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Dairy Cattle Husbandry Practices and the Major Constraints of Smallholder Farmers in Telo District, Ethiopia

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Abstract: Dairy cattle production is an integral part of the farming system in Telo district which lacks information on dairy cattle husbandry practices and major constraints. Thus, this study was conducted with the aim of assessing the husbandry practices and major constraints of smallholder farmers in Telo districts. Cross-sectional study design was used to collect data from randomly sampled 156 households (33 from Urban and 123 from Rural) using questionnaires, farm visit and group discussion. The average number of dairy cattle were 7, the higher ($P<0.05$) cattle number found in rural than in urban. About 67.3% and 66.9% of cows and calves were housed sharing the same house with family house respectively. The main source of feed were grazing on natural pasture on the grazing area of individual owned 71.2% (rural), combination of rented and individual owned10.3% (rural) and only rented 18.6% (urban) respectively. Majority (78.8%) of respondents were producing crops like wheat, barley, teff and maize. But the ones supplementing their cows with crop residues were only 13.8%. The majority (67.3%) of smallholders used water from river for their dairy cattle. Access to modern animal health services was significantly ($p<0.05$) different between rural (mixed crop-livestock) and urban smallholders. The reported disease was Anthrax, black leg, diarrhea, parasite, bloating and cough. Most smallholders relay on traditional healers or on their own skill to treat their sick dairy cattle. Male calves suckle relatively longer period than female. The major constraints hindering dairy cattle production was shortage of grazing land, disease and low productivity on their decreasing orders of importance. Crop and livestock production systems were not complementing each other therefore; there should be resource control over with improved dairy management system.

Keywords: Dairy Cattle, Husbandry Practices, Major Constraints, Telo

1. Introduction

Livestock production in Ethiopia is mainly of smallholder farming system with an animal having multipurpose use [1], and accounts for approximately 49% of the total agricultural GDP and 21% of national GDP. Moreover, Ethiopia has currently the highest cattle population in Africa, estimated to be 59.5 million [2]. Out of these total cattle population, the female cattle constitute about 54.87 percent and the remaining 45.13 percent are male cattle, From these milking cows number is about 10 million with an estimated annual total milk production of 5.2 billion liters of milk per year. Or 1.54 liters per day per cow In addition, it provides about 68 million tons of organic fertilizer and almost 617 million days in animal traction [3]. Majority of cattle in Ethiopia are indigenous and owned by smallholder farmers under traditional management [4].

In spite of the presence of large population, the productivity (i.e., meat and milk) remains low for various reasons, such as inadequate nutrition, poor genetic potential, inadequate animal health services and other husbandry related problems. Ethiopia's increasing production potential,

human population, urbanization trends and household incomes are leading to a substantial increase in the demand for livestock products. In light of prevailing land-resources limitation, expecting the establishment of large scale commercial dairy farms in urban and peri-urban areas is unlikely. Thus, under Ethiopian condition, there is no doubt that the increase in milk supply to urban centers will continue to rely on smallholder dairy for many years to come [5].

The mainstay of Keffa people is rain fed subsistence agriculture and majority of these population practices mixed crop-livestock production system under traditional management. Telo District is one of 11District in Kaffa zone and found at distance of 45 km from Bonga or capital of Kaffa zone. The main agriculture system in this area are livestock production especially mixed crop-livestock production, coffee production, spices, crops like barley, wheat, maize, teffe, inset, bean, pea and sorghum. Dairy cattle production is an integral part of the farming system in Telo District., the total cattle population is about 81,993 from these milking cow contributes 13,346 [6] . Milk production is mainly from indigenous cows which are kept under smallholder farmers under traditional management system. Even if the area has potential for milk production, nothing has been studied on existing husbandry practices, major constraints associated with milk production, resources utilization or recycling between two integrated (livestock and crop) production systems. Therefore, the objectives of this study was to assess dairy cattle husbandry practices and the major constraints of smallholder farmers in Telo district.

2. Materials and Methods

2.1. Study Area

The study was conducted in Telo district, Kaffa zone, Southern Nation Nationalities People Regional State. It is located at 500 km southwest of Addis Ababa and 45 km from Bonga or capital of Kaffa. The total area coverage is 5569.4 hectares and total population of 623,125. The altitude ranges from 2436 to 2451m.a.s.l which represents typical highland environment. The main rainy season is from June to September with a mean annual rainfall of 1278 mm and the average daily temperature vary from 17-25^{o}c. Four "*kebeles*" namely Oda, Dacha, Wora and Yama were selected as study sites based on potential for dairy. Oda is a small town whiles the rest three *Kebeles* are rural areas of mixed crop livestock production system. Thus for the purpose of this study, the dairy cattle husbandry system was classified as urban for Oda and rural mixed crop-livestock production systems for the rest three *Kebeles*.

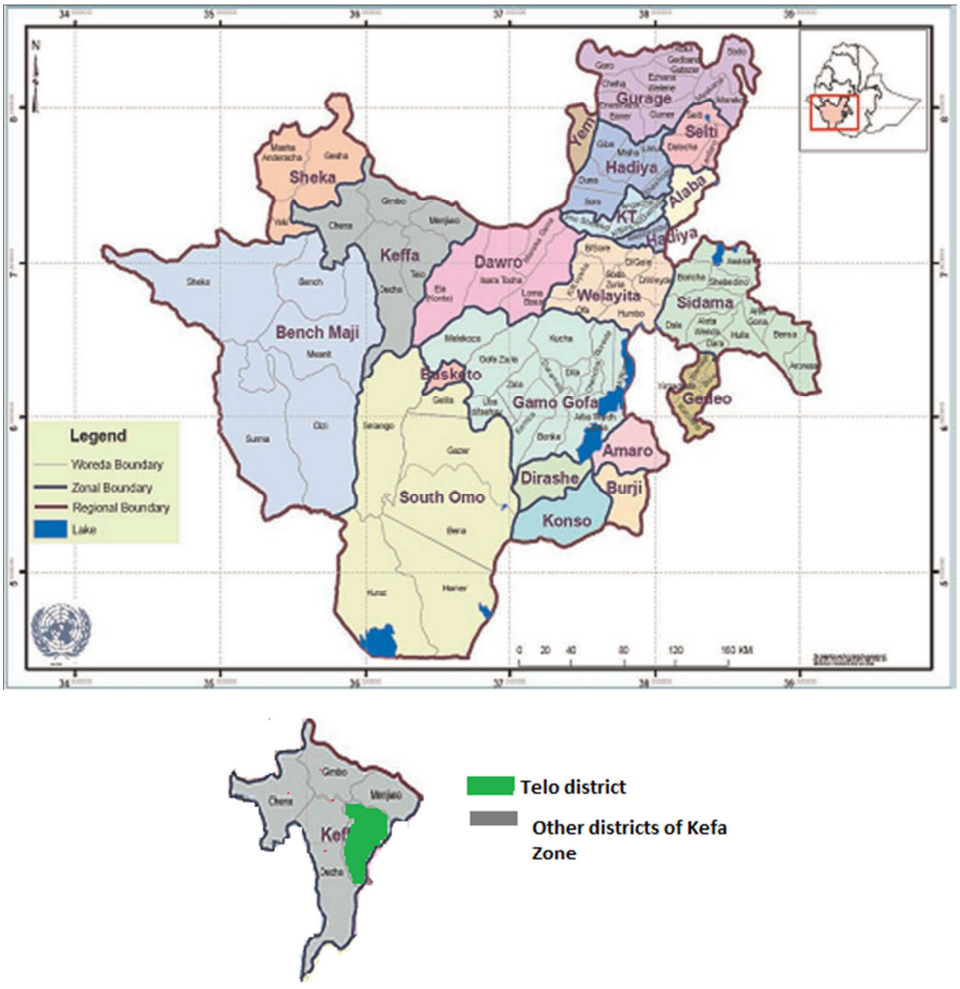

Figure 1. *Map of the study area.*

2.2. Study Design

Cross-sectional study design was conducted from September 2011 up to March 2012 by using different survey tools (semi-structured questioner, farm visit and group discussion…).

2.3. Study Population and Sample Size Determination

The target sampling population constituted all households in the study area who owned milking cows. The sample size was determined by using Arsham (2007) with an estimated 8% confidence interval and 95% confidence level the sample size studied was 156 smallholders. $N=0.25/SE^2$ Where, N=sample size, SE=standard error assumed.

The study participants' distribution in the four *Kebeles* (Dacha, Oda, Wora and Yama) was proportionate to the smallholders having milking cows in each *Kebele*. The identification of study participants was done by using random (ballot) method.

2.4. Data Collection

Secondary data

Secondary data on human population, main agricultural practices cattle population in the district were obtained from "District" Livestock and fishery development.

Questionnaire survey

A total of 156 smallholders were interviewed using a pre tested and semi- structured questionnaire. The letter contained both open and close ended questions. The overall purpose of the questionnaire was to understand the milk cattle husbandry situations, labor division among family members on cattle husbandry and to identify the constraints.

Group discussion

In addition to individual interviews, focus group discussions were undertaken with key informants (extension workers, elders, cattle production and health experts, and community chairperson) in order to strength or supplement major information obtained from individual interviewers. The issue included was major feed resources, type of disease, extension service and major constraints in order of its importance.

Farm inspection.

A onetime farm inspection was done at the same time with the questionnaire interview to assess housing condition of milking cows, feeding practices. Barn cleanness was qualified as poor when there is bad smelling, dung accumulation, gutter, holes presence and when the animals flank, udder and belly were soiled. the barn cleanness qualified as fair when there is some smells that is not much sniffing and if the dung or mud was not more than feet of animals. The barn cleanness qualified as good when there was no one of the above mentioned defects was observed. Ventilation was qualified as not adequate when there is bad smell or smell of ammonia or if there is suffocations, if there was no above suffocations then the ventilation qualified as adequate.

2.5. Data Entry and Analysis

Microsoft excel computer program, was used for data entry and SPSS (statistical package for social science) software version 17.0 was used for data analysis. Statistical methods like descriptive statistics, cross tabulation frequency and ANOVA were used to summarize data and determine level of significance of variations in different measured variables. Differences was considered significant for $P < 0.05$.

3. Results

3.1. Husbandry Practices

3.1.1. Housing Practices

The main objective of housing dairy cattle in this study area was to protect them from cold stress at night. During day time dairy cattle were not housed unless they themselves search natural shed. But only pregnant cows were housed during extreme environmental condition of day time. The main housing conditions observed were enclosure, traditional hut, sharing family house/rural and in kitchen/Urban. Cows (67.3%) and calves (66.9%) were housed in family house (Table1).

Table 1. *Housing conditions of cattle in study areas.*

Variable		Calves	Cow and heife	Bull and oxen
Type of housing	Enclosure	1(0.7)	22(14)	74(60.2)
	Traditional hut	1(0.7)	2(0.7)	
	family house	103(66.9)	104(67.3)	49(39.8)
	cooking kitchen	51(31.8)	28(18)	
Floor type	Harden soil	12(7.7)		
	Wood and hardsoil	140(89.7)		
Window	Present	7(4.5)		
	Absent	149(95.5)		
Ventilation	Adequate	62(39.4)		
	Not adequate	94(60.6)		
Barn cleanness	Good	59(37.8)		
	Fair	56(35.9)		
	Poor	41(26.3)		

Numbers in bracket represents percentage.

3.1.2. Feeding Practices

The smallholder dairy farmers indicated that the common feeding practice was tethered grazing and herded grazing. Grazing lands, in most cases (71.2% of the smallholders), area of individual owned. The rest use a combination of once own (10.3%) and rented or only rented (18.6%) grazing lands. The dominant grasses on natural grazing area were *cynodon dactylen* "*serdo"*. Dairy cattle were supplement potage" (*genfo*") prepared from mixture of left over from grain milling and residue of "*inset* ", kitchen leftover, by- products of local beverage (*borde, tella and areke*). Although smallholders produce large volume of crop residues from cereal grain (*teffe,* wheat, barley, maize and sorghum) production, practice of feeding dairy cattle with crop residues is almost inexistent in the area. From the smallholders who participated in the present study 78.8% were also producing crops but the ones supplementing their dairy cattle with crop residues were only 13.8% (Table2).

Table 2. *Smallholders engaged in cereal crop production and their experience in using crop residues for dairy cattle feeding in study area.*

Variable		Frequency	Percentage
Crop production	Yes	123	78.8
	No	33	21.2
Use of crop residue for animal feed	Yes	17	13.8
	No	106	86.2
Reasons for not using crop residue	Lack of awareness	78	73.6
	Alternative use	2	1.9
	Refusal of animal	26	24.5
Use of urea treatment	Yes		
	No	17	100

3.1.3. Watering and Source of Water

Source of water for milking cows were river, dams and pipe water. The majority (67.3%) of smallholders used water from river for their cows, while 24.4% from dams, 8.3% from pip. Frequency of watering varied with season (Table 3).

Table 3. *Source of water and the practice of watering cattle in dry and wet seasons in study area.*

Variable	Frequency	Percentage
Source of water		
River	105	67.3
Pip	13	8.3
Dams	38	24.4
Frequency of watering in dry season		
Once per day	1	0.6
Twice per day	110	70.5
Three times per day	42	26.6
Free access	3	1.9
Frequency of watering in wet season		
Once per day	82	56.6
Twice per day	2	1.3
Three times per day	1	0.6
Not watered at all	71	45.5

3.1.4. Health Care

Access to modern animal health services was significantly ($p<0.05$) different between rural (mixed crop-livestock) and urban smallholders. However, the percentage of smallholders that had vaccination accesses was74.4% (Table 4). Most smallholders relay on traditional healers or on their own skill to treat their sick cattle.

Table 4. *Access to modern animal health services in study area.*

Variable		Rural n=123	Urban n=33	Total n=156
Is there regular vaccination	Yes	85(69.1)	31(93.9)	116(74.4)
	No	38(30.1)	2(6.1)	40(25.6)
Place of vaccination	Keble	84(73)	0(0)	84(73)
	District clinic	1(27)	31(100)	32(27)
Diseases frequently affecting your milk cow	Diarrhea	16(13)	5(15)	21(13.5)
	Anthrax	27(22)	4(12)	31(19.9)
	Black leg	27(22	2(6.1)	29(19.6)
	Ecto parasite	10(8.1)	4(12.2)	14(9)
	Cough	2(1.6)	7(21.2)	9(5.8)
	Emaciation	25(20.3)	5(15.2)	30(19.2)
	Bloat	10(8.1)	1(3)	11(7.1)
	Teat problem	6(4.9)	5(15.2)	11(7.1)
Source of treatment	District clinic	37(30.08)	30(90.9)	67(43)
	Traditional treatment	52(42.3)	1(3.03)	53(34)

Variable		Rural n=123	Urban n=33	Total n=156
	Not treated at all	36(29.3)	2(6.06)	37(23)

Numbers in bracket represents percentage.

3.1.5. Breeding Practice

The majority (99%) milk cow were indigenous zebu breed. Few crossbred cows (1%) found in the study area were owned by the urban smallholders. More than 90% of the smallholders use natural mating by using local bulls and in very few cases with crossbred bull. Very few cases of AI were also reported by smallholders (Table 5).

Table 5. *Breeding practice in study area.*

Method of breeding	Frequency	Percentage
AI	13	8.3
Local bull	133	85.29
Cross bull	10	6.5

3.1.6. Calf Rearing

Natural suckling is the most common calf feeding method. In local breeds, for up to one month period after calving, the cow was not milked and the whole milk was left for calf suckling. While in cross breeds, for up to four days period after calving, the cow was not milked and the whole milk was left for calf suckling and some milked for cat or stripping to the ground when the calf can't finished. Male calves were allowed to suckle the whole of their dams' milk for a relatively longer period (more than a month) than female calves (less than a month) (Table6). Bucket feeding is very rare. As the respondents indicated weaning of calf was easier practice, because the dam her selves ignore the calf when she attempts to stop milk production. thus, weaning is duty of dam rather than man.

Table 6. *Calf rearing methods in study area.*

Variable		Cross		Local	
		Frequency	Percentage	Frequency	Percentage
Period of calves suckle	Until cow dry off	8	100%	156	100%
Period grass feeding	After month	3	37.5	129	82.7%
	After two month	5	62.5	27	17.3%
Frequency of suckling	Once	7	87.5	5	3.2
	Twice	1	12.5	50	32.03
	Three times		-	99	63.4%
	Not separated		-	2	1.3%

Table 7. *Calf rearing method with respect to sex in study area.*

Variable			rural	Urban	Total
period of starting milking when the neonate is male	30 to40days	N	92	0	92
		Percentage	74.8	.0	59.0
	15to 20 days	N	9	31	40
		Percentage	7.3	93.9	25.6
	not separated	N	22	2	24
		Percentage	17.9	6.1	15.4
Period of starting milking when the neonate is female	30 to 40days	N	11	2	13
		Percentage	8.9	6.1	8.3
	15 to to20 days	N	85	31	116
		Percentage	69.1	93.9	74.4
	not separated	N	27	0	27
		Percentage	22	0	17.3

N= frequency.

3.1.7. Culling Practice

Culling of dairy cattle was practiced by smallholders. The majority (36.6%) of rural smallholders were culling their dairy cattle due to disease condition and old age (24.4%), while the majority (39.4%) of urban milk producers culls their milk cows due to low productivity followed by old age (18.2%). Both production systems taken together, disease condition was the first cause of culling (31.4%) followed by age (23.1%), low productivity (17.3%) (Table 8). The other culling reasons include financial requirement, temperament and feed shortage. About 90% of the smallholders produce replacement dairy cattle themselves while the rest purchased from open market based on body conformation, presence of lower fore teeth for effective grazing, docile nature while palpating teat and udder and free from any visible injury.

Table 8. *Reason of culling milk cow in study area.*

Reason of culling		Rural N=123	Urban N=33	Total N=156	p-value
low productivity	N	14	13	27	0.001
	Percentage	11.4	39.4	17.3	
disease condition	N	45	4	49	
	Percentage	36.6	12.1	31.4	
financial requirement	N	19	5	24	
	Percentage	15.4	15.2	15.4	
Aggressiveness	N	13	2	15	
	Percentage	10.6	6.1	9.6	
feed shortage	N	2	3	5	
	Percentage	1.6	9.1	3.2	
Age	N	30	6	36	
	Percentage	24.4	18.2	23.1	

N=frequency.

3.1.8. Labor Distribution in Dairy Farming

Barn cleaning, feeding, milking, milk processing and selling of dairy products were activities mostly done by women. Men's jobs were more or less limited to sells of cattle and breeding (matting) activities. There were also some differences between urban and rural households in labor distribution among family members. Women of urban household appeared to have relatively less work load than those of the rural households (Table 9).

Table 9. *Division of labor among family members in dairy farming in the study areas (n=156).*

Variables	Rural mixed (n=123)				Urban (n=33)				Overall (n=156)			
	Men	Women	Son	Daughter	Men	Women	Son	Daughter	Men	Women	Son	Daughter
Barn cl	8(6.5)	85(69.1)	11(8.9)	19(15.4)	8(24.2)	12(36.4)	8(24.2)	5(15.2)	16(10.3)	97(62.2)	19(12.1)	24(15.4)
Sell A	80(65.5)	34(27.6)	6(4.9)	3(2.4)	18(54.5)	10(30.3)	5(15.2)	0(0)	98(62.8)	44(28.2)	11(7.1)	3(1.9)
Feeding	21(17.1	77(62.6)	16(13)	9(7.3)	8(24.2)	14(42.4)	4(12.1)	7(21.2)	29(18.6)	91(58.3)	20(12.8)	16(10.3)
Herding	24(19.5)	22(17.9)	68(55.3)	9(7.3)	3(9.1)	7(21.2)	21(63.6)	2(6.1)	27(17.2)	29(18.6)	89(57.1)	11(7.1)
Watering	23(18.7)	37(30.1)	56(45.5)	7(5.7)	3(9.1	11(33.3)	16(48.5)	3(5.7)	26(16.7	48(30.8)	72(46.2)	10(6.4)
Mating	73(59.3)	2(1.6)	47(38.2)	1(0.8)	15(45.5)	0(0)	18(54.5)	0(0)	88(56.4)	2(1.3)	65(41.7)	1(0.6)
Milking	5(4.1)	94(76.4	9(7.3)	15(12.2)	8(24.2)	18(54.5)	2(6.1)	5(15.2)	13(8.3)	112(71.8)	11(7.1)	20(12.8)
Processing	0(0)	79(64.2	6(4.9	38(30.9)	0(0)	22(60)	1(6.7)	11(33.3)	0(0)	101(64.7)	7(3.8)	49(31.5)
SDP	2(1.6)	101(82.1)	4(3.3)	16(13)	1(3)	16(48.5)	7(21.2)	9(27.3)	3(1.9)	117(75)	11(7.1)	25(16)

SDP=sell of dairy products, numbers in bracket represents percentage of respondent,
Sell A.=selling of animals.
Barn cl= barn cleaning.

3.1.9. Extension Service on Dairy Farming

Only 25% of the smallholders said that they had got some advice from extension agents on improved dairy farming. Nearly half of the smallholders (45%) were operating their farms based on their own experiences, 5% benefitted from radio transmitted messages and the rest (25%) from parents and other relatives experiences. Only 5.8% the small holders took some sort of training at District level (two days training) on improved dairy farming and milk handling.

3.2. Major Constraints of Milk Production

The major constraints hindering milk production that were cited and ranked by the respondents from Rural (mixed-crop livestock production) system, in decreasing order of importance were shortage of grazing land, disease, low production performance of indigenous cows and lack of market access. Urban smallholders mentioned more frequently feed related problems that include shortage of grazing land, seasonality in the availability of the traditional brewery by-product "*Atela*" and lack of agro industrial by-products. During our survey study we also witnessed that the local beverage especially "*tela*' was not regularly prepared during summer due to less demand by customers in that period.

3.2.1. Shortage of Grazing Land

In Rural (mixed crop-livestock production) system the available family land is portioned into different agriculture activities that include crop production, coffee, "*Inset*" (*Ensete ventricosum*) and natural pasture, with the largest proportion of land assigned for crop production. Grazing land shortage is particularly acute from October—December and June. Urban milk producers also faced similar problems of grazing land except those rented grazing land from organization owning lands in the area.

Table 10. *Summary of milk production constraints cited and ranked by smallholders in Telo District.*

Variables	Rural			Urban			Overall		
Constraints	**N**	**Mean**	**Rank**	**N**	**Mean**	**Rank**	**N**	**Mean**	**Rank**
Shortage of grazing L	123	2.33	1	33	1.33	1	156	2.12	1
Health problem	123	2.80	2	33	3.79	4	156	3.01	2
Low productivity	123	2.83	3	33	3.73	3	156	3.02	3
Lack of market access	123	4.45	4	33	5.64	6	156	4.70	4
Water scarcity	123	4.76	5	33	5.82	7	156	4.99	6
Feed shortage	123	5.26	6	33	2.76	2	156	4.75	5
Labour shortage	123	5.60	7	33	5.06	5	156	5.48	7

N= frequency.
L=land, Rank 1 = most important problem, Rank 7 = least important problem.

3.2.2. Disease Outbreak

Infectious and parasitic diseases encountered in the study area as reported by the veterinary technician working in the area were anthrax, black leg, pneumonia, diarrheal diseases, external and internal parasites, lumpy skin disease (LSD), babesiosis and bloating. Both rural and urban smallholders ranked health problems as second most important constraint, next to feed problem. The severity of the disease problem was said to be partly associated to shortage of drugs in the "district "clinic, irregularity of vaccination programs and absence of laboratory equipment and chemical reagent.

3.2.3. Low Production Performance of Indigenous Cows

Almost all (99%) cows found in the study area were indigenous low producing cows. The problem was indicated by the smallholders as well as animal production and health technicians in the current study area. Due to poor infrastructure development in the area, farmers were not benefiting from dairy technologies like AI that could help to improve productivity. In the extension work activities also livestock were not given equal emphasis like the crop sector

3.2.4. Lack of Market Access

Remoteness to the town and lack of road access to the town or milk demand place was indicated as the bottleneck of rural smallholder milk producers. Thus, rural smallholders have the only chance to convert milk in to butter and cottage cheese in order to sell with unfixed price.

3.2.5. Feed Shortage

Urban smallholder milk producers mentioned feed shortage as their second most important constraint that lagging behind milk production next to shortage of grazing land. Large majority (94%) of urban smallholder milk producers indicated that the seasonality of local beverage especially, "*tella* "production and the total absence of agro-industrial by products were the major problem associated with feed shortage. during summer animals only depended on grazing land.

4. Discussions

The average cattle number per household in the study area was 7.45 with minimum and maximum number of 1and 22 respectively. The higher numbers of cattle were found in rural areas, this might be due to land availability and the need for oxen (for traction) in rural areas. As the result showed land size for crop and family number per household has positive correlation with Pearson correlation coefficient of 0.28 and p -value 0.027, the same result was found for cattle number and land size for pasture or grazing land.

The average land holding of the respondent in the study area was 2.12 hectare per household with highest portion (1.4ha) allocated to crop production followed by pasture (0.295ha) and the least proportion (0.1785ha) was allocated to coffee production. This average land holding pattern of household was lower than the national land holding size of 2.5hectare and 6.24ha reported for Northern Ethiopia [7].

As the respondents indicated the primary objective of cattle keeping in rural area were for traction followed by milk production for home or family consumption. But in urban areas the primary objectives of cattle keeping were for milk production. This result agreed with the reports of [8] Awassa, Shashemene and Dilla and [9] for Fogera district who reported the primary objectives of cattle keeping in highlands of Ethiopia were for production of oxen for traction.

The source of feed for dairy cows was not significantly different between rural and urban production systems, the main source of feed were grazing on natural pasture and after math grazing with tethered and herded grazing system and very rarely crop residues. This finding is in line with the report of [10] and [11], who indicated that the major basal feed resources for cattle in Bure, Bahir Dar and Mecha districts and the highlands of Ethiopia, respectively, are natural pasture, crop residue and stubble grazing. But disagree with the findings of Daniel who reported crop residues particularly cereal straws are the major livestock feed particularly in the dry seasons, providing 40-50% of the total annual livestock feed in Ethiopian highlands [12].

The labour distribution among family member showed that there was significant difference between urban and rural dairy cattle production systems. In urban milk production (24.2%) of men participated in barn cleaning. but in rural milk production only 6.5% of men participated in barn cleaning.

In general milking, barn cleaning, processing and feeding supplemental feed was primarily undertaken by women followed by daughters. This finding is agreed with the finding of Kedija who found in Meiso district that milking is primarily undertaken by women [13]. But in contrast to the findings of Adebabay who found that milking is primarily undertaking by men in Bure district [14]. Sale of cattle and

breeding decisions were undertaken mostly by male (men and son). This result showed that women have no equal participation in the decision of household affairs i.e. decisions are made solely by male. Therefore, this result indicated, the necessity of gender education in the district so that women can be empowered in every social, economic, cultural and political context. The respondents reported that the treatment measure for the sick cattle most of the time was traditional rather than modern. This report is not in agreement to report of Ahmed [15] reported 85.2% use modern treatment

Smallholders indicated shortage of grazing land as most important constraints that hinder milk production in the study area. Out of average landholdings, 95% was cultivated during the rainy season and only 5% was left for grazing. Thus during the rainy season, all livestock were concentrate on a small grazing area. As the farmers reported the main season of feed shortage for their dairy cattle were October, December and June. This might be due to the over lapping situations of crop production, (maize cultivation takes place before harvesting of summer crops like wheat, barley, *teff,* sorghum, bean and pea. On the other hand, as this result shows there was no or little utilization of crop residue as an animal feed due to lack of awareness and/or refusal of animals to eat. Therefore, this shows the necessity of training of farmers on crop residue utilization and improvement of nutritional quality of crop residues through, like physical and chemical treatment.

In this study disease affecting dairy cattle were anthrax, black leg, diarrhea, external parasite, bloat, teat problem and cough in decreasing order of importance. Anthrax is the first important disease affecting milking cows in the study area; as Anthrax is a vaccine preventable disease, its high prevalence shows the weak health service (vaccination program) in the area. The majority of the smallholders taking their sick animals to traditional healers and/or trying to handle by themselves also show the weakness of public or private veterinary services in the area.

5. Conclusion

It can be concluded that Telo district is of a highland agro-ecology with a favorable climate for dairy farming. The district however is not making use of this potential. Although crop and milk cattle production are both practiced in the district, there is no circulation of resources between the two sectors. Dairy technologies like improved breeds, health care, improved forage production, access to market, access to extension service, etc., are not available or accessible for smallholders of the district.

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