

Assessment of Dairy Cattle Feed Resources in Fafan Town Eastern Ethiopia

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Abstract: The study was conducted in Fafan town of the Somali Regional State Eastern Ethiopia with the objective to assess dairy cattle feed resource in Fafan town. Purposive sampling technique was used in selecting four Kebeles out of twelve living in the town. A total of 30 households per Kebele that own at least one local milking cow purposively selected. Thus, a total of 120 households were interviewed and data were collected by using Semi-structured questionnaire. The major feed sources for dairy cattle in the study area were crop residues (35.6%), conserved hay (26.7%), natural pasture (17.8%), improved forage (8.9%), fodder tree (8.9%) and concentrated feed (2.2%). The common type of crop residue used as feed for dairy cattle were maize comb, stack of maize and sorghum. The majority of the study area (93.7%) was faced for shortage of feed throughout the year. Most of the respondent perceived (58.33%) the improved forage production does not play role in increasing the production of dairy cattle this is may be due to lack of awareness, inefficiency of extension service and intervention. The major factors that hinder the availability feed resource for dairy cattle were livestock production system (42.2%), season of rainfall availability (20%), income (15.6%) and lack of improved technology (11.1%). Therefore, awareness creations on the utilization improved forage pasture, feeding system and enhance the quality of poor crop residue by fortifying feed handling and harvesting method were recommended.

Key words: Feed • Dairy • Cattle • Resource

INTRODUCTION

Ethiopia holds a substantial potential for dairy development mainly due to its large livestock population coupled with the relatively suitable environment for livestock production [1]. In 2011, Ethiopia was home for an estimated 53.4 million cattle, 22.8 million goats, 25.5 million sheep, 49.3 million chicken and 1.1 million camels [2]. However, the productivity of the livestock resources and the benefits obtained from the sector does not huge from small to large sized and subsistence to commensurate with the high livestock population.

The major bottleneck limiting productivity of livestock in Ethiopia is poor supply and low quality of feeds. The problem of feed supply and quality is even more aggravated in arid and semi-arid areas with erratic and unreliable rainfall. In such areas, the erratic nature of the rainfall hampers crop production. This in turn affects

the quantity of crop residues available for feeding to livestock. Low and erratic rainfall also severely affects the growth of grass and other forages. Thus, animals in these areas have to survive only on range grass that has a low nutritional value for most part of the year. The crude protein (CP) content of range vegetation is between 8 to 12% of dry matter (DM) at the beginning of rainy seasons, but drops to 2-4% in the four to six month dry season [3], leading to prolonged period of under nutrition and malnutrition.

The major feed resources to livestock in Ethiopia as in other tropical and sub-tropical regions include natural pasture, crop residue, agro-industrial by-products, stubble grazing and browse species which are used at the site of production or conserved for use during seasons of shortage. Their contribution to the total feed resource base varies from area to area based on cropping intensity [4]. The diverse causes of land degradation also result in

reduction of vegetation cover; low species composition and diversity, minimized plant restoration due to soil seed bank factors, reduced soil fertility and poor rangeland condition. The potential role of available reed resource for dairy cattle in meeting current and future producer needs is recognized as vital to the development of dairying in Ethiopia in general and study area in particular. Therefore, the availability of information on the dairy cattle feed resource is vital if proper and steady dairy development is expected in Ethiopia [5]. The aim of current study was to assess dairy cattle feed resource in Fafn town, Somali Region, Eastern Ethiopia

MATERIAL AND METHOD

Description of the Study Area: The study was conducted at Somali regional state of Ethiopia in Fafan town. Somali regional state is one of the nine regional states of Ethiopia which are located in the south east of the country. The Zone has a total population of 967,652, of whom 526,398 are men and 441,254 women. While 203,588 or 21.04% are urban inhabitants, a further 112,153 or 11.59% were pastoralists [6]. Fafan town is located west of capital city of Somali regional state and it's the low land according to part of other region.

Sampling Technique: Purposive sampling technique was used in selecting four Kebeles from 12 kebeles that found in the town with the intention of covering the town with different production systems and fair accessibility. From each kebeles four dairy cattle producing peasants association purposively was selected from each association representative households were randomly selected. A total of 30 households per Kebele that own at least one local milking cow purposively selected. Thus, a total of 120 households were interviewed. Semi-structured questionnaire was developed to collect data on the dairy cattle feed situation of the area, the practice of feeding and different type of feed resource for dairy cattle and feed were preferred by dairy cattle, the existing constraints in feeding different feed type to sheep and goats.

Method of Data Analysis: Both qualitative and quantitative data collected at household level was analyzed and summarized using both percentage and frequency procedures using SPSS statistical package for Social Science version 16.

Table 1: Types of major feed resource available for dairy cattle in Fafan town

Feeds Resources	Frequency	Percentage (%)
Crop residue	42	35.6
Conserved hay	32	26.7
Improved forage	11	8.9
Natural pasture	21	17.8
Concentrate feed	3	2.2
Fodder tree	11	8.9
Total	120	100

RESULT AND DISCUSSION

Major dairy Feed Resources and its Utilization: The major feed sources for dairy cattle in the study area include crop residues (35.6%), conserved hay (26.7%) and natural pasture (17.8%), (Table 1) which could be affected by stage of maturity, season harvesting and way of management.

The majority of the respondents in the study area use combinations of different feed resources based on availability, the effort made to improve the utilization of crop residues and cultivation of improved forage crops on private lands was not practiced. All of the dairy producer kept their cattle under extremely simple management conditions and receive little supplementary feed and health care similar to earlier reports [7] in central highlands of Ethiopia. Crop residues especially in wet season around crop producing area can be used as feed for dairy cattle.

The common type of crop residue used as feed for dairy cattle includes according to the response of the representative livestock owners maize comb, stack of maize and sorghum. In a survey conducted in the representative respondent of Fafan town 17.8%% of the respondent were reported natural pasture as feed sources for their dairy cattle. All the domesticated dairy cattle in the survey area consumed natural pasture at one time or another during the year, depending upon fodder availability and the preference by animal species. Some respondent utilize improved forage and fodder tree for dairy cattle as feed resource 8.9% and 8.9%, respectively. But supplementation of concentrated feed for dairy cattle is not common. Where only 2.2% of them practice it; this may be due to lack of awareness and income.

As indicated in Table 2 majority of the respondent dairy cattle consume crop residue, conserved hay and natural pasture as a main feed. As stated earlier those feed resource have a problem of lower quality. While very few numbers (4.17%) of respondent could strongly disagree with the idea that feeding crop residue has low nutritive

Table 2: feeding of dairy cattle with crop residue

Response	Frequency	Percentage
Strongly agree	55	45.83%
Agree	50	41.67%
Disagree	10	8.33%
Strongly disagree	5	4.17%
Total	120	100%

Table 3: shortage of feed resources for dairy cattle in the study area

Response	Frequency	Percentage
Shortage of feed	113	93.75%
No shortage of feed	7	6.25%
Total	120	100%

Table 4: utilization of improve forage as feed for dairy cattle to improve production

Response	Frequency	Percentage %
Improvement predication by feeding improved forage production	50	41.7
No improvement of milk production in forage production	70	58.3
Total	120	100

value for dairy cattle because this may due to long term traditional habit on feeding crop residue as a good feed resource.

As in the Table 3 indicated that 93.75% of respondent where strongly agree that there is high shortage of feed throughout the year. According to the result of the survey study showed that the livestock production in the area was insufficient due feed shortage which bring by change in vegetation cover as a result of decline land production, low carrying capacity of the range land and poor vegetation composition. According to [8] the number of livestock and the available feed resources is not proportional to be beneficial for livestock rearing and water, which is in agreement with the report of [9]. However, nutrition has a very important influence on animal reproduction, milk production and growth performance.

According to respondent of the representative (Table 4) above 58.33% the respondent disagrees as the improved forage production does not play role in increasing the production dairy cattle this is may be due

to lack of intervention, awareness creation up on the quality and contribution of the improved forage for livestock, but 41.67% of the responded are strongly agreed as the improved forage production will improve or increase the production and secure feed available through out of the year this may be due to experience from other environmental where is forage production are adopted to some the problem of shortage of feed and quality with respective increasing of dairy cattle production performance

According to the response obtained from the respondent in Table 5, dairy cattle are provided with feed two times per day are 52.08% and 41.67% for lactating and non-lactating cattle, respectively. According to the respondents report, this is due to the fact that the shortage of feed and water causes provision of two times per day, in the case of surplus feed may be supply three times per day is lowest. But few of the respondent provide with feed three times per day that caused due to climate condition or season of the year. However, 6.25% and 37.5% of respondent supply one time per day that is morning during the day the animals released to the field for Lactating dairy cattle and non- Lactating dairy cattle respectively, because of they are low economic implies to purchase or prepared feeds.

According to the respondent in the study area more than half of them (68.75%) could not use supplementary feed for their livestock especially for dairy cattle. Whereas 31.25%of the responded indicate that they are using supplementary feed for their stocks.

In terms of the effect of the supplementation on productive of dairy cattle 20.83% would agree the supplementation improve productivity in dairy cattle. However 79.17%of the responded did not agree with this idea because of lack of supplementation and awareness of the effect of supplementation or the productivity of dairy cattle.

The majority (64.58%) of the respondent have local breed because of shortage of seed supplementation as exotic breed require huge amount of feed supplementation and intensive management. But, 35.42% of respondent use cross breed as result of adoption of the environment,

Table 5: Frequency of feed provision for lactating and Non-lactating dairy cattle

Time of provision	Lactating dairy cattle		Non-lactating dairy cattle	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Three time	50	41.67	25	20.83
Two time	63	52.08	50	41.67
One time	7	6.25	45	37.5
Total	120	100	120	100

Table 6: Type's dairy cattle breed composition in the study area

Breed	Frequency	Percentage
Exotic	--	--
Cross breed	43	33.42%
Local breed	77	64.58%
Total	120	100%

Table 7: types of breed that used for milk production in the study area

Breed	Frequency	Percentage
Local breed	70	79.1
Cross breed	50	20.9
Pure Exotic breed	0	0
Total	120	100

Table 8: dairy cattle production system

System	Frequency	Percentage
Intensive	--	--
Semi- intensive	50	41.67%
Extensive	70	58.33%
Total	120	100%

Table 9: Factor affecting availability of feed resource in fafan town

Factors	Frequency	Percentage
Livestock Production system	51	42.2
Agro-ecology	2	2.2
Lack of improved technology	13	11.1
lack of extension service	7	6.7
income	19	15.6
Awareness	3	2.2
Season of rainfall availability	25	20
	120	100

has good perception the milk production potential of cross breed and to some extensive of their economic level even if there is shortage of feed in the town during the dry season, but they were over feed shortage problem by conserved feeds.

As indicate in Table 7, majority (79.1%) of the respondent consider that local breed were more productive as compared to both cross breed due to their ability to resist disease, productive on low quality feed and under low management as compared to exotic breed. This perception may be due to lack of awareness, intervention and shortage of feed. While 25% and 20.83% of the respondents preferred exotic and cross breed respectively, because they has high milk production potential than local breed under good managements.

As Table 8 clearly indicated that 58.33% or majority of respondent depend on extensive management system. they are dependent on grazing land feed resource availability while 41.67% of the respondent where also some intensive management system by using some of crop residues and some cultivated feed resource but stile

there were no more practiced way of intensive management system due to shortage of feed resource throughout the year especial during wet season when the grazing land is occupied by crop cultivation.

Constraint of Feed Resource Availability: The major factors that hinder the availability feed resource for dairy cattle were livestock production system (42.2%), season of rainfall availability (20%), income (15.6%) and lack of improved technology (11.1%).

Shortage of feed resource in the study area were also related to the rest constraints as indicated in different findings as the grazing land in a given area decline the amount of feed and the quality also reduced [10], this may be due to overstock and overgrazing of the rangelands. Furthermore range land productivity was interlinked to availability of water in the study area and human population size. As responded by the respondent in the study area since the number of livestock and human population size increasing in the study area specially near to the town over utilization of resources was occurred that affect the availability of feed resource for livestock. In Ethiopia more than 90% of the ruminant livestock feed on natural pastures, which vary in composition depending on the agro-ecology [11].

The level of natural pasture to some extent reduced during dry period in the study area so it is possible to say that natural pastures support animal productivity in the rainy season, while in the dry season these pastures can hardly maintain the animals as most of the feed resources are less available and of poor nutritional quality. This could be due to the poor practices of feed conservation during the dry season which was in line with other studies having similar results [12, 13].

CONCLUSION AND RECOMMENDATION

The major feed sources available for dairy cattle in the study area include crop residues, conserved hay and natural pasture which are low in nutritive value. The major factors that hinder the availability feed resource for dairy cattle were livestock production system, season of rainfall available, income and lack of improved technology. Some respondent utilize improved forage and fodder tree for dairy cattle as feed resource, but they have limitation due to Lacks of awareness on the improve forage which hinder the availability of feed resource in the study area. Crop residue was the dominant feed resource available was crop residue even if its high in utilization, scarcity of feed is the main constraints in the area. Therefore, awareness

creations on the utilization improved forage pasture, feeding system and enhance the quality of poor crop residue by fortifying feed handling and harvesting methods.

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