Major Dairy Production Constraints in Alaba Wereda, Southern Nation's Nationalities and Peoples Region

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ABSTRACT

A study was conducted to identify the major dairy production constraints in Alaba Wereda, the Southern Nations and Nationalities People Region to provide base line information on the major dairy production problems in the area. A total of 60 respondents (10% from total population) were selected from 6 peasant associations and interviewed using structured questionnaire. Focus group discussion was also made with key respondents and the participants described the major dairy problems on their area. Data was analyzed through descriptive statistics (frequency, percentage) using SPSS software. A total of 60 farmers were interviewed. Among them 92 % were male household farmers and the rest 8 % was women household farmers. Maximum farmland size own by the respondents of the study area was 1.5 ha. Moreover, 1.8ha and 0.28ha is the mean farmland and grazing land own by the respondents respectively. Farmers reported that cattle were first (46.6%) rank follow poultry (23.4 %) as importance livestock used. Most respondents (70%) first and foremost keep cattle for draft purpose followed by milk products (65.2%), selling live animals (3.5%) and lastly for manure (5.25%). About 42.9% of respondents keep their Cross breeds animals in the same house where they live (Not separated). Only 57.1% out of the total respondents had separate shelters for their Cross breed's animals. However, 50% of the interviewer was reported keep for their local breed's animals on the separate shelters. The principal feed resources available to livestock in the study area include crop-residue (31.9%), natural pasture (22.3%) and concentrates (17%). The most critical periods of feed shortage were summer, autumn and spring (80% 12% and 8%) respectively. Out of the sample size 18.5% of the respondents used Artificial insemination for mating, 77.5% of the respondents were used natural mating bull with cross breed blood and 4% of the respondents also used a combination of AI and cross breed bull. The overall average lactation lengths and milk yields per cow per day of local and crossbred cows were 4 and 7 months, 2.1 and 7liters respectively. Mastitis, anthrax, ticks and black leg are the most prevalent disease that attacks dairy cattle's. The respondents reported that shortage of feed (50.6%), low pasture land productivity (34.2%), low animal productivity performance (15.8%), and Disease (17.3%) was the major dairy production constraints on the study area.

Introduction

Livestock in the Greater Horn of Africa is vital resource in promoting development. They provide 20- 30% of the Gross Domestic Product (GDP), and at the farmer level as much as 70% of cash income is generated from live stock (Ndikima *et al*., 2000). Nevertheless, several factors exert an influence on the production and productivity of livestock mainly kept under extensive and unimproved management conditions. Diseases, Seasonal feed scarcity and poorly developed Infrastructures curtail the production potential (Solomon, 1994).

In the highland areas, agricultural production system is predominantly smallholder mixed Farming, with crop and livestock husbandry typically practiced within same management unit.

Among the systems, milk production system is the most biologically efficient system that Converts large quantities of roughage, the most abundant feed in the tropics, to milk, the most nutritious food known to man (Belete, 2006).

The traditional smallholder dairy system makes up the largest characterized mode of milk Production, and uses low input feeding and management requirement and the indigenous Genotypes (Jabbar et al.1997). The characteristics of the improved dairy production system vary substantially in terms of intensification, management systems; genotype used, type and method of marketing and processing of milk and dairy products.

The livestock genetic resources of Ethiopia's have involved largely as a result of natural selection influenced by environmental factors. This has made the stock better conditioned to withstand feed and water shortages, diseases challenges and harsh climates. But the capacity for the high level of production has remained low (IPS, 2000).

The low productivity that is attributed to the low genetic potential of indigenous cattle, in adequate management, poor nutrition and reproductive performance are also commonly accused causes of low productivity (Arthur et al.1984).

Knowing the type and extent of the common and/ or major dairy production problems is very important to the livestock

owners and researchers which can assist in the development of heard Production strategies and in the selection of possible interventions.

Statement of the problem

Though the farmers have involved on the production of different cattle breeds, the output is poor due to unknown reason. Thus the search is aimed on the assessment of these constraints of management that have a significant effect on the milk production.

Justifications

The development and application of the principles of dairy farm requires some knowledge of management on dairy cattle in feeding system, housing and health care to achievable target of production performance. So this research is important to have general knowledge about constraints on management of dairy farm.

Objectives

To provide base line information on the major dairy production problems on the study area.

Methods of data collection

Study area

The study was conducted in Alaba special wereda of the Southern Nations Nationalities and Peoples Region (SNNPR). The "wereda" located 315km south of Addis Ababa and about 85km south west of south Nation Nationalities and people regional state capital of Awassa. The "wereda" is geographically located at 7 0 17' N latitude and 38 0 06' E longitude. The Altitude of the, wereda ranges from 1554 to 2149m above sea level (masl), but most of the wereda is found at about 1800 masl. Agro ecologically, the wereda is classified as "Weina Dega" and in terms of topography the wereda has an agriculturally suitable land. The annual rainfall varies from 857 to 1085mm. The area receives a bimodal rainfall where the small rainy season/months are between March and April while the main rains are from July to September The annual mean temperatures also varies from 17^{0}C to 28^{0}C with mean value of 24^{0}C (AWARDO, 2002).

Study design

Sample size

For this beginning survey 6 PAs were selected purposively selected. From each selected PAs 10 households were identified purposely (farmers owned dairy cow). There were, therefore, a total of 60 households (10% from total population) included in this study.

Study methods

Questionnaire Survey

A detailed questionnaire format was designed to generate information related to animal production (Demographic features of respondents and their land use pattern, livestock herd size, livestock function, feeding practice and availability, management systems such as watering, housing and breeding) with particularly stress on major dairy production problems in the area.

Focus group discussion

The focus group discussion was done with 10 key respondents from each PA identified by the PAs development agents. The major dairy problems such as major diseases, major feed types in the area, and other issues on dairy production have been raised for discussion to collect basic information. Data such as household characteristics, household land holding, livestock importance within household and constraint of dairy production were collected.

Data Analysis

Data was analyzed through descriptive statistics (frequency, percentage) using SPSS version 16 software (1996).

Result and discussion

Demographic feature

A total of 60 households participated in the present study. Demographic feature of respondent's shows most of the interviewees (92%) were male and the rest female (8%). Age range varied from 30 to 65 years (Average age of 41.9 years). Regarding respondents education level 42.5% were illiterates, 47% elementary level and the rest 10.5% secondary school (Table 1).

Table 1. Household Characteristics

Sex	%
Mal	92
Female	8
education level	
Illiterates	42.5
elementary school	47
secondary school	10.5

Land holding

Maximum farmland size own by the respondents of the study area was 1.5 ha. Moreover, 1.8ha and 0.28ha is the mean farmland and grazing land own by the respondents respectively. This finding was similar with kuastros mekonnen, 2007 reported.

Livestock Composition and Functions

Cattle cover the largest proportion of the livestock herd (46.6%) followed by poultry (23.4%), sheep (15%), goats (10.4%) lastly equines (4.6%) in their order of appearance.

Most respondents (70%) first and for most keep cattle for draft purpose followed by milk products (65.2%), selling live animals (3.5%), for skin and hide purpose 7%, for meat 9.5% and lastly for manure and loading each 5.25%. skin production in sheep and milk Production in goats were reasons mentioned In small ruminants for keeping the animals by larger proportion of the respondents.

Livestock Management

Housing

About 42.9% of respondents keep their Cross breeds animals in the same house where they live (Not separated). Only 57.1% out of the total respondents had separate shelters for their Cross breeds animals. However, 50% of the interviewer was reported keep for their local breed's animals on the separate shelters (Table 2).

Table 2. Dairy Cattle housing system in the study area

Parameters	%	
	Local breeds	Cross breeds
Separated Housed	50	57.1
Not separated Housed	50	42.9

Feeding

Availability, quality and quantity of feed vary among varies production systems. Cattle largely depend on rangeland grazing or crop residues that are of poor nutritive value. Feed is not uniformly supplied and the quality is poor (Ibrahim and Ololaku, 2002).

The different feedstuffs provided by farmers to their animals in the study area are indicated in Table 3. All the respondents (N=60) indicated that Crop residue (31.9%) were the most important feed resource available on Alaba wereda . However, Natural pastures (22.3%) were the principal feed resources in the study area.

Table 3. Major feed sources in the area

Feed sources	N=60	Percentage %
Natural pasture	21	22.340
Crop residue	60	31.915
Concentrates	16	17
Atela	11	11.7
Improved forage	6	17

The most critical periods of feed shortage were summer, autumn and spring (80% 12% and 8%) respectively. The dairy cattle owners also alleviate feed shortage by purchasing hay during that period, destalking or migrating their animals to the place where feed availability is high or decreasing their animals by selling to the farmers who have high feed availability.

Watering

Ruminates require water to maintain the water content of the body, and water availability affects voluntary feed intake; less water leads to inadequate intake of dry matter. For animals kept under pastoral production system, the frequency of watering is very important. During the dry season water is available only from wells and some lakes and streams (Ibrahim and Olaloku, 2002).

Table 4. Frequency of Watering for Dairy Cattle

Frequency of watering	N	%
Freely available	21	35
Once a day	24	40
Twice a day	15	25

Generally water is a problem in the study area. Water shortage was most acute during the period from December to March, pick at January second week to March end. During this shortage period most respondents indicated that animals are watered at a frequency of once every two days. River (87.5%), stream (36%) and pond (5%) were watering sources for their animals.

Frequencies of watering for dairy cattle on the study area were given in Table 4. 35% of the interviewer explained water was used freely available for their cattle and 40% of the respondents reported once a day.

Animal health care

Animal health care and improved health management is also one of the major constraints of dairy development in Ethiopia, which caused poor performance across the production system.

The poor housing and feeding methods of the dairy cows in Alba results in a significant health problem. the most prevalent disease that attack dairy cattle's were mastitis, anthrax, ticks, black leg.

Breeding practice

Out of sample size 18.5% of the respondents used Artificial insemination for mating, 77.5% of the respondents were used natural mating bull with cross breed blood and 4% of the respondents also used a combination of AI and cross breed bull (Table 5).

Table 5. Breeding system preferred by the respondents

Breeding system	N	Percent
AI	11	18.5
Natural	47	77.5
Both	2	4

Lactation length and average milk yield of local and crossbred cows

In most of the highlands of Ethiopia, milk production per head is low as compared to the highlands of Kenya due to the wide adoption of upgrading the indigenous breeds through cross breeding (Perera, 1999). The consequence of the low genetic potential of indigenous breed for productive traits makes total national milk production to be low (Mukasa-Mugerwa, 1989). The indigenous Zebu breed produces about 400-680 kg of milk/cow per lactation compared to grade animals that have the Potential to produce 1120-2500 liters over 279 day lactation.

The overall average lactation lengths of local and crossbred cows on the studay area were 4 and 7 months,respectively (Table 6). This result was less than the average lactation length of local cows (7.29months) at Meiso district (Kedija, 2008). The lactation length of the indigenous cows observed in this study is

less than the national average (7 months) (CSA, 2005), while the lactation length in crossbred cows observed in this study is also shorter than the lactation length of 11.7 months reported for crossbred cows in the Central Highlands of Ethiopia (Zelalem and Ledin, 2001).

Table 6. Daily Milk yield and lactation length of cow in the study area.

Parameter	Breeds	
	Local	Cross
Calving interval /months	>24	15-20
Age at first service (month)	48 month	24 month
Lactation length(month)	4	7
Milk yield (cow/liter/day)	2.1	7

Average milk production of indigenous cattle per cow is very low. Milk production potential of indigenous cattle such as Boran, Barca, Arsi and Fogera is low and it ranges from 494-809 kg per lactation (Mukasa-Mugerwa, 1989).

The overall mean milk yields per cow per day of local and crossbred cows were 2.1 and 7liters, respectively (table 6). the milk yield of the cross cows observed in this study is less than the average (13 litters) (kuastros mekonnen, 2007) finding. The mean of milk yields per cow per day determine on the types of breed and types and quality of feed and amount. The results indicate that the cross breed milk yield is lesser from what is expected from them scientifically, this might be as a result of feed shortage. Besides, the respondents said that our cow give us milk based on what we feed to her even though the cow is cross breed.

Constraints of dairy production in the study area

The most important constraints production of the study area was given in Table 7. The respondents reported that shortage of feed (50.6%) was the major dairy production constraints. Moreover, the respondents notified that low pasture land productivity (34.2%) low animal productivity performance (15.8%), and Disease (17.3%) also tailback of dairy production in the area.

Table 7. Major constraints of dairy production

Constraints	Frequency	Percent (%)
feed shortage	56	50.6
Disease	19	17.3
Drought	24	21.6
shortage of rain fail	18	16.3
marketing problem	9	7.9
low animal productivity performance	17	15.8
low pasture land productivity	38	34.2
low animal management	16	14.7

Conclusion and Recommendation
Conclusion

Major of dairy cattle breeds are local (indigenous) and a few of cross. Hay, natural pasture and crop residues were the most feed sources in the study area and they have low palatability and digestibility as well as high fiber content which are low in energy production and generally reduce milk production of dairy cattle breeds.

The respondents reported that shortage of feed, low pasture land productivity, low animal productivity performance, low animal management and Disease was the major dairy production constraints in the study area.

Recommendation

In order to improve the milk production potential of the breeds and reduce the negative impacts of the constraints, the following points were recommended.

Appropriate breeding improvement programmers should be provided to improve the indigenous breeds.

Governmental and private veterinary services should be established to protect the health of the dairy cattle.

Regular training should be given to the dairy cattle owners for improving the managmental condition of the dairy animals.

Reference

Arthur, G.H., Noakes, D.E. and pearson, H. 1984.Veterinary reproduction and obstetrics. In:Theriogenology, 5th ed. London. Bailler Tindal Company.

AWARDO/ Alaba wereda of agricultural and rural development office,2002.unpuplished

Belete Anteneh, 2006. Studies on cattle milk and meat production in Fogera woreda: Production systems, constraints and opportunities for development. MSc thesis, Hawassa University, Awassa, Ethiopia.

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

Jabbar M., T. Emmanuael and M,Gary, 1997. A methodology for characterizing dairy marketing systems. Working document No 3. ILRI ILRI, Addis Ababa. Ethiopia.

Ibrahim, H. and E. Olaloku, 2002. Improving cattle for milk, meat and traction. ILRI, manual 4. ILRI (International Livestock Research Institute), Nairobi, Kenya.

IPS (International Project Service) 2000. Resource potential assessment and project identification study of the Somalia Region: Research Report. Vol.III. Somalia, Ethiopia.

Kedija Husien, 2008. Characterization of milk production system and opportunity for market orientation: A Case Study of Mieso District, Oromia Region, Ethiopia. M.Sc. Thesis. Haramaya University, Ethiopia.

kuastros mekonnen ,2007.major animal health problems of market oriented livestock development in alaba woreda, southern nations nationalities and peoples region Debre Zeit, Ethiopia

Ndikima, S., Suth, J., Kamadi, R., Ossera, S., Marambi, R. and Hamlet, P. 2000. Coping mechanisims and their efficiency in disaster-prone pastoral system of greater horn of Africa. Effect of the 1995-1997 draught and the 1997-1998 ELNINO rains and response of pastorals and livestock. International Livestock research Institute (ILRI), Nirobi Kenya.

Mukasa-Mugerwa, E., 1989. A review of reproductive performance of *Bos indicus* cattle. ILCA Monograph No. 6, International Livestock Center for Africa (ILCA), Addis Ababa, Ethiopia.

Perera O. 1999. Management of reproduction. ILRI (International Livestock Research Institute), Nairobi, Kenya.

SPSS (Statistical Packages for the Social Sciences, version 16) ,1996. Cary, North Carolina.

Solomon, B. 1994. Prevatization of animal health service Sub-program proceeding of the 18th Annual conference of Ethiopia veterinary Association (EVA), Addis Ababa Ethiopia.

Zelalem Yilma and Ledin Inger, 2001. Milk production, processing, marketing and the role of milk and milk products on smallholder farmers' income in the central highlands of Ethiopia. In: Proceedings of the 8th Annual Conference of the Ethiopian Society of Animal Production (ESAP). 24-26 August, 2000, Addis Ababa, Ethiopia.