

**EVALUATION OF PRODUCTION LOSSES OF DAIRY
CATTLE AT THE UNIVERSITY OF NAIROBI
VETERINARY FARM.**

A PROJECT REPORT SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF BACHELOR OF
VETERINARY MEDICINE, UNIVERSITY OF NAIROBI.

**NYAMBUTI AGATA ALFAYO
(J30/3512/2009),
BVM, UNIVERSITY OF NAIROBI**

APRIL 2015

DECLARATION

I hereby declare that this project is my original work and has not been submitted to any other university or institution of higher learning for the award of a degree/diploma.

SIGNED..... DATE.....

This project has been submitted with my approval as the University of Nairobi supervisor.

NAME.....

SIGNED..... DATE.....

DEDICATION

This study is dedicated to my mother Mrs. Joyce Nyambuti for her great support emotionally and financially.

I also dedicate this study to my loving brothers Fred and George for their encouragement during this study

ACKNOWLEDGEMENTS

I sincerely thank my supervisor Professor Japheth Kiptoon for his guidance and supervision throughout the study. I also thank the University of Nairobi Veterinary Farm staff members for assistance especially in access to farm records.

God bless you all.

I worship and praise the Almighty God for His blessings during my investigations and writing of this report.

TABLE OF CONTENTS

DECLARATION	II
DEDICATION	III
ACKNOWLEDGEMENTS	IV
TABLE OF CONTENTS.....	V
LIST OF FIGURES	VII
ABSTRACT.....	VIII
CHAPTER ONE	1
1.1 INTRODUCTION	1
1.2 GENERAL OBJECTIVES FOR THE STUDY.....	2
1.3 SPECIFIC OBJECTIVES.....	2
CHAPTER TWO	3
2.1 LITERATURE REVIEW	3
CHAPTER THREE	8
3.1 MATERIALS AND METHODS.....	8
3.1.1 STUDY DESIGN	8
3.2 RETROSPECTIVE SURVEY OF PRODUCTION LOSSES	9
3.3 EXAMINATION OF THE ANIMALS	9
3.4 FARM RECORDS.....	9
3.5 DATA COLLECTED.....	10
3.6 DATA ANALYSIS.....	10
CHAPTER FOUR	11
4.1 RESULTS	11
4.1.1 USER DETAILS	11

4.2 GENERAL OBSERVATIONS	11
4.3 MILKING HERD AND HEIFERS.....	11
4.4 NUTRITION AND REPRODUCTIVE MANAGEMENT	12
4.5 CATTLE LAMENESS	13
4.6 MORBIDITY AND MORTALITY RATES	13
4.7 THE MOST PREVALENT DISEASES.....	14
4.8 AGE AT FIRST SERVICE/AGE AT PUBERTY	14
4.9 MILK PRODUCED PER COW PER LACTATION LENGTH.....	15
4.10 THE CALVING INTERVAL.....	15
CHAPTER FIVE	21
5.1 CONCLUSION.....	21
5.2 RECOMMENDATIONS	22
REFERENCES	23
QUESTIONNAIRE	24

LIST OF FIGURES

Figure 4.1-a pie chat showing the most prevalent diseases in the farm.....	16
Figure 4.2.a pie chat showing diseases and conditions leading to culling in the farm	17
Figure 4.3 showing age at first calving of a sample of heifers	17
Figure 4.4. shows number of services in the first conception of a sample of heifers	18
Figure 4.4.1 a graph showing number of services for second conception	18
Figure 4.5. showing the amount of milk produced per cow per lactation	19
Figure 4.6. showing the first calving interval of a sample of animals	19
Figure 4.7.showing the second calving interval.....	20

ABSTRACT

Production of milk in developing countries has not been improving despite the changing trend in the developed countries. Moreover, efforts that have been made to improve the situation of low milk production in these countries have not seen any improvement so far. Dairy cattle are the leading source of milk production, while dairy goats, sheep and camels contribute a smaller percentage of milk consumed in the world. Despite their contribution to food security through milk production for dairy products in Kenya, little is done for their nutrition and health for their well being to encourage more milk production.

This study was conducted to investigate how management factors like nutrition, hygiene, disease control and other management factors affect milk production in dairy cattle and then recommendations were made on how to improve on milk production.

This was a cross-sectional study carried out by administering semi structured questionnaires to herders and technicians. The researcher also made observations on nutritional management of the dairy herd and managerial factors that may influence their performance.

Despite the significance of the dairy industry in Kenya, the dairy animals at the University of Nairobi Veterinary Farm were seen to be poorly fed and given poor healthcare which was seen as the main contributor to reproduction and production losses. Record keeping for estrous cycle management, most probable date of parturition, and drying was very poor thus hindering efficiency of dairy management. Some of the health challenges facing the dairy animals at the farm were keratoconjunctivitis, mastitis, pneumonia, anaplasmosis, Babesiosis and helminthosis.

Therefore with respect to nutrition, dairy animals in addition to hay need to be supplemented with silage, concentrates and mineral licks in respect to their production capacity and given water at all times. They should also be provided with clean sleeping areas and slurry drained away.

CHAPTER ONE

1.1 INTRODUCTION

Nutritionists worldwide recommend milk as a very nutritious product for human consumption. There is also increased demand for milk and milk products across the world, but production of this important commodity still remains low. There is also a progressive increase in the world population and this has put a lot of pressure on the available sources of milk since little has been done to improve on this important animal product. Therefore achievement of an ideal dairy performance of mean age at first calving, mean calving interval, mean interval calving to conception, mean length of lactation, mean length of dry period, mean culling rate for reproduction efficiency and reduced abortion rates are not usually achieved due to poor nutrition, disease and other management factors. (*Payne, 1985*)

In addition, there is no reliable information on factors such as selection and breeding, nutrition and disease and this has compromised efficiency and reliability of dairy industry.

Therefore profitable management of a dairy herd for sustainable production depends on sound business decisions, financial management, optimal animal care and quick response to clinical cases when reported.

Due to inadequate land for dairy production, today's world is shifting to adoption of specialized management that encourage higher productivity e.g. through reduced herd numbers, increased herd size and improved per cow milk production for example between 1999 to 2000 in the United States of America per cow milk production per lactation increased by 196kg.

1.2 GENERAL OBJECTIVES FOR THE STUDY

The study was aimed at identifying the factors associated with the high production losses of calf harvest, mortalities and extremely high costs of inputs as compared to the outputs of the farm and to propose intervention strategies for their control.

1.3 SPECIFIC OBJECTIVES

- a. To find out the cause of specific calf morbidity and mortality at the farm.
- b. To identify some of the causes of reduced pregnancy rates at the farm.
- c. To investigate the associated factors that lower milk yield at the farm in relation to the potential production capacity of the farm.
- d. To evaluate the existing disease control strategies at the farm and propose appropriate interventions.

CHAPTER TWO

2.1 LITERATURE REVIEW

Dairy production losses can be defined as any losses at the dairy management systems arising from delayed onset of puberty, delayed age at 1st calving, prenatal and neonatal losses, dairy animal mortalities and lowered milk production due to controllable factors at the farm level. {Payne,1985}

According to Roy (1980) production losses can be classified into seven broad groups:

- a) Deaths from uncontrollable diseases and conditions
- b) Cattle lameness,
- c) Delayed age at puberty of dairy heifers
- d) Long calving interval,
- e) Prolonged dry periods,
- f) Reduced pregnancy rates and prolonged lactation lengths.
- g) Mastitis

Mortality of dairy animals begin from the embryonic life of the calf to any time when the cow's productive life is still potent.

Mortality data are more readily available from the records while morbidity rates are less readily available and can only be traced from the treatment rates.

According to Roy (1980) calf mortality can be classified into: Peri-natal mortality which includes stillbirths of calves more than 270 days of gestation and those dying 24hrs postpartum.

Neonatal mortality which includes those calves that die aged between 24hrs and 28 days of life; older calf mortality which includes calves that die aged between 29 days to 182 days of life.

According to Radostits *et al* (1996) the targets of dairy calf health and performance in calf mortality categories can be grouped into two: Mortality rates according to age groups and Annual mortality rates for calves less than 30 days of age.

Radostits *et al* (1996) also reported that a peri-natal mortality rate of 1-3%; Neonatal mortality rate of 3% and older calf mortality rate of less than 1% are considered within the normal limits for optimal herd performance. When mortalities in a given herd exceed these ranges then herd production efficiency is severely affected.

Targets for annual mortality rates for calves less than 30 days of age includes all calves born alive and the acceptable range is between 3-5%. A calf mortality rate of 21.6% in the 1st yr of life was recorded by Gitau *et al* (1994) in small scale dairy farms of Kiambu district in Kenya. In the same study, infectious diarrhea was found to be the most common cause of mortality in calves that were reported sick while poisoning with acaricides and other unidentified compounds were also associated with mortality in calves less than 3 months of age.

Accurate information of prevalence and incidence of morbidity unlike that of mortality is not easily obtainable since determining records are rarely kept. These rates can only be determined through the use of formal prospective studies. However can be determined where treatment records are available but these would not be a good measure of morbidity of animals that fell sick and went untreated since they would not be included in the estimates (Radostits *et al*, 1996).

They also classified the major epidemiological determinants of dairy disease and mortality as follows: Vigor and health at birth; level of passive colostrums immunity(indicated by ability to suckle and the time to colostrums feeding);hygiene at calving(including disinfection of the umbilicus and hygiene of the calving area.);hygiene at rearing units ;nutritional programs ;adequacy of housing ;vaccination of endemic diseases; reliability and availability of response to clinical cases and separating the sick from the healthy animals.

Economic and welfare implications of lameness in cattle include pain and discomfort thus animal stress; movement and feeding reduced thus decreased reproduction and production; limits animal's social behavior and third contributor to negative economy. Cattle lameness is associated with factors such as barbed wire fences which injure the animals as they jump in scramble for feed; dog bites both from stray dogs and farm security dogs which could equally pose the risk of rabies transmission; wet and muddy conditions which weaken the hooves and predispose them to fractures and foot rot thus lameness results; Inadequate hoof trimming; sub acute ruminal acidosis due to overfeeding with concentrates and mixing of cattle leading to molesting and bullying of weaker ones are among major contributing factors to cattle lameness. (Radostitis *et al* 1996).

The term Mastitis refers to inflammation of the mammary gland regardless of the cause. It is characterized by physical, chemical and usually bacteriological changes in the milk and by pathological changes in the gland (Radostits *et al.*,1996). Diagnosis of mastitis is based on history, physical abnormalities of udder and gross abnormalities in the milk like discoloration and presence of clots/flakes. Palpation of udder reveals enlargement and pain with the presence of clots/ flakes in the milk. Predisposing factors to mastitis include injuries to teats and udder which provide routes of access to causative agents like bacteria.; lack of teat dipping immediately after milking which leaves the teats open to entry of bacteria; inter cow spread

during unhygienic milking especially in cases of sub-clinical mastitis; slow response to diagnosis and treatment when they occur; genetic predilection factors and unhygienic environment thus increase the risk of spread. Conception rate is defined as the % number of animals that conceive following 1st, 2nd and 3rd service .Animals that get served more than three times without conception are said to be repeat breeders (*Graeme Donovan,1985*)

Reduced conception rates is of economic concern as this lead to high production costs and low revenue as many animals will require high maintenance costs at the farm with low reproductive index. Always the cumulative output benefits should outweigh input costs. (*Radostits et al, 1996*).

The age at puberty is defined as the age at which the heifer shows first estrous signs. Ideal age at puberty is 13 months to 16months (*Radostits et al 1996*).This age depends on the status of nutrition as the better the nutrition the earlier the age is achieved; breed as certain breeds achieve it earlier than others for example *Bos taurus* grow faster and achieve earlier than *Bos indicus*; and herd composition in which mixed male and female animals has shown earlier onset of puberty (*Radostits et al 1996*).

Calving interval is the duration from one calving down to the next. Normal calving interval is 365 days. Calving interval is majorly determined by the plane of nutrition and management factors. Shorter calving interval means a better plane of nutrition. The repeatability and heritability of calving interval in the cow is usually very small (*Payne, 1985*).

Post-calving health and reproductive disorders seriously affects the conception rates. In spite of treatment, performance is still lower than in normal cows. It is therefore paramount to prevent post calving health and reproductive disorders to maximize the conception rate.

The prolonged calving interval of up to 3 years is also caused by prolonged lactation length far beyond the normal 305 days during which the cows are not pregnant (*Radostits et al*, 1996).

Normally, milking length should be 305 days with the normal dry period of 45 to 90 days (*Radostits et al 1996*). The dry period is important as it allows the animal's mammary glands to regenerate and enables her to complete the building of body reserves for the next lactation. During the dry period the animal should be about 6 to 7 months pregnant. It is during this 3rd trimester that the animal should be fed more on concentrates owing to the size of the rumen. The longer the dry period the higher the production losses whereas very short dry periods shorten the milking length of the next lactation period (below 305 days). Decreased milking length lowers milk production in kg/cow/year thus reduced revenue .

According to *Radostits et al* (1996), herd efficiency is defined as the number of animals being milked at a given moment over the total number of dairy animals. This is a very important determinant of fertility index in dairy practice. At any given time 60% of the cows should be in the milking herd for higher economic returns.

CHAPTER THREE

3.1 MATERIALS AND METHODS

3.1.1 STUDY DESIGN

The type of study that I used during this research was mainly descriptive research for collecting data that would be used in solving the problem in question at the farm.

The study was carried out at the University veterinary farm located at approximately 5km from The College of Agriculture and Veterinary Sciences. The farm is about 375 acres in size with a cool and wet climate receiving an annual rainfall of about 700mm to 2000mm thus the area is high potential for dairy farming.

The farm deals with the rearing of dairy animals, pigs, poultry, goats and sheep. But my study dealt with dairy animals and analyzed their potential production capacity in relation to their current production and reproduction indices.

My target population was calves, heifers and mature dairy animals (milking herd and dry cows). Production and reproduction indices were determined and analyzed in the target population.

I collected data using semi-structured questionnaires and in-depth interviews with herdsman and technicians, observation of dairy animals as they are fed milked, handled and general management. Questionnaires were used during the study and the data obtained were tabulated. These methods were easy and simple to use and are not tedious.

Data collection instruments had been designed pretested and revised. I paid actual visits to the farm weekly for four months accurate and clear data collection using the methods listed above.

I visited the farm weekly for 3 months to observe the general management procedures, types of housing, feeding regimes, milking procedures, frequency of cleaning the pens and stocking rate,

heat detection methods, de-worming regimes, vaccination regimes and treatment programs. The general hygiene of pens were graded as poor or good based on frequency of cleaning the pens.

Milking hygiene was graded as poor or good based on description of milking procedures (whether a disinfectant was used during milking, routine cleaning of milking machines, routine emptying of the udder in mastitis cows and teat dipping).

3.2 RETROSPECTIVE SURVEY OF PRODUCTION LOSSES

A field questionnaire was administered to farm technicians and herdsmen to determine all the management practices over the past 2years. Information on nutrition , hygiene standards, and general management practices were requested for from the respondents .Details of response to clinical cases was also sought from the respondents.

3.3 EXAMINATION OF THE ANIMALS

Each of the calves, heifers and mature dairy cows under study were subjected to general physical examination to determine general health status .Demeanor was also observed. The general body condition was recorded as poor, fair or good. The animals will be examined for congenital abnormalities, physical injuries /defects and malnutrition or disease related defects.

3.4 FARM RECORDS

Age at 1st calving, milk yield records, lactation length, morbidity and mortality rates, culling rates, treatment and vaccination records, colostrums feeding quantity records and routine management practices were sampled and recorded. The efficiency of record keeping was determined during the study.

3.5 DATA COLLECTED

This included mean age at first calving; mean calving intervals (days); post calving service in days; mean lactation period (days); mean length of the dry period (days); culling rate for reproduction efficiency (%/yr); and lameness incidences.

3.6 DATA ANALYSIS

Data was analyzed using quantitative analysis with the help of descriptive statistics, percentiles and Statistical graphs were used for interpretation.

CHAPTER FOUR

4.1 RESULTS

4.1.1 USER DETAILS

The farm has 24 calves that are below one year of age,31 calves that are between 1 and 2 years,15 pregnant heifers, 39 cows in the milking herd and 43 dry cows. The farm has mainly four breeds: 58 Friesians,40 Guernseys,22 Jerseys and 32 Ayshires. All the animals under study had names for easy of handling especially during milking as they were called by names.

4.2 GENERAL OBSERVATIONS

Calves under one year old were in a good body condition but those between one and two years of age had fair body condition.

Feeding troughs were dirty and had moulds which were indicative of no or irregular cleaning.

Calf pen floors were covered with wet hay straws which were not regularly changed which predisposed the calves to frequent pneumonias due to cold.

Six calves had pressure sores due to lack of beddings .There was slurry accumulation in the calf pens and overcrowding in the weaner calf pens .30% of the calves had diarrhea indicative of faulty feeding and watering due to hygiene status of feeding and watering troughs which had moulds and algae.

4.3 MILKING HERD AND HEIFERS

It was observed that 42 of the animals were in good body condition, 20 had fair body condition and 37 of the cows had poor body condition. Body condition score was based on extent of rib exposure.48 of the cows had either small or large wounds on their bodies and 67 of the animals

had blue ticks (*Boophilus* species) on their bodies. The feet of all the animals had nicely groomed feet and only two animals had splayed toes which could have contributed to incidences of lameness.

4.4 NUTRITION AND REPRODUCTIVE MANAGEMENT

All the respondents interviewed in this study confirmed that all calves born are exclusively fed on colostrums for one week .Afterwards the calves are then bucket fed. It was found that the milk was not warmed to body temperature before it was given to the calves. When the calves reach three weeks of age, they are fed on milk replacer in form of pellets. Weaning is done at one month of age in which the calves are introduced to hay, silage and mineral licks. The calves are fed twice a day.

Calves are occasionally de-wormed with albendazole oral suspensions (once after three months).The respondents interviewed said that all the heifers are left free range to graze on the extensive fields. At midday they are then supplemented with hay mixed with dairy meal. Mineral licks are availed in blocks and these animals have access to these at all times.

Heat detection was done by herders during the day only whose number was so small to note all the heifers that could be on heat on a given day. At night only two guards were around to guard the animals against rustlers and none seemed to take note of those animals that could come on heat at night. In addition, these herders are not trained on heat detection techniques. This could be a contributing factor to prolonged age at first service was noticed in most animals at the farm.

The respondents interviewed in this study said that the milking herd is fed twice a day starting with hay in the morning mixed with molasses then silage occasionally when available in the afternoon. Dairy meal is only given to the animals during milking .Feeding is done uniformly without production capacity consideration. Use of strip cup was only done on suspects and

irregularly. Therefore subclinical mastitis could be the key challenge at the farm since all the animals were not screened before milking. All the respondents confirmed that no teat dipping was done immediately after milking to counteract the risk of bacterial invasion of teats immediately after milking. Milking machine was cleaned immediately after milking but was not done just before milking.

The 305 days lactation length was not observed by those milking as they confirmed milking the animals even if they were producing 2 liters of milk. This prolonged the calving interval and lowered the number of calves per an animal's reproductive life.

4.5 CATTLE LAMENESS

8 of the respondents interviewed in this study attributed the high incidences of lameness to injuries during animal handling and when animals jump over fences in competition for feed with 20% of the respondents attributing it to dog bites. Those who attributed lameness to dog bites said 90% of the bites were from stray dogs with only 10% attributing it to bites by security dogs belonging to the farm.

All the herders had done less to control the predisposing factors to lameness with 90% of them claiming financial constraints as the hindering factor to erection of strong brick wall fence to curb the lameness hazards.

4.6 MORBIDITY AND MORTALITY RATES

Respondents interviewed in this study indicated that the health challenges facing the farm included pneumonia especially in calves which accounted for 60 % (48/80) Of the deaths in calves and to about 4 % (4/150) in adults. Diarrhea was found to be the second most common cause of deaths in calves at the farm contributing to about 30%(24/80)of deaths in calves. Six calves had dermatomycosis and sodium hypochlorite spray was reportedly done once a month.

Sick animals were isolated from the rest but at a close proximity to naïve herd which did not guarantee complete quarantine

All respondents confirmed that carcasses took as long as 3 days before they could be disposed off due to the bureaucracy involved in disposal from the university farm management section. This was a great risk to contamination of the environment for the animals and the animal attendants at the farm.

In older animals common causes of death were found to be Pneumonia (4%), Babesiosis (6%) Anaplasmosis (8%), Foot and Mouth Disease (8%) Lumpy skin Disease (4%) and others which include fractures, dystocia, milk fever and old age.

Most animals were treated late from the time of reporting clinical cases due to bureaucracy involved in the procurement of drugs.

The animals were vaccinated against Foot and Mouth disease twice a year and whenever there was an outbreak. Lumpy skin disease was also vaccinated against once a year when there is an outbreak. Spraying for the control of ectoparasites was done once a month using triatix but this seemed not to have done effectively as most animals still had blue ticks.

4.7 THE MOST PREVALENT DISEASES

A survey was done to ascertain the most prevalent diseases in the farm from November 2012 to November 2013 that affects productivity of the farm and the results illustrated (Figure 4.10).

4.8 AGE AT FIRST SERVICE/AGE AT PUBERTY

From the respondents and examination and analysis of farm records it was found out that the onset of puberty is delayed (prolonged) since most animals reach puberty at a late age of even 18 to 45 months which was a large deviation from the normal 14 to 16 months in which the animals

are expected to deliver first at the age of 24 months. This late age at first service was attributed to poor nutrition of the heifers and poor heat detection methods.

The number of services per conception in the first service was also evaluated to determine the cost inputs during inseminations which are of economic concern. (Figure 4.2)

There was a clear indication from the data analyzed that about 50 out of 100 cows served when they first come on heat get pregnant whereas the rest are either served twice(28%),three times(16%)or four times(5%). This leads to repeat breeding which is of economic concern. (Figure 4.3).This is a clear indication that as the herd ages, the number of services per conception increases considerably, leading to a great economic disadvantage.

4.9 MILK PRODUCED PER COW PER LACTATION LENGTH

A sample size of 25 lactating cows was examined and tabulated, later analysed and represented in a graph. The sample size composed of 10 Friesians, 6 Ayrshire, 5 Guernsey and 4 Jersey of different parities. (Figure 4.4).

On average each cow was producing an average of 6 litres per day. The above analyzed records show that the animals are below the average dairy milk production of 10500 litres per lactation length. This was a great economic loss for the farm. This was indicative of how the farm was operating at economic losses despite the highly paid farm workers and cost of animal feeds. This highly reduced milk production was majorly due to poor nutrition and high incidences of clinical cases which could have been prevented.

4.10 THE CALVING INTERVAL

The calving interval of all the cows which had given birth more than twice was examined. The results are tabulated in both figures 4.5 and figure 4.6.

Post-calving health and reproductive disorders seriously affects the conception rates up to 23% of cattle have been reported. In spite of treatment, performance is still lower than normal cows. It is therefore paramount to prevent the disorders to maximize the conception rate.

The prolonged calving interval of up to 3years was also caused by prolonged lactation length far beyond the normal 305 days during which the cows were not pregnant. (Figure 4.6).

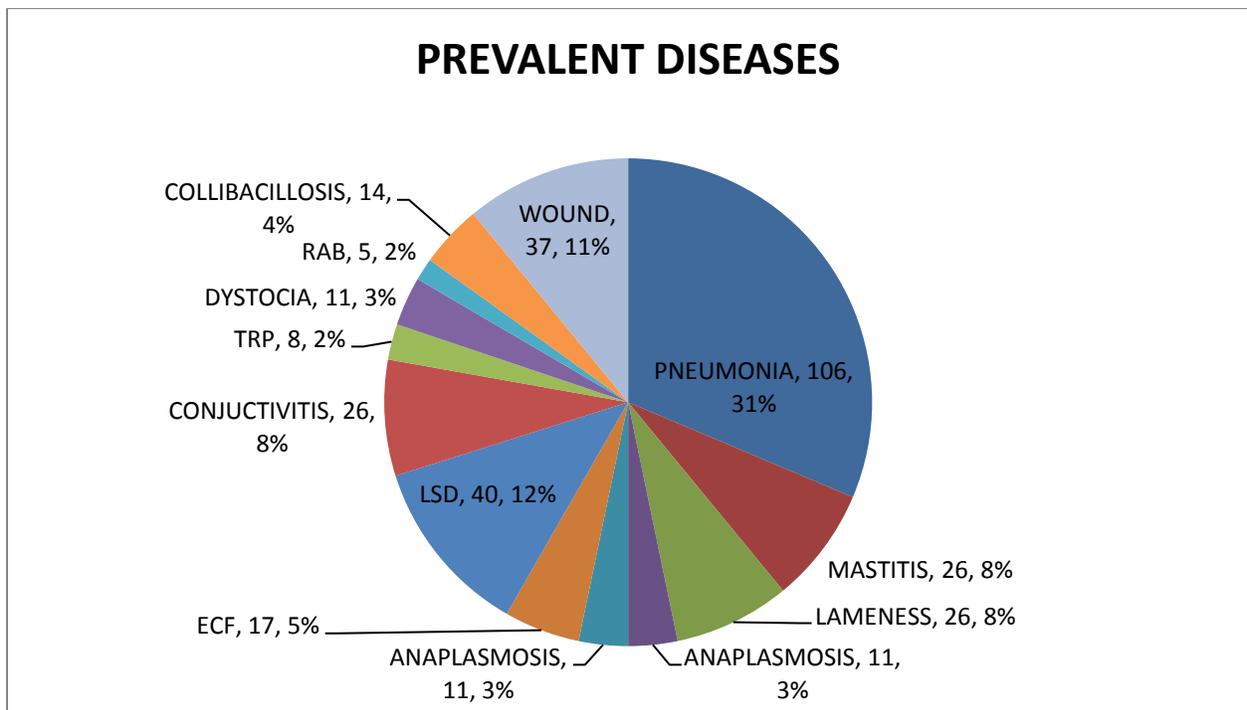


Figure 4.1-a pie chat showing the most prevalent diseases in the farm

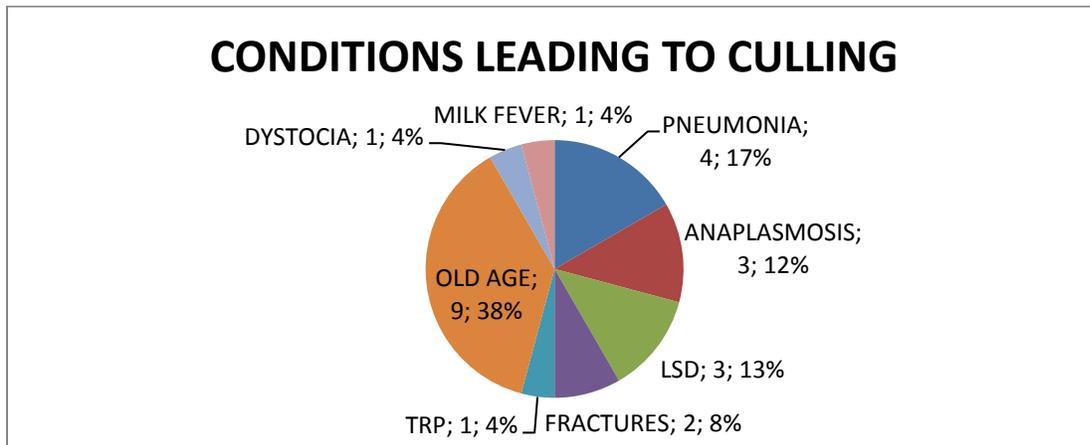


Figure 4.2.a pie chat showing diseases and conditions leading to culling in the farm

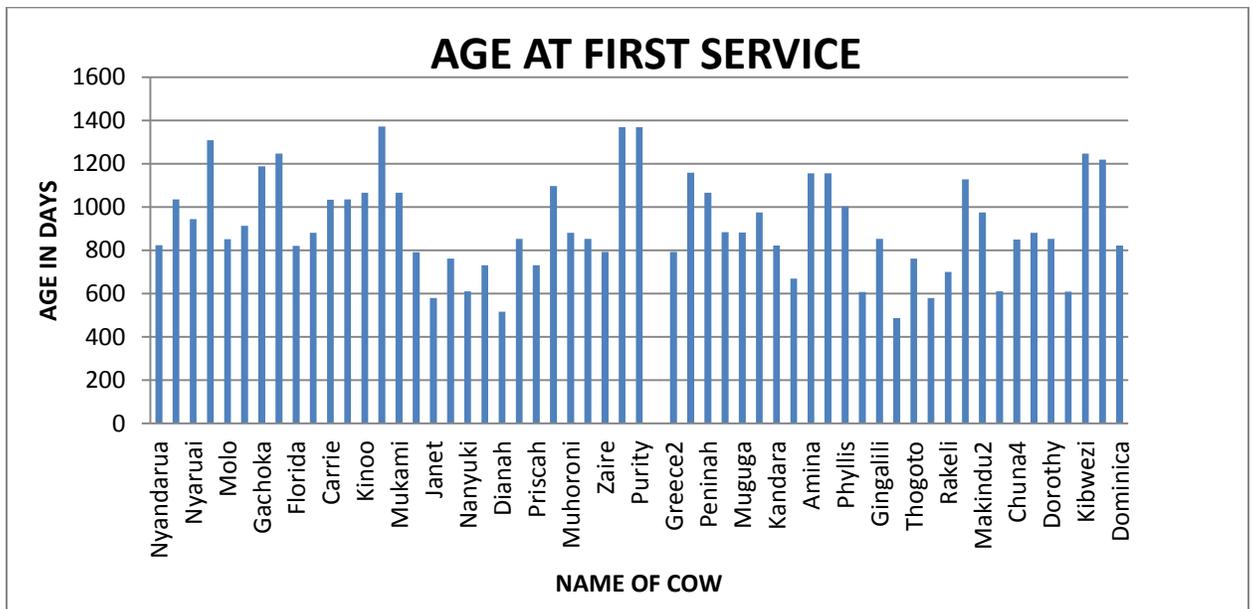


Figure 4.3 showing age at first calving of a sample of heifers

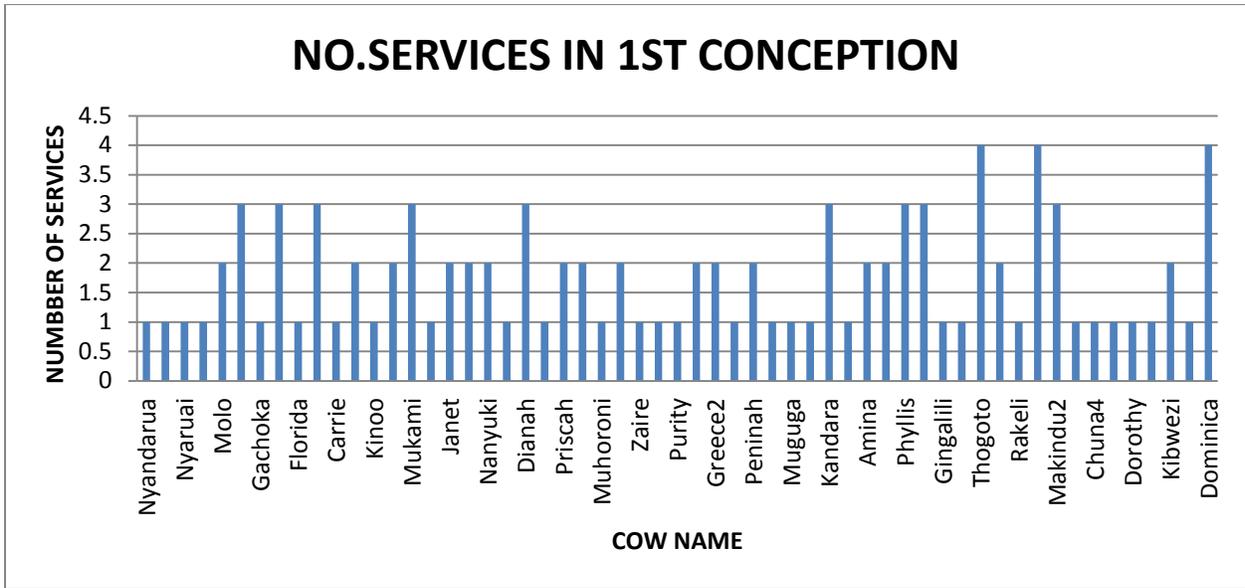


Figure 4.4. shows number of services in the first conception of a sample of heifers

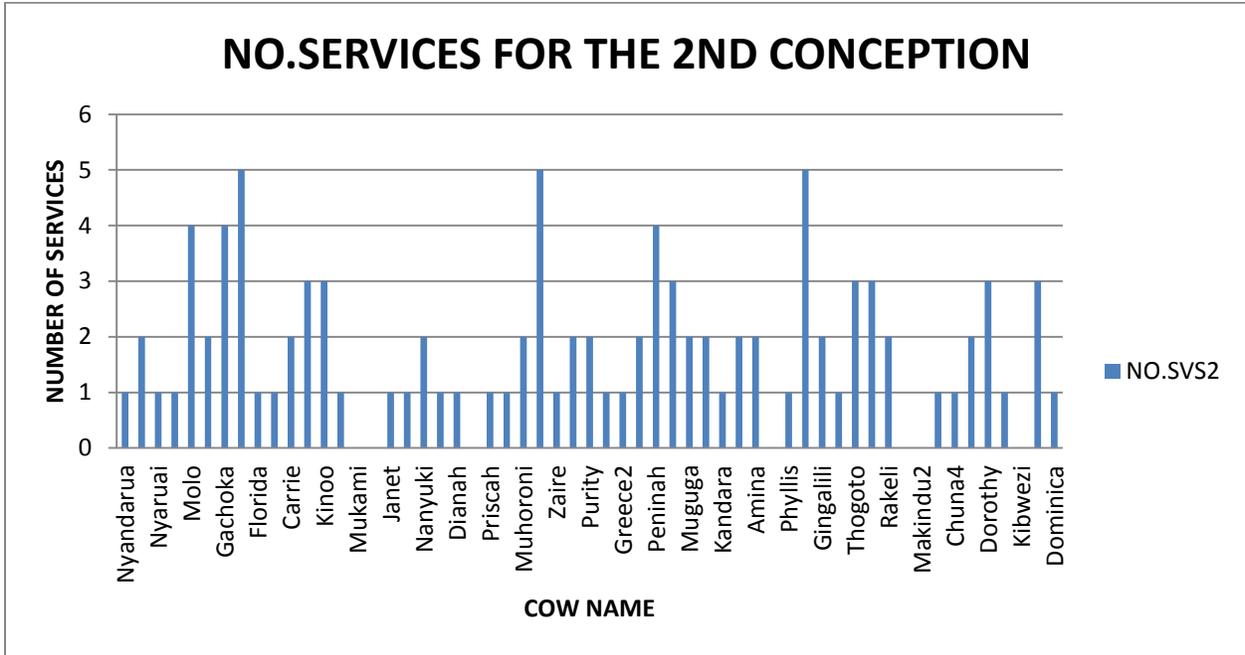


Figure 4.4.1 a graph showing number of services for second conception

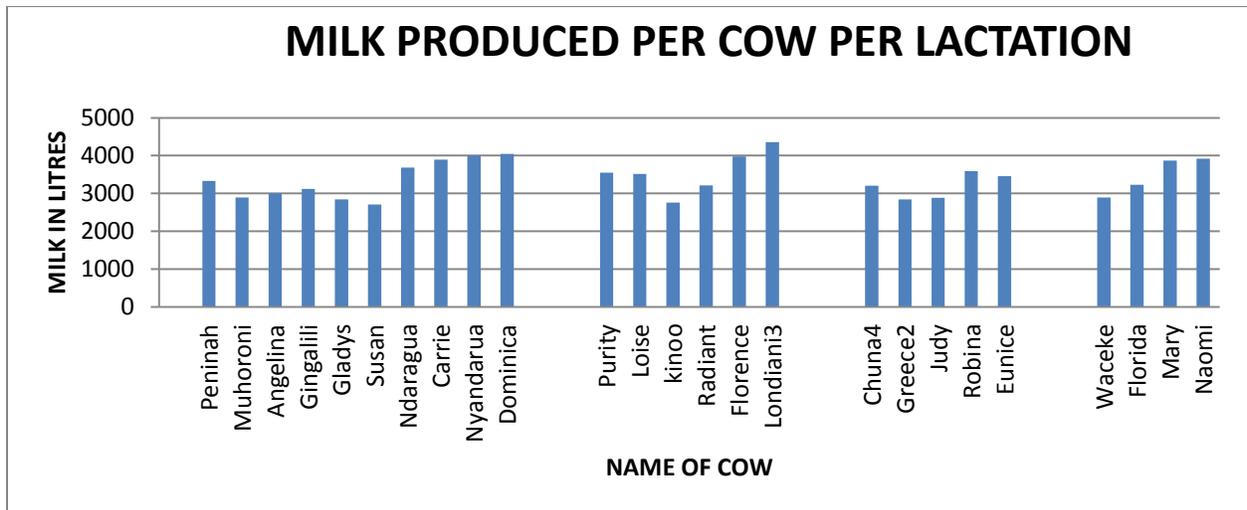


Figure 4.5. showing the amount of milk produced per cow per lactation

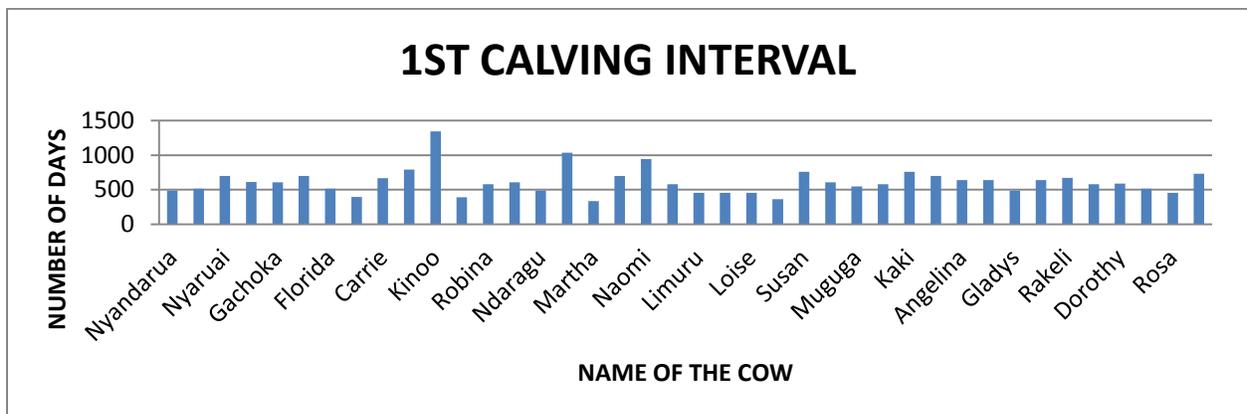


Figure 4.6. showing the first calving interval of a sample of animals

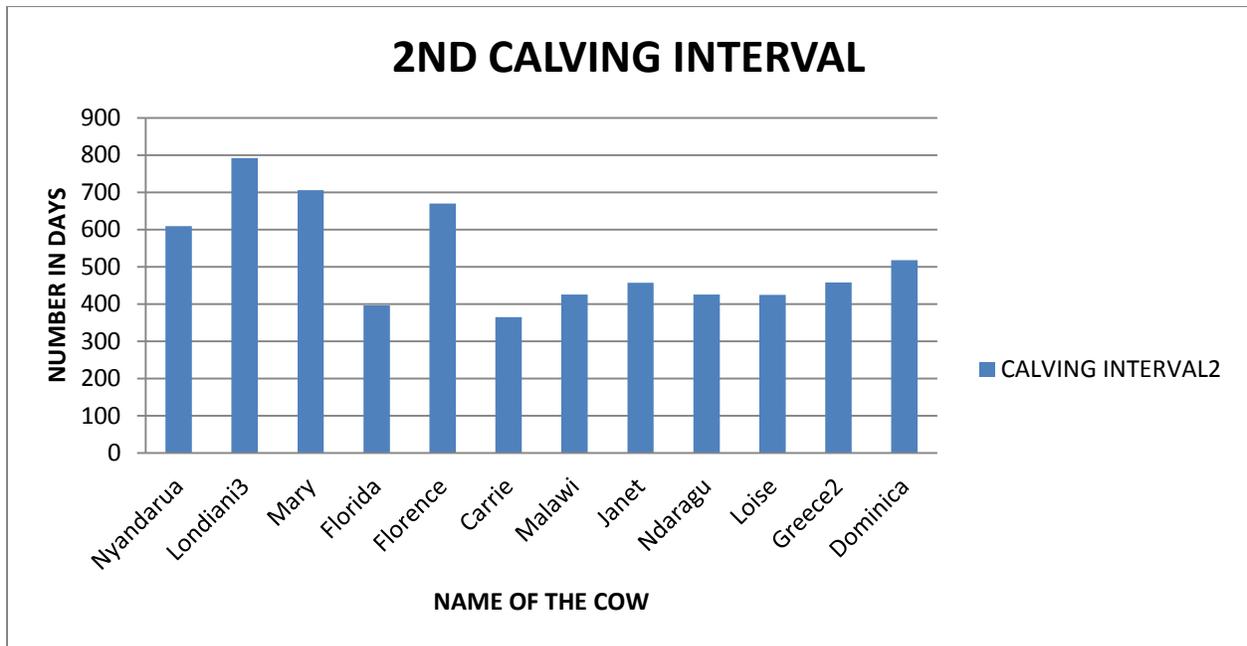


Figure 4.7.showing the second calving interval

CHAPTER FIVE

5.1 CONCLUSION

Malnutrition was seen as the major challenge to production at the farm due to fluctuating weather conditions. This was complicated by the irregular supplementary feeding with concentrates.

The choice of fencing materials was poor as they were injury hazards to the animal.

Milk production per cow per lactation length was extremely low compared to the cost of inputs.

Screening for subclinical mastitis was inadequate and teat dipping was not practiced thus a great risk to mastitis spread. Improper semen storage and poor heat detection methods were seen as the major causes of return to heat.

There were inadequate farm records about birth, health and breeding.

There were general unhygienic conditions at the farm from the calf pens, heifer herd stalls and dairy herd milking pens and feeding troughs.

There were prolonged ages at first service, calving intervals, lactation length and other reproductive indices.

These shortcomings need to be addressed to improve production and productivity of the dairy herd at the University Veterinary Farm.

5.2 RECOMMENDATIONS

The farm management should expand forage production during the rainy season and store the excess in form of silage for use during the dry season. The animals should be fed at all times together with mineral supplementation as nutrition is necessary for good dairy performance

The dairy animal handlers should be taught on the significance of keeping records of birth, breeding and health for easy management. There should be regular vaccination to prevent viral and bacterial outbreaks like Anthrax, Black quarter, Foot and Mouth disease and quick response to clinical cases to minimize deaths from preventable diseases. It is also important that there's screening of the animals regularly for subclinical mastitis to avoid further spread to the naïve herd. The farm should keep proper records to ensure normal lactation length of 305 days is achieved, calving interval of 365 days, dry period of 60 days and other reproductive parameters discussed above.

General hygiene should be improved at the farm from the calf pens, heifer herd stalls, milking pens and feeding troughs to avoid contraction of diseases which can be prevented with basic hygiene at the farm.

REFERENCES

1. Broom D. M & Frazer (2005), *Farm animal behavior and welfare*, 3rd edition ,page 288-209
2. Gitau G.K, JM Osumo,D. Murioki (1994)-*factors affecting small scale dairy farming in Kiambu District , Kenya*, pages 167-178
3. Janes R. Gillespie, *Animal science*, Delmar publishers.Journal on animal health.
4. Karanja A. M, 2003: The dairy industry in Kenya.Pages 5-10
5. Mogoia EGM, Wabacha J.K, Mbithi PMF and Kiama S.G (2005): An overview of animal welfare issues in Kenya, the Kenya veterinarian (29).
6. Nguhiu-Mwangi, Aleri JW, Mbithi PF and Mogoia EGM: Indicators of poor welfare in dairy cows within smallholder zero-grazing units in peri-urban areas of Nairobi, Kenya.
7. Otto Radostits, Clive C. Gay, Peter D Constable (1996)-*A textbook of veterinary medicine; diseases of cattle, horses, pigs and sheep*
8. Payne W. J. A (1985), *Introduction to animal husbandry in the tropics*, 4th edition. .
9. Roy Milleret (1980) Losses in production ;*agriculture in the topics*, volume 11- A journal on animal health and industry.
10. Thorpe, 2000: *Dairy development in Kenya; The past, the present and the future*. Annual symposium of the animal production society, March 2000.
11. Graeme W Donovan (1985) *Employment generation in agriculture*, a study in Mandya District, South India

QUESTIONNAIRE

RESEARCH QUESTIONNAIRE-EVALUATION OF PRODUCTION LOSSES OF DAIRY ANIMALS AT KANYARIRI VETERINARY FARM

NAME OF HERDSMAN.....DATE.....

Kindly fill this questionnaire to the best of your ability.

I. OBSERVATION

CALF MANAGEMENT SECTION

- i. General body condition of the calves. Good[] Fair[] Poor[]
- ii. Presence of any injuries on the body; Yes [] which ones..... No []
- iii. Any skin conditions affecting the calves; yes [] No[] if yes name them
- iv. Hygienic conditions of the feeding troughs; Good [] Poor []
- v. Are the feeding troughs raised from the ground? Yes[] No[]
- vi. Nature of the feeds given to the calves.....
.....
.....
- vii. Are the calf pens crowded? Yes [] No []
- viii. Hygienic conditions of the calf pens ,Good [] Poor []

HEIFER HERD

- i. General body condition of the heifers. Good[] Fair[] Poor[]
- ii. Presence of any injuries on the body; Yes [] which ones..... No []
- iii. Any skin conditions affecting the heifers; yes [] No[] if yes name them
- iv. Hygienic conditions of the feeding troughs; Good [] Poor []
- v. Are the heifers pens crowded? Yes [] No []

MILKING HERD

- i. General body condition of the milking herd. Good[] Fair[] Poor[]
- ii. What materials are used in fencing the farm?.....
.....
- iii. Any hazards posed by the fencing materials to the animals?.....
.....
- iv. Presence of any injuries on the body; Yes [] which ones..... No []
- v. Any skin conditions affecting the milking herd, yes [] No[] if yes name them.....
.....
.....

- vi. Hygienic conditions of the feeding troughs; Good [] Poor []
- vii. Nature and hygiene of the milking parlor. Good[] Poor [] if poor describe.....
.....
.....
- viii. Any feeds given to the animals during milking? Yes [] No []
- ix. Are there cow sheds? Yes [] if Yes give general condition ...Good[] Fair[] Poor[] ,No []

II. QUESTIONS

CALF MANAGEMENT SECTION

- i. Do you keep records of the calf management unit? Yes[] No[]
- ii. Do you take the birth weights of the newborns? Yes [] No [] if No why?
.....
.....
- iii. Are the neonates allowed to suckle on their own or bucket fed?
.....
.....
- iv. Do you warm the milk before giving to the calves afterwards? Yes[]No[]
- v. How often do clean the calf pens?

- vi. Do you control dermatological conditions in calves? Yes[] if yes how?.....
No[]if No why?.....
- vii. What is the feeding regime used in feeding the calves?.....
.....
.....
- viii. Do you deworm the calves? Yes []if yes how often?.....No[] if No why?.....
- ix. Is the weaning weight and age of the calves taken?
.....

HEIFER HERD

- i. What is the feeding regime of the heifers?
- ii. What is the usual age at first service/heat?
- iii. Which methods do you use in heat detection?.....
.....
- iv. Are those people detecting the heat trained? Yes[]No[]
- v. Which method do you use in breeding the heifers?
.....
- vi. If AI used what is the source of the semen?

vii. Are the inseminators trained? Yes[] No[]

viii. What is the time since the onset of estrous signs to insemination?

.....

ix. What are some of the management factors affecting the heifers that could lead to delayed age at first

service?.....

.....

.....

x. MILKING HERD

i. What is the feeding regime for the milking herd?.....

.....

.....

ii. Are the cows fed according to production capacity or are fed uniformly?

.....

iii. In your opinion what are the predisposing factors to cattle lameness in the farm?.....

.....

.....

.....

iv. Is the water feeding troughs hygiene to standard? Yes [] No []

- v. What are some of the endemic diseases/conditions affecting the milking herd?.....
.....
.....
- vi. How fast does the farm management respond to clinical cases reported to them by the herdsmen? Slow response[] Quick response []
- vii. Do you isolate the sick animals from the rest? Yes [] No []
- viii. Do you use the strip cup before milking? Yes [] No []
- ix. Do you teat dip after milking? Yes [] No []
- x. How often do you clean the milking machine?
.....
- xi. What is the approximate lactation length for most cows in the farm?
- xii. In your opinion what are some of the contributing factors to the lactation length indicated above?.....
.....