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Assessment of Use of Improved Production Technologies among Goat Farmers in Abia State Nigeria

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ABSTRACT

The study provided an empirical evidence on the use of improved goat production technologies among rural farmers in Abia State, Nigeria. The specific objectives of the study were to describe the socioeconomic characteristics of the respondent, ascertain the extent of use of improved goat production technologies, determine factors influencing use of improved goat production technologies and identify the constraint to access and use of improved goat production technologies in the study area. A multi-stage random sampling technique was adopted in selecting the sample size 120 respondents. Data for the study were collected through the use of questionnaire. The data collected for the study were analysed with both descriptive and inferential statistics. The result of the socioeconomic characteristics revealed the mean age of the respondents was 43 years, majority 69.16% of the respondents were married, about 45% had secondary education, a mean household size of 6 persons, majority 66.67% were farmers, mean years of arming experience at 5.7 years, mean income of #102,000, mean farm size of 11 goats and majority (78.33%) of respondents were non- members of cooperative societies. The result on extent of use of improved goat production technologies, revealed that the respondents highly used most of improved goat production technologies as affirmed with the grand mean of $\bar{x}$= 3.20. On constraint to use of improved goat production technologies, all the respondents 100% agreed that lack of access to credit was a constraint to use, 100% agrees on lack of credibility from source of technological information, 99.2% agreed that they were afraid of taking risk, 93.3% agreed on difficulty in technology application among others. The OLS regression estimates of the influence of socioeconomic characteristics the respondents on the use of improved goat production technologies in the study area, revealed that age at 10%, education at 1%, household size at 1%, farming experience at 1%, farm size at 1%, income at 1% and access to credit at 5% were the determinants of use of improved goat production technologies in the study area and the null hypotheses rejected. In conclusion, greater use of available improved technologies will promote productivity, and therefore there is need for proper sensitization and awareness by relevant agencies. The study recommended that credit should be made available to farmers by relevant governmental and non- governmental agencies to increase the level of use of available improved technologies.

1. Introduction

Goats are among the main meat-producing animals in Nigeria, whose meat is one of the choicest and has high demand across the country. Besides meat, goats provide other products like milk, skin, fiber and manure. Nigeria, with over 3.9 million goats is one of the largest goat producing countries in Africa and playing a significant role

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in livelihood and nutritional security as well as providing supplementary income to many marginal and resource poor farmers, (Food and Agricultural organization; FAO,: 2015).

However, the productivity of goats under the traditional production system is very low owing to their maintenance under extensive system on natural vegetation and shrinking common grazing lands and tree lopping. Moreover, adoption of improved technologies and management practices in the farmers' flock is very low (Singh and Kumar, 2007). Adoption behaviour of goat farmers depends on knowledge, economic motivation, family education status, extension agency contact, social participation and income (Kumar et al., 2014). The adoption is low in important scientific practices due to lack of exposure, henceforth extension agencies have to arrange training and demonstration programs of improved practices to goat keepers (Singh, 2017).

Technology information usage on the other hand refers to the physical and mental acts involved in incorporating the improved technologies found, into the farmers existing technology base. Technology use is an indicator of technology needs, because it leads an individual use the technology in order to meet his needs. Technology use is concerned with what happens with a technology once it has been obtained, and how it is applied to accomplishing a specific task. It is the final step in the technology seeking process.

Goat rearing using improved management practices undertaken for maximization of returns from the enterprise was considered as 'commercial goat farming' in the present context. The entry of large farmers, who have better access to technical knowledge, resources and market, into this activity would help in realizing the potential of goat enterprise (Kumar, 2007). The trend of commercialization has especially been prominent in the Northern States of Nigeria, where demand for marketing is relatively better. Goat production can be singled out to be an ideal option for the South Eastern part of Nigeria, given the abundance of suitable rangelands and the accommodating climatic conditions in the area.

In order to make the goat rearing a profitable enterprise, technologies have been developed by the research institutions both at national and international level. Such improved practices developed have not been adopted by the farmers so far. Therefore, proper adoption of these improved practices by the goat farmers will be the only means to hasten further development in this sector.

Improved technologies are various technical know-how for the promotion and development of agriculture. However in developing countries some of these technologies have been rejected by rural farmers, giving rise to the need to examine technologies used by rural farmers in a particular locality so as to identify and meet their needs. Keeping in view the above facts, the present research was designed to study the Utilization level of improved goat farming technologies by goat farmers.

Statement of problem

Available statistics show that the supply of goat meat fell short of it's demand. Ijere (2012), asserts that while the average growth rate of the Nigerian population is between 2.5 - 3.0%per annum, domestic food production lags behind at a growth rate less than 2% per annum, thereby creating food supply gap. The decreased output of agricultural produce over the years may not only be connected to deviations of farmers from improved recommended production technologies but also with lack of use of the existing improved production technologies leading to inefficiencies (Ijere, 2012).

Despite the multiple roles goats play in the livelihood of rural farmers and the economic growth of the country, they are still neglected by farmers and sources of credit. For efficient production in the goat production enterprise, a lot of improved technologies have be developed and transferred to the field for use. There is is little or no information on how farmers adopt and use these technologies, hence this study was conducted to investigate the use of improved goat production technologies among farmers in Abia state.

Specific objectives of the study

(1) describe the socioeconomic characteristics of the farmers in the area

(2) ascertain the extent of use of improved goat production technologies

(3) determine factors influencing use of improved goat production technologies

(4) ascertain the constraints to use of existing improved technologies.

Hypothesis

$H_0$1: There is no significant difference between farmers socioeconomic characteristics and the extent of use of improved goat production technologies.

2. Methodology

The study was conducted in Abia State. Abia State is located in the South-East agro-ecological zone of Nigeria. According to National Population Commission, 2007 census report, Abia State has a population of 2,833,999

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people, made up of 1,454,195 males and 1,599,806 females, and the population is predominately rural (62.25%) with only 37.75 % urban population. Abia State lies within Longitude 7^0 23E and 8^0 2E and Latitude 4^0 47N and 6^0 12N. The population of the study comprised of all the goat farmers in Abia State, Nigeria. A multi-stage random sampling technique was adopted in selecting the sample size 120 respondents. In the first stage, 2 Agricultural Blocks each were randomly selected from the 3 Agricultural Zones in Abia State making a total 6 Agricultural Blocks. In the second stage, 2 circles each were randomly selected from the 6 Agricultural Blocks making a total of 12 circles. In the third stage, 2 cells each were randomly selected from circles already selected making a total 24 cells. In the fourth stage five (5) goat farmers were randomly selected from each of the cells which gave a total of 120 respondents that were used for the study. The study made use of primary data. Data for the study were collected through the use of questionnaire. Data were collected on all the specific objectives of the study. The data collected for the study were analysed with both descriptive and inferential statistics. All the specific objectives were analysed using descriptive statistic while the hypothesis was tested using Ordinary Least Square regression model.

The formula to compute the mean count to be used in this study is specified below. The mean ($\overline{x}$) is computed by multiplying the frequency (f) of the responses under each category by assigned value and dividing the sum ($\sum$) of the product by (N) number of respondents to the particular indicator as shown:

$$\overline{X} = \frac{\sum fx}{N} \quad (3.1)$$

Where,

$\sum$ = Summation

F = Frequency

X = assigned scores to response category

N = number of respondents

$\overline{X}$ = Arithmetic mean

$H_0$1: There is no significant relationship between farmer's socio-economic characteristics and the level of use of improved goat production technologies in the study area was tested using Ordinary Least Square regression model. Multiple regression helps to learn more about the relationship between one dependent variable (Y) and two or more independent variables (X). It is used when we want to predict the value of a variable based on the value of two or more variables. It calculates a coefficient for each independent variable, as well as its statistical significance, to estimate the effect of each predictor on the dependent variable, with other predictors held constant.

The OLS/Multiple regression expressed implicitly as follows.

$Y = f(X_1\ X_2\ X_3\ X_4\ X_5\ X_6\ X_7, X_8 X_9 X_{10} X_{11} X_{12,}\ X_{13},\ ei)$ …….. (3.2)

The four functional forms of OLS in explicit form is specified as;

Linear Function

$Y = ß + ß_1 + x_1 + ß_2 x_2 + \ldots\ldots\ldots\ldots\ldots\ldots ß_n x_{n+} ei$

Exponential function

$Log\ Y = ß + ß_1 + x_1 + ß_2 x_2 + \ldots\ldots\ldots\ldots\ldots\ldots ß_n x_{n+} ei$

Semi-log function

$Y = ß_0 + ß_1 ln x_1 + ß_2 ln x_2 \ldots\ldots\ldots\ldots\ldots\ldots ß_n ln x_{n+} ei$

Cobb Douglas function

$Log\ Y = ß_0 + ß_1 ln x_1 + ß_2 ln x_2 \ldots\ldots\ldots\ldots\ldots ß_n ln x_{n+} ei$

Where,

Y = use of improved got production technologies (mean score)

X_1 = Age (years)

X_2 = Education level (Number of years spent in school)

X_3 = Marital status (1 = married, 0 = single)

X_4 = flock size (number of goats)

X_5 = farmers experience (years)

X_6 = household size (number of persons)

X_7 = Occupation (Farming = 1, trading = 2, civil service = 3, artisan= 4)

X_8 = farm income (₦)

X_9 = access to credit (yes=1 No = 2)

X_{10}= membership of cooperative (yes = 1, No = 0)

e = error term

3. Results and Discussion

3.1 Socioeconomic characteristics of the respondents

Table 1. Distribution of respondents based on their socio-economic characteristics

Parameters	Percentages	Parameters	
Age(years)		**Farming Experience (years)**	
20-30	12.3	1-5	50.00
31-40	15.8	6-10	20.0
41-50	37.5	11-15	20.83
51-60	22.5	16-20	9.16
61-70	4.16	Mean	15.7 years
Mean	42.8 years	Farm income (₦)	
Marital Status		10,000-50,000	10.83
Single	8.33	51,000 – 100,000	40.83
Married	69.16	101,000 – 150,000	41.67
Widow	16.66	151,000 – 200,000	6.67
Divorced	5.38	Mean	102,012.22
Level of Education		Farm Size (number of goats)	

Parameters	Percentages	Parameters	
Age(years)		**Farming Experience (years)**	
No formal education	16.67	01 – 05	25
Primary	29.17	06 – 10	48.3
Secondary	45.0	11 – 15	25
Tertiary	9.16	16 – 20	1.7
Household Size (numbers)		Mean	10.6 goats
2-5	45.0	Access to Credit	
6-10	50.0	No	80.83
11-15	0.25	Yes	19.17
16-20	0.25		
Mean	6.4 persons		
Primary Occupation			
Farming	61.67		
Trading	16.67		
Civil service	16.66		
Artisan	5.00		

Source: Field Survey, 2019

Table 1 shows the distribution of respondents according to their age in the study area. The Table revealed that about 37.5% of the farmers were between the age range of 41-50 years, 22.5%were between 51-60 years 15.8% were between 31-40 years 12.3% were between 20-30 years and 4.16% were between 61-70 years. With the mean age of the farmers at 42.8 years, it implies that the respondents were still young, active and productive. The result agrees with the findings of Tiamiyu *et al*, (2009), that young farmers exhibit risk aversion and have higher tendency to adopt technologies that have long lag between investment and yield.

The result showed that majority (69.16%) were married, 16.66% were widowed, 8.33% were single and 5.38% were divorced. The result indicates that married people are more involved in goat farming in the study area, this is in a bid to provide food and diversify sources of income which helps them to meet basic financial obligations like payment of school fees, rents, medical bills, purchase of seeds, fertilizers etc.

The result revealed that most of the respondents were educated at different levels. A fairly large proportion 45% were educated at secondary school level, 29.17% had primary education, 16.67% had no formal education, and 9.16% had tertiary education. The high level of literacy among the respondents is expected to have a positive influence on their level of access and use of improved goat production technologies. The result agrees with the findings of Abdelmagid and Hassan;(2012); that educated farmers are more receptive to advice from extension officers, deal more with technical recommendations that require litracy, are rational in their choice of technologies rather than developing a negative attitude towards new technologies and that education have a positive and significant influence on adoption.

The result revealed that a large proportion (50%) of the respondents had 6-10 persons in their household 45% had 2-5 persons in their household 2.5% had 11-15persons in their household and another 2.5% had 16-20 persons in their household. The mean household size is 6.4 persons, which implies that there is enough persons in most household to provide family labour in the goat production enterprise. From a prior expectation, availability of family labour reduces labour cost, increase productivity and net profit.

The result indicates that majority 61.67% of respondents are famers, 16.67% are traders, 16.66% are civil servants while 5% are artisans. Goat production are undertaken by farmers majorly as they see it as an investment and insurance that provide income to meet seasonal purchases of seeds, fertilizers and other inputs in times or seasons of crop failure and fall in prices of crops (Mahama 2012). Also a major characteristics of livestock production system is its integration into crop production system by farmers, where the droppings serve as manure and help to replenish soil fertility while crop residues are been used in feeding the goats (Dube, 2015).

The result shows that a large proportion 50% of the respondents had 1-5 years of experience, 20.83% had 11-15 years, experience, 20% had 6-10 years, experience, while 9.17% had 16-20 years, experience. The result revealed that the farmers had 5.7 mean years of experience. The implication is that a large proportion of farmers are new in goat farming, are zealous and are willing to access and use improved goat production technologies. This result agrees with the findings of Chilot *et al*; (2009); that farming experience does not matter or is inversely related to adoption of improved technologies.

The result revealed that a fair proportion 41.67% were within the monthly income of ₦101,000 - ₦150,000, 40.83% were within the income range of ₦51,000 - ₦100,000, 10.83% were within the income range of ₦10,000 - ₦50,000 while 6.67% were within the income range of ₦151,000 - ₦200,000. No respondent had above ₦201,000 income. The study revealed that the respondents had a mean income of ₦ 102,012.22, and the implication is that the respondent had a relatively moderate level of income.

The result showed that a fairly large proportion 48.3% had 6-10 goats, 25% had 1-5 goats another 25% had 11-15 goats and 1.7% had 16-20 goats. The mean farm size is 11 goats. The result implies that farmers in the study area were mainly smallholder farmers. The finding is plausible because farm size is a determinant of technology

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adoption. The result agrees with the of (Djana, 2011), and (FAO, 2013), that most farmers are peasants and operate at subsistence level.

The result indicates that majority 78.33% 0f respondents were non -members of cooperative societies, while 21.67% were members of cooperative societies. Being a member of cooperative society affords farmers the opportunity of sharing technological information, thereby creating awareness, enhancing understanding of existing technologies, Akinola as cited by Simon; (2012); creates access to available technologies which in turn leads efficiency and higher productivity.

The result revealed that majority 80.83% of respondents had no access to credit while19.17% had access to credit. It is expected that access to credit will help farmers to increase their farm size, hire labour, purchase needed inputs, equipment and adopt necessary technologies Abdoulaye *et al*; (2014) Inadequate capital and poor access to credit from credit institutions are major reasons why farmers still operate at subsistence level (Adunni Sanni; 2008).

3.2 Extent of use of improved goat production technologies

The result revealed a grand mean of 3.20 implying a high level of use of the improved goat production technologies. The result revealed that the respondents used the slated floor system ($\bar{x}$ = 3.65), vaccination ($\bar{x}$ =3.34), goats raised on plateforms ($\bar{x}$ = 3.36), flushing of does ($\bar{x}$ =3.36), fostering of kids ($\bar{x}$ =3.33), formulation of concentrates ($\bar{x}$ =3.29), colostrum feeding ($\bar{x}$ =3.29), feeding goats with concentrate ($\bar{x}$ =3.28), farm fumigation and disinfection ($\bar{x}$ =3.28), changing of bucks ($\bar{x}$ =3.27), crosss breeding ($\bar{x}$ =3.08), odour transfer ($\bar{x}$ =3.00), dipping ($\bar{x}$ =2.93), Deworming ($\bar{x}$ =2,92), giving mineral supplement ($\bar{x}$ =2.92). The result implied that respondents in the study area made use of the improved goats production technologies leading to higher productivity and generation of income. This result disagrees with the finding of Mahama (2012), that farmers are not willing to adopt new or improved technologies due to their small size of holding and financial challenges associated with new technologies.

Table 2. Mean rating of respondents based on the extent of use of improved goat production technologies

Extent of use of improved goat production technologies	Very often	Often	Rarely	Never	$\sum fx$	$\bar{x}$
Slated floor system	78(312)	42(126)	0(0)	0(0)	438	3.65
Goat raised on platforms	65(260)	35(105)	18(36)	2(2)	403	3.36
Formulation of concentrates	35(140)	85(255)	0(0)	0(0)	395	3.29
Feeding goats with concentrates	47(188)	60(180)	13(26)	0(0)	394	3.28
Giving mineral supplement	30(120)	60(180)	20(40)	10(10)	350	2.92
Identification of does on heat	25(100)	73(219)	11(22)	11(11)	352	2.93
Cross breeding	27(108)	46(138)	38(76)	9(9)	555	3.08
Vaccination	65(260)	41(123)	14(28)	0(0)	411	3.43
Flushing of does	65(260)	35(105)	18(36)	2(2)	403	3.36
Colostrum feeding	35(140)	85(255)	0(0)	0(0)	395	3.29
Farm fumigation or disinfection	47(188)	60(180)	13(26)	0(0)	394	3.28
Deworming	30(120)	60(180)	20(40)	10(10)	350	2.92
Dipping	25(100)	73(219)	11(22)	11(11)	352	2.93
Are you aware that bucks (male goats) are to be changed at recommended intervals	60(240)	40(120)	12(24)	8(8)	392	3.27
Fostering of kids	40(160)	80(240)	0(0)	0(0)	400	3.33
Odour transfer	40(160)	60(180)	20(40)	0(0)	360	3.00
Total mean						51.27
Grand mean						3.20

Source: Field Survey, 2019

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3.3 Factors influencing use of improved goat production technologies

Table 3. OLS regression estimates of the socio-economic determinants of use of improved goat production technologies in the study area

Variables	Linear	Exponential	Semi-Log	+ Double Log
(Constant)	-2338.142 (-0.032)	8.980 (9.566)***	103387.027 (4.714)***	11.173 (4.507)***
Age	-194.886 (-0.255)	0.007 (0.681)	-37351.323 (-0.972)	-.773 (-1.779)*
Marital status	-26405.1 (-3.097)***	-0.303 (-2.794)**	-28338.511 (1.236)	-0.417 (1.361)
Years of Education	3244.229 (1.805)*	0.064 (2.501)**	-34888.386 (1.151)	1.149 (3.355)***
Household size	-302.356 (-0.122)	0.005 (0.172)	1376.132 (0.106)	.068 (3.461)***
Farming experience	1950.902 (1.983)**	0.010 (0.832)	14972.501 (4.160)***	.089 (3.767)***
Farm size	0.054 (0.247)	1.766E-6 (0.633)	8394.982 (0.767)	.048 (3.390)***
Monthly income	0.422 (2.071)	1.823E-6 (0.705)	474.305 (2.037)**	.113 (5.768)***
Access to Credit	-0.057 (-0.637)	1.967E-6 (1.740)*	4482.591 (4.112)***	.288 (2.60)**
Cooperative membership	39594.605 (0.651)	0.659 (0.473)	29725.679 (1.363)	.637 (0.588)
R-Square	0.685	0.655	0.616	0.765
R Adjusted	0.618	0.609	0.597	0.733
F – ratio	14.710***	11.711***	12.27***	16.144***

Field Survey, 2019 Key: * Significance at 10%, ** Significance at 5%, *** Significance at 1% ***, + = Lead Equation and the values in bracket are the t-value

The result in Table 3 showed the Ordinary Least Square regression estimates of the socio-economic determinants of extent of use of improved goat production technologies in the study area. Four functional forms of multiple regressions were analyzed and Double-log functional form was selected based on magnitude of the R^2 value, number of significant variables and F- ratio. The R^2 (coefficient of multiple determination) value was 0.765 which implied that 76.5% of the total observed variations in the dependent variable (Y) were accounted for while 23.5% of the variation was due to error. F–statistics was significant at1% indicating the fitness of the model used.

The coefficient of age was statistically significant at 10% and negatively related extent of use of improved goat production technologies in the study area. This implies that as the age of farmers' increase, their extent of use of improved goat production technologies decreases. This inverse relationship implies that the age of the farmers' increase, their extent of use of improved goat production technologies in the study area decrease. The result is in agreement with Effiong *et al* (2014) who found age to be negatively signed to output indicating that the farmers output decreases as the farmer's age increases.

The coefficient of education was positively related and statistically significant at 1% level of probability. The result implied that an increase in the level of education of the respondents in the study area will lead to a corresponding increase extent of use of improved goat production technologies in the study area. The result conforms to the researchers *a prior* expectation that education enhance farmers' awareness, access to market as well as enhances extent of use of improved goat production technologies. Abudu *et al*., (2014) reported that increase in education of farmers positively influenced access, participation and adoption of improved agricultural practices. This is encouraging because Imonikhe (2010) states that education enhances farmers' ability to make accurate and meaningful management decision.

The coefficient of coefficient of house size was positively related and statistically significant at 1% level of probability. This result of implies that an increase in household size will result to a corresponding increase in the extent of use of improved goat production technologies in the study area. The increase of household size suggests that more family labour would be readily available since relatively large household size is an obvious advantage in terms of labour supply, where wage rate is relatively costly (Nwaobiala, 2013).

The coefficient of farming experience was significant at 1% and positively related to extent of use of improved goat production technologies in the study area. The result implied that a unit increase in the years of farming will lead to an increase in the extent of use of improved goat production technologies in the study area. In agreement with this result, Onu and Maduka (2017) also found that farming experience has shown to enhance the participation increasing agricultural output.

The coefficient of annual farm size was statistically significant at 1% and positively related to the extent of use of improved goat production technologies in the study area. This result implies that a unit increase in the farmers' farm size will lead to a corresponding increase in the extent of use of improved goat production technologies in the study area.

The coefficient of income was statistically significant at 1% and it is positively related to extent of use of improved goat production technologies in the study area. This implies that a unit increase in income will lead to an increase in extent of use of improved goat production technologies in the study area. This may be attributed to the fact that an increase in income will enable the farmers to adopt new farming strategies, buy new equipment, ease transportation and improves investment into the enterprise.

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The null hypothesis which stated that there is no significant relationship between farmer's socio-economic characteristics and the extent of improved goat production technologies in the study area was therefore rejected at 5% alpha level and concluded otherwise.

3.4 Constraints to use of improved goat production technologies

Table 4. Distribution of respondents based on the constraints to use of improved goat production technologies

Constraints to use of improved goat production technologies	Frequency	Percentage
The technologies expensive to adopt	92	76.67
Procedures were difficult to understand	67	58.83
Lack of veterinary experts around you	73	60.83
Technologies were against your cultural or religious beliefs	91	75.83
Lack of access to credit	120	100.0
Lack of credibility from source	120	100.0
Farm size is small	104	86.67
Difficulty in applying technology	112	93.3
Lack of technical support	69	57.5
You were afraid of taking risk	119	99.2

Source: Field Survey, 2019

Multiple responses recorded

Table 4 showed Distribution of respondents based on the constraints to use of improved goat production technologies. On constraint to use of improved goat production technologies, all the respondents 100% agreed that lack of access to credit was a constraint in the use of improved technologies. Access to credit is expected to increase the adoption (use) of new technologies if the funds are not channeled to other household activities. The result implied that lack of access to credit is a major factor militating against the use of improved agricultural technologies. The result agrees with the findings of Abdoulaye *et al* (2014), Aduani Sanni (2008), and Kasana *et al* (2010) that access to credit have a positive influence on adoption of new technologies.

Another 100% agreed that lack of credibility from source of technological information is another reason why they don't use or adopt improved agricultural practices. This result implies that sources of agricultural information or technologies are not honest. Lack of credibility may be in form of lack of follow up service, failure of technology to solve required problem e.t.c. The partnership between farmers and sources of technology must be enhanced and participatory approach must be used, to ensure that farmers are fully involved, Chambers *et al*; (2009).

Again, a large proportion 99.2% agreed that they were afraid of taking risk. Risk refers to imperfect knowledge of the future. It talks about chances of occurrence events that leads to failure. The result implies that farmers were afraid of investing in the new technologies for fear of failure and loss of finance. This result disagrees with the finding of Tiamiyu *et al* (2009) that young farmers exhibit lower risk aversion and that older farmers are more likely to adopt innovation as a result of accumulated knowledge, capital and experience. Again about 93.3% agreed that difficulty in technology application served as a constraint in the use of improved technologies. The result implied that the respondents lack the technical know how to handle the innovation. This result is in agreement with the findings of Simon (2006) that farmers require certain level of literacy in handling technical recommendation.

Again 86.67% of the respondent agreed that small farm size was the constraints to use of improved technologies. The result implies that small farm size is a dis incentive to technology adoption. Most of the respondents are peasants and operate at a subsistence level which conforms with the findings of Djana,(2011).

Another 76.67% agreed that cost adopting technologies posed as a constraint to improved goat technology use. The result implied that most of the farmers could not afford the technologies as a result of high cost Gertrude; (2011). A major characteristics of Nigerian farmers is that they are poor and leave poor capital base FAO (2013). Cost may not always be in terms of money or financial benefit, but if what the farmer is expected to give up is less than what he is to gain, Okoosi, (2009).

Furthermore, 75.83%, of the respondents agreed that technologies were against their cultural and religious believe. The result implies that the respondents did not use technologies that were against their cultural and religious believes. For technologies to be adopted it must be compatible with the existing values, norms and experience of the user. This findings together previous findings from others researchers has led to the formulation of demand driven extension by Government and other agencies, according to Getrude (2011).

About 60.83% of the respondents agreed that lack of veterinary experts around them was one of the constraints to use of improved technologies , the result implies that the respondents did not use technologies that required the expertise of veterinarians because of their none availability in the study area. This finding have a dire implication

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in the health management of flock. There is inflated cost of animal health service delivery which most times are unavailable, Getrude, (2011). Huge financial burden is incurred by farmers in an effort to manage diseases within their flock. Bester *et al* (2010).

Again 58.83% of respondents agreed that difficulty in understanding procedures of technology was a constraint to use of improved goat production technologies. The result implies that the technologies were complex for a large proportion of the farmers to understand. Technologies that are too complex are not readily adopted by farmers and this conforms to the findings of Djana, (2011). Finally, 57.50% of respondents agreed that lack of technical support was a constraint in the use of improve goat technology, the result implied that farmers at one or the other in the adoption process required technical support from technology developers or extension officers. This assistance can be provided through individual and group training. Lack of technical support may lead to failure in usage of a technology.

4. Conclusion and Recommendations

The study provided an empirical evidence on use of improved goat production technologies in the study area. It could be inferred from the study that the respondents, highly utilized the available improved production technologies. Furthermore, some factors (poor financial status, poor educational background, small size of holding, lack of access to credit, lack of technical support, etc.), served as serious constraint to use of improved goat production technologies and some of these factors, are beyond the control of rural farmers. In conclusion, greater use of available improved technologies will promote productivity, and make goat production a profitable enterprise.

Based on the findings of the study, the following recommendations were made;

(1) Credit should be made available to farmers by relevant governmental and non- governmental agencies to increase the level of use of available improved technologies.

(2) Agricultural development programmes (ADPs) should provide necessary technical support to the farmers when needed.

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