Perception of Artificial Insemination among Fulani Cattle Rearers in Zuru Local Government Area of Kebbi State, Nigeria

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Abstract: The study was conducted to examine the perception of artificial insemination among Fulani cattle rearers in Zuru Local Government Area of Kebbi State, Nigeria. Proportionate random sampling was used for the study. A total of one hundred and seven (107) Fulani cattle rearers constitute the sample size for the study. The instrument used for data collection was interview scheduled and data was collected in 2012. The data collected were analysed using descriptive statistics; five (5) points' likert scale was used to determine the perception of Fulani cattle rearers on artificial insemination and Pearson Product Moment Correlation was used to establish the relationship between perception of Fulani cattle rearers on artificial insemination and some of their personal characteristics (Age, Educational level and Sex). The study revealed that the majority (71.02%) of the Fulani cattle rearers were male and 42% were within the age range of 31 – 35 years. Majority (53.27%) of the Fulani cattle rearers had no education. The results further revealed that 57.01% of the Fulani cattle rearers are aware of artificial insemination. The result also revealed that majority (54.1%) of the cattle rearers perceived artificial insemination unfavourably. However, age, educational level and sex of Fulani cattle rearers were not significantly related to their perception on artificial insemination. Therefore, more awareness should be created among Fulani cattle rearers to stimulate their involvement in artificial insemination. Demonstration centres should be established within and around the Fulani cattle rearers settlements for them to see, appreciate and seeks for assistance on artificial insemination.
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1.0 Introduction

Modern agriculture uses many technologies that were developed over a period of time. Artificial insemination is one of these technologies, artificial insemination is a process by which sperm are collected from the male, processed, stored and artificially introduced in to the female reproductive tract for the purpose of conception (Adegeye, 2004). Artificial insemination has become one of the most important techniques ever devised for the genetic improvement of farm animals. It has been most widely used for breeding dairy cattle and has made bulls of high genetic merit available to all (Eyiyere, 2002).

Artificial Insemination is one of the modern tools available for animal improvement. If a bull has been tested and selected either on its own merit or based on the performance of its relatives or offspring, its semen can be obtained and used to inseminate cows that are located several thousands of kilometres away (Adeniji, 1991). The advantage is that the genetic characteristics of a highly priced bull are made available at low cost to distant or local farmers who may never have had the opportunity of using such a superior bull (Anilomo and Grant, 2001). Artificial Insemination is the most widely used assisted reproductive technology. Although artificial insemination is much more widely used in dairy herds than beef herds, it is becoming more important in beef cattle breeding programs. Its labour required for Artificial insemination is the most common reason beef cattle producers do not use this technology. However, exhaustive economic analysis of Artificial Insemination shows it to increase net revenue in most situations Taiwo *et al*., 2003).

Promotion of Livestock production has become increasingly prominent in development efforts which have concentrated on the modern sector beef ranching, large scale dairy farming, and feedlot fattening of livestock. Although some of these schemes have been technically successful, outputs do not generally justify the high input costs, and impacts on total national production have been minimal (Connor, 2007). In Nigeria, for example, over 90 per cent of locally produced beef and milk still comes from the traditional sector. This sector is the focus of International Livestock Centre for Africa (ILCA) research in the sub-humid zone of West Africa. Indigenous livestock systems are being studied to identify major production constraints and to design innovations such as artificial insemination that can be adopted by traditional producers (Fayinka, 2002).

1.1 Hypothesis

There is no significant Relationship between some personal characteristics of Fulani cattle rearers and their perception of artificial insemination.

2.0 Methodology

The study was carried out in Zuru Local Government Area (LGA) of kebbi State. The Area is located within latitude 11^o 35' and 11^o 55'N and longitude 4^o 45' and 5^o 25'E of the equator approximately (KBSG., 2003). Zuru LGA is geographically located in the south-eastern part of the state. The estimated population of the LGA is 165,547 people (NPC., 2006). The weather is marked by a single rainy season and long dry season, the average rainfall is 1025mm/annum, the rainy season is between May to October, the rainy season last for four – five months. The climatic condition of the area is characterized by hot and wet season as in the tropics; the month of November to January is the hamattan period. The soil type is sandy loam and rich, which makes it suitable for agriculture (KBSG., 2003).

Zuru Local Government comprises of six administrative districts namely Dabai, Rikoto, Rafin Zuru, Senchi, Manga and Ushe. Multi stage sampling was used for the study. The first stage involve selecting one village from each district purposively, this is due to concentration of Fulani cattle rearers in this villages. The second stage involves selecting Fulani cattle rearers proportionate to the population. Thus one hundred and seven (107) Fulani cattle rearers constitute the sample size for the study. Interview schedule was used to collect primary data from respondents. Data was analysed using descriptive statistics and Pearson product moment correlation.

2.1 Model Specification

Pearson Product Moment Correlation - This is a method used to measure the strength of linear relationship between variables x and y. This is denoted by;

$$r_{xy} = \frac{N\sum XY-(\sum X)(\sum Y)}{\sqrt{(N\sum X^2-(\sum X)^2}\ \sqrt{(N\sum Y^2-(\sum Y)^2}} \quad \text{..... (1)}$$

Where, X_1 = Age;

X_2 = Educational level;

X_3 = Sex;

Y = Perception of Fulani Cattle Rearers on Artificial Insemination;

N = Number of observations.

r can range from +1, i.e. perfect positive correlation where the variables change value in the same direction as each other, to -1, i.e. perfect negative correlation where Y decreases linearly as X increases. And a coefficient of zero or near zero generally indicates no correlation.

3.0 Results and Discussion

3.1 Personal Characteristics of Cattle Rearers

Table 1 showed that majority (71.02%) of the Fulani cattle rearers are male, while 28.98% are female. This implied that cattle's rearing is very strenuous that is why it is undertaken by males, while the female counterpart involves themselves in domestic activities and processing of dairy products from the cattle. This finding agreed with the findings of Lunak and Morehart (2001) who indicated that Fulani males are more engage in cattle rearing than the females. The Table also revealed that majority (42.05%) of the Fulani cattle rearers are between 31 – 35 years, 18.69% of the Fulani cattle rearers are within 26 – 30 years, 17.76% of the fulani cattle rearers are within 35 – 40 years, 14.95% of the Fulani cattle rearers are 41 and above years, while 6.55% of Fulani cattle rearers are between 20 – 25 years. This showed that cattle rearing were dominated by youths in the study area. This implied that people within the age bracket of 31 – 35 years are able-bodied that are likely to withstand strenuous activities involved in cattle rearing. This finding has agreed with the finding of Adeniji *et. al.* (1991) that majority of the Fulani cattle rearers are within the age of 31 - 40 years. The table further revealed that majority (53.27%) of the Fulani cattle rearers had no formal education, 29.91% of the fulani cattle rearers had primary education and 16.82% of the Fulani cattle rearers had secondary education. This is in line with the findings of Lunak and Morehart (2001) who stated that low level of education have a negative contribution in the adoption of artificial insemination. The Table also revealed that majority (64.48%) of the Fulani cattle rearers are married while 35.52% are single. The findings have agreed with the findings of Dalton et al. (2008) that majority of Fulani married at early age. Further revealed from the Table majority (70.09%) of Fulani cattle rearers years of experience fall within 11 – 20 years, 23.36% of Fulani cattle rearers years of experience are within 1 – 10 years, 3.74% are within 21 - 30 years, 1.86% of Fulani cattle rearers fall within 31 – 40 years, while 0.95% of Fulani cattle rearers had 41 and above years of experience in cattle rearing. Years of experience in agricultural production helps in determining the accuracy in decision making. Oluwatayo *et al.* (2008) reported that farmers with more experience would be more efficient, accept innovations easily, and have better understanding of the environment and market situations.

Table 1: Distribution of the Fulani Cattle Rearers According to Personal Characteristics

Variable	Frequency	Percentage
Sex		
Male	76	71.02
Female	31	28.98
Total	**107**	**100**
Age		
20 – 25 years	7	6.55
26 – 30 years	20	18.69
31 – 35 years	45	42.05
35 – 40 years	19	17.76
41 and above	16	14.95
Total	**107**	**100**
Educational Level		
Primary level	32	29.91
Secondary level	18	16.82
No Education	57	53.27
Total	**107**	**100**
Marital Status		
Married	69	64.48
Single	38	35.52
Total	**107**	**100**
Cattle Rearing Experience		
1 – 10	25	23.36
11 – 20	75	70.09
21 – 30	4	3.74
31 – 40	2	1.86
41 and above	1	0.95
Total	**107**	**100**

Source: Field Survey Data and Computation by the Researcher, (2014).

3.2 Awareness and Sources of Information of Artificial Insemination

Table 2 revealed that majority (57.01%) of the Fulani cattle rearers are aware of the artificial insemination, 42.99% of the Fulani cattle rearers are not aware of artificial insemination. This implied that information on modern livestock keeping is gradually reaching the Fulani cattle rearers. This finding has disagreed with the finding of Torimiro and Dionco-Adetayo (2004) that majority (56.7%) of the Fulani cattle rearers are not aware of artificial insemination. The Table also revealed that majority (44.26%) received information through extension agents, 22.96% received information through veterinary officers and 21.31% received their information from friends/colleagues, while 11.47% of the Fulani cattle rearers received information about artificial insemination through Radio/Television. This finding have agreed with the findings of Lunak and Morehart (2001) who stated that artificial insemination has been applied for some years in a number of countries using the appropriate extension approaches.

Table 2: Distribution of the Fulani cattle Rearers According to Awareness and Sources of Information of Artificial Insemination

Variable	Frequency	Percentage
Awareness		
Yes	61	57.01
No	46	42.99
Total	**107**	**100**
Source of Information		
Radio/Television	7	11.47
Friend/Colleagues	13	21.31
Extension Agents	27	44.26
Veterinary Officers	14	22.96
Total	**61**	**100**

Source: Field Survey Data and Computation by the Researcher, (2014).

3.3 Perception of Artificial Insemination

In order to determine the way artificial insemination was perceived by Fulani cattle rearers, 5 negative and 5 positive validated perceptional statements against a five likert scale ranging from strongly agree (5), agree (4), undecided (3), disagree (2) and strongly disagree (1) for positive statements and vice-versa for negative statement was administered to Fulani cattle rearers as shown in table 3. The result revealed that 32.78% of Fulani cattle rearers strongly agreed that there is nothing special about artificial insemination, 37.70% strongly agreed that artificial insemination is very dangerous, 49.18% disagreed that artificial insemination is of economic importance, 47.54% strongly agreed that artificial insemination is too expensive while 45.90% agreed that they cannot practice artificial insemination. The result further revealed that 49.18% of Fulani cattle rearers strongly disagreed to practice artificial insemination, 39.35% strongly agreed that artificial insemination is for exotic breeds of livestock, 37.70% strongly disagreed that artificial insemination is for all breeds of livestock, 25% disagreed that artificial insemination help improve strains of livestock while 40.98% strongly disagreed that artificial insemination leads to rapid multiplication of livestock. More so, level of perception of artificial insemination was further determined using mean perception score (40) plus or minus standard deviation (5) to classify the perception of Fulani cattle rearers into favourable, indifferent and unfavourable perception. The result also revealed that majority (54.1%) of Fulani cattle rearers perceived artificial insemination unfavourably. This implies that this category of Fulani cattle rearers still needs to be

educated about the usefulness of artificial insemination in order to stimulate their favourable perception. About 29.5% of Fulani cattle rearers perceived artificial insemination indifferently, while 16.4% of Fulani cattle rearers perceived artificial insemination favourably.

Table 3: Distribution of Fulani Cattle Rearers according to Perception of Artificial Insemination

Perceptional statements	Strongly Agreed	Agreed	Undecided	Disagreed	Strongly Disagreed
Positive	5	4	3	2	1
Negative	1	2	3	4	5
1.-There is nothing					
Special About AI	20 (32.79)	13 (21.32)	13 (21.31)	8 (13.11)	7 (11.47)
2. – AI is vey					
3. + AI is of Dangerous	23 (37.70)	15 (24.59)	14(22.96)	5 (8.19)	4 (6.56)
Economic importance	1 (1.65)	2 (3.28)	5 (8.19)	30(49.18)	23(37.70)
4.- AI is too expensive	29 (47.54)	12 (19.67)	10 (16.39)	3 (4.93)	7 (11.47)
5.– I cannot practice AI	11 (18.03)	28 (45.90)	12 (19.67)	6 (9.84)	4 (6.56)
6.+ I am ready to practice AI	1 (1.65)	4 (6.56)	9 (14.75)	17 (27.86)	30 (49.18)
7.– AI is for exotic breed of livestock	24 (39.35)	15 (24.59)	11 (18.03)	5 (8.19)	6 (9.84)
8. + AI is for all breed of livestock	6 (9.84)	5 (8.19)	11 (18.03)	16 (26.24)	23 (37.70)
9.+ AI help develop improve strains of livestock	2 (3.28)	1 (1.65)	8 (13.11)	25 (40.98)	25 (40.98)
10.+ AI leads to rapid multiplication of livestock.	3 (4.93)	4 (6.56)	9 (14.74)	20 (32.79)	25 (40.98)

Source: Field Survey Data and Computation by the researcher, (2014). Note: The values in parenthesis are percentages, perception is measured on sixty one (61) Fulani cattle rearers that are aware of artificial insemination and AI = means Artificial Insemination.

Table 4: Distribution of the Fulani Cattle Rearers According to Level of Perception.

Level of Perception	Frequency	Percentage	
Favourable perception	10	16.4	Mean = 40
Indifferent perception	18	29.5	Standard Deviation = 5
Unfavourable perception	33	54.1	
Total	**61**	**100**	

Source: Field Survey and Computation by the Researcher, (2014).

3.4 Hypothesis Testing

Table 5 indicated that positive and non-significant values of (0.000) and (0.031) for age and educational level respectively. This implies that there is no significant relationship between perception of Fulani cattle rearers on artificial insemination with age and educational level of the respondents. However, the table further revealed negative (inverse) and non-significant value of (-0.142) for sex of respondents.

Table 5: Relationship between Some Personal Characteristics Fulani Cattle Rearers and their Perception of Artificial Insemination

Variables		r - value
Age (X_1)		0.000
Educational level (X_2)		0.031
Sex (X_3)		-0.142

Source: Field Survey and Computation by the Researcher, (2014).

4.0 Conclusion and Recommendations

Based on the findings of this research, it can be concluded that majority of Fulani cattle rearers in the study area are aware of artificial insemination and that majority Fulani cattle rearers in the study area perceived artificial insemination unfavourably.

It is therefore recommended that more awareness should be created among Fulani cattle rearers to stimulate their involvement in artificial insemination. Fulani cattle rearers should be educated through Extension service delivery system on the benefits of artificial insemination to stimulate its adoption. Demonstration centres should be established within and around the Fulani cattle rearers settlements for them to see, appreciate and seeks for assistance on artificial insemination.

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