]. Okunlola, J.O. and Olofinsawe, A.(2007): Effect of Extension Activities on Poultry Production in Ondo State, South Western Nigeria. *Agricultural Journal*, 2: 559 -563
- [18]. Okunmadewa, F.Y. (1999). Livestock Industry as a Tool for Poverty Alleviation. *Tropical Journal of Animal Science*, 2: 21-30
- [19]. Olaniyi, A.O., Adesiyun, I. O. and Ayoade, R. A. (2008):Constraints to Utilization of Poultry Production Technology among Farmers in Oyo State, Nigeria. *Journal of Human Ecology*, 24 (4): 305-309.
- [20]. Oluyemi, J.A. and Robert, F.A. (2000): *Poultry Production in Warm Wet Climates*.Spectrum Book Ltd., Ibadan, Nigeria.
- [21]. Otegbeye, G.O, Owonubi, J.J and Oviasuyi, P.K; (2001): inter specific variation growth of Eucalyptus Growing in Northern Nigeria: In *Proceeding of the 27th Annual Conference of Forest Association of Nigeria* held in Abuja. Ed by Poppoola, Abu J.E and Oni, P.I: pp. 12- 16.
- [22]. Oyeyinka, R.A., Raheem, W. K., Ayanda, I. F. and Abiona, B. G (2011): Poultry Farmers' Awareness and Knowledge of Improved Production Practices in Afijio,Local Government Area, Oyo sState, Nigeria. *E3 Journal of Agricultural Research and Development*, 1(1): 001-008.
- [23]. Rogers, E.M. (1995). *Diffusion of Innovations*. 4th edition. New York, The Free Press.p247.
- [24]. Umeh, G.N. and Odo, B.I. (2002): Profitability of Poultry Production among School Leavers in Anaocha Local Government Area of Anambra State, Nigeria. *The Nigerian Journal of Animal Production*, 29 (1): 76 – 80.
- [25]. United State Agency for International Development (USAID) (2005): *Global Horticulture Assessment*.The World Vegetable Centre. Available , http://pdf.usaid.gov/pdf_docs/pnadh769.pdf. Accessed 20th July, 2019.
- [26]. Van dan ban, A.W. and Hawkins, H. (1960): *Agricultural Extension*.2nd edition. Blackwell Science Ltd.. 25 John Street, London