

Original Research Article

Accessibility of Agroforestry Farmers to Credit Facilities on Poultry Egg Production in Oyo State Nigeria

Abstract

Poultry egg production is an economically viable investment among Agroforestry farmers in Southwestern Nigeria but the paucity of funds and high cost of inputs are major problem to their business operations. This study focused on the effects of accessibility and non-accessibility of Agroforestry farmers to credit on poultry egg production. Data were randomly collected from 120 poultry farmers with a structured questionnaire which comprised of 60 credit beneficiaries and 60 non-credit beneficiaries' Agroforestry farmers. The data were analyzed with mean, percentages, frequency distribution, logit and multiple regression analyses. The results of the analyses indicated that the mean age of the credit accessed and non-credit accessed by Agroforestry farmers were ± 46 years and ± 56 years respectively. The result showed eds that majority of the farmers were married. The logit regression analysis result revealed that age of the respondents had a positive relationship with access to credit at 5% level of significance. Multiple regression model for credit accessed farmers indicated that age, family size, drug quantity are positively related to output and are significant at 10% and 1% level of significance. Multiple regression result for no credit accessed farmers shows s that quantity of drug used is positively related to the egg production output and significant at 1% level. The hypotheses tested showed that there was a significant relationship between socio-economic characteristics and the egg production in the study area, and also there was a significant difference between the output of farmers who are credit beneficiaries and non-credit beneficiaries. The major constraints to Agroforestry production were limited finance, high cost of input, poor quality of day old chicks, scarcity of raw materials, lack of storage facilities and marketing of product. Agroforestry farmers should be mobilized to save to enhance and furnish their access to credit for their business operations. Also, agricultural policies and programmes should focus on optimal credit utilization on poultry egg production in the country.

Keywords: Agroforestry farmers, accessibility, credit facilities, egg production, logit regression

Formatted: Highlight

31 Introduction

32 | The **import** of Agroforestry to poultry production cannot be overemphasized as it underpins the
33 complementary benefits that arise from the trees, the soil and the poultry birds in terms of sustainable
34 development. According to Yates *et al.* (2007) the main benefits arising from the use of trees to poultry
35 birds are potential changes to the microclimate and animal welfare in particular protection and possibly
36 a sense of security from aerial predators. In existing poultry production of egg or meat systems among
37 agroforestry farmers in poultry practice are not usually allowed to range except only few birds range
38 when poultry house needed to be sanitized (Dawkins *et al.* 2003). Moreover, rearing of poultry birds
39 for meat and egg production are usually not meant to be carried out in a noisy environment. This is the
40 essence of agroforestry contribution to poultry egg production with associated benefit that offer
41 welfare and/or environmental benefits. Poultry housing, local climatic conditions and breed differences
42 will also interact with these changes. Despite important economic benefit from this integrated system
43 of poultry production and Agroforestry, poultry practice by Agroforestry farmers still have challenge
44 in egg production due to problem of access to credit facility. However, Poultry practice has economic
45 value to man as source of meat, egg and fiber. It is a part of subsistence agriculture farming system in
46 Nigeria with egg production as one of its major products. Egg production is most vital due to key
47 contributions to national economy in the spheres of generating employment opportunity, additional
48 income and improving the nutritional level. Egg production involves the use of good layer birds for the
49 purpose of table egg production (Ogunlade and Adebayo, 2009). Eggs are major sources of animal
50 protein in human diet. According to Oji and Chukwuma (2007) the poultry goes a long way in
51 providing animal protein for the populace because it yields quickest returns and provides for meat and
52 eggs in a very short time. Animal protein is an essential part of human nutrition because of its
53 biological significance. Iwena (2007) reported that proteins are required for the growth of young ones,
54 formation of gametes in reproduction, formation of digestive juices, repair of worn-out tissues or cells,
55 production of anti-bodies as well as enzymes and hormones in the body. Tijani *et al.* (2006) reaffirmed
56 that animal proteins are more “biologically complete” than vegetable proteins with regards to their
57 amino-acids composition. The dearth in the quantity and quality of protein supply in Nigeria is a
58 challenge that is beyond dependence on plant protein alone. According to Fasasi (2006), Nigeria has a
59 total land area of 98.3 million hectares out of which 71.3 million hectares (72.5%) are cultivable, while
60 34.2 million hectares representing 48% of the cultivable area are actually being cultivated and less than
61 10% of the arable land is irrigated. It suffices therefore, to explore quality protein of animal origin of
62 which poultry egg is of prime importance. Nwaru and Onuoha (2010) further observed that when

Formatted: Highlight

63 agricultural credit is properly extended and utilized, it encourages diversification which stabilizes and
64 often increases resource productivity, agricultural production, value added and net incomes of farmers.
65 Credit is therefore a necessary input in the various aspects of farm operations. Agricultural production
66 needs to rise at least by some six percent per annum for Africa to be able to meet its food needs and for
67 African agriculture to become a real motor for economic development ((Okuneye, 2001; Enweze,
68 2006). Nigerian agriculture is abysmally underfinanced. Currently agriculture accounts for about 40
69 percent of the GDP, yet it receives only one percent of total commercial bank loans (Global
70 Agricultural Information Network [GAIN] 2011).

71 Efforts to deliver formal credit and financial services to the poultry farmer in developing countries
72 have failed over the years (Adams, 2009; Otunaiya, 2007). Commercial banks generally do not serve
73 the needs of the poultry because of the perceived high risk and the high transaction costs associated
74 with loans and saving deposits. To fill the void, many governments have tried to deliver formal credit
75 to the farmer by setting up special agricultural banks or directing commercial banks to loan to the
76 borrowers. Despite government initiatives, agricultural credit still seems insufficient. This
77 insufficiency **is?** due to several problems on the side of the financial institution which could be as a

Formatted: Highlight

78 result of supervision insufficiency, political interference, etc (Abedullah, 2009). More so, these
79 programs have almost failed because of political difficulty for governments to enforce loan repayment
80 and often time the relatively wealthy farmers have better access to loan than the poor farmers (Adams,
81 2009). Other problem includes increase in default rates of agricultural loans which have made the
82 sector non-viable as it gives a negative margin (NBS, 2006). High default rates were identified as a
83 major reason which makes banks reluctant to give loans to farmers (Akinwunmi, 1988). The study
84 further explained that problems arose from the inability of the credit institution to distinguish lending
85 for urban projects and small scale farming. However, Agricultural loan remain a critical means through
86 many problems confronting poultry farmers can be resolved. Primarily, it assists in breaking the chains

Formatted: Highlight

87 of the vicious circles of poverty which **is has been** the main cause of low productivity and low income
88 of the poultry farmers (Bamiro *et al.*, 2012). Unfortunately, the level of credit available to these
89 farmers is grossly inadequate and therefore, limits the realization of their full potentials. Access to
90 formal financial services by the majority of the poultry farmers **is has been** highly limited. In modern
91 farming business in Nigeria, beyond poor access, efficient utilization of credit is fast becoming a major
92 factor limiting farm productivity and income (Ololade and Olagunju, 2013). This may be one of the
93 reasons why food security **is** not improved in the country because the amount of credit given to the

Formatted: Highlight

94 farmers is not enough for them to improve their method of farming in the study area. Therefore, this

95 | study will investigated the accessibility of Agroforestry farmers to credit facilities on poultry egg
96 | production in Oyo State Nigeria with the following objectives: describe the socio-economic
97 | characteristics of Agroforestry farmers in poultry egg production; determine the factors affecting
98 | access to credit; determine the factor affecting output of poultry egg production; and identify the
99 | constraints faced by poultry egg production in the study area.

Formatted: Highlight

100 | **Methodology**

101 | The study was carried out in Oyo state which is made up of thirty three (33) Local Government Areas
102 | with four (4) agricultural zones. Which are: Oyo, Ibadan-Ibarapa, Ogbomoso, and Saki Zones. Oyo
103 | State covers a total land area of about 27,249,000 square kilometers with a total population of about
104 | 5.6million (National Population Commission, 2006). It is situated between Latitude 7° N and 19°N and
105 | Longitude 2.5°E and 5°E of the meridian. It is located South Western Nigeria. The city has a
106 | population of 1,338,659 in 2006 and more than 96 per cent of the inhabitants are Yoruba. The capitl is
107 | Ibadan which has a tropical wet and dry climate, with a lengthy wet season and relatively constant
108 | temperatures throughout the course of the year. This good weather condition makes poultry a thriving
109 | business among farmers in the study area. Primary data was collected through a well-structured
110 | questionnaire. A two-stage sampling technique was employed in selecting the respondents. The first
111 | stage involved purposive selection of six LGAs based on where Agroforestry is practiced with poultry
112 | production and these areas are Egbeda, Oluyole, Afijio, Surulere, Saki North and Ibarapa central
113 | LGAs. The Agroforestry farmers in poultry production were selected from the estimated numbers of
114 | poultry farms in the state. There are over 320 estimated poultry farms in with most of them not
115 | registered with Oyo State Branch of Poultry Farmers Association of Nigeria (Oluwole *et al.*, 2012).
116 | However, the second stage of the sampling procedure involved the random selection of respondents
117 | from the estimated poultry farms in the selected LGAs in proportionate to size. In all, 120 Agroforestry
118 | farmers were randomly selected through questionnaire. Ten (10) poultry farmers with credit facility
119 | and ten (10) poultry farmers without credit facility were selected from each of the selected Local
120 | Government areas (LGAs) for the study. Both descriptive and inferential analytical tools were used to
121 | analyze the data collected. The simple percentages and frequencies were descriptive tool whereas logit
122 | multiple regression is the inferential tool employed.

Formatted: Highlight

123 | **Model specification for inferential statistical tool:**

124 |
$$Y_i = \log \frac{P_i}{1-P_i} = \beta_0 + \beta_i X_i + U_i$$

125 | Y_i = Access of i th poultry farmer to credit (1 = if acquired credit, 0 = if otherwise)

Formatted: Highlight

126 | X_1 = Age (years)

127 | X_2 = level of education

128 | X_3 = Family size

129 | X_4 = visitation by extension agent

130 | U_i = Error term

131 | Multiple Regression Analysis

132 | The multiple regression model was used to determine the factors affecting poultry egg production in
133 | the study area.

134 | $Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \dots + \beta_{10} X_{10} + U_i$

135 | Y = Output (Total Revenue)

136 | X_1 = Sex

137 | X_2 = Age

138 | X_3 = Marital Status

139 | X_4 = Level of Education

140 | X_5 = Family Size

141 | X_6 = Year of Experience

142 | X_7 = Extension Agent Visit

143 | X_8 = Feed Quantity

144 | X_9 = Drug quantity

145 | X_{10} = Vaccine quantity

146 | β_5 = The Unidentified Parameter Estimated.

147 U_i = Error Term.

148 **Results and Discussion**

149 Table 1 revealed that the age distribution of credit beneficiary and non-credit beneficiary poultry
150 farmers in the study areas that the mean age of farmers with access to credit was ± 46 years while that
151 of non-credit access was ± 56 years. Majority age range of the respondent **is** 41-50 year and 51-60 years
152 for credit and non-credit beneficiaries' Agroforestry farmers respectively. This result is line with the
153 findings of Aromolaran *et al.* (2013) that small scale layers farming **is** common among average aged
154 farmers. Majority (77.4%) of the credit access farmers and most of the non-credit access farmers
155 (81.0%) were married. This show**ed** that agriculture especially poultry production **is** the business of
156 married people. This result corroborates with Chioma *et al.* (2017) that majority of poultry farmers are
157 married individuals with responsibilities. Looking at the years of experience for both credit access and
158 non-credit access farmers shows that 37.7% of farmers with credit had been practicing egg production
159 between the year ranges of 11-15 years while that of non-credit access was 59.5%. It **is** expected that
160 farmers with high years of experience should be more efficient and their chances of obtaining credit **is**
161 higher than a farmer with little years of experience. The result agree**s** with the findings of Otunaiya *et*
162 *al.* (2015) that majority of the poultry farmers are involved in egg production in Oyo State. Majority of
163 both Agroforestry farmers with access to credit (73.6%) and those with non-access to credit access
164 (73.8%) were male indicating that poultry egg production **is were** basically male dominated. This **is**
165 expected given the drudgery nature, physical and energy demand as well capital intensive nature of
166 investment required to establish poultry-egg enterprise, majority (60.4%) of credit access farmers had
167 family sizes of (4-6) persons, while most (69.0%) of non-credit farmers had household size of (7-9)
168 persons. Efiog (2007) and Idiong (2006) reported that relatively large household size enhances the
169 availability of labour, although, large household size may rob a farmer the opportunity of obtaining
170 financial help in form of credit, as this credit may be directed to some other family matters. Also, all
171 (100%) of credit access farmers and (97.6%) of non-credit farmers belong to different co-operative
172 societies, while (2.4%) of non-credit farmers did not belong to co-operative societies. The essence of
173 co-operative **is** to help educate the members and support them to be financially stable. This is line with
174 Otunaiya *et al.* (2015) that over 80% of egg farmers are members of cooperative societies in Oyo State
175 which helps them in solving problems.

176

Formatted: Highlight

Formatted: Highlight

Formatted: Highlight

Formatted: Highlight

Formatted: Highlight

Formatted: Highlight

Formatted: Highlight

Formatted: Highlight

Formatted: Highlight

Formatted: Highlight

177 **Table 1: Socio-economic characteristic of the respondents with access and non access to credit**

Variables	Credit (N=53)		Non-credit (N= 42)	
	Frequency	Percentage	Frequency	Percentage
Age range				
≤30	1	1.9	-	-
31-40	9	16.9	-	-
41-50	23	43.5	10	23.8
51-60	19	35.8	22	52.4
≥61	1	1.9	10	23.8
Level of Education				
Primary education	-	-	1	2.4
Secondary education	16	30.2	9	21.4
Tertiary education	37	69.8	32	76.2
Year of Experience				
1-5	6	11.3	1	2.4
6-10	14	26.5	1	2.4
11-15	20	37.7	6	14.3
16-20	9	17.0	25	59.5
≥ 20	4	7.5	9	21.4
Gender				
Male	39	73.6	31	73.8
Female	14	26.4	11	26.2
Family size				
1-3	6	11.3	-	-
4-6	32	60.4	12	28.6
7-9	15	28.3	29	69.0
>9	-	-	1	2.4
Cooperative				
Yes	53	100	41	97.6
No	-	-	1	2.4

180

181

182 The analysis in table 2 revealed the result of logit model used to determine the factor affecting access
 183 to credit in the study area. The result showed that age of respondents has significant and positive
 184 relationship with access to credit by the poultry egg farmers at 5% level of significance. This implies
 185 that as the age of Agroforestry farmers increases, they tend to gain more access to credit facilities. This
 186 is line with Chioma *et al.* (2017) that most of the farmers in Ogun State had access to credit facility
 187 which correspond with the age of farmers in poultry business.

Formatted: Highlight

188 **Table 2: Logit Regression Results on Factor Affecting Access to Credit in the Study Area.**

Sex	Coefficient	Std. Err.	z	P> z
X ₁ Age of farmer	.0902277**	.0451034	2.00	0.045
X ₂ Level of educ	.6057318	.5945613	1.02	0.308
X ₃ Family size	-.1179183	.2038809	-0.58	0.563
X ₄ Extension	.1686712	.248674	0.68	0.498
Constant	-5.412192	2.857995	-1.89	0.058

189

190 LR chi2 (4) = 7.26
 191 Prob > chi2 = 0.1230
 192 Log likelihood = -30.853653
 193 Pseudo R² = 0.1052
 194 **Sig at 5%

195 From table 3, the result revealed that the factors affecting output of poultry egg. It shows that age,
 196 family size and drug quantity are positively related to output at 10% and 1% level of significance. This
 197 implies that as age, family size and drug quantity used increases the output of Agroforestry farmers
 198 also increases. Marital status has negative impact on the farmers' output and there is significant
 199 relationship between marriage and output in poultry egg production. This implies that the married
 200 farmers have significant relationship with increasing output than with unmarried farmers. The R² value
 201 of 0.874 implied that the regressors accounted for 87.4% of the variations in the total output of credit
 202 access among Agroforestry farmers in poultry egg production. The result revealed that access to credit
 203 facility and socioeconomic characteristics had positive coefficient and significantly related to the

Formatted: Highlight

Formatted: Highlight

Formatted: Highlight

204 | output. This is in line with Oladunni and Fatuase (2014) that as the level of socioeconomic
 205 | characteristics increases the output efficiency in egg production also increases.

Formatted: Highlight

206 | **Table 3: Determinants of Egg Production among Agroforestry farmers with Access to Credit.**

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients Beta	T	Sig.
	B	Std. Error			
(Constant)	-16263.342	19703.56		-.825	.421
Sex	-1822.140	5420.843	-.017	-.336	.741
Age	1022.371*	518.335	.197	1.972	.066
Marital status	-7214.321*	3625.607	-.099	-1.990	.064
Level of education	-839.354	5721.680	-.008	-.147	.885
Family size	2687.434*	1395.594	.092	1.926	.072
Years of experience	-624.224	852.969	-.069	-.732	.475
Extension agent visit	-3340.544	1938.892	-.081	-1.723	.104
Feed quantity	-.204	.982	-.013	-.208	.838
Drug quantity	314.483***	54.838	.839	5.735	.000
Vaccine quantity	875.604	1373.566	.093	.637	.533

Dependent Variable: Output

R² = 0.874

Adjusted R² = 0.858

207 | *Sig at 10%, **Sig at 5%, ***Sig at 1%

208 | From table 4, the result showed the determinant of egg production among farmers with no access to
 209 | credit. Drug quantity used is positively related to the egg production output and significant at 1% level.

Formatted: Highlight

210 | This implies that as the drug quantity used by the poultry farmers increases the total output of the
 211 | farmer also increases. Family size has a negative relationship with the total output and significant at
 212 | 5% meaning that they are at the third stage of production process with regard to family labour. The R²
 213 | value of 0.829 implied that the regressors accounted for 82.9% of the variations in the total output of
 214 | Agroforestry farmers with no access to credit facility which influences positively some socioeconomic
 215 | characteristics especially the quantity of drug used.

Formatted: Highlight

216 **Table 4: Determinants of Egg Production among Agroforestry farmers with no Access to Credit.**

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	76533.371	46883.11		1.632	.119
Sex	-455.206	7462.633	-.004	-.061	.952
Age	1028.995	623.277	.136	1.651	.115
Marital status	-4082.389	4411.530	-.069	-.925	.366
Level of education	-9648.249	7990.910	-.084	-1.207	.242
Family size	-6203.229**	2663.314	-.190	-2.329	.031
Year of experience	-1736.480	1276.162	-.125	-1.361	.190
Extension agent visit	2266.173	2722.286	.058	.832	.415
Feed quantity	-.396	1.471	-.024	-.269	.791
Drug quantity	289.743***	66.986	.815	4.325	.000
Vaccine quantity	1028.491	1639.260	.108	.627	.538

a. Dependent Variable: Total Output
 $R^2 = 0.829$
Adjusted $R^2 = 0.791$

217 Source: analysis from field survey 2016
218 *Sig at 10%, **Sig at 5%, ***Sig at 1%

219
220 **Constraints to Poultry Egg Production among Agroforestry farmers in the Study Area**

221 From table 5, the result revealed the constraints to poultry egg production in declining order of
222 importance in terms of severity of the challenges. Respondents rated limited finance as the major
223 problem confronting poultry farmers in egg production. This result is in tandem with the submission of
224 Ovwigho *et al.* (2009) that lack of finance are often a major problem to both extensive and semi-
225 intensive poultry production among poultry producers in Delta State Nigeria. This could be the major
226 challenge to farmers from not being able to acquire the necessary inputs especially fixed inputs for
227 large scale production which attracts higher profit and efficiency. This in line with the reposition of
228 Liu (2006) that technical efficiency to production was highly influenced by financial constraints. This

229 | is because in addition to the quantity of inputs used, the timing of input usage also affects farm output.
 230 High Cost of Inputs was the next most important constraints identified by the respondents and it makes
 231 it very difficult for the existing farms to expand their scale of operation while the new ones are
 232 reluctant to go into the business. Also stocking of poor breeds of poultry is tantamount to waste of
 233 effort because such breeds are positioned to get infected with diseases than good breeds due to high
 234 cost of input.

Formatted: Highlight

Formatted: Highlight

235 **Table 5: Distribution of Challenges Encounter in Egg Production by Agroforestry farmers**

Constraint	Very severe	Severe	Moderate	Rank
Limited finance	15	2	21	1 st
High cost of input	17	8	10	2 nd
Poor quality of day old chicks	16	10	12	3 rd
Scarcity of raw materials for chicks	9	18		4 th
Lack of storage facilities	10	11		5 th
Marketing of product	2	10		6 th

236

237 **Conclusion**

238 It was therefore concluded that level of education, years of experience and membership of cooperative
 239 play significant roles in credit used on poultry egg production and the major source of credit to poultry
 240 farmers was from their personal savings. From the result of the regression analysis the determinants of
 241 poultry egg production are age, family size, drug quantity and marital status for farmers with access to
 242 credit as well as drug quantity and family size among poultry farmers with no access to credit while the
 243 major problem encountered by Agroforestry farmers was limited capital in poultry egg production.

244 **Recommendations**

- 245 i. The study identified poor saving ability of the farmers as the reason for credit inequality.
 246 Therefore, enhancing mobilization of savings and access to savings facilities to enable
 247 Agroforestry farmers to demonstrate financial stability and credit-worthiness. Savings enhance
 248 poor people's self-reliance and act as a safeguard against risk in times of emergency.

- 249 ii. Government should enact policy that would promote both formal and informal rural financial
250 institutions to extend equal credits to farmers as this will help to improve poor people's access
251 to appropriate and sustainable credit.
- 252 iii. Any measure adopted to reduce the cost of drug used in egg production will lead to increased
253 profitability. Research should focus on developing drug production at affordable cost for
254 agroforestry poultry egg producers.

255 **References**

- 256 Abedullah, N., Mahmood, M. Khalid and S. Kouser, (2009). The role of agricultural credit in the
257 growth of livestock sector: A case study of Faisalabad. *Pak. Vet. J.*, 29: 81-84.
258
- 259 Achoja F.O; Ofaku A.U.; Okoh R. N, (2006): Linkage Between Socio– Economic Variables And The
260 Efficient Marketing Of Poultry Feeds In Delta State, Nigeria; implication for Extension
261 services.
262
- 263 Adams, D.W., (2009). Easing Poverty through Thrift Savings *Development Journal*, 33: 73-85.
- 264 Akinwunmi, J.A. (1988). Credit Guarantee as a strategy for Agricultural Financing in Nigeria,
265 unpublished paper presented at the Central Bank of Nigeria Workshop in Abuja.
- 266 Aromolaran, A.K., Ademiluyi, I.O. and Itebu, O.J. (2013). Challenges of small scale poultry farms in
267 layers production in Ibadan Oyo State Nigeria. *Global Journal of Science Frontier Research*
268 *Agriculture and Veterinary Sciences*. Vol.13 (2). Retrieved July 2019 from
269 <https://globaljournals.org>>...
- 270 Bamiro, O.M., A.O. Otunaiya and A.O. Idowu, (2012). Economics of Horizontal Integration in
271 Poultry Industry in South-West Nigeria. *Int. J. Poult. Sci.*, 11: 39-46.
- 272 Chioma, G., Afodu, O., Akinboye, F., Ndubuisi-Ogbona, L. and Ogunnowo, D. (2017). Impact of
273 access to credit on poultry farmers' performance in Ikenne Local Government Area of Ogun
274 State, Nigeria. *Journal of Agricultural Economics and Development*. Vol.6 (6). Pp50-55.
275 Retrieved July 2019 from <https://www.academeresearchjournals.org>>...
- 276 Dawkins, M.S., Cook, P., Whittingham, M.J., Mansell, K. and Harper, A. (2003). What makes free-
277 range broiler chickens range? In Situ measurement of habitat preference. *Animal Behav* Vol. 66:
278 pp151-160. Retrieved July 2019 from <https://www.researchgate.net>>2485...
279
- 280 Effiong, E. O. and Onuekwusi, G. C. (2007). "Maximum Likelihood Estimation Techniques of
281 Rabbit Production in Akwa Ibom State, Nigeria". *Research Journal of Applied Science*, 2(2):
282 165-169

283
 284 Enweze, C. (2006). Between Food Security, Economic Growth and National Development,
 285 Economics and Politics: the Nigeria Business.com. Retrieved November 2013 from
 286 <http://www.thenigeriabusiness.com>

287 Fasasi, A. R. (2006). "Resource Use Efficiency in Yam Production in Ondo State, Nigeria".
 288 *Agricultural Journal*, 1(2):36-40

289 Global Agricultural Information Network (GAIN), (2011). Report Paper, Agricultural Finance and
 290 Development: focus on Nigeria, USDA foreign agricultural services.

291 Idiong, I. C. (2006). "Evaluation of Technical, Allocative and Economic Efficiencies in Rice
 292 Production Systems in Cross-Rivers State, Nigeria". Unpublished Ph.D Dissertation, Michael
 293 Okpara University of Agriculture, Umudike.

294 Iwena, O. A. (2007). "Essential Agricultural Science for Senior Secondary Schools". Tonad
 295 Publishers Limited. Ogun, Nigeria PP.197.

296 Liu, Y. F.; Chang, S. J.; Hsu, A. L. (2006) "Effects Of Supplemental Vitamin E During The Laying
 297 Period on the Reproductive Performance Of Taiwan Native Chickens" :In *British Poultry*
 298 *Science* Vol. 45 No. 6, Dec, 20

299 National Bureau of Statistics-NBS, (2006). 2006 Population Census. National Bureau of Statistics:
 300 Federal Republic of Nigeria, Abuja.

301 Nwaru, J.C. and Onuoha, R.E., (2010). Credit Use and Technical Change in Smallholder Food Crop
 302 Production in Imo State of Nigeria, *New York Science Journal* 3(11), 144-152.

303 Ogunlade, I. and Adebayo, S. A. (2009). "Socio-Economic Status of Women in Rural Poultry
 304 Production in Selected Areas of Kwara State, Nigeria". *International Journal of Poultry*
 305 *Science*. 8(1):55-59
 306

307 Oji, U.O. and Chukwuma, A.A. (2007). "Technical Efficiency of Small-Scale Poultry Egg
 308 Production in Nigeria: Empirical Study of Poultry Farmers in Imo State, Nigeria". *Research*
 309 *Journal of Poultry Science* 1(3-4): 16 -21

310 Okuneye, P.A. (2001). Rural Poverty Assessment and Control in Africa, An Invited Specialization
 311 Course Paper Presented at the United Nations IDEP, Dakar, Senegal, 19th – 22nd June, 2001.

312 Oladunni, N.E. and Fatuase, A.I. (2014). Economic analysis of backyard poultry farming in Akoko
 313 North West Local Government Area of Ondo State, Nigeria. *Global Journal of Biology,*
 314 *Agriculture and Health Sciences*. Vol.3(1) pp141-147. Retrieved July 2019 from
 315 <https://www.longdom.org>

316 Ololade, R. A. and Olagunju, F. I., (2013). Determinants of Access to Credit among Rural Farmers in
 317 Oyo State, Nigeria, *Global Journal of Science Frontier Research Agriculture and Veterinary*
 318 *Sciences* 13 (2), 50-58

- 319 Oluwole, O.E., Emikpe, B.O. and Olusaga, B.O. (2012). Attitude of Poultry farmers towards
320 vaccination against Newcastle disease and avian influenza in Ibadan, Nigeria. *Sokoto Journal*
321 *Veterinary Sciences*. Vol.10 (1) pp5-42. Retrieved July 2019 from
322 <https://www.researchgate.net>2723...>
- 323 Otunaiya, A.O., (2007). Access to informal credit and its effects on cassava production in yewa
324 division of Ogun State, Nigeria. *Nig. J. Res. Prod.*, 11: 140-148.
- 325
- 326 Otunaiya, A.O., Adeyonu, A.G. and Bamiro, O.M. (2015). Technical efficiency of poultry egg
327 production in Ibadan Metropolis, Oyo State, Nigeria. *Economics*. Vol.4 (3). Pp50-56. Retrieved
328 July 2019 from <http://www.sciencepublishnggroup.com/j/eo...>
- 329 Ovwigho, B.O., Mmereole, F.U.C., Udeh, I. and Akporhwarho, P.O. (2009). Comparison of constraints
330 to poultry producers in Delta State, Nigeria. *International Journal of Poultry Science*. Vol.8(5)
331 pp480-484. Retrieved July 2019 from <citeseerx.ist.psu.edu>down...>
- 332 Tijjani, A. A., Alimi, T. and Adesiyani, A. T. (2006). "Profit Efficiency among Nigerian Poultry Egg
333 Farmers: A Case Study of Aiyedoto Farm Settlement, Nigeria. *Research Journal of*
334 *Agricultural Biological Sciences*, 2(6):256-261
- 335 Yates, C., Dorward, P., Hemery, G. and Cook, P. (2007). The economic viability and potential of a
336 novel poultry Agroforestry System. *Agroforestry Syst.* Vol. 69: pp13-28. Retrieved July 2019
337 from <https://researchgate.net/publication/225333954>
- 338
- 339
- 340
- 341