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Prevalence of mastitis among dairy cattle in Kanam Local Government Area of Plateau state, Nigeria

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Abstract. Mastitis is a major disease that infects the mammary gland of dairy cattle and adversely affects the quantity and quality of milk produced by cows. This study described the socio-economic characteristics of herdsmen and examined the prevalence rate of mastitis in White Fulani cows in Kanam Local Government Area (LGA) of Plateau State, North Central Nigeria. Four districts were randomly selected from the LGA (among 10 districts) and twenty herdsmen were randomly selected from each of these four districts, making a total of eighty herdsmen. Primary data were collected from the eighty herdsmen using a structured questionnaire. Data were analyzed using descriptive statistics. The results showed that majority of the herdsmen (78%) were illiterate and the prevalence rate of mastitis in the study area was 64%. Proper health management measures and vigorous enlightenment campaign by veterinary extension workers were recommended.
Key Words: mastitis, prevalence, cattle, mammary gland.

Introduction. Mastitis is one of the most common and costly diseases of dairy cattle, it can be contagious and the mode of spread is rapid and can only be controlled by good management programme (Allore 1993). Mastitis is an inflammatory reaction of the udder tissues to bacterial, chemical, thermal or mechanical injury. Mastitis may be an infection caused by microbial organisms or non infection resulting from physical injury to mammary gland (McDonald 1979). This disease can be identified by abnormalities in the udder such as swelling, heat, redness or pain, other indication of mastitis may be abnormalities in milk such as a watery appearance, flakes, clots or pus. Allore (1993) also described mastitis as a persistent inflammatory reaction of the udder tissue in cows. This potentially fatal mammary gland infection is the most common disease in dairy cattle. Milk from cows suffering from mastitis has increased somatic cells (leukocytes) which are released into the mammary gland, usually as response to an invasion of bacteria of the teat canal. Milk secreting tissues and various ducts throughout the mammary gland are damaged due to toxins produced by the bacteria.

The most common mastitis pathogens are contagious and environmental pathogens. Among the contagious pathogens are *Staphylococcus aureus* and *Streptococcus agalactiae;* while the environmental pathogens are *Streptococcus uberis* and *Streptoccoccus dysgalectiae* (Fox & Smith 1993). Mastitis is caused by a variety of pathogens and prevalence of mastitis is high in some countries of the world. Hygiene plays an important role in disease management. Most of the illiterate farmers in Nigeria do not wash their hands or the udder of the cow before milking is carried out and this is a preventive avenue for the spread of mastitis. A mastitis control programme is needed for running a profitable dairy business (Jones 2006). The mastitis occurring in lactating cows after calving is higher in pendulous udder than in those cows with non-pendulous

udder (Sori et al 2005). The pendulous udder exposes the teat to injury and pathogens may easily adhere to the teat and get access to the gland tissue. The infection rate in cows with teat lesions is higher than in cows with normal teats.

Mastitis, a bacterial disease which infect the mammary gland of dairy cattle, is the most important and expensive disease in the dairy industry. Its effects on the milk include discoloration, presence of clots, presence of large number of leukocytes and watery appearance (Ratafia 1987). Mastitis disease is seen on cows in villages in Kanam Local Government Area of Plateau state, Nigeria. This disease affects the udder (mammary glands) of these cows where milk is extracted from the cow. The rate of occurrence of this disease in this area, if not addressed, can cause a reduction of milk supply in this community and by extension in Nigeria, because Plateau State is of major importance in the livestock industry in Nigeria.

Kanam Local Government is often described as the home of cattle. According to the Nigerian 2006 population Census, Kanam Local Government Area has an estimated population of 165,898 people (NBS 2010). It is located between latitude $8^0$22 and $10^0$24 North and longitude $8^0$32 and $10^0$38 East. This Local Government is 193 kilometers south of Jos, Plateau State Capital. The Local Government Area has a moderate temperature of 14°C minimum and maximum of 26°C with an average annual rainfall of 160cm. The Local Government is generally rich in agriculture and livestock, about 80% of the people are predominantly farmers. The major crops produced by the people are maize, millet, beans, cotton, groundnut amongst others. Animals produced in the Local Government Area include cattle, goats, sheep and chickens for local consumption and sold also to various Local Government Areas and other states of the country. White Fulani is the commonest breed of cattle reared in the community. Thus this research intends to answer the following questions:

i. What are the socio-economic characteristics of dairy herdsmen in Kanam Local Government Area?
ii. What is the prevalence rate of Mastitis disease in the study area?

This work therefore described the socio-economical characteristics of herdsmen and examined the prevalence of mastitis with its effect on dairy productive performance as income generating animals for farmers and also as a source of protein.

Material and Methods. (Respondents) The farmers selected for this research were drawn purposively. Four districts (Kanam, Kantana, Garga and Dengi) were randomly selected from a total of about ten districts that made up Kanam Local Government Area. Based on the size and number of cattle owners, twenty respondents were randomly selected from each of the four districts, making a total of 80 respondents (this is to give fair treatment and equal representation). Primary data were collected in May 2010, during the period, questionnaires were administered to the cattle owners to source for information concerning the study. Personal visits were also conducted to the various districts under consideration and on-the-spot assessment of conditions was made. The simple percentage method of analysis was employed in this study for analyzing the data from the respondents.

Results and Discussion. Table 1 shows the socio-economical characteristics of the respondents. About 80% of the respondents fall within the age range of 20 – 50 years. This indicates that majority of the herdsmen are energetic and can adequately ingest physical labour into rearing of the cattle to achieve optimum productivity. It could also be explained that adults are managerial and constitutes the productive sector of the economy and most often resort to breed animals. About 79% of the respondents were male. This is because cattle herding is a hardy agricultural enterprise and it takes the stronger male gender to make the necessary impact in herding. About 37% of the herdsmen had no formal education, while about 41% had contact with primary education. It can then be said that majority of the herdsmen (78%) are illiterate and the methods used by them in animal husbandry could be the crude, traditional methods and this could lead to their herds been susceptible to mastitis disease. More so, because of the high illiteracy level of the respondents, acceptance of the modern technology of

veterinary services might be hampered. About 62% of the respondents had a herd size between 10-30 cattle. This implies that herding in the study area is been operated on a small/medium scale. Majority of the respondents (77.5%) had no contact with extension services and this shows that they may not have gained much from veterinary extension services. About 87% of the respondents breed cattle primarily for income purpose. Majority of the herdsmen (71%) milked their cows once a day. The reason for milking their cows every day could be that most of them depend on the income from their cattle for daily sustenance.

Table 1

Socioeconomic characteristics of respondents

Variables	Frequency	Percentage
Age in years		
< 20	05	06.25
20 – 30	14	17.50
31 – 40	22	27.50
41 – 50	28	35.00
> 50	11	13.75
Total	80	100
Gender		
Male	63	78.70
Female	17	21.30
Total	80	100
Education		
No formal education	30	37.50
Primary education	33	41.25
Secondary education	15	18.75
Tertiary education	02	02.50
Total	80	100
Herd size		
< 10	09	11.25
10 – 20	20	25.00
21 – 30	30	37.50
31 – 40	10	12.50
41 – 50	07	8.75
>50	04	5.00
total	80	100
Extension contact		
Yes	62	77.50
No	18	22.50
total	80	100
Reasons for keeping cattle		
Traditional/prestige	2	02.50
Income earning	70	87.50
Consumption	6	07.50
Research	2	02.50
Total	80	100
Frequency of Milking		
Once a day	57	71.3
Twice a day	22	27.5
More than twice a day	01	1.2
Total	80	100

Source: Field survey, 2010

Table 2 shows the prevalence rate of mastitis in the study area. The results obtained indicate that 64% of respondents attested to the fact that cattle in their herd were

infected with mastitis. It could then be said that the prevalence rate of mastitis in Kanam Local Government Area of Plateau state, Nigeria, is 64%. This is quite on the high side and could be attributed to the insanitary conditions in which cows are bred, thereby predisposing them to infection by the microbial organisms. The herdsmen milk their cows on a daily basis and if the occurrence of mastitis is not reduced in the study area, this will affect the quantity and quality of milk produced which will adversely affect the income of the farmers derivable from milk production and further impoverish the herdsmen since majority of the herdsmen rear cattle for income purpose.

Table 2

Prevalence rate of mastitis in the study area

Occurrence	Frequency	Percentage
Present	51	63.7
Absent	29	36.3
Total	80	100

Source: Field survey, 2010

Conclusion. This study was carried out to examine the prevalence rate of mastitis disease in cows in Kanam Local Government Area of Plateau state in North Central Nigeria. The result of this study revealed that the study area had 64% prevalence rate of the disease. However, this disease is dependent on the management system adopted by farmers where by if cows are properly housed, milking adopts healthy measures and comfortable environment are provided, infections will be controlled.

The presence of mastitis poses some danger for production of dairy cows. Education plays a great role in disease prevention, management and control. Since majority of the herdsmen are illiterate, there should be vigorous public enlightenment about the presence of mastitis and its dangers to cows and the economic health impact it poses to the production of milk as a source of protein to our society. This could be achieved if more veterinary extension workers are deployed not just to the study area but also to livestock producing areas to professionally tackle the prevalence of mastitis and other livestock diseases. Proper management systems in dairy cattle should be intensive. Routine mastitis test on dry cows should be carried out; cleaning of the udder should be done before and after milking and milking should be carried out in a healthy environment.

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