COLLAGE OF AGRICULTURE AND NATURAL RESOURCE

DEPARTMENT OF ANIMAL PRODUCTION AND TECHNOLOGY

ASSESSMENT OF LACTATION PERFORMANCE AND RELATED CONSTRAINTS OF DAIRY COWS IN WOLKITE UNIVERSITY DAIRY FARM

By:-

1. ABABA DIRO ……...…001/11
2. ABDE TEMAM ……..005/11
3. AYAYU GETAHUN ……....078/11
4. SAMUEL YOHANNES ……..303/11
5. SISAY ABERA ……..…316/11

ADVISOR: - MR. BELACHEW ZERFU (MSc)

A SENIOR RESEARCH

SUBMITTED TO THE DEPARTMENT OF ANIMAL PRODUCTION AND TECHNOLOGY, COLLEGE OF AGRICULTURE AND NATURAL RESOURCES, WOLKITE UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE COURSE SENIOR RESEARCH PROJECT

WOLKITE, ETHIOPIA

AUGUST, 2021

APPROVAL SHEET

Wolkite University College of Agriculture and Natural Resource

Department of Animal Production and Technology

Senior Research Project Approval Form

As *Senior* Research advisor, I hereby certify that I have read and evaluated this *Senior research work* prepared, under my guidance, by Abebe Diro, Abde Temam, Ayayu Getahun, Samuel Yohannes and Sisay Abera; entitled "Lactation performance and related constraints of dairy cows wolkite university dairy farm**".** I recommend that it be submitted as fulfilling the *Senior Research* requirement.

1. _____ _____ _____

2. _____ _____ _____

3. _____ _____ _____

4. _____ _____ _____

5. _____ _____ _____

Name of students Signature Date

Approved by:

Belachew Zerfu _____ _____

Name of Advisor Signature Date

_____ _____ _____

Name of Dep't Head Signature Date

Table of Contents

List of Tables

LIST OF ABBREVIATIONS

AI	Artificial Insemination
CI	Calving Interval
CSA	Central Statistical Agency
GDP	Gross Domestic Product
HEIL	Higher Education Institutions Level
ILRI	International Livestock Research Institute
LL	Lactation Length
L	Liter
MOA	Ministry of Agriculture
N	Number
SE	Standard Error
WKU	Wolkite University

AKNOWLEDGEMENT

First of all we would like to thank God who help us to do well. We want to express our great full thanks for our advisor Mr. Belachew Zerfu (Msc) for his great academic advice and guidance on our work and for his friendly comments on our senior research project. Also, we thank all our department staffs for their support in every direction of our works. Finally we would like to thank all of our classmates.

-

ABSTRACT

The study was conducted in wolkite university dairy farm, Guraghe zone, SNNPR , Ethiopia with the objectives of assessing the milk yield, lactation length and relate constraints of dairy cows. In the university, there was only one farm and all the dairy cows which have recorded data were used for the analysis. We used questionnaires to collect data. The primary aims of the farm were, for research purpose, students' practical study and income generation. The result of the study showed that, 70.83% of farm workers were males and 29.16% of them were females. The total numbers of local and cross breed cattle in the farm is 10 and 50, respectively. Based on the farm record the overall estimated average daily milk yield of cross breed cows is 12.5 liters and 3.5 liters for local cows. The average lactation length based on the farm record was 250 days, for crossbred cows and 175 days for local cows. The major calf rearing practice in the study area was partial suckling for local breed cows and bucket feeding for crossbred cows. Major constraints that reported for limited lactation performance of dairy cattle in the farm were awareness problem, lack of improved breed, disease prevalence (mostly tick and mastitis), climate change and poor management are 5%, 10% 15%, 30% and 40%, respectively. In general, this study showed that despite the untapped dairy cattle population and climate change for dairy cattle development, the performance of dairy production in the study area was very low due to many constraints. Therefore, coordinated efforts are required to address the constraints.

1. INTRODUCTION

1.1. Back ground

Ethiopia has the largest livestock inventory in Africa and possessed 59.5 million heads of cattle, 30.7 million heads of sheep, 30.2 million heads of goats,11.01 million heads of equines,1.21 million heads of camels and 56.56 million of poultry (CSA, 2016/17). Livestock production is an integral part of agricultural activities in Ethiopia. The livestock sector accounts for about 40% of agricultural GDP and 18% of overall GDP in Ethiopia (CSA, 2004).to old Currently livestock contribute 35-49% of agricultural GDP in Ethiopia (Sintayehu *et al*., 2008). Moreover, livestock contributes about 60-70% of the livelihoods of the Ethiopia population (Ayele *et al*., 2000; Tessema *et al*., 2010).

In Ethiopia dairy production depends mainly on indigenous livestock genetic resources; more specifically on cattle, goats, camels and sheep. Cattle have the largest contribution (81.2%) of the total national annual milk output, followed by goats (7.9%), camels (6.3%) and sheep (4.6%), (CSA, 2009). Despite its potential for dairy development, productivity of indigenous livestock genetic resources in general is low, and the direct contribution it makes to the national economy is limited. A report by CSA (2015) indicated that the total production of cow milk is about 3.07 billion liters, and this translates to an average daily milk production/cow of 1.35 liters/day. As a result the per capita milk consumption of the country is only (MoA, 2012), which is much lower than Africa and world per capita average of 27 kg/year and 100 kg/year, respectively.

The country has great potential for increase livestock production in domestic and export market. However, development of the dairy sector has been constrained by inadequate nutrition, diseases, lack of service like extension service, and weakness of policy to improve animal genetics/breeding, market and processing. Different authors have been described constraints at different level that affect livestock production in the country. Berekedu *et al* (2000) indicated that in adequate feed and nutrition, widespread disease, poor breeding stock, and inadequate livestock policies with respect to credit, extension, marketing and infrastructure as major constraints affecting livestock performance in Ethiopia.

1.2. Statement of the problem

Ethiopia has huge livestock populations; first in Africa and tenth in the world. Dairy cattle production as one component has significant role in livelihoods of smallholder farmers. In pastoral area dairy production is essential components of their food and income generation. Dairying in Ethiopia is constrained by different factors like feed shortage, poor genetics, climate shocks, poor veterinary services, poor recording system and others. Authors reported such kind constraints differed from places to place or production system to production systems. In the compound of Wolkite University there is high demand for milk by both students and University staffs. But this high demand of milk is not satisfied by amount of milk which is supply from WKU dairy farm. There was also two researches done by Animal production and technology department staffs in the farm with related title. Our interest majorly to do this research is to know about lactation performance of dairy cows. We want to know overall reasons or factors that pull the amount of milk supply is to be low. And also we want to assess the constraints that hindering the productivity of wolkite university dairy farm.

1.3. Objective

1.3.1. General objective

- To Assess the lactation performance and related constraints in Wolkite University dairy farm.

1.3.2. Specific objectives

- To discuss the milk yield of both local and cross breed cows
- To discuss lactation length of both cross breed and local cows

2. LITERATURE REVIEW

2.1. Lactation performance

The lactation performance of dairy cattle is usually measured by determining the total milk yield per lactation or per year, average daily milk yield, lactation length, lactation persistency, and milk composition. Generally, the reproductive performance and lactation performance of dairy cattle are closely associated with each other. Breeding failure has a clear negative influence on milk production and farm income and determines the future sustainability of a dairy farming operation. Milk production level and lactation persistency are crucial factors determining the appropriate calving interval (Arbel *et a*l., 2001). On the other hand, the costs of fertility depend on the stage of lactation and the shape of the lactation curve. Cows normally have a lactation curve that loses 8 to 10% per month after the peak, but those rare animals whose production declines by only 4% or so may make a longer calving interval justified (Esslemont, 2003).

2.1.1. Milk yield

Milk production is influenced by several genetic and environmental factors. Among the environmental factors, the quantity and quality of available feed resources are the major ones (Zewdie, 2010). Other factors influencing the trait are the breeding goals viz. breeding for draught purpose, disease resistance, tolerance to tropical climates besides poor nutrition and management of the cattle are some of the factors influencing lower milk yield (Desta, 2002). Milk production potential of indigenous cattle such as Boran, Arsi and Fogera is low and it ranges from 494-809 kg per lactation. For instance, average milk production per cow per day in Western Gojam Zone is about 1 litter per day, resulting in an estimated milk production of 46,710,335 liters per lactation for all lactating cows (CSA, 2005). Milk yield performance of some zebu and crossbred dairy cattle are presented in **Table 1.**

Table 1: Average milk yield performance of zebu and cross breed cows

Breeds	LL in days	Daily milk yield in liters	Sources
Horo	-	1.5± 0.03	Demissu *et al*.,(2014)
Boran	211.1±7.1	2.2	Kedija , (2007)
Freisian cross Arsi	306.94±3.58	6.38±0.08	Wassie *et al*.,(2014)
Freisian cross Boran	307.47±3.92	7.02±0.11	Wassie *et al*.,(2014)
Horro cross Jersey	247.11±22.64	5.6±0.07	Demissu *et al*.,(2014)

2.1.2. Lactation length

In most dairy farms, a lactation length of 305 days is commonly accepted as a standard. However, such a standard lactation length might not be feasible for smallholder dairy cows where in most cases the lactation length is extended considerably (Msangi *et al*., 2005). Lactation length of animals depends mostly on the management objective of the herder; the herder may prolong the lactation length for the sake of continuous milk supply to the household or dry off the cow at early stage of lactation for breeding purpose (Msangi *et al.*, 2005).

2.1.3. **Calf rearing practices**

The major calf raring systems practiced in the most dairy farms are restricted partial suckling and bucket feeding. Bucket feeding was practiced with households who own crossbred cows only; whereas partial suckling was mainly practiced with households who own local zebu cows. The major reasons for termination of suckling (weaning) were cow refusal and refusal of calf. The methods of pre-weaning milk feeding were partial suckling and bucket feeding. The main reason for weaning calves was to prepare the cow for mating to get more milk and give rest time for next calving. The systems of weaning calves as reported by milk producers were isolation of calves from cows and smearing of teats with manure (Tsegaye *et al.,* 2015)

2.2. Constraints of dairy cows

Ethiopia has great potential to increase dairy production, both for local use and export market. However, development of the sector has been constrained by inadequate nutrition, diseases, lack

of support service such as extension service, insufficient data with which to plan improved services, and inadequate information related to how to improve animal breeding, marketing and processing. Moreover, the high concentration of animals in the high lands, together with the fact that cattle are often kept for status, reduces the economic potential of the Ethiopia (KAUSTRAS, 2007, Tesfaye, 2009). Birhanu (2006) indicated that inadequate feed, widespread diseases and poor health, poor breeding stock, and inadequate dairy cows policies with respect to credit, extension, marketing and infrastructure as major constraints affecting locational performance in Ethiopia.

The prevailing production constraints in dairy cows of the country would vary depending on the agro-ecology of the areas where activity is carried out. Moreover it has been long recognized that the limitation to increase dairy development (increase production and productivity) in Ethiopia are multi- dimensional (Yohannes, 2007). According to Tesfaye (2009), dairy production constraints can be grouped in to soicio- economic constraints encompass policy issues, land tenure, institutions, marketing and budget. The major problems that were grouped as technical constraints include animal health, feed shortage and poor production performance of local breeds (Markos, 2006; Gebremedin, 2007). .

2.2.1. Nutritional problems

Feed is the most important input in dairy production, and its adequate supply (quality and quantity) throughout the year is an essential prerequisite for any substantial and sustained expansion in dairy production. The major dairy feed in the country are grazing natural pasture, crop residues and agro-industrial by- products, and cultivated pasture, forage crop species (Abebe, 2008). Under nutrition and malnutrition are major factors constraining dairy production in Ethiopia. Nutrition stress causes low growth rates, poor fertility and high mortality, which is compounded by disease. About 76.6% of feed intake issued to meet the animals maintenance requirement and only 20.4% is utilized for production (Mukesa Mugarawa *et al*., 2002; Tesfaye, 2009).

The area which is under improved pasture and fodder crops is significant and natural pasture are overgrazed causing invasion of inferior species like which are able to survive under heavy grazing pressure (Markos, 2006). According to Weldgebriel,(2007), crop resides and post-

harvest grazing contribute 0.5, 1.84 , and 0.404 million tons out of total dry matter feed resources of 41.66 million tones available annually in the high lands of Ethiopia. However, these crop residues are characterized by low metabolized energy and digestible contents, which sometimes barely cover animal maintenance requirements (Anene, 2008).

of humid hot conditions are more severe than the dry hot. High temperature and relative humidity reduces evaporative cooling, so under hot and humid conditions the dairy cattle cannot dissipate sufficient body heat to avert a rise in body temperature. The dry hot condition can be relieved by providing sprinklers and fans, whereas, in the humid hot case the cows solely rely upon evaporative cooling in the form of sweating and panting (West, 2003).

2.2.2. Animal health

Animal health and improved management is also one of the major constraints of dairy cattle in Ethiopia which cause poor performance across the production system. Many of the problems result from the interaction the technical and non-technical constraints themselves. Poorly feed animal develop low diseases resistance, fertility problem, partly be caused the animal health care system relies heavily on veterinary measures, poor grazing management system continue to cause high mortality and morbidity, many of the disease constraints which effect supply are also a consequence of the non-technical constraints (Gizachew, 2007).

2.2.3. Water problems

Water is a scarce resource in many of rural area of Ethiopia. Both people and their dairy cattle commonly travel long distance daily to obtain the water they need. Much time and energy is expended during daily trekking to distant water supplies. As result, animals condition and their productivity is reduced (Abebe, 2008). In general most animals have to drink water at least every day to be productive (Ayele *et al.*, 2002). Therefore the provision of water is primary important in all animal production system.

2.2.4. Poor genetic potential

Mating in the context of animal breeding means pairing of female and male animals for the purpose of reproduction on a farm using natural or artificial (AI) methods (Willam and Simianer, 2011). The genetic of Ethiopian livestock have involved largely as result of natural selection

influenced by environmental factors. This has made the stock better conditioned to withstand feed and water shortage, diseases challenges and harsh climate. But the capacity for the high level of production has remained low (Yilma, 2011). Artificial insemination (AI) is a process in which sperm is collect from male animals and artificially introduced into the female reproductive tract for the purpose of fertilization (Ball and peter, 2004). Artificial insemination offers several potential advantages over natural service, of these, the reason most commonly advocated is as a means of genetic improvement and others include cost effectiveness, disease control, safety breeding, flexibility, and fertility management (Ball and peter, 2004; Gebremedin, 2005; Holm *et al.,* 2008).

2.2.5. Record keeping system problem

Record keeping is an important part of any dairy farm enterprise. Keeping records allows farmers to improve production in areas such as milk yield, fat and protein yield, fertility in cows, decrease levels of mastitis, and also management practices such as culling, feeding, and methods used to milk cows. About 79 and 94% of the urban and mixed crop livestock producers, respectively, did not have any record keeping schemes. Only 21.2 and 6% of the urban and mixed crop–livestock producers, respectively, were found recording some reproduction parameters using informal sheets (Sintayehu, Y *et al*., 2008). Record keeping in Ethiopia is not well practiced as the owners do not have adequate experience and are not aware of the benefits (Sintayehu *et al*., 2008). It is therefore essential to provide formal training on this useful practice to dairy owners in both the urban and rural areas. Same author revealed that majority of dairy producers are literate, this practice should not be considered difficult to extend especially in urban area.

2.2.6. Climate change

The climate in a certain geographical area, particularly temperature and relative humidity, greatly influence the production potential of the animals (McManus *et al*., 2011). In lactating cows body heat production is associated with increases milk yield because metabolic processes, feed intake and digestive requirements increase with yield (West, 2003). The heat stress to which a lactating cow is exposed is a combination of heat accumulated from an environment and a failure to dissipate heat associated with metabolic process (Usman *et al*., 2013). According to West (2003)

the temperature (28°C) at a high humidity (80%) showed milk composition, heat production, evaporative heat loss and time spent lying down than when humidity was low (40%). The effects

3. MATERIAL AND METHODS

3.1. Description area of the wolkite university dairy farm

The study was conducted in Wolkite university dairy farm. The farm is located in wolkite University compound, Guraghe Zone, SNNPRS of Ethiopia. Wolkite town is located on the paved Addis Ababa to Jimma highway, in the Guraghe zones of the SNNPRS, Ethiopia. It is the largest town in this zone and found at 158 km away from Addis Ababa and the study area is 10 km away from wolkite town. The assessment areas are generally characterized by mid-altitude climate with mean annual rainfall of 1244 mm and range of temperature varying between 18°C to 26^{o} C. The long rainy season is from June to Jully and short rainy season is from September to October. The altitude is ranging between 1500 - 2500 m.a.s.l. Wolkite University located at 10 km distance from Wolkite town. The foundation stone of Wolkite University was laid on 2001 EC by Prime Minister Mr. Meles Zenawi. Wolkite university dairy farm located at one corner of the university. The farm was established in 2005 E.C . In WKU dairy farm there are 60 cattle; 10 local and 50 crossbreds. There are 29 cows, 24 heifers, 2 bulls and 5 calves. Within the study area there is Sheko breed, Borena breed and Jersey breeds.

3.2. Sampling size and sampling procedure

The study was devoted to assess lactation performance and identify challenges/constraints limited dairy cows' performance. The study unit was Wolkite University dairy farm. In the University there is only one farm. Our sampling method was purposive sampling for both dairy cows and respondents. And for dairy cows we used sample size of 29 cows, for respondents we used sample size of 24 respondent who are workers within the farm.

3.3 Method of data collection

This study used both qualitative and quantitative data collected from primary and secondary data sources. Secondary data was collected from Wolkite University dairy farm which was collected or recorded for three consecutive years. Both milk yield and lactation length of dairy cows was analyzed for different years. For this study all the cows which have recorded in the farm were used for the analysis. The primary data was collected through interview the experts within farm and other workers who had better knowledge on the subject to identify the problems related with dairy farm. Structured questionnaires were prepared for the interview of those experts in dairy

farm. From this, we were assessed the problems related with feeds and feeding system, housing system, veterinary and record keeping problems in the farm by using the check lists.

3.4. Data analysis

The collected data was analyzed by using both descriptive and inferential statistics. Descriptive statistics were used to determine for different years mean of milk yields . Percentage and were used to indicate dairy cows in the farm. Tables were used to present the results of the study.

4. RESULT AND DISCUSSION

4.1. Back ground information of farm workers

Detail information of workers is presented in Table1. The result indicate that, the majority of workers wre male (70.83%) and 29.16% are female. Concerning educational status (4.16%, 8.33% and 87.5%) were first degree, diploma graduates and learned up to grade 10 respectively. Some of them are engaged in recording, taking cares of animals, milking, feeding, watering, sanitation and coordinating the remaining all activities within the farm.

4.2. Aim of dairy farm in wolkite univesrity

The Wolkite University dairy farm was established with the aims of research and for student practical study. Apart from this, farm delivered milk to the community of university to generate income.

Table 2: Sex and educational level of workers in the study farm

Sex of the worker	(N=24)
Male	17 (70.83%)
Female	7 (29.16%)
Education level of Worker	
Degree	1 (4.16%)
Diploma	2 (8.33%)
Other	21 (87.5%)

4.3. Dairy Cattle composition of farm

The total dairy cattle in farm are 60 and Borana breed is the dominant of local breeds. Of total 16.66% are pure local breeds and 83.33% are crossbreds and 3.32% are bulls within the farm.

Table 3: Dairy cattle composition of WKU farm

Cattle types	Local breeds	Cross breeds	Total
Bulls	1	1	2
Lactation cows	-	12	12
Pregnant cows	2	10	12
Dry cows	1	4	5
Young stock (>6 months) of age	6	18	24
Calves up to 6 months of age	-	5	5

WKU = Wolkite University

4.4. Lactation performance of dairy cows

In addition to genetic causes some environmental factors influence milk production. The cross breed cows which are raised in the farm give good yield. Available feed resources, knowledge and skill gaps of the farm experts are not good enough for farm management. The cross breed cows due to environmental factors *i.e.* poor grazing ability, shortage of supplementary feed, climate change and poor management their milk yield is very low. This low production is due to feed shortage and poor management in cross breed cows and poor genetic makeup, shortage of feed and poor management conditions in local cows.

4.3. Lactation length and average daily milk yield of local and cross breed cows

Table 4: Lactation length in month of dairy cows in Wolkite University dairy farm

Cows breed	Lactation length of local and cross breed cows in days					
	No of cow	**Milk yield/day**	**min**	Max.	Mean±SE	SD
Local cows	3	10.5/L	150	210	175±9.21	31.01

Cross breeds	26	325/L	175	325	250±43.58	75.50
Total	29	335.5/ L	325	535	425±52.79	106.51

The average lactation length of local and cross breed cows is 175±9.21and 250±43.58 days respectively. The average lactation length of the present study was shorter than the study reported by Gebregziabher *et al* (2013) for Borana dairy cows (211.1±7.1days) and Wassie *et al* (2014) for Friesian cross Arsi dairy cows (306.94± 3.58days). Maybe it was due to poor management of dairy cows in the farm. In such kind of poor condition it is difficult to estimate exact lactation length of cows since cows cannot express full potential in this trait. Based on the farm secondary data analysis, average daily milk yield of crossbred cows within the farm is 12.5 liters. And also according to the key respondents and based on the secondary data analysis, average daily milk yield for local cows within the farm is 3.5 liters. The milk produced from local dairy cows used only for feeding of calf by suckling.

4.6. Calf rearing practices in the study farm

The calf raring systems practiced in the study area were both restricted partial suckling and bucket feeding. Partial suckling was practiced with local breed cows and bucket feeding is applied for crossbred cows. After 5 days of colostrum feeding the calf is then separated from their mother. In the study area the calves separated from their mother during days and night, but they suckling in morning and afternoon. This partial suckling is practice during early location periods. The dairy cows due to poor management, they stop milking and the calf suckling thought out the day. According to the respondents the calf rearing practice of the present study is similar with the result of Tsegaye *et al* (2015)

4.7. Calving interval (CI)

The calving interval in the study area was 463.17±3.34 days for local cows and 474.33±2.96 days for cross breed. The mean calving interval observed in the study area is longer than the result reported by Yifat *et al* (2012)., that is 431.5 days for local cows and 429 days for cross breeds reported. However it is shorter than the results reported by Mulugeta and Belayneh (2013). This long calving interval is maybe

due to poor management and , feeding problem, climate, and external parasite Belay *et al* (2012). The dairy cows due to all those constraints they were milked for short period of time .

4.8. Over all constraints of the wolkite university of dairy cows

Table 5: Over all constraints in WKU dairy farm

Constraints	Percentage composition
Poor management	30%
Disease prevalence(tick and mastitis)	40%
Lack of improved breed	15%
Awareness problem	10%
Climate change	5%

Different constraints of dairy cattle production in farm were identified during discussion with expertise in the farm. The feed shortage, lack of awareness, poor management, disease prevalence, milk parlors, feed storage and the overall hygiene of farm (not properly cleaned) are the major constraints identified; that can affect the production potential of dairy cows. The result in lined with the report of(, 2007; Tesfaye, 2009).

4.8.1. Feed scarcity

Feed has been identified as the major constraints affecting dairy cow's production in the study farm. The effect of inadequate feed, widespread disease and poor health, poor breeding stock, low production and productivity. There are supplementary feeds in the farm; even if they have sometimes feeding systems are inconsistence resulted in milk yield reduction. Most of time dairy cattle were grazed in free area in University compound *i.e.* extensive feeding system on free range land. In the dairy farm only small amount of dairy excellence feed and wheat bran feeding as supplementary feed, but it is not enough to the cows to produce enough milk. The available grass and natural pastures in the grazing land around the farm is decrease over time due to especially during dry season. Feed scarcity constraints of the present study in lined with the report of Abebe (2008) and Markos (2006). The result was comparable with report by Derese (2008) in west shoa zone who indicated that unavailability of feed probably limit the milk

production potential of cows with good milk producing ability more than any other single factor and is the most serious constraint to improve dairying.

4.8.2. Water shortage

Water shortage has been identified as the important constraints affecting to dairy performance. Lack of water may be expressed in quantity and quality/shortage of clean water. The source of water in the university farm is from the pipe of university resulted to shortage of water especially during dry season. The amount and quality of water could result in reduction of milk yield, lactation length growth rate of born calf. The cows were supplied water per day. But the water is not available near to their feed trough within their house, their drinking water is presented outside from their house. The frequencies of water supply of dairy cows were varying based on availability of water. The presented result is in concordance to the previous finding of Abebe (2008).

4.8.3. Poor genetics of local breeds

The breeding method of the study area is artificial insemination (AI). The farm is dominated by crossbred cows and the local breed cows are small in number. Though production potential of local dairy cows is low, they are highly resistant to feed and water shortage, disease prevalence and harsh climate. As a result poor production performance has identified as major constraints affecting the dairy cows in the Wolkite University dairy farm. A poor genetic potential constraint of the present study was in lined with the reported by Yilma (2011).

4.8.4. Disease prevalence

Disease is one of constraint affecting dairy cow's productivity .According to the respondents the major disease affecting to dairy cattle are tick and mastitis. Tick cause substantial losses in cattle production, in terms in reduced productivity and fertility. In study farm the udder of dairy cow is affected by tick, it is difficult to milking and damaging udder teats. Extensive grazing land is one of major factors for prevalence of tick in the study farm. The other disease affecting to dairy cattle in farm is mastitis which results in decreased milk yield, premature culling of cows, milk discard and high treatment cost. The present study was slightly similar with the report of Gizachew (2007). A similar result was reported by Million *et al* (2014) in Ada'a Liban woreda

who reported mastitis as the most economic loss for the majority of dairy producers through reduction in milk yield.

4.8.5. The poor hyigen

Poor housing system is another challenge of dairy cattle production and productivity. The farm of Wolkite University was made by modern materials; but we observed; poor floor, feeding trough, watering trough and poor hygiene, etc. There was no separation of animal based on age, sex and breeds; all animal live together in single house and affecting by overcrowding. There was also no separate house for dry-off and culling animals and also for calf separation. Generally the housing system of the study farm is lack of well organized management. On the study area there is a problem of using well facilitated infrastructures properly for specific purpose. The cubicles that are found in the study area are too wide to tether calf and calf are tethered within the cubicle of large animals. This condition is not correct way with regard to proper husbandry point of view.

4.8.6. Climate change

Climate change is identified as one of the constraint that affect dairy cow in the study area .The study area is affected by fluctuation of temperature especially during dry season and animals were affected by heat stress and decrease feed intake. The cross breed cow in the study area is very low in average milk yield since their heat resistant capacity is low compared with that of local cows. This is due to climate fluctuations, since climate fluctuations cause feed scarcity, water shortage and reduce feed intake; animals struggled to survive rather than producing milk. The cross breeds' cows have less adaptation capacity to environmental changes, temperature and rain fall variability than local cows. Even though the adaptation capacity of local cows high the production and productivity is low due to all the constraints listed above. Similar effect of climate change on milk yield was reported by Usman (2013) and McManus (2011).

4.8.7. Poor Record keeping system

Records keeping allow the farm community to manage their farm smoothly. It improves milk, fat and protein yield, fertility of cows, decrease exposure of cows to mastitis, and for managing of

animals in the farm (culling, feeding, and milk) of cows. In Wolkite University dairy farm there is no quality record. They records only milk and diseases for sometimes and they live another times; there is inconsistence in recording. Still there are huge gaps of record keeping; there is lack of record of feeds, feeding, management (culling, death of animals, etc.), milk fat records, milk butter records and breeding records. This present study was in agreement to the report of Sintayehu (2008).

5.CONCLUSION

The study was conducted in Wolkite University dairy farm, The university has only one farm and all the dairy cows which have recorded data in the farm were used for this analysis to generate information of dairy performance and major constraints Of total 70.83% of farm workers were males, 29.16% were females with the education level of 4.16% degree, 8.33% diploma level and 87.5% other level or up to grade 10. The total dairy cattle in the farm were 60, from those Boran breeds and sheko breed and were cross breeds. The overall total estimated milk yield in the study area. The lection length of local and cross breed cows in the study area was 175±9.21 and 250±43.58 days, respectively. In which crossbred cows higher milk yield than local breed cows. The major calf rearing practiced in the farm was restricted partial suckling. The result of the present study also depicted that the calving interval (CI) of local and cross breed cows were 463.17±3.34 and 474.33±2.96 days, respectively. In the study area the major constraints are; awareness problem, lack of, disease prevalence(tick and mastitis), poor management(feeding, watering, housing and record keeping problems) share; 10%, 15%, 40%, 5% and 30% respectively. Generally, this study showed that despite the performance of dairy production in the study was very low due to many constraints like technological, nutrition and management related constraints. Therefore, coordinated efforts are required to address the constraints of dairy .

6.RECOMMENDATION

Based on the present finding the following recommendations were forwarded.

- ✓ Efforts should be made to alleviate the main constraints that hindered lactation performance dairy cattle.
- ✓ The university should have farm site for cultivation of improved livestock feeds and seed multiplication.
- ✓ Housing system should be advance: house for calve, sick animals, for culling etc. should be separate
- ✓ Introduction of permanent and coordinated recording system, which will assist on management, animal health, feed records and dairy production development programs.
- ✓ In production and productivity of dairy cattle the disease outbreak, especially mastitis and tick were the key factors. For this issue hygien be accountable to minimize the problem.

7. REFERENCES

Abebe,H.,(2008). Supplementation of graded level of concentrate mix on feed intake, digestibility, live weight change and carcass characteristics of dairy cows feed urea treated rice straw.An,MSC ,This presented to the school of Graduate studies of Haramaya University. 65 Pp.

Abebe B., Zelalem Y & Ajebu N.(2012). Hygienic and microbial quality of raw whole cow's milk produced in Ezha district of the Gurage zone, Southern Ethiopia. Wudpecker Journal of Agricultural Research. 1(11): 459.

Anene, B.,(2008). Characterize the metabolic energy and digestibility constraint of crop residues.

Arbel, R., Bigun, Y., Ezra, E., Sturman., H. & Hojean, D., 2001. The effect of extended calving intervals in high lactating cows on milk production and profitability. Journal of Dairy Science 84, 600–608.

Asrate Ayza, Yilma Zelalem and Ajebu Nurfeta. 2012. Quality of fresh whole milk produced in and around Boditi town, South Ethiopia. African Journal of Animal and Biomedical Sciences 7(2), pp 95.

Asrat Ayza, Yilma Zelalem and Ajebu Nurfeta. 2013. Characterization of milk production systems in and around Boditti, South Ethiopia. Liv. Res. for Rural. Deve. 25 (183). pp 65.

Ayele ,S.(2000). Livestock production is an integral part of agricultural activities in Ethiopia and livestock contributes about 60-70% of the live hoods of the Ethiopia population.

Ayele,S.Assegid,W.Tabbar,M.A.,Ahmed,M.M.and belachew,H.(2002): Livestock stock marketing in Ethiopia a review Of structure, performance and development initiatives, in; socio- economic and policy research Working paper. Nairobi Kenya; ILRI (International Livestock Research Institute).

Azage T., Berhanu G., Hoekstra D., Berhanu B. and Yoseph M. 2013: Smallholder dairy production and marketing systems in Ethiopia: IPMS experiences and opportunities for market-oriented development.IPMS (Improving Productivity and Market Success) of Ethiopian Farmers Project Working Paper 31. Nairobi: Kenya. 65p.

Belay D., Yisehak K. and Janssens G.P.J. 2012a: Socio-economic factors influencing urban small-scale dairy management practices in Jimma Town, Ethiopia. Libyan Agriculture Research Center Journal International, 3(1): 07-12.

Ball P. J. H and Peters A. R. 2004. Reproduction in Cattle .Third edition, Fibiol. Pp.1-13.

Berekedu ,B.Berhanu,A.Lakes,S. (2000): Indicated that inadequate feed, nutrition, widespread disease poor breeding stock, and inadequate livestock policies With respect to credit extension, marketing and infrastructure as major constraints affecting livestock performance in Ethiopia.

Birhanu, B.(2006). Analysis of factor affecting the adoption of cross breed diary cows in the central high lands of Ethiopia. MSC, thesis.school of Graduate studies, Haramaya University, Ethiopia.

CSA (Central Statistical Agency), 2005. Federal Democratic Republic of Ethiopia Agricultural sample survey. Livestock and livestock characteristics bulletin, Volume II. Addis Ababa, Ethiopia.

CSA (Central Statistics Authority). 2009. Agricultural sample survey 2008/09. Report on livestock and livestock characteristics. Statistical bulletin 446. Addis Ababa, Ethiopia: CSA.

CSA (Central Statistics Authority), 20013/14. Agricultural sample survey 2013/2014. Vol. II.Report on livestock and livestock characteristics. Statistical Bulletin. Addis Ababa, Ethiopia: CSA.

CSA (Central Statistics Authority), 20014/15. Agricultural sample survey 2014/2015. Vol. II.Report on livestock and livestock characteristics. Statistical Bulletin 578. Addis Ababa, Ethiopia: CSA

CSA(Central Statical Agency).,2016/17.Ethiopia Agricultural sample survey. Vol ll.Report on livestock and livestock and livestock characteristics. statistical Bulletin 388.CSA, Addis Ababa, Ethiopia.

Demissu H., Fekadu, B. & Gemeda D. 2014. Dairy Productive Potential, Challenges and Production opportunities of Horro and their F1 Jersey Crossbred Cows. A Case of

Guduru Livestock production and Research Center and Its Surroundings, West Oromia, Ethiopia. Science, Technology and Arts Research Journal. 3(4). 79-84.

Deresse T.2008. Present situation of Urban and PriUrban Milk Production and Quality of Raw Milk Production. MSc Thesis, Alemaya Universty of Agriculture, Dire Dawa, Ethiopia.pp2530.

Desta, K. B. 2002. Analyses of Dairy Cattle Breeding Practices in Selected Areas of Ethiopia. PhD thesis. Humboldt-Universität zu Berlin,Germany.Prod., 37. 247-252.

Esslemont, R.J., 2003. The costs of poor fertility and what to do about reducing them. British Cattle Veterinary Association 11, 237–250. FAOSTAT,2OO4

Gebregziabher, G., Skorn, K., Mauricio, A. Elzo and Thanathip, S. 2013. Variance Components and Genetic Parameters for Milk Production and Lactation Pattern in an Ethiopian Multibreed Dairy Cattle Population. Asian Australas. J. Anim. Sci. 26 (9) . 1237-1246.

Gebremedhin D. 2005. All in one. A Practical Guide To Dairy Farming. Agri-Service Ethiopia Printing Unit, Addis Ababa. Pp. 15-21.

Gebremedin, A.,2007. Productivity and health of indigenous dairy cows and health of indigenous dairy cows and cross breeds Doctoral thesis Swedish University of Agricultural science, Department of Animal breeding and Genetics upsell.

Gebrekidan T.W., Zeleke M.Z. & Gangwar S.K.(2012) Reproductive and productive performance of dairy Cattle in central zone of Tigray, Northern Ethiopia.

Gizachew, B.,2007. Major animal health problems of market oriented livestock development in Ketema woreda, North GONDER zone, Ethiopia, DVM this faculty of veterinary Medicine, Addis Ababa University.

Holm D.E., Thompson P.N. and Irons P.C. 2008. The economic effects of an estrus synchronization protocol using prostaglandin in beef heifers. Theriogenology, 70.1507–1515.

Katesedler.(,2009).milk matter: alternative Review of pastoralists Nutrition and programming response.

Kaustros, M.(,2007. Major animal health problems of market oriented livestock development in Alaba words,southern Nations Nationality and peoples region. DVM, thesis. Faculty of veterinary medicine, Addis Ababa University, Debre zeit,Ethiopia.

Kedija H (2007). Characterization of milk production system and opportunity for market orientation: A case study of Mieso district, Oromia Region, Ethiopia. MEd Thesis, Haramaya University, Dire Dawa, Ethiopia.

Kumar N., Alemayehu E., Berihu G. & Endale B. Gurmu. 2014. Reproductive performance of indigenous and HF crossbred dairy cows in Gondar, Ethiopia. IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS). Volume 7, Issue 1 Ver. V, PP 56-61.

Markos, T.,2006. Productivity and health of indigenous dairy cows and health of indigenous dairy cows and cross breeds Doctoral thesis. Swedish university of Agricultural science, Department of Animal breeding and Genetics uppsele, Sweden, 76 pg.

Mekonnen A., Haile A., Dessie T. and Mekasha Y. 2012. On farm characterization of Horro cattle breed production systems in western Oromia, Ethiopia. Livestock Research for Development 24 (100). Retrieve June 25, 2015 from http.//www.lrrd.org/lrrd24/6/meko24100.htm.

Million T.,Adey M.,Azage T.& Kassahun M.2014. Gender and Urban dairy production system: the case of Debreziet Town, Ethiopia. Livestock and economic growth: Value chain as pathway for development. SAP (Ethiopian Society of animal production). In: Proceeding of the21st Annual conference of the Ethiopian Society of animal production held in Addis Ababa, Ethiopia, August2830, 2014, ESAP, Addis Ababa, pp299.

MoA. 2012. Livestock growth strategy and action. Draft discussion paper. Addis Ababa: MoA. (Amharic version).

Msangi, B.S.J., Bryant, M. J. & Thorne, P.J., 2005. Some factors affecting variation in milk yield in crossbred dairy cows on smallholder farms in North-east Tanzania. Tropical Animal Health and Production 37, 403412.

Mukesa mugerwa, Aninda,D.,sovani.,LahLou.kassi,A.,Tebely,s.,Rege,T.(2002).Production performance of indigenous cattle in the Ada district of the central Ethiopia high lands. Mimeograph, ILcA, Addis Ababa.

Mulugeta, A. and Belayeneh, A. 2013. Reproductive and lactation performances of dairy cows in Chacha town and nearby selected kebeles, north Shoa zone, Amhara region, Ethiopia. World J.A.

McManus C., Castanheira M., Paiva S. R., Louvandini H., Fioravanti M. C., Paludo G. R., Bianchini E. and Correa P. S. 2011: Use of multivariate analyses for determining heat tolerance in Brazilian cattle. Trop. Anim. Health Prod., 43: 623-630.

Sintayehu Yigrem, Fekadu Beyene, Azage Tegegne and Berhanu Gebremedhin. 2008. Dairy production, processing and marketing systems of ShashemeneDilla area, South Ethiopia. IPMS (Improving Productivity and Market Success) of Ethiopian FarmersProject Working Paper 9. Nairobi, Kenya: ILRI (International Livestock Research Institute).

Solomon Z.A., Binyam K., Bilatu A, Ferede A and Gadisa M. 2014. Smallholder cattle production systems in Metekel zone, northwest Ethiopia. Research Journal of Agriculture and Environmental Management. 3(2), pp. 151-157.

Tessema,Z.K.,Ashagre,A.and Solomon, M.,2010.Botanical composition, yield and nutritional quality of grass Land, in relation to stages of harvesting and fertilizer application in the high land of Ethiopia. African Journal of Range and forage science (in press).

Tesfaye,T.(2009). Analysis of factors affecting the adoption of cross breed dairy cows in the central high lands of Ethiopia. Msc this school of graduated, Alemaya, University Ethiopia.

Tsegay Lijalem, Agengew Asefa Ashenafi Sharo, 2015. Dairy Cattle Production at Small Holder Level in Sidama Zone Selected Districts, Southern Ethiopia. Food Science and Quality Management (IISTE) . 40: 7.

Usman T., Qureshi M. S., Yu Y. and Wang Y. 2013. Influence of various environmental factors on dairy production and adaptability of Holstein cattle maintained under tropical and subtropical conditions. Adv. Environ. Bio., 7(2): 366-372.

Wassie T, Mekuriaw G.and Mekuriaw Z. 2014. Milk production performances of Holstein Friesian x Arsi and Holstein Friesian x Boran cross-bred cattle at Agarfa Agricultural Technical Vocational and Educational Training (ATVET) College, Oromia, Ethiopia. Livestock Research for Rural Development. 26(154).

Weldgebriel, T.,(2007). Estimated Contribution of crop residues and post harvests grazing out of total dry matter feed resources in high lands of Ethiopia.

West J. W. 2003. Effects of heat-stress on production in dairy cattle. J. Dairy Sci., 86:21312144.

Willam A. & Simianer H. 2011. Tierzucht-Grundwissen Bachelor. UTB Verlag, Stuttgart, 41-274.

Yifat, D., Bahilibi, W. and Desie, S. 2012. Reproductive performance of Boran cows at Tatesa cattle breeding center. Advances in Biol. Res. 6 (3): 101-105.

Yilma Z., Emannuelle G.B and., Ameha S. 2011. A Review of the Ethiopian Dairy Sector. Ed. Rudolf Fombad, Food and Agriculture Organization of the United Nations, Sub Regional Office for Eastern Africa (FAO/SFE), Addis Ababa, Ethiopia, 81P.

Yohannes,T., 2007. Major Animal health problems of market oriented livestock development in Alamata woreda.

Zewdie W. 2010.Livestock Production Systems in Relation with Feed Availability in the Highlands and Central Rift Valley of Ethiopia. MSc thesis, Haramaya University, Haramaya Ethiopia.

Appendix: Check list used for data collection

General information

Date of enumeration_____

General information for respondent

Name_____ Sex____ Marital status: single___ Married_____Divorce_____ widowed_____

Cattle composition

Type of breeds	Local breeds	Cross breeds	Total
Bulls Cows Lactations cows Pregnant cows Dry cows Heifers (>6 months) Calves up to 6 months of age			

Lactation performance of dairy cows

1 How much the amount of milk yield from local breed cows?

2 How much the amount of milk yield from cross breed cows?

3 How many the lactation length of local breed cows ?

4 How many the lactation length of cross breed cows?

5 How much the Daily milk yield of local cows ?

6 How much the daily milk yield of cross breed cows ?

7 what is the calf rearing of the farm ?

8 what is the weaning calves in the farm ?

Major constraints of dairy cows

1 what are the major constraints affecting lactation performance of dairy cows in the farm?

1.1 feed scarcity?

1.2 water short ?

1.3 disease/ parasite?

1.4 market problem?

1.5 awareness problem?

1.6 poor breed stock?

1.7 poor management?

1.8 other specified

Dairy cattle production system

1 what is purpose of keeping cattle production ?

2 what is the feeding system of dairy farm?

2.1 what are the major feed sources for dairy cattle?

A,improved forage species B,indigenous grass c, crop residue D, Tree species

2.2 How does the availability of feed vary over an average year?

2.3 Is there feed shortage constraint for your dairy cattle production ?

1, yes 2 , no

2.4 If yes,when? 1, dry season 2, wet season 3, both

3, what is the watering system of the dairy farm?

3.1 what is the source of water in the farm?

3.2 How many times do you water the cattle per day?

3.3 Is there any water shortage problem to dairy farm?

4 , what is the housing system of the dairy farm?

4.1 Types of floor?

5 , What are most common dairy cattle disease in the area ?

A,Brucellosis B,Tuberculosis c,leptospirosis D,trichomoniasis E,mastitis F,mite G, Tick H,other specified

6 , Do you vaccinate your dairy cattle?

7, Do you spray your dairy cattle? If yes ,how many times you spray your dairy cattle per year