

Proceedings of the Annual Conference of the Agricultural Extension Society of Nigeria

Number: Twenty-Second Annual Conference

Theme: Mainstreaming Entrepreneurship in Agricultural Extension Practice in Nigeria

Date: 23rd -26th April, 2017. **Venue:** University of Port Harcourt, River State, Nigeria

ISSN: 1595 – 1421. <http://aesonnigeria.org/ConfProc> . **Email:** editorinchief@aesonnigeria.org

Socio-Economic Characteristics of Dairy Cattle Farmers in Northern Nigeria

<https://dx.doi.org/10.4314/jae.v22i1.26S>

Saleh, M.K.

Department of Agricultural Extension and Rural Development, Ahmadu Bello University, Zaria

E-mail: salequa@yahoo.com, quagyangsaleh@gmail.com

Phone: +234(0)8032949878, +234(0)8123431446

Abstract

This study examined socio-economic factors affecting improved dairy cattle farmers. A two-stage sampling procedures were adopted for the study. First, the purposive choice of the 16 States of northern Nigeria and in stage second, random sampling of 61 improved dairy farms. Questionnaire instrument was used to collect data from the respondents who were mostly the chairmen of the farms or their managers. Descriptive statistics were used to analyze the data. The results revealed that the mean age of the respondents was 48 years, 71% of the farmers were retired civil servants, 67% of the farmers had Bachelor Degree, the mean family size of the respondents was 11 persons per family and the mean annual income was ₦2, 000,113 per year. Sixty percent of the respondents had no contact with government extension workers, but 69% had knowledge of improved dairy cattle technologies through other means. Over 64% of cattle in the sampled farms were exotic breed, while 21% were crossbreed and indigenous breed constituted 15% of the total cattle in the sampled farms. The distribution of adoption level among the improved dairy cattle farmers shows that 38% adopted all the 6 and 26% adopted 3 and the mean was 4 out of the 6 technologies. Constraints identified were poor power supply, inadequacy of veterinary services and, high costs of inputs. Based on these findings, effective market outlay, virile extension services, efficient power supply and importation of exotic dairy cattle to crossbreed indigenous cattle breeds should be encouraged by government and non-governmental organizations and private individuals were recommended.

Key words: Dairy cattle, dairy farmer, socioeconomic characteristics,

Introduction

Dairy production is an instrument to socio-economic change to improve income and quality of life of farmers concerned. In Nigeria, dairy cattle are a primary source of milk for most urban centres. A study by Central Bank of Nigeria revealed that domestic supply of milk was estimated at 591,470 tonnes while demand for milk by the population was estimated at 1.7 million tonnes (CBN, 2014). From the supply side, most of the local supply come from the local Fulani tribe, mainly in northern Nigeria where the cows are kept due to the natural factors such as weather conditions. In terms of revenue, the

Proceedings of the Annual Conference of the Agricultural Extension Society of Nigeria

Number: Twenty-Second Annual Conference

Theme: Mainstreaming Entrepreneurship in Agricultural Extension Practice in Nigeria

Date: 23rd -26th April, 2017. **Venue:** University of Port Harcourt, River State, Nigeria

ISSN: 1595 – 1421. <http://aesonnigeria.org/ConfProc> . **Email:** editorinchief@aesonnigeria.org

contribution of dairy industry to Gross National Product (GDP) was estimated at 345 billion Naira per annum (CBN, 2014). The industry is made up of different segments, pure milk, infant formula, yoghurt, ice cream and butter. Out of the four, milk market is the biggest, contributing about 61% to the total industry's revenue. However, it is important to know that there is still a wide gap between the local production and demand which led to a substantial amount of milk being imported into Nigeria.

Thau (2004) argued that production such as milk is affected by farmers' education, the existence of capital and credit, the role of extension services and farmers' behaviour to attend trainings. Thus, the behaviour of the farmers in overcoming the problems is the reflection of their willingness to innovate improved dairy technologies aided by their socioeconomic status (Fleisher, 1990). That is why, Soekartawi *et al.* (1993) stated that a farmer's decision to accept or reject innovation, among others, is influenced by the strength of their socio-economic situations. While, Mardikanto (1993) argued that the attitude of farmers in overcoming the problems in farm production is a form of the courage to face the risks. Protein from cattle, such as milk is needed for physical and intellectual development as well as for developing immunity against disease, particularly among children below the age of five (Atinmo and Akinyele 1983). A study by the Food and Agricultural Organization reported low milk intake among Nigerians, it estimated an average intake at 7.5 grammes per head per day. This is grossly low when compared to the international standard of 25 grammes per head per day (FAO, 2010). As a result, milk importation in liquid or powdered form becomes order of the day. Imported milk accounts for over 75% of Nigeria's dairy industry.

The possible reason for the short supply of dairy in Nigeria is due to the genetic makeup of local cows which produce low milk. On the average, a local cow produces about 2.5 litres of milk per day in rainy season and 0.75 litres during the dry season. Its counterpart in New Zealand, United States or United Kingdom produces an average of 40 litres per day all year round. On farm study by Saleh reported that improved dairy cattle in Nigerian farms produce an average of 35 litres of milk per day all year round (Saleh, 2014). He also found that improved dairy cattle are responsible for 40% of total milk intake in the country.

In Nigeria, there exist two systems of dairy cattle farming, the traditional and improved. In the traditional system cattle is kept mainly for local consumption within producing area, while the improved system is for nationwide circulation and export of milk (Ehler and Bottrell, 2000). In the improved dairy cattle system, the enterprise not only provides continuous income and improves dietary standards of the nation, it also supplements the income and reduces unemployment. Improved dairy cattle production is a key instrument to socio-economic change that improved income and quality of life. This study examines socio-economic factors affecting entrepreneurial behavior of improved dairy cattle farmers in northern Nigeria with an attempt to examine the effects of socio-

Proceedings of the Annual Conference of the Agricultural Extension Society of Nigeria

Number: Twenty-Second Annual Conference

Theme: Mainstreaming Entrepreneurship in Agricultural Extension Practice in Nigeria

Date: 23rd -26th April, 2017. **Venue:** University of Port Harcourt, River State, Nigeria

ISSN: 1595 – 1421. <http://aesonnigeria.org/ConfProc> . **Email:** editorinchief@aesonnigeria.org

economic factors affecting entrepreneurial behavior of dairy farmers and identify constraints improved dairy cattle farming.

Methodology

The study was conducted in 16 States of Northern Nigeria namely: Adamawa, Bauchi, Borno, Gombe, Jigawa, Kaduna, Kano, Katsina, Kebbi, Kwara, Nasarawa, Niger, Plateau, Sokoto, Taraba and Yobe States. The study area lies between Latitudes 7°5' and 14°5' North and Longitudes 3°0' and 14°0'. The main characteristics of the area are short grasses and trees which favour rearing of livestock. The area has a good network of rivers and some have been harnessed into reservoirs and dams to provide water for domestic consumption and industrial purposes. Livestock species of the area include cattle, sheep, goats, pigs, donkeys, horses and camels.

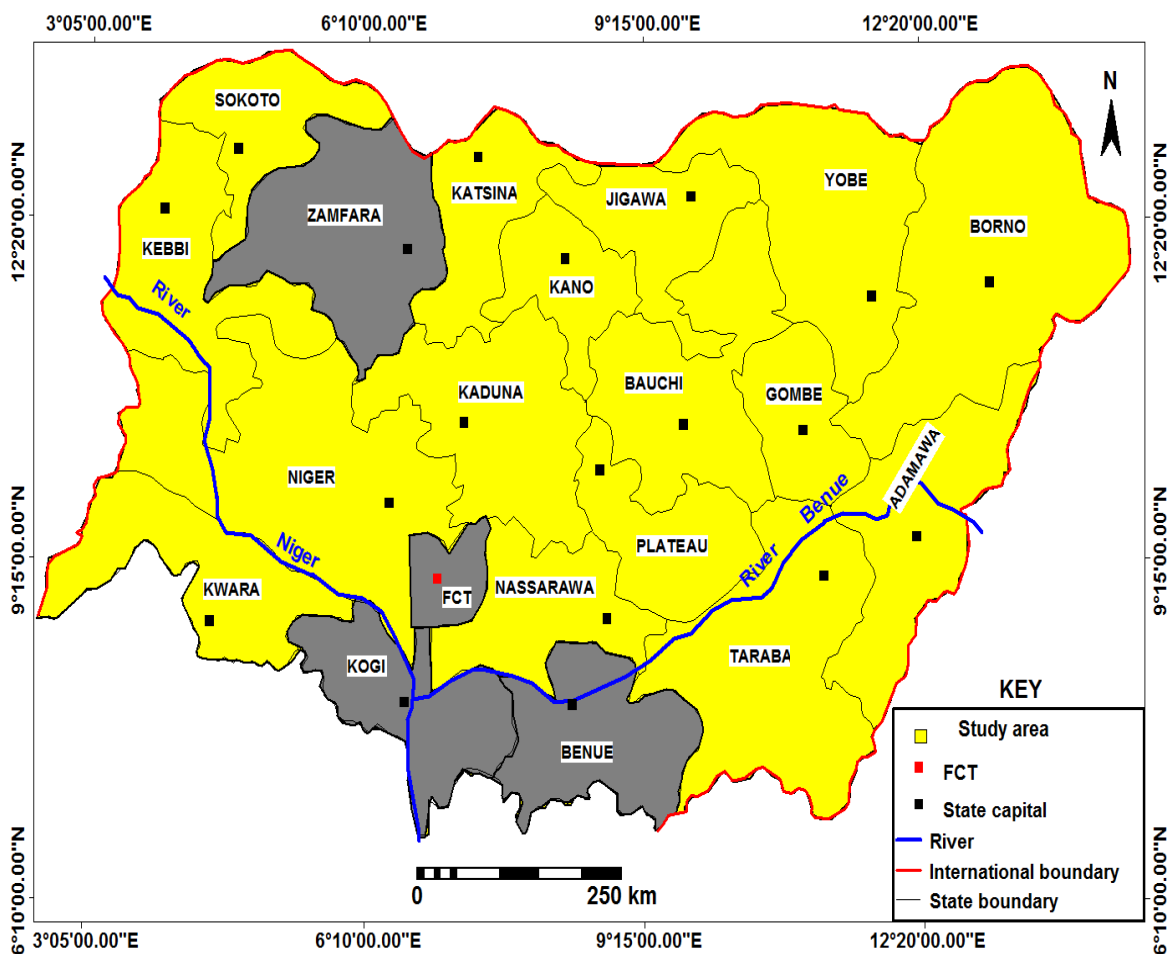


Figure 1: Map of Northern Nigeria Showing the Study States
Source: Modified from Administrative Map of Nigeria, 2010.

Proceedings of the Annual Conference of the Agricultural Extension Society of Nigeria

Number: Twenty-Second Annual Conference

Theme: Mainstreaming Entrepreneurship in Agricultural Extension Practice in Nigeria

Date: 23rd -26th April, 2017. **Venue:** University of Port Harcourt, River State, Nigeria

ISSN: 1595 – 1421. <http://aesonnigeria.org/ConfProc> . **Email:** editorinchief@aesonnigeria.org

Sampling Procedure and Sample Size

The study began with reconnaissance visits to the 16 States of the northern Nigeria between January, 2009 to March, 2010. This was done to obtain the lists of improved dairy cattle farms in the area. A purposive sampling procedure was employed for the study area. This was necessary because northern Nigeria has advantage in livestock farming in the country and due to the small size of improved dairy cattle farm. Also, respondents were purposively selected, all the 69 improved dairy cattle farms on the list were taken for the studied but 61 filled questionnaire were retrieved, 8 farmers could not respond due to lack of cooperation. Table 1 shows the sampling size of the study.

Table 1: Distribution of improved dairy farms by states in Northern

State	No. of Identified Improved Dairy Farms	Selected Improved Dairy Farms
Adamawa	9	9
Bauchi	2	2
Borno	3	1
Gombe	3	1
Jigawa	4	4
Kaduna	10	8
Kano	9	9
Katsina	1	1
Kebbi	3	3
Kwara	3	3
Nassarawa	1	1
Niger	4	4
Plateau	3	3
Sokoto	10	9
Taraba	1	1
Yobe	3	2
Total	69	61(88%)

Source: Livestock Division of the Ministries of Agriculture of 16 States of the North, Nigeria (2008)

Data Collection

Proceedings of the Annual Conference of the Agricultural Extension Society of Nigeria

Number: Twenty-Second Annual Conference

Theme: Mainstreaming Entrepreneurship in Agricultural Extension Practice in Nigeria

Date: 23rd -26th April, 2017. **Venue:** University of Port Harcourt, River State, Nigeria

ISSN: 1595 – 1421. <http://aesonnigeria.org/ConfProc> . **Email:** editorinchief@aesonnigeria.org

Data collection was carried out between October, 2010 and June, 2011. The actual survey to collect data took place shortly after the reconnaissance visits in January to March, 2010. Data were collected using questionnaire instrument. The administration of the questionnaire was done by trained enumerators who were mostly University graduates or Higher National Diploma (HND)/Nigerian Certificate of Education (NCE) and were extension field staff of Agricultural Development Project of the 16 State. The retrieved copies of questionnaire were analyzed using the Statistical Product and Service Solution (SPSS, 20.0package) using descriptive statistics.

Analytical Tools

The data collected for this study were analyzed using descriptive statistics and multiple regression model. The multiple regression model is used to derive the assumption that improved dairy cattle farmers maximize a utility function that ranks their preferences of the available technological choices.

Results and Discussion

Socio-economic Characteristics of the Improved Dairy Cattle Farmers in Northern Nigeria

The socio-economic characteristics of improved dairy cattle farmers are presented in Table 2.

Age: The age of the respondents ranged from 31 to above 71 years old. The mean age of the respondents was 48 years old. However, the distribution of individual grouping shows that those between 51 and 60 years old constituted 31%, 41-50 were 29%, 61-70 were 20% and those above 71 years old constituted 11%. There were those between 31 and 40 years making 9% of the total respondents. The findings revealed that majority of the dairy farmers were still in their active age. This clearly implied that that dairy cattle farming in the study area was mostly managed by the middle-age group. This finding agrees with the report of Voh (1988), who found that productive farmers were generally in their middle age and had high tendency for innovativeness.

Primary occupation: The distribution of primary occupation among the dairy cattle farmers showed that 64% were primarily dairy cattle farmers, 29% were traders and 7% were civil servants (Table 2). The implication of this finding is that improved dairy cattle farming technologies were recognized technologies in the study area and dairy farmers have put them into practice. This study agrees with Onasaya *et al.* (2006) who reported that improved dairy cattle occupation in Nigeria is well established particularly in northern Nigeria.

Proceedings of the Annual Conference of the Agricultural Extension Society of Nigeria

Number: Twenty-Second Annual Conference

Theme: Mainstreaming Entrepreneurship in Agricultural Extension Practice in Nigeria

Date: 23rd -26th April, 2017. **Venue:** University of Port Harcourt, River State, Nigeria

ISSN: 1595 – 1421. <http://aesonnigeria.org/ConfProc> . **Email:** editorinchief@aesonnigeria.org

Household size: The family size of the respondents showed that 60% had family size between 1 and 20 members of the family, 24% had between 11 and 20 and 15% had 21 members in their families. The mean of family size of improved dairy farmers was 8 persons. By implication dairy farmers had large members in their families to bring information on improved farming practices. It also aids the distribution of work among members of the family which guarantees management and control of the farm. This finding agrees with D'Sylva and Raza (1980) who stated that a large family size has the potentials for labour force and technology information.

Educational level: Educational status of the improved dairy cattle farmers in the area revealed that 76% of them had university degrees, 16% had other tertiary education, 4% had secondary and another 4% had primary education (Table 2). This finding implies that improved dairy farming was dominated by elites who are exposed to innovation. Higher education is important and necessary for improved dairy cattle farmers because the venture is highly technical which requires that a farmer must be well educated to understand technical operations of the system. This result agrees with Yahaya *et al.* (2007) who found that farmer's education has significant relationship with adoption of improved dairy cattle farming.

Income: The study reveals that 35% of the respondents had their annual income above ₦6,000,000, while 24% had their annual income less than ₦1,000,000. There 16% of the respondents with an income of ₦1,000,000-2,000,000 annually, 13% with ₦3,000,000-4,000,000 and 12% with ₦5,000,000-6,000,000. This finding implies that improved dairy cattle farming is relatively a high income venture. This result supports that of Gana (1988) who reported that high income has positive influence on adoption of agricultural technologies in Soba LGA of Kaduna State.

Herding experience: The result for herding experience indicates that 62% of the respondents had their experience between 1 and 10 years, 15% had between 11 and 20 years, 11% had 21-30 years and 4% of them had between 31-40 years. This implies that adoption of improved dairy cattle technologies is relatively new among farmers in the area. However, Igbago (2008) stated that farming experience is not only length of time but intensity and consistency the farmers practice the technologies.

Number of Dairy cattle owned: The result shows that 51% had between 10 and 50 dairy cows in their herds, 24% had 51-100 dairy cows, 9% had 101-150 cows and 11% had above 200 dairy cows in their herds. Out of these numbers, some of the cows were lactating and 44% of the respondents had between 1 and 10 lactating cows, 22% were having lactating cows ranging from 11-20 and 9% were having above 61 lactating cows.

Extension contact: Access to extension services revealed that 60% of the dairy farmers had no contact, 33% had one extension contacts per year, 4% had three contacts and 2% had two contacts with extension agents per year. This implies that

Proceedings of the Annual Conference of the Agricultural Extension Society of Nigeria

Number: Twenty-Second Annual Conference

Theme: Mainstreaming Entrepreneurship in Agricultural Extension Practice in Nigeria

Date: 23rd -26th April, 2017. **Venue:** University of Port Harcourt, River State, Nigeria

ISSN: 1595 – 1421. <http://aesonnigeria.org/ConfProc> . **Email:** editorinchief@aesonnigeria.org

extension services are low and extension agencies should wake up and live up to their expectation. The finding is in agreement with the finding of Mijindadi and Njoku (1985) who found farmers' positive response to innovation as a result of efficient extension delivery in Ikara, Nigeria.

Table 2: Distribution of socio-economic characteristics of the respondents

Variable	Percent
Age range (yrs)	
31-40	9.0
41-50	29.0
51-60	31.0
61-70	20.0
71+	11.0
Primary occupation	
Dairy farmer	64.4
Trader	28.9
Civil service	6.6
Household size (number of person)	
1-10	60.0
11-20	24.0
21+	15.0
Educational status (yrs)	
Primary education	4.4
Secondary education	4.4
Tertiary education	15.5
University degree	75.6
Income (₦)	
<1,000,000	24
N1,000,000-2,000,000	16
N3,000,000-4,000,000	13
N5,000,000-6,000,000	12
Above N6,000,000	35
Herding experience (yrs)	
1-10	62.0
11-20	15.0

Proceedings of the Annual Conference of the Agricultural Extension Society of Nigeria

Number: Twenty-Second Annual Conference

Theme: Mainstreaming Entrepreneurship in Agricultural Extension Practice in Nigeria

Date: 23rd -26th April, 2017. **Venue:** University of Port Harcourt, River State, Nigeria

ISSN: 1595 – 1421. <http://aesonnigeria.org/ConfProc> . **Email:** editorinchief@aesonnigeria.org

21-30	11.0
31-40	4.0
41+	7.0
Dairy cattle size (number of dairy cows)	
10-50	50.7
51-100	24.3
101-150	8.8
151-200	4.4
201+	11.0
Extension Contact (number of contact)	
No contact	60.00
Three times in a year	4.44
Twice a year	2.22
Once a year	33.33
Total	100.0

Genetic Upgrading: Genetic upgrading is achieved through natural crossbreeding by mating a female cow with a bull of proven specie of cow for upgraded heifer or artificially inseminating semen from proven specie for better heifers. The result obtained from this study shows that 67% of the respondents utilized crossbreeding and 55% practice artificial insemination. The finding is in agreement with that of Mallau-Aduli *et al.* (2012) who reported significant use of genetic upgrading among dairy cattle farmers in Nigeria.

Fodder Production: Use of fodder crops production, mainly roughages and concentrates is also investigated. Roughages are low in protein and fat but high in fibre. In the study area, Gamba grass and Lablab were commonly produced by 71% and 58% of the dairy cattle farmers respectively. All (100%) respondents either cultivate or buy concentrates which are highly digestible, possess low fibre content and are rich in protein, carbohydrates, fats, vitamins, water and minerals, cereal grains and oil seeds were commonly used. Nutrients from both concentrates and roughages are essentially required by dairy animals for optimum milk production during lactation period. This finding agrees with Ehoche *et al.* (1999) who stated that the use of sown fodder crops has positive influence on adoption of improved dairy cattle technologies.

Table 3: Distribution of zero grazing practice and improved management practices among dairy farmers in Northern Nigeria

Improved Management practices	Practiced Percent
Cross breeding	67
Artificial insemination	55
Preventive animal healthcare	100
Curative animal healthcare	100
Gamba grass production	71
Lablab production	58

Proceedings of the Annual Conference of the Agricultural Extension Society of Nigeria

Number: Twenty-Second Annual Conference

Theme: Mainstreaming Entrepreneurship in Agricultural Extension Practice in Nigeria

Date: 23rd -26th April, 2017. **Venue:** University of Port Harcourt, River State, Nigeria

ISSN: 1595 – 1421. <http://aesonnigeria.org/ConfProc> . **Email:** editorinchief@aesonnigeria.org

Improved Management practices	Practiced Percent
Use of concentrates	100
Zero grazing	60
Use of milking machines	78
Processing of dairy products	56

Adoption Levels of Improved Dairy cattle Technologies

The result of adoption level presented in Table 4 shows the distribution of dairy cattle farmers on the basis of the number of technologies adopted. It was revealed that 38% of the farmers adopted all the six technologies introduced to them. While 26% adopted 3 technologies and 4% adopted 4 technologies. The average number of technologies adopted by the dairy farmers was estimated to be 4 technologies. This implying that adoption levels among the dairy farmers in the study area was fairly large. This may be attributed to the fact that dairy cattle farmers in the study area attached relative importance to improved dairy cattle production technologies.

Table 4: Adoption of improved dairy cattle practices

Improved Dairy cattle Adopted	Percent
6	38
5	21
4	4
3	26
2	5
1	6
Total	100

Constraints to Improved dairy cattle Farming

Table 6 shows the constraints encountered by the respondents in the process of decision taking. The results showed that high cost of exotic cattle was the first constraint in behaviour formation. Secondly, unstable power supply for storage of vaccines and dairy product. This was followed by weather conditions which are different from that of Europe and America. Another problem was that of poor quality of the vaccines and drugs and lastly the inadequate extension services in the area.

Table 6: Ranking of Constraints by the farmers

Constraints	Ranking
High cost of exotic cattle	1

Proceedings of the Annual Conference of the Agricultural Extension Society of Nigeria

Number: Twenty-Second Annual Conference

Theme: Mainstreaming Entrepreneurship in Agricultural Extension Practice in Nigeria

Date: 23rd -26th April, 2017. **Venue:** University of Port Harcourt, River State, Nigeria

ISSN: 1595 – 1421. <http://aesonnigeria.org/ConfProc> . **Email:** editorinchief@aesonnigeria.org

Unstable power supply for storage	2
Weather conditions	3
Poor quality of vaccine	4
Poor extension Services	5

Conclusion and Recommendation

Dairy cattle farming enjoy strong product demand in Nigeria; however, costs of purchasing and maintaining exotic breed, erratic power supply and poor quality of vaccines/drugs were some of the problems dairy farmers encountered. Therefore, subsidies should extended by Government to cover importation of improved dairy cattle exotic dairy cattle in the country.

References

Atinmo, O. and Akinyele, O. (1983). Nutrition and Food Policy of Nigeria. Published by National Institute for Policy and Strategic Studies, Kuru, Jos. Pp 3 -10.

C.B.N. (Central Bank of Nigeria), (2014). *Statistical Bulletin*, No. 17.

D'Sylva, R.J. and Razza, A.F. (1980). "Fertilizer Recommendation in Tanzania on District by District Basis", Mlingano Agricultural Research Institute, *National Soil Service*, Ministry of Agriculture, Tanga, Tanzania.

Ehoche, O.W.; Barje, P.P.; Chiezey, N.P.; Adeyinka, I.A.; Okaiyeto, P.O.; Rekwot, P. I.; Lufadeju, O.P.; Akinpelumi, R.O.; Oyedipe, E.O. and Agyemang, K. (2009). "Effect of Feed Supplementation and Helmut Control on the Performance of Indigenous Cattle under Smallholder Peri-Urban Dairy Production System," *Journal of Agriculture and Social Research*, 8(2):150-160.

Ehler, L.E and Bottrell D.G. (2000). *The Illusion of Integrated Pest Management. Issues in Science and Technology*. Bell and Howell Information and Learning Company, London.

Food and Agriculture Organization (FAO) (2010). *Production Year Book*, UN Publication Rome.

Gana, J.A. (1988). "Market Centers in Zaria Division Nigeria: Analysis of their Evolution and Location Structure," Ph.D. Thesis, University of Aberdeen.

Proceedings of the Annual Conference of the Agricultural Extension Society of Nigeria

Number: Twenty-Second Annual Conference

Theme: Mainstreaming Entrepreneurship in Agricultural Extension Practice in Nigeria

Date: 23rd -26th April, 2017. **Venue:** University of Port Harcourt, River State, Nigeria

ISSN: 1595 – 1421. <http://aesonnigeria.org/ConfProc> . **Email:** editorinchief@aesonnigeria.org

Igbago, R. (2008). An Assessment of Legislative Oversight Functions on Budget Monitoring in Benue, Nassarawa and Plateau States. Unpublished M.Sc. Thesis, Benue State University, Makurdi, Nigeria.

Malau-Aduli, A.E.O.; Dim, N.I.; Abubakar, B.Y.; Ehoche, O.W.; Lufadeju, E.A. and Olaoshebikan, Y.R. (2012). Dairy Performance of Friesian-Bunaji Crosses and their Growth to Yearling Age. Paper presented at the *National Animal Production Research Institute* (NAPRI), Shika, Nigeria. Feb. 18th, 2012. Pp 324 – 331.

Mardikanto, T. 1993. *Penyuluhan Pembangunan Pertanian*. UNS Press, Surakarta.

Mijindadi, N.B. and Njoku, J.A. (1985). A Companion of Individual and Cooperate Members: A Study of Ikwzar tomato growers in Kaduna State, Nigeria. Paper presented at the national workshop on cooperative for policy makers / ARMTI, Ilorin.

Onasanya, A.S., Adedoyin, S.F. and Onasanya, O.A. (2006). Communication Factors Affecting the Adoption of Innovations at the Grassroots Level in Ogun State, Nigeria. *Nigeria Journal of Agriculture and Food Science*,b(1):264-273.

Thau, T.D. 2004. Factors Affecting Technical Efficiency of Household Dairy Cattle Production in Two Communes of Gialam District, Hanoi. *J. ISSAAS*. 10(1):86-90

Saleh, M.K. (2014). Factors Influencing Adoption of Improved Dairy Cattle Technologies in Northern Nigeria. Ph.D. Dissertation, Ahmadu Bello University, Zaria. Unpublished

Soekartawi, Rusmadi and E. Damaijati. 1993. *RisikodanKetidakpastiandalamAgribisnis*. PT Raja GrafindoPersada. Jakarta.

Voh, J.P. (1988). Information sources and awareness of selected recommended farm practices: A study in a village in Kaduna State of Nigeria. *Journal of Agricultural Science*, 8 (1 & 2): 34 -40.

Yahaya, M., Willian, C. and Oyibe, B.A.(2007). Communication and Social Change: Lessons from Cassava Technology Transfer in Nigeria. *Journal of Agricultural Extension* (10):23-28.