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Characterization of Smallholder Cattle Milk Production System in Aleta Chukko District, Southern Ethiopia

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Abstract

The study was conducted at Aleta Chukko district, Southern Ethiopia with the objective of characterizing smallholder cattle milk production system. A single-visit multiple-subject formal survey was used to collect data on milk production system from a total of 100 households. For this purpose, six kebeles were selected using purposive sampling method, while households from each kebele were selected randomly. Local indigenous zebu cattle breed dominated cattle population in the study area (95.6%). The major purposes of cattle rearing in the district was for milk production (72%), income generation (17%), fertilizer, social value and saving purposes (11%). Milking, milk processing, barn cleaning and sale of dairy products were mainly performed by women while live animal marketing and stall feeding were performed by a husband. Majority of households kept their animals in the same house in the family house (89%). Communal grazing and stall feeding were feeding systems practiced in the study area. River water, well water and tape water were used as a source of water for the cattle. About 91% of farmers used only natural mating system with a bull available in the area. Average lactation length of local and crossbred cows was 9.93 ± 0.2 and 10.61 ± 0.4 months with mean calving interval of 19.93 ± 0.2 and 21.7 ± 0.3 respectively. The overall mean daily milk yield of local and crossbred cows was 1.45 and 4.69 liters, respectively. Shortage of grazing land, diseases and parasites, inadequate veterinary services and low milk production potential of indigenous cattle were major constraints of cattle production in the district. Put together, milk production in Aleta Chukko district is subsistence type despite of its great role in consumption and income generation.

Keywords: Aleta Chukko; Cattle production; Characterization, Milk production

Abbreviations:

SNNPRS: Southern Nations, Nationalities and Peoples Regional State; ACWARDO: Aleta Chukko Woreda Agricultural and Rural Development Office; AI: Artificial Insemination; ANOVA: Analysis of Variance; CSA: Central Statistical Agency; HH: House Hold; GDP: Gross Domestic Product; SE: Standard Error of Mean; SPSS: Statistical Package for Social Sciences

Introduction

Livestock production in Ethiopia is mainly of smallholder farming system with an animal having multipurpose use and accounts for approximately 30% of the total agricultural gross domestic product (GDP) and 16% of national foreign currency earnings [1]. Cattle are very important livestock species in the traditional mixed crop livestock production systems of Ethiopia by providing mainly drought power, a small amount of milk, meat usually when they retire and manure.

Dairy production is an important part of the Ethiopian livestock production systems. Cattle, camels, goats and sheep are the main livestock species that supply milk in the country, with cows constituting 83.4 % of the total annual milk output of the country [2]. The country's milk production level increased only by 1.6% and per capita production declined by about 0.8% annually during 1966-2001. Per capita milk consumption has been reduced from 26 liters in the mid-1980s to about 16 liters in 2001 [3]. Although the country recently recorded an annual growth rate of 3% in national milk production, it was achieved mainly due to increased herd size (60%) than productivity improvements [4]. This indicates the gap that exists between the current supply of milk and the demand for milk in Ethiopia.

Moreover milk and milk products are economically important farm commodities and dairy farming is an investment option for smallholder farmers [5]. It plays a very important role in feeding the rural and urban population of Ethiopia. Milk is produced daily, sold for cash or readily processed. It is a cash crop in the milk-shed areas that enables families to buy other foodstuffs and is significantly contributing to the household food security [6]. Similarly Production and marketing of milk plays an important role in improving the livelihoods and household income of small holders in Chukko district. Milk production is mainly from indigenous cows which are kept under smallholder farmers under traditional management system. However, there is little information on existing cattle milk production system. Therefore, the current study was initiated to address research questions about cattle milk production system in the study area. The finding of the study is important to generate information and tighten the existed information gap. It is also important to indicate status of cattle milk production in the study area and make information available for the development planners and policy makers for immediate intervention to dairy sub-sectors. Furthermore, findings

from the present work can provide baseline information for other researchers interested in milk production and animal husbandry sector. Therefore, the objective of this study is to characterize cattle milk production system in Aleta Chukko district.

Material and Methods

Description of study area

The study was conducted in Aleta Chukko woreda found in Sidama Zone, Southern Nations, Nationalities and Peoples Regional State (SNNPRS). It is located 62 km south of Hawassa, the regional capital of Southern region and 339 Km south of the capital Addis Ababa along Addis Ababa Moyale Highway. It has an altitude of 1400-2300 masl. with an annual average rainfall of 1100-1400 mm and mean annual temperature of 10-26°C. Major Cash Crops grown in the area are coffee, pineapple, chat, avocado and mango, and other food crops like cereals, sweet potato, cassava and enset. Aleta Chukko woreda contains 27 kebeles. Total population of district is 198, 269. From these, 48.63% are males and 51.37% are females Animal husbandry in the area is characterized by mixed Crop-livestock production system. There are 87771, 18760, 11246, 272, 892, 3780 and 68276 Cattle, Goat, Sheep, Horse, Mules, Donkey and Poultry in the Chuko woreda respectively [7].

Sampling procedure and sample size

All households in the study area who owned both local and crossbred milking cows were involved. For the study, purposive sampling procedure was employed. Therefore, the study site was selected purposively taking into account accessibility and the livestock potential of the area. Individual households owning milking cow were identified and listed in selected kebeles (administrative units under the study district). A total of 100 households from six rural kebeles namely Chukko Lamala, Loko daama, Dongora kawado, Lella Honcho, Gambela and Tesso. Households were selected based on proportion of total household size in each kebele. The numbers of households were selected randomly from households who own local or crossbreed milking cows.

The sample size was determined using the formula given by [8].

N=0.25/SE2=100

Where: N=Total sample size and

SE2=Standard error

Therefore a total of 100 household were sampled at 5% Standard error. Thus SE is at maximum when p=0.05.

Data collection methods

Both primary and secondary data sources were used. Primary data were obtained from the household heads through pre-structured questionnaire that had a type of mixed questions. The secondary data were taken from the agricultural and rural development office and public and veterinary health office of the Woreda.

In each study area, a structured questionnaire that has a type of mixed questions with open ended and closed types was administered. Development agents working in the woreda office of agriculture and rural kebeles who speaks local language Sidamigna were recruited and trained on way of handling and administering the questionnaire. The focus areas of the questionnaire were production performance, socioeconomic background of respondent, available feed recourses, grazing system, and health of dairy cattle, constraints of milk production, milking and milk handling practices and milk handling utensils. The process of data collection was closely supervised by the principal researcher.

Statistical analysis

Data collected from survey were entered, checked and managed using Microsoft excel spread sheet for analysis. Statistical package for social science. SPSS [9] software was used for data analysis. Statistical methods like descriptive statistics (mean, standard error and frequency distribution) were performed. Associations of different variables were analyzed by using correlation coefficient (R). Means of quantitative data between study sites were compared using one way analysis of variance (one way ANOVA) and also mean price of butter and butter milk in dry and wet season were compared using t-test. The results were considered statistically significant at P-value less than 5% and confidence interval of 95%.

Results and Discussion

Household characteristics

Family size, sex, household head and age of the household in Aleta Chukko district is presented in Table 1. The average family size per household in Aleta Chukko district was 7.05 persons per household with 3.43 ± 0.126 and 3.67 ± 0.139 male and female per household, respectively. The mean (±SE) age of household head was 39.57 ± 1.089 year. About 89% of the household with the mean age of 40.09 ± 1.17 year and 11% of the household with mean age of 35.36 ± 2.72 year were male and female headed household, respectively in the study area. Majority of the household members were found in the age group of 21-64 years old (35.04%) followed by 11-20 years old (30.92%). 28.08% of household members in the study area were children in the age group of ≤10 years old. The remaining 5.96% of household member in study area was age group above 65years old.

Variables	Mean ± SE	Percent
Total family size	7.05 ± 0.212	100
Male	3.43 ± 0.126	48
Female	3.67 ± 0.139	52
Mean age of HH head	39.57 ± 1.089	
Male headed HH	40.09 ± 1.17	89
Female headed HH	35.36 ± 2.72	11
Age category		
Age ≤10	1.98 ± 0.103	28.08
Age 11-20 y	2.18 ± 0.133	30.92
Age 21-64	2.47 ± 0.107	35.04
Age ≥ 64	0.33 ± 0.071	5.95

Table 1: Total family size, age of household head, and age category of household members.

The average family size obtained in this study was greater than average family size reported by Adebabay [10] who reported the average family size of 6.22 in Bure district. Tesfaye [11] in Metema district and Kedija et al. [12] in Meiso district reported also an average family size of 5.7 ± 0.134 and 6.62 person per household, respectively. Similarly, Samuel [13] in Ada'a liben district reported a family size of 6.34 ± 20 persons per household. However, the average family size obtained in this study was lesser than the average family size reported by Sintayehu [14] in Shashshemene-Dilla area (7.39 ± 0.17), Asaminew [15] in Mecha and Bahirdar Zuria Woreda (7.71) and Berhanu et al. [16] in Bure district (7.5) persons per household. A proportion of male headed and female headed household in current study area was consistent with reports of Kedija et al. [11] in Metema district.

Educational status respondents

A proportion of illiteracy in this study was lower than proportion of respondents attended certain level of education. As indicated in the Table 2, majority of respondents in the study area had, attended secondary (33%), high school (33%), primary (22%) and college/ university education (2%). In the current study area, only 10% of the respondents were illiterate.

The percentage of illiteracy in this study was lower than that reported by (11) in Metema (45%), Adebabay [10] in Bure district (31.5%), and Fisseha [17] in the Bure district (50%). As indicated in the Table 2, majority of respondents in the study area had attended certain level of education.

Educational status	Percent
Illiterate	10
Primary education	22
Secondary education	33
High school	33
College/university	2
Total	100

Table 2: Educational status of respondents in Aleta Chukko district.

This showed the growing coverage of education system which provided better opportunity to implement improved agricultural practices and wise use of scarce agricultural resources in the study area. Therefore, this can be considered to be a good opportunity to facilitating extension services for rural development and transferring technology.

Cattle herd structure

A proportion of cow was higher in the current study area (51%). From the total cattle population in the study district, lactating cow was dominant (28.5%) followed by calve (27.5%) and heifers (12.1%). In the current study area, bulls (2.7%) and oxen (1.8%) occupies smallest proportion of cattle (Table 3). In the current study area, average mean (±SE) of lactating cow was 2.03 ± 0.104 head /household (HH). However average mean cross breed lactating cow was (0.09 ± 0.035). As indicated in the (Table 3), a proportion of cross breed heifer was higher than other age group of cross breed cattle (1.5%).

	Mean ± SE		Percent	
Types of cattle	**local**	**cross**	**Local**	**Cross**
Lactating cow	2.03 ± 0.104	0.09 ± 0.035	28.5	1.26
Pregnant cow	0.9 ± 0.085	0.01 ± 0.001	12.6	0.14
Dry cow	0.74 ± 0.092		10.4	
Heifer	0.86 ± 0.082	0.11 ± 0.06	12.1	1.5
Male calf	0.99 ± 0.066	0.06 ± 0.024	13.9	0.84
Female calf	0.97 ± 0.067	0.03 ± 0.017	13.6	0.42
Oxen	0.13 ± 0.037	0.01 ± 0.001	1.8	0.14
Bull	0.19 ± 0.039	0.01 ± 0.001	2.7	0.14
Total	**6. 81**	**0.32**	**95.6**	**4.4**

Table 3: Cattle herd structure in Alata Chukko district.

The proportion of local cattle obtained in this finding was less than that reported by Fisseha [17] in Bure district (99.5%), however, it was higher than that reported by Adebabay [10] in the same district (93%). The mean holding of lactating cow (2.03 ± 0.104) in this study is much higher than mean holding of bulls (0.19 ± 0.039) and oxen (0.13 ± 0.037). This indicates that farmers in the study area keep cattle mainly for milk production.

Husbandry practice of dairy cattle

Purpose of cattle rearing: The major farming activity in the study area was crop-livestock production. Cattle was important component of the mixed-farming system in the study area since they provide, milk, income generation, saving and fertilizer to the farmers. Cows were the only source of milk in Aleta Chukko district. The main purpose of cattle rearing is presented in the Table 4. A primary purpose of cattle rearing in the Aleta Chukko district was for milk production (72%) followed by income source (17%). In the current study area, cattle were not reared for the purpose of meat production and traction.

Purpose	Percent (%)		
	cattle	**Small ruminant**	**Donkey**
Milk production	72	-	-
Meat production	-	9	-
Income generation	17	78	92
Drought power	-	-	-
Saving	-	13	-
Transportation	-	-	8
Other	11	-	-

Table 4: Main objectives of livestock rearing in Aleta Chukko district.

This result contrasts with Asaminew [15] who prioritized drought purpose as primary objectives of cattle rearing followed by milk production in Mecha and Bahr Dar Zuria woreda. However, main

objectives of cattle rearing in current study area, agreed with Tesfaye [11] in Metema district which was for milk production (48.9%) followed by income source (26.9%). Another purpose of cattle rearing in the study area was social function, manure production, and gift (11%). This was consistent with Adebabay [10] in Bure district of Amhara regional state.

Labor force allocation

Labor allocation for different cattle husbandry activities is presented in the Table 5. In this study, herding was mainly a responsibility of children (62%). Hired labor (26%) and men (11%) were also participated in this job. Milking of dairy animal is main job of women (80%). In addition, sale of dairy products (58%), barn cleaning (50%), calf rearing (38%) and milk processing (47%) are main jobs of women. Children were also main participants in the household in the activity of sale of dairy products (32%), barn cleaning (36%), calf rearing (26%), and milk processing (40%) and milking (17%). Live animal marketing (69%) and stall feeding (46%) was a main job of men. Also women and children in the household participated in this activity. Generally, even though there was sharing of responsibility for different husbandry activities among all members of household, women played major role in dairy production.

Activities	Responsibility sharing among family members (%)			
	Men	Women	Children	Hired labor
Herding	11	4	62	26
Stall-feeding	46	16	26	12
Milking	3	80	17	
Barn cleaning		50	36	14
Calf rearing	17	38	26	19
Milk processing		47	26	19
Sale of dairy products		58	32	10
Sale of live animal	69	19	12	

Table 5: Labor allocation in respect to different dairy activity.

Concerning labor allocation for different dairy activity in Aleta Chukko district, milking of dairy cow was the job of women (80%). This is inconsistent with Adebabay, Tesfaye and Asaminew [10,11,15] who found that milking of dairy cow was the job of men while this result agree with Kedija et al., Samuel and Derese [12,13,18] who found that milking activity of dairy cow is mainly a job of women. Live animal marketing (69%) and stall feeding (46%) was a main job of men. This finding agreed with Adebabay, Kedija et al., Asaminew, Asaminew and Eyassu [10,12,15,19]. Herding activity is mainly performed by children (62%) followed by hired labor (26%) and Men (11%). This result is consistent with Asaminew and Eyassu [19] while it contrasts with Adebabay and Tesfaye [10,11] who prioritize hired labor to be responsible for herding activity followed by children.

Cattle housing and facilities used in the barn

Housing condition and facilities used in the barn are presented in the Table 6. From the total interviewed households, 89% of respondents kept their cattle alongside with farm households under the same shed in the separate room (barn) while 11% of household housed cattle in the separate house (loose house). This finding contrasted with Asaminew [15] who found that a majority of respondents in Mecha and Bahir Dar zuria woreda kept their cattle in separate house and Tesfaye [11] who reported that farmers in Metema district used open barn that did not have roofing. This indicates that farmers in current study area may have less option and less understanding about livestock production and also there may be less provision of training and extension advice when compared to that study area. Majority of farmers had both water and feed trough (47%) while 26% of the farmers had no facilities in the barn. The floor of the house was compacted soil. This was consistent with Tesfaye [11] in Metema district.

Types of house N=100	Percent
Separate house	11
House together farm house hold	89
Facilities used in the barn	
No facility	26
Feed trough	22
Water trough	5
Both feed and water trough	47

Table 6: Types of cattle house in Aleta Chukko district.

Cattle feeds and feeding system

Cattle feeds and feeding system in the study area is presented in the Table 7.

Parameters	Percent (%)
Feeding system	
Communal grazing	43
Private grazing	25
Stall feeding	32
Feed source	
Grass	63
Crop and crop residue	22
Industrial by product	6
Improved forage	9
Season encountering feed shortage	
Dry season	82
Both dry and wet season	18

Table 7: Feedings, feeding system and season encountering feed shortage in Aleta Chukko district.

Communal gazing (43%), private grazing (25%) and stall feeding (32%) were major feeding system in Chukko district. From the total interviewed household 63% of the respondents revealed that grass is

major source of feed for the livestock (63%). Crops and crop residue (22%), industrial by-products (6%) and improved forage (9%) were available source of feed in the study district.

In the current study area, shortage of feed was major problem in both dry and wet season although 82% of interviewed farmers associated the livestock feed shortage with dry season. Feeding system in current study area was consistent with Adebabay [10] who found that communal grazing and stall feeding are types of feeding systems in Bure district. A major source of feed obtained in this study was in agreement with Alemayehu [20], who found that the major feed resource in Ethiopia are natural grazing and browse, crop residue improved pasture and agro-industrial by products. Also Samuel [13] found that major livestock feed sources in Ada'a liben woreda in Oromia regional state were crop residues, natural pasture and commercially available feeds. This finding also agreed with reports of Sintayehu et al. [14] who reported that the major basal feed resources for cattle in the highlands of Ethiopia are natural pasture, crop residues and stubble grazing.

Source of water for the cattle

River, well and tape (pipe) water were source of water in study area (Table 8). From the total respondents, 59% of the household used river water for cattle. Few respondents (13%) used well water while 23% of the total respondents used both river and well water as source of water for cattle. This result is comparable with Berhanu et al. [16] in Metema district.

Source of water N=100	Percent
Tap (pipe) water	5
River	59
Well	13
Both River and well	23
Frequency of watering	
Wet season	100
Once a day	
Dry season	
Once a day	38
Twice a day	62
Do you have shortage of water?	
Yes	52
No	48
Season of water shortage	
Dry season	52
Wet season	

Table 8: Sources, frequency of watering and season of water shortage in Aleta Chukko district.

During dry season most of the farmers gave water for cattle twice a day while during wet season, the frequency of watering is once a day. This may be due to the consumption of green pasture which has high water content and prevailing low environmental condition during wet season. Shortage of water was major problem for cattle in the dry season especially in winter season.

All of the respondents in the current study area gave water once a day during wet season while during dry season, 62% of total respondents gave water twice a day. In this study, it was also observed that 52% in the study area had shortage of water especially during dry season while 48% of the respondents revealed the absence of water shortage in all season of the year.

Cattle breeds and breeding system

Majority of cattle breeds found in the Aleta Chukko district were short horned indigenous zebu cattle. As indicated in the Table 3, 95.6% of cattle in the study area were local zebu and 4.4% were crossbred (Zebu x Holstein and Zebu x Jersey). In the current study area, majority of the farmers (91%) practiced natural mating system only using bull available in the area while some of the farmers used both natural and artificial mating system (7%). From the total respondents 2% of them used artificial insemination only (Table 9). This result is inconsistent with Berhanu et al. [16] who found that breeding system in Metema district was entirely natural mating system. This may be due to absence of using AI service or exotic breed bull station that provide breeding bull service due to absence of technological intervention to introduce foreign (improved) breed in that area.

Selection practices of bull for breeding

From the total respondents, 73% practiced selection of bull before mating (controlled mating) while 27% used free mating system. As indicated in the Table 9, selection of bull was practiced based on milk production performance of the bull by asking background of the bull dam (family selection) (34%), body conformation of the bull (29%).

Types of breed N=100	Percent (%)
Local	91
Cross	2
Both cross and local	7
Type of mating system used	
Natural	91
AI	2
Both natural and AI	7
Do you practice selection?	
Yes	73
No	27
What are the criteria for selection of bull	
Milk production performance	34
Body conformation	29
Others	10

Table 9: Cattle breeds and breeding system in Aleta Chukko district.

Selection practice of bull for breeding purpose in current study area was comparable with Seyoum et al. [21], who found that overall, 65.8% of the farmers had intention and exercised practice of selecting bulls for breeding purpose in Metema district.

Calf rearing practice

Calf management practice in the study area is shown in the Table 10. In the current study area, all the respondents revealed that milking was not started until two weeks of birth due to bad odor. During this time only the calves suckled the dam. After two weeks, all the respondents (100%) in the study area allowed partial suckling of the dam. From the total interviewed respondents, 56% started giving feed to the calf after one month while 21% of farmers started after two weeks. Soft green grass (88%) and household (12%) residue were major feeds given to the calf after starting feeding. In this study, all the respondents practiced weaning. Average age of calf weaning was 8.36 ± 0.217 and 7.83 ± 0.543 month for local and crossbred calf, respectively.

Parameters	Percent
Feeding before weaning	
Partial Suckling	100
When you start feeding the calf?	
After two week	21
After three week	4
After one month	56
After two month	19
Types of feed given after starting feeding	
Soft grass	88
Household residue	12
Weaning age (month)	Mean ± SE
Cross breed	8.36 ± 0.217
Local breed	7.83 ± 0.543

Table 10: Calf rearing practice in Alata Chukko district.

Productive performance of dairy cattle in the Aleta Chukko district

In this study, the mean (±SE) age of first calving for local and crossbred cows was 51.24 ± 0.55 and 42.6 ± 1.47 month, respectively. Average lactation length of local cows was 9.93 ± 0.2 and 10.61 ± 0.4 month for crossbred cows and also mean (±SE) of calving interval of local and cross breed cow was 19.93 ± 0.2 and 21.7 ± 0.3 month, respectively. In current study area, the mean daily milk production of local cattle was 2.04, 1.78 and 0.54 liter in first, second and third lactation respectively with overall average mean of 1.45 liter of milk per day. The average daily milk yield of crossbred cow was 6.25, 5.08 and 2.75 liter per day at first, second and third lactation respectively with overall average of 4.69 liter milk per day (Table 11).

In the current study area, the mean age at first calving for local cows was comparable with mean age reported by Menale et al. [22-24]. However, it was slightly higher than mean age reported by Derese and Gebrekidan et al. [18,25] in Central Zone of Tigrai and West Shoa Zone of Oromia. Similarly, it was slightly higher than mean value of first calving for tropical cows under traditional management (43.2 month) as reported by Mukasa-Mugerwa [26].

Parameters	Mean ± SE	
	Local	Cross
Age at first calving	51.24 ± 0.55	42.6 ± 1.47
Lactation length	9.93 ± 0.2	10.61 ± 0.4
Calving interval	19.93 ± 0.18	21.7 ± 0.3
Daily milk yield		
Early stage	2.21 ± 0.054	6.68 ± 0.282
Mid period	1.97 ± 0.0577	5.107 ± 0.243
Late period	0.712 ± 0.028	2.96 ± 0.158

Table 11: Age at first calving, lactation length, calving interval and daily milk yield in Aleta Chukko district.

While, age at first calving obtained in this finding was slightly lesser than the value reported by Tesfaye, Asaminew and Eyassu [11,19] in Mecha and Bahirdar zuria woreda and Metema district. Average calving interval observed in this study was comparable with Derese and Radostits et al. studies [18,27]. However, it was lesser than that reported by Tesfaye [11].

Average lactation length in the current study area was consistent with the studies of Adebabay, Samuel, Asaminew, Mulugeta and Belayeneh [10,13,15,28]. However, it was higher than Tesfaye et al. studies [11,12,18,25,29]. This shows cow in the current study area had longer lactation length. This may be due to bred differences or feeding and other management factors in the current study area. Average mean daily milk yield decreased as lactation length advanced in both local and crossbred cows. Average daily milk yield in the current study area was comparable with the report of Derese et al. [18,25,28,29].

Milk consumption and utilization pattern

In the current study site, it was observed that the objectives of milk production were not only for home consumption. It was also for income generation. Majority of respondents (64%) in the study district reported that they sale surplus milk in the market to fulfill their needs in the family. However some farmers produce milk only for home consumption (36%). Farmers in the study area consume milk in the form of raw state and after processing (fermented and butter milk). Out of the total interviewed respondents, 78% of them consume butter milk while 21% consumes raw milk. As indicated in the Table 12, husband was given priority for consumption of milk (53%) followed by children (27%).

Constraints of milk production in Aleta Chukko woreda

Major constraints affecting milk production potential of dairy cattle in the study districts were shortage of grazing land, disease and parasites, shortage of land for cultivation of improved forage, inadequate veterinary service, low milk production potential of local zebu cattle, inadequate AI service and labor shortage (Table 13).

Majority of farmers reported that shortage of grazing land was main problem of milk production (37%) in the study area followed by disease and parasites (16%). Inadequate veterinary service to handle outbreak of diseases was also prevailing constraints of milk production in the area. In the study area, low milk production potential of local zebu cattle (11%) and shortage of land for forage cultivation (10%) were also major prioritized constraints for milk production in the study district. Similarly inadequate AI service to improve milk production performance of local zebu cattle which are dominant cattle population in the study area was also major problem of milk production in the area.

Variables	Percent
Form of milk more consumed	
Raw state	21
Fermented milk	1
Butter milk	78
Priority of milk consumption	
Husband	53
Children	27
Wife	20
Purpose of milk production	
Home consumption only	36
Sale and home consumption	64

Table 12: Purpose of milk production and use pattern in Aleta Chukko district.

Constraints	Percent
Shortage of grazing land	37
Disease and parasites	16
Shortage of land for forage production	10
Labor shortage	5
Inadequate veterinary service	14
Low milk production potential of cattle	11
Inadequate AI service	7

Table 13: Major Constraints of milk production in Aleta Chukko district.

Conclusions

Generally, milk production in Aleta Chukko district is subsistence type despite of its great role in consumption and income generation. Indigenous local zebu cattle with unknown breed are dominant cattle population in the area with low milk production potential. Improving such low milk production potential of local breed through AI service is constrained by animal factor, lack of awareness among farmers, inadequate AI service and feed shortage. Milk production in the study area is also constrained by Shortage of grazing land, disease and parasites, shortage of land for improved forage production, inadequate veterinary service, and low milk production potential of cow. Marketing of dairy products is also restricted to butter and butter milk. Milk and milk product collection center or co-operatives is absent in the Aleta Chukko district. Therefore, according to this study farmers are not profitable from the livestock sector.

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