

Role of Female and Male Headed Households in Dairy Production, Processing and Marketing in Walmera District of Central High Lands of Ethiopia

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Abstract

A formal survey was conducted in Rob Gebeya women dairy producers of Walmera districts of West Shewa in central highlands of Ethiopia. The objective of the study was to identify constraints of female headed households (FHH) in comparison with male headed households (MHH) in dairy production, handling, processing and marketing. A total of 66 dairy producer households were randomly selected from a women dairy producer association in Rob Gebeya 'kebele' of Walmera district. The average family size (Mean \pm SE) in the FHHs in Rob Gebeya was 4.8 ± 0.7 persons per household whereas the MHHs was 6.0 ± 0.3 persons. FHHs had less access to education than MHHs in Rob Gebeya. Dairy and food crop based farming enterprises were identified as major sources of livelihood. Record keeping is not common in more than half of the respondents both in female and male headed households. The situation is more aggravated in FHH where more than 80% of the FHHs do not keep any type of farm record. In 57% of MHH, husbandry and management of dairy animals was undertaken mainly by MHHs. In 50 % of the households, milking was the responsibility of women. About 66.7% MHHs and 63.6% FHH sell milk. The major marketing segment for raw whole milk is neighbors. About 60.4% of male and 55.6% FHH sold their milk directly to their neighbors. In 64.9% of MHH, women exclusively control income from milk sells. While, 21.6 % of the husbands controlled the income from sell of milk. The major production constraints in the study area were poor quality of feed (27.5%) and feed shortage (29.4%) in MHH. Only 36.4% of FHH had access to training on dairy production and farm management aspects. While, 74.5 % of MHH had access to training. The major constraints can be alleviated by enhancing utilization of available feed resources, improved health, reproductive management, targeted trainings and improved dairy technology.

Keywords: dairy, household groups, production, processing, marketing

Introduction

The Ethiopian dairy sector has passed through major structural changes for half a century which resulted from changes in government and their policies. Though there have been various initiatives in introduction of exotic and crossbreed dairy, artificial insemination technology, feed and husbandry technologies and development of milk processing industries. The growth of the industry in terms of production is slow due to technical, institutional, policy and socio-economic constraints and ever increasing human population and associated diminishing grazing land (Wytze et al., 2012). Beside, the efforts made to improve the existing traditional dairy technologies which has existed for centuries was insignificant. Therefore, milk producers in the country are still dependent on traditional technologies with inadequate knowledge and skills. Moreover, smallholder dairy production system which is subsistence to the farm household is dominant in many parts of the country. Almost 98% of milk is produced under smallholder conditions (CSA, 2014).

Commercial dairy farms are located in the urban and peri-urban areas of the country. However, their proportion is insignificant. If dairy technology is improved and developed, the dairy sector in Ethiopia can contribute significantly to poverty alleviation (Mohamed et al., 2004). Dairying plays an important role in providing regular income for farmers in different parts of the country through sells of milk, animals and other by products. The sector has recently registered a relatively better development than previous times (Wytze et al, 2012).

Women perform the majority of household works especially dairy related activities in most parts of the country. According to a study conducted by Million et al., (2013) 54% of women are responsible for the majority of activities related to dairy production such as feeding, milking, handling, processing and marketing. Another report by Kassahun and Jeilu (2013) indicated that in Ada'a district about 90% of the household work load in dairy production is shouldered by female. However, women do as such control the income generated from sells of milk and milk products. The role, challenges and constraints of female headed households (FHH) in the dairy production, handling, processing and marketing in comparison with male headed households (MHH) is not well studied in many parts of the country. Thus, the objective of this study was to assess and identify challenges and constraints of female and male headed households in dairy production, handling, processing and marketing in Rob Gebeya area of Walmera district.

Materials and Methods

Description of the study area

The survey was conducted in purposely selected dairy potential district of Walmera in Rob Gebeya in West Shewa Zone of Oromia National Regional State of Ethiopia. Walmera is one of the districts in the Oromia Region of Ethiopia. It is one of the Oromia special zones surrounding Addis Ababa. It is bordered in the south by the Sebeta Hawas, in the west by West Shewa Zone, in the north by Mulo, in the northeast by Sululta and in the east by Addis Ababa. The highest point in this district is Mountain Wechacha (3191 meters above sea level) located in the southern part of the district. The rainfall pattern of the district is bimodal, with a short rainy period from February to April and a long rainy season from mid June to September. The annual temperature and rainfall ranges from 18°C to 24°C and 1000 to 1100 mm, respectively. Rob Gebeya is one of the 'kebeles' found in Walmera district. Rob Gebeya women association comprises more than 76 female headed and male headed women smallholder dairy producers. The objective of the association is to collectively sell raw milk, process and sell dairy products. The association also collectively accesses different agricultural inputs.

Sampling procedure and data analysis

The study was conducted using a semi structured questionnaire which was pre-tested in pilot area and adjusted before actual data collection. Enumerators were trained after necessary adjustment of the questionnaire to enable them to understand each question. The women association was selected for this study based on the potential of the area for dairy production and ease of access for data collection and monitoring activities. A total of 66 dairy households were randomly selected among 76 members of the association. Among the sample population, 11 respondents were FHHs (female headed households) and 51 were MHHs (male headed households). Face to face interview was employed to collect the data from the MHHs and FHHs. Data were entered, cleaned and analyzed using Statistical Package for Social Sciences (SPSS) version 20 (SPSS, 2011).

Results and Discussion

Socioeconomic characteristics of the households

Family size and age of male and female headed households in the study area were indicated in (Table 1). The mean family size and age of the household heads in male and female headed household groups were different between household head groups. The average family size (Mean \pm SE) of the FHHs was 4.82 ± 0.724 persons per household; whereas for the MHHs it was 6.02 ± 0.307 persons. The average family size in the current study is less than the national average which is 6.4 persons per household (Randall et al., 2008).

The average age of female household heads was higher than male household heads (Table 1). The average age of the male household heads was 39.71 ± 1.599 years. While the average age of female household heads was 42.82 ± 3.898 years. Majority of female household heads are either widowed or divorced. The age discrepancy between male and female household heads in this study agrees with the study conducted in Kenya, Rwanda and Uganda where the age of female headed households was significantly higher than that of male headed households (EADD, 2009).

Table 1. Family size and age of the male and female headed household in the study area

Parameters	HHG	N	Minimum.	Maximum	Mean	S.E
Family size	MHH	51	1	11	6.02	0.307
	FHH	11	2	10	4.82	0.724
Age	MHH	51	4	65	39.71	1.599
	FHH	11	30	66	42.82	3.898

HHG = Household head group, MHH = Male headed households, FHH = Female headed households, S.E = Standard Error, N= number of respondents

In the study area 11 % of the FHHs were widowed, 3% of the households were divorced and single, respectively. While 75% were married (Figure 1). This difference is due to the nature of household structure which is similar to most parts of the country. According to the respondents, in the male headed households, male represents the household. whilst women represent their households in case when their husband dies or when they are divorced.

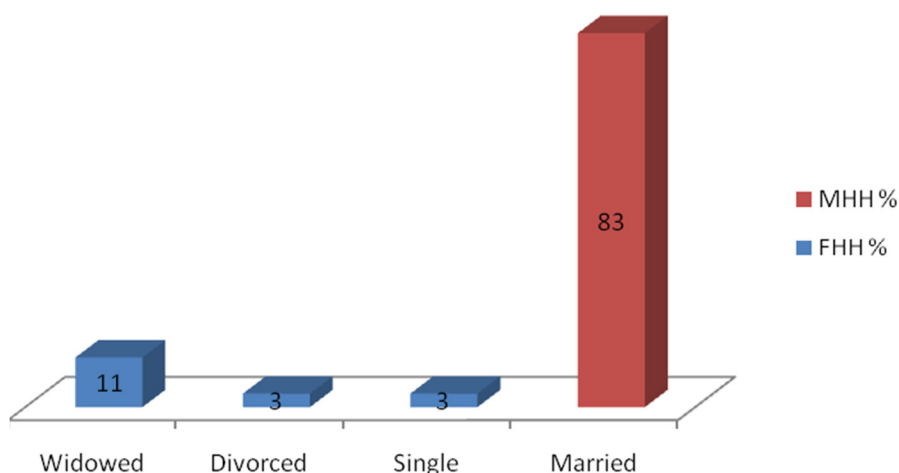


Figure 1. Marital status of women in Robe Gebeya

Educational status of the household head groups is presented in (Table 2). About 47.1% and 54.5 of MHHs and FHHs, respectively had no formal education. About 21.6 and 18.2 % of MHHs and FHHs can read write only. While about 23.4 % and 27.3 % of MHHs and FHHs, respectively had primary school education. However, only 7.9% and 0 % of MHHs and FHHs, respectively had secondary school education in the studied households in Walmera districts. Different studied revealed that women have many responsibilities and workloads in their households and spend more than 16 hours/day in household activities and do not have enough time to go to school (Lemlem et al, 2010; Aklilu, 2014; Aklilu et al, 2014; Mohammed, 2014). The same authors reported that male are not engaged in household activities as compared to women and they have better access to education in most parts of the country. Similar finding was reported in Kenya, Rwanda and Uganda (EADD, 2009). The highest percentage of illiteracy of female headed household revealed in the present study showed that female have less access to education.

Table 2. Educational status of male and female household heads in the study area

Household head	Education level	Proportion	
		N	%
MHH	No formal education	24	47.1
	Read and write only	11	21.6
	Primary school	12	23.4
	Secondary school	4	7.9
	Total	51	100.0
FHH	No formal education	6	54.5
	Read and write only	2	18.2
	Primary school	3	27.3
	Secondary school	0	0
	Total	11	100.0

MHH- Male headed household, FHH- Female headed household

Agricultural production system and management

Major farm enterprises

The major farm enterprises in the study area were investigated and the result is presented in (Figure 2). Dairy and food crop based farming enterprises were identified as major sources of livelihood in the area. About 72.5 % and 74.5 % of female headed households and male headed households, respectively depend on crop production for their livelihoods. While 27.3 % and 25.5 % of female headed households and male headed households, respectively depend on dairying for their livelihoods. According to the respondents, dairying played vital role in creating job opportunity and improving female welfare for female headed households. Similar study conducted in Ada'a district by Kassahun and Jeilu (2013) revealed that dairying was indicated as the major income source. The production system in Rob Gebeya women association of Walmera district is more of mixed crop livestock system.

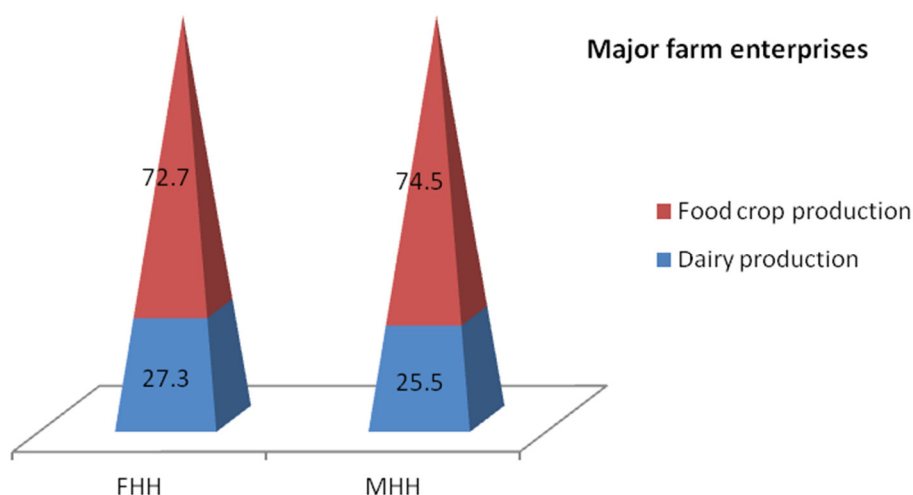


Figure 2. Major farm enterprises in MHHs and FHHs in Robe Gebeya kebele of Walmera district

Purposes of keeping dairy cattle

The purpose of keeping dairy cattle in the studied households is summarized in (Table 3). In Rob Gebeya (Walmera district) 86.7 % of MHHs and 81.8 % of FHHs kept dairy cattle for income generation purpose. In 10 % and 18.2 % of MHHs and FHHs, respectively keep dairy cattle for draught power. Only 3.3 % of male headed households keep dairy cattle for milk production for their household. The present result is in line with the report by Kassahun and Jeilu (2013) where dairying was most important income source in the dairy producing households of Ada'a district. The present result also agrees with the findings of Sintayehu et al., (2008) which reported that the purpose of keeping cattle was influenced by the type of production system. Another report by Haile et al., (2012) showed that the major purpose of milk production in Hawassa area was for selling and income generation from dairy cattle.

Table 3. Purpose of keeping dairy cattle by women association in Rob Gebeya

Group of the household head	Purpose	N	Proportion %
MHH	Draught power	3	10.0
	Milk production for household consumption	1	3.3
	Milk production for income generation	26	86.7
	Total	30	100.0
FHH	Draught power	2	18.2
	Milk production for income generation	9	81.8
	Total	11	100.0

Practice of farm data record keeping

Record keeping is an important activity in the dairy farm to make decision in farm management aspects. Result of farm record keeping practice in the study area is presented in Figure 3. Record keeping is not practiced at all by 63 % the respondents in both female and male headed households. However, 27 % of the respondents occasionally practice farm record keeping and only 10 % of the respondents always practice farm record keeping. According to the respondents, the situation is more aggravated in female headed households compared to male headed households. This might be due to lack of awareness on record keeping and their poor access to formal education. Besides, due to work load, women might not have enough time to keep farm record. Male headed households were better in keeping farm records than that of female headed households even if the record keeping practice is not regular. Many past research results indicated that record keeping is the major problem in the country and most farmers do not keep record. For instance, Tadele and Nibret (2014) reported that only 18.2% of farmers keep farm records in the Northern part of the country. Sintayehu et al., (2008) also disclosed that about 79 % and 94 % of the urban and mixed crop–livestock producers, respectively, did not have any record keeping schemes in the southern part of the Ethiopia.

Habit of record keeping

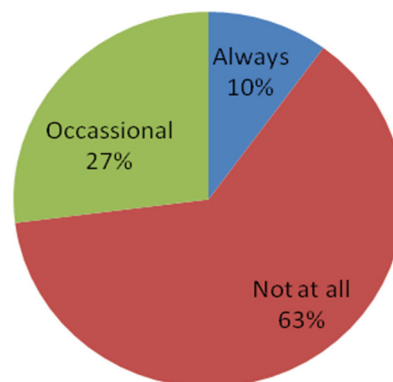


Figure 3. Practice of farm data record keeping in Rob Gebeya

Division of labor in dairy production activities

Dairy husbandry, management and milking

Various household members have different responsibilities for different dairy farm operations such as dairy herd management. This information is important in terms of targeting training and extension services to different household members based on their responsibilities. The division of labor in dairying among households in the study area is presented in (Table 4). According to the respondents, in 57.5 % of the male headed households, husbandry and management of dairy animals was undertaken mainly by male. In the same household group, 27% of the wives perform husbandry and management activities of dairy animals. In 36.4 % of the female headed households husbandry and management activity was mainly performed by female. In 27% of female headed households daughters played important role in husbandry and management activities.

Milking was mainly performed by female household members in both household head groups. In female headed households about 54.5% and 36.4 % of women and daughters, respectively, perform milking. Whilst in male headed households 73.5 %, 11.8 % and 11.8 % of wives, husbands and daughters, respectively carried out milking. Only 9.1 % of the sons perform milking. In both household groups, women are responsible in most of the activities related to dairying compared to other family members. They play major role in husbandry and management, milking, handling, processing of dairy products. In female headed households 36.4%, 36.4%, 18.2% and 9% women, daughters, casual laborers and sons, respectively handle process and transport milk in the study area.

Table 4. Division of labor on husbandry and management of dairy cattle, milking and handling, of dairy products in the study area

Responsible persons	Group of the household head	Family member	Proportion	
			N	%
Who is responsible for husbandry & management of dairy cattle?	MHH	Husband	27	57.45
		Wife	13	27.2
		Casual laborer	1	2.1
		Sons	6	12.8
		Total	47	100
	FHH	Women	4	36.4
		Daughter	3	27.2
		Son	2	18.2
		Casual laborer	2	18.2
		Total	11	100
		MHH	Husband	3
Wife	19		51.4	
Daughter	13		35.1	
Son	1		2.7	
Casual laborer	1		2.7	
Who is responsible for milking?	FHH	Total	37	100
		Women	6	54.5
		Daughter	4	36.4
		Sons	1	9.1
		Total	11	100
	MHH	Husband	4	11.8
		Wife	25	73.5
		Daughter	4	11.8
		Sons	1	2.9
		Total	34	100
		FHH	Women	4
Daughter	4		36.4	
Sons	1		9	
Casual laborer	2		18.2	
Total	11		100	

Milk processing, handling and transportation

Results on milk processing, handling and transportation and responsible persons in the household groups were indicated in (Table5). According to the respondents, 70.6 % of male headed households do not process milk in to different dairy products but they sell raw milk. However, 29.6 % of the male headed households process milk. About 63.6 % of female headed households process milk. But 36.4 % of the female headed households sell raw whole milk and do not process milk. In the male headed household group 80% of the wives were responsible for milk processing. In the same group, about 13.3 % and 6.7 % of daughters and hired persons, respectively were responsible for milk processing. In female headed household group, 85.7 % of women household heads and 14 % of daughters are responsible for milk processing.

In both household head groups, where milk processing is practiced, processing is entirely done by women household members. Though the degree of responsibility varied and biased towards women, all family members had responsibility for milk processing. From the present result, it can be concluded that women in FHHs and MHHs shoulder great responsibility in dairy production and processing. Hence, it is vital to consider women household members in training and extension services in order to improve the dairy processing technology.

Table 5. Milk processing and responsible persons in the household groups in the study area

Type of activity	Household head	Answer	Proportion	
			No.	%
Do you process milk?	MHH	Yes	15	29.4
		No	36	70.6
		Total	51	100
	FHH	Yes	7	63.6
		No	4	36.4
		Total	11	100
Who is responsible for milk processing?	MHH	Family member		
		Wife	12	80.0
		Daughter	2	13.3
		Hired persons	1	6.7
	FHH	Total	15	100
		Women	6	85.7
		Daughter	1	14.3
		Total	7	100

Transporting and Marketing of milk

The results on marketing and transportation of milk to collection points is indicated in (Table 6). According to the present result, production of milk for income generation was found to be important reason for dairy production. 66.7% of MHHs and 63.6% of FHHs households in the district sell milk. Whereas, 33.3 % of MHH and 36.4 % of FHH do not sell milk. The household groups might probably process and utilize the milk. The present result is in agreement with the report of Sintayehu et al., (2008) that reported majority of milk producers in peri urban production system produce milk for sell. The milk was handled and transported to collection points mostly by women. According to the respondents, 76.5 % and 71.4 % of the wives in MHHs and women in the FHHs were responsible for taking milk to collection points and sell. While 17.6 % and 28.6 % of daughters in male and female headed households are responsible for taking milk to collection points and sell. Besides, in the MHH groups 5.9 % of the husbands were responsible for transporting milk to collection points and sell.

Cash earned from dairy products marketing plays a crucial role in covering daily expenditure of the households. Generally, women were more responsible than men in the overall aspects of dairy production, management, milking, handling and processing and marketing. Previous research reports conducted in Ada'a district of Ethiopia by Million et al., (2013); Kassahun and Jeilu (2013) also indicated that majority of activities related to dairy production were performed by women.

Table 6. Transporting and Marketing of milk in the study area

Parameters	Household head	Yes/No	Proportion	
			N	%
Do you sell milk?	MHH	Yes	34	66.7
		No	17	33.3
		Total	51	100
	FHH	Yes	7	63.6
		No	4	36.4
		Total	11	100
Who is responsible for transport and sell of milk?	MHH	Husband		
		Wife	2	5.9
		Daughter	26	76.5
		Total	6	17.6
	FHH	Total	34	100
		Women	5	71.4
		Daughter	2	28.6
		Total	5	71.4

Mode of transport and distance of farm gates from milk collection points

The results of mode of transport and distances of farm gates from milk collection points were indicated in (Figure 4). Walking on foot was the major mode of transport to deliver milk to its marketing niche for 100 % of FHH and 87.5 % of MHH, respectively. Only 12.5% of MHHs use carts for transporting milk to collection points. In 12.5 % of MHH carts were used as a mode of transport to deliver milk to collection points. However, in FHHs none of them used carts for transporting milk to market. Besides, there were no other means of transport for taking milk to collection points in the study area.

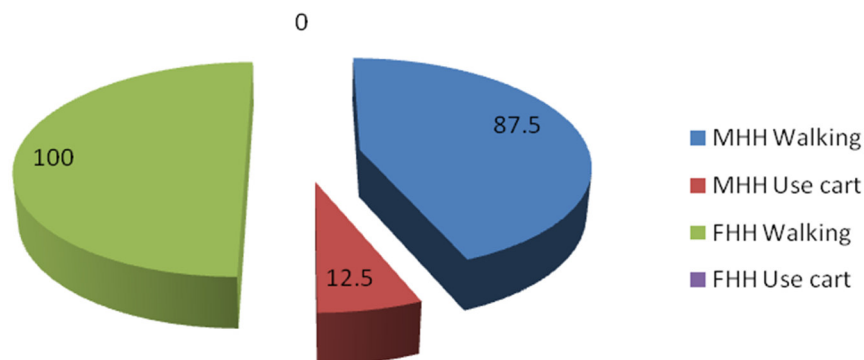


Figure 4. Mode of transport to take milk to collection points

The result of distances from farm gate to milk collection point is presented in table (Table 7). About 62.5 % of the MHHs and 71.4 % of FHHs, respectively, travel on their foot less than 2 kilometers to deliver milk to their marketing niche. Whilst 29.2 % of MHHs travel 2 to 5 kilometers from their farm gate to milk collection points to deliver milk. 8.3 % of MHH and 28.6 % of FHH travel more than 5 kilometers from their farm gates to milk collection points to deliver milk. A study conducted in Ada'a and Lume districts of Ethiopia by Kassahun et al., (2014) reported that it took an average 30 minutes to deliver milk from farm gate to marketing niche. The distance travelled and time taken to deliver milk without cool transport is one of the major reasons for spoilage and rejection of milk upon quality checking on collection points.

Table 7. Distance from farm gate to milk collection point

	Distance in Km	Proportion		
		N	%	
How far is the distance of milk collection point?	MHH	<2	15	62.5
		2-5	7	29.2
		> 5	2	8.3
		Total	24	100.0
FHH		<2	5	71.4
		2-5	-	-
		> 5	2	28.6

Main buyers and market outlets of dairy products

Main buyers of milk and time of payment for raw milk is presented in (Table 8). 60.4% of MHHs and 55.6% of FHHs, respectively sold their milk directly to their neighbors. The major marketing segments for raw milk are neighbors. About 22.9 % and 22.2 % of male and female headed households, respectively delivered milk to their respective cooperative unions. The remaining 16.7% of MHHs and 22.2% of FHHs, respectively delivered milk daily to individual collectors. Individual milk collectors were also another important marketing segment. Similar types of marketing segments were reported in other areas of the country (Yisehak, 2008). In the present study, respondents indicated that delivering milk to neighbors had financial advantage as compared to individual processors and cooperative unions. But delivering milk to neighbors was not reliable during fasting period of the Ethiopian Orthodox church. On the other hand, the house hold groups indicated that the cooperative union in Walmera does not have many members and collect milk in a sustainable way.

About 52.9% and 44.1% and only 2.9 % MHHs, respectively received payment for raw milk delivered to different marketing segments after every week, every two weeks and after every month, respectively. In the FHHs, the proportion of households who received the payment after every week was 62.5%. The remaining 37.5 % of the FHHs received their payments every two weeks. FHHs use the income from milk sells to cover the costs related to dairy farm inputs and other household expenditures.

Table 8. Target milk markets and time of payment for milk sells in MHHs and FHHs of the study area

Questions	Group of the household head	Target market	Proportion		
			N	%	
What is the main market outlet?	MHH	Neighbor	29	60.4	
		Individual	8	16.7	
		Cooperatives	11	22.9	
		Total	48	100	
	FHH	Neighbor	5	55.6	
		Individual	2	22.2	
		Cooperative	2	22.2	
Total	9	100			
When is the payment done?	MHH	Time of payment after milk reception		N	%
		After 1 week	18	52.9	
		After 2 weeks	15	44.1	
		After a month	1	2.9	
	Total	34	100.0		
	FHH	After 1 week	5	62.5	
		After 2 weeks	3	37.5	
		Total	8	100.0	

Control over income from sale of milk

Control over income from sells of milk by male and female headed households in the study area is presented in (Table 9). About 64.9 % of wives of MHHs and 100 % of women in FHHs had access to control income from milk sells. The proportion of husbands in MHHs who had access over control of income from milk sells was 21.6%. In 13.5% of MHHs both husbands and wives had equal access to control income from milk sells.

Table 9. Control over income from sale of milk in MHHs and FHHs in Rob Gebeya women dairy cooperative union

Group of the household head	Household member	Proportion	
		N	%
MHH	Husband	8	21.6
	Wife	24	64.9
	Both	5	13.5
	Total	37	100.0
FHH	Women	9	100.0
	Total	9	100.0

MHH= Male headed households, FHH= Female headed households

Purpose of dairy cooperative union in the study area

Purposes of dairy cooperatives union in Rob Gebeya area of Walmera district is presented in (Figure 5). According to the house hold groups, in 100 % of MHH and 88.3 % FHH, the role of cooperative unions was milk collection, processing and sell. The respondents reported that dairy cooperatives play vital role in collection and marketing of milk in reliable and sustainable manner. Different reports indicated the purpose of dairy cooperatives mainly as milk collection, sell of raw milk and processing in to fermented milk, butter and cottage type cheese using small scale technologies (Almaz, 2008; Adebabay, 2009; Asaminew and Eyassu, 2009; Embaye, 2010; Francesconi, G. N. Ruben, R., 2012; Sintayehu et al., 2008).

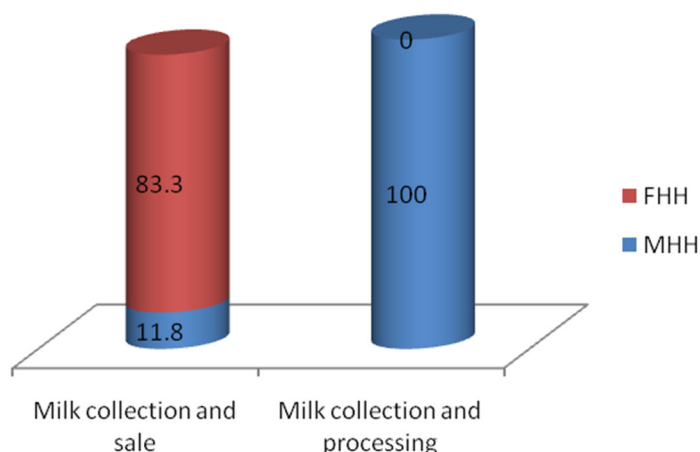


Figure 5. Purpose of dairy cooperative unions in Rob Gebeya area of Walmera district

Membership to dairy cooperative union and willingness to form another union

Membership of dairy cooperative union and household representation in MHHs and FHHs was presented in (Table 10). In the study area, 48.8% of MHHs and 60% of FHHs were members of dairy cooperative union. However, 51.2% and 40% of male and female headed households, respectively, were not member of any dairy cooperative union. Those respondents who were not member of any dairy cooperative union were asked about their willingness to form women dairy cooperative union and 54.5% of wives in MHHs and 50 % of FHHs were willing to form women dairy cooperative union. The women respondents witnessed that engagement of women in dairy cooperative unions is an important factor towards women empowerment and economic security. While 45.5 % and 50 % women in male and female household heads, respectively were not willing to form dairy cooperative union. According to the respondents, the main reason for not willing to form women group were time constraint, lack of awareness and presence of optional market such as neighbors and individual collectors for raw milk.

Among the MHHs about 61.9 % and 38.1 % of wives and husbands, respectively had power to represent their households on major decisions as a member of already existing cooperative union. In FHHs, 83.3 % and 16.7 % of women and sons, had power to represent their households on major decisions as a member of already existing dairy cooperative union.

Table 10. Membership in dairy cooperative union and household representation in MHHs and FHHs

Questions	Household head	Membership	Proportion	
			N	%
Are you a member of a dairy cooperative union?	MHH	Yes	21	48.8
		No	22	51.2
		Total	43	100.0
	FHH	Yes	6	60.0
		No	4	40.0
		Total	10	100.0
If you are not a member of a cooperative union, are you willing to form a women group?	MHH	Yes	12	54.5
		No	10	45.5
		Total	22	100.0
	FHH	Yes	2	50.0
		No	2	50.0
		Total	4	100.0
Who represent the HH on major decisions as a member of the existing cooperative union ?	MHH	Wife	13	61.9
		Husband	8	38.1
		Total	21	100.0
	FHH	Women	5	83.3
		Son	1	16.7
		Total	6	100.0

HH- Household, MHH- Male headed household, FHH- Female headed household

Willingness to get improved small scale milk processing technologies

Willingness to get improved milk processing equipments in MHHs and FHHs in Robe Gebeya kebele of Walmera district is presented in (Figure 6). According to the present survey, 60.5% of MHHs and 72.7 % FHHs were willing to obtain small scale milk processing technologies. Improved technology is very important to make dairy farm enterprise more market oriented and profitable. This can help producers to increase profitability from milk

products especially during fasting periods when milk price is reduced. The improved dairy equipments can easily convert the raw milk into shelf stable products such as butter

Willingness to get milk processing equipments

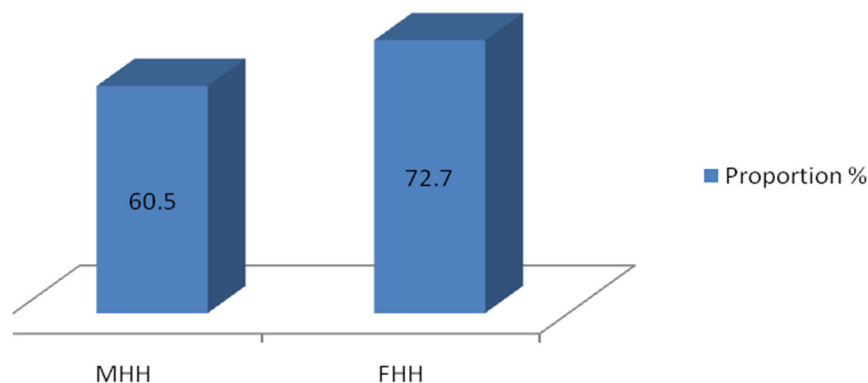


Figure 6. Willingness of the households to get milk processing equipments

Constraints in dairy production, processing and marketing

Dairy production constraints

The results of dairy production constraints in MHHs and FHHs in Rob Gebeya women dairy producers of Walmera districts are summarized in (Table 11). In MHHs, the major production constraints were poor quality of feed (27.5%) and feed shortage (29.4%). In 36.4 % and 18.2 % of FHHs poor quality of feed, feed shortage, unavailability of dairy breeds, disease (health problem), respectively were major production constraints. Similar constraints were mentioned as challenges for milk production in other parts of the country (Adebabay, 2009; Asaminew and Eyassu, 2009; Kedija, 2007; Sintayehu et al., 2008).

Table 22 Dairy production constraints in MHHs and FHHs in Walmera districts

Constraint	N	Group of the household head		
		MHH	FHH	
		%	N	%
Poor quality of feed	14	27.5	4	36.4
Feed shortage	15	29.4	2	18.2
Labor shortage	3	5.9	1	9.1
Unavailability of dairy breeds	8	15.7	2	18.2
Disease/health problem	7	13.7	2	18.2
High price of feed	4	7.8	-	-
Total	51	100	11	100

Constraints in marketing of dairy products

The major constraints in milk marketing in male and female headed households in the study area are presented in (Table 12). According to the survey result, 29.4% and 21.6% of MHHs, respectively were majorly constrained by low milk yield of dairy cows and milk price of milk. 45.5 % of FHHs were highly constrained by low milk yield. Besides, in 27.3 % of FHHs low price of milk and high milk rejection rate were other major challenges. The situation indicates that the households could not afford the higher price of feed and provide to their animals to produce more milk. While the price of milk is still low. Lack of skill in modern dairy husbandry and management could also be another reason for low milk production. Another study by Lemma et al. (2005) reported that insufficient amount of milk production per household was the most important constraints that hindered milk marketing in Arsi Negele area.

Table 232. Marketing constraints in MHHs and FHHs in Walmera districts

Constraint	Group of the household head			
	MHH		FHH	
	N	%	N	%
Low milk yield	11	21.6	5	45.5
Low price of milk	15	29.4	3	27.3
Poor milk quality/rejection	4	7.8	3	27.3
Price fluctuation	7	13.7	0	0.0
No bargaining power	9	17.6	0	0.0
Delay in payment	5	9.8	0	0.0
Unavailability of milk processing equipments	0	0.0	3	27.3
Total	51	100.0	11	100.0

Dairy products processing constraints

The result of dairy products processing constraints are presented in Table 13. Unavailability of small scale processing equipments and low milk yield were also found to be major processing challenges for 35.3% and 21.6% of FHHs and 36.4% and 27.3% of MHHs, respectively. There were only traditional milk processing technologies in the study area. The traditional technologies are time consuming, labor intensive, the yield obtained from such technologies is not attractive and do not make profit. Hence, the households preferred to directly sell raw milk. However, during different festivities, the households usually processed milk to sell butter and cottage type cheese. Table 13. Dairy products processing constraints in MHHs and FHHs in Rob Gebeya kebele of Walmera districts

Constraints	Group of the household head			
	MHH		FHH	
	N	%	N	%
Low milk yield	11	21.6	3	27.3
Labor shortage	2	3.9	0	0.0
Unavailability of small-scale milk processing equipments	18	35.3	4	36.4
Lack of skill	5	9.8	2	18.2
Time constraint	2	3.9	0	0.0
Price fluctuation	9	17.6	0	0.0
Unavailability of standardized milk handling equipments	4	7.8	2	18.2
Total	51	100.0	11	100.0

Access of male and female headed household groups to training

Access of MHHs and FHHs to training in Rob Gebeya women dairy producers of Walmera districts is presented in Figure 7. About 74.5% of MHHs had access to training. However, only 36.4% of FHHs had access to training on dairy production and farm management. Training can play enormous role in the overall improvement of farm productivity through building the capacity and knowledge of dairy producers. Dairying households were asked about their access to training for the last few years. According to the respondents, MHHs had better access to training compared to FHHs. In our discussion in the above sections, women shouldered many responsibilities in dairying activities but they did not have good access to training. In order to improve dairy profitability in the study area, there should be targeted plans and provisions of training.

Access to training %

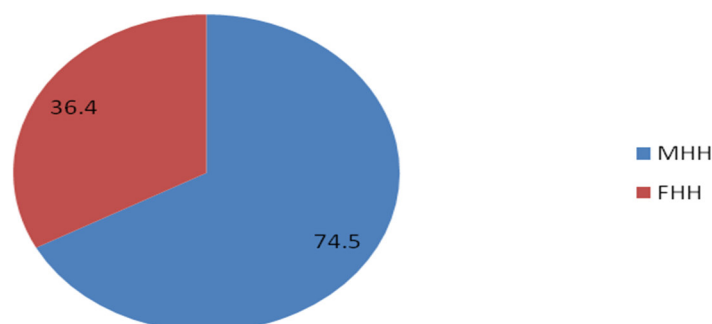


Figure 7. Access of MHHs and FHHs to training in Walmera districts

Conclusion and Recommendation

The contribution of dairying for the household livelihood can be significantly increased through improvement in husbandry and management of dairy animals. Dairying would play pivotal role in the household nutrition and

income generation through increased milk production through the application of modern knowledge and skills. The purpose of keeping dairy cattle was income generation through sells of milk and other farm byproducts. However, at present dairy households are not benefited from the sector due to low productivity and associated constraints in the production, processing and marketing of milk. Record keeping is not common in more than half of the respondents. The situation is more aggravated in FHHs. This is mainly due to poor access of FHHs to education. Record keeping has to get due attention as it is the first step in decision making in different aspects of dairying.

Women were more responsible than men in the overall aspects of dairying in the study area. However, they did not have significant access to training in many aspects of dairying. Therefore, there should be special consideration on women in training and extension aspects in both household groups. The major constraints hindering improved and sustainable milk production can be alleviated by enhancing utilization of available feed resources, improved animal health, reproductive management and introduction of improved dairy processing materials and methods. Assisting in formation of more cooperative unions is also vital to make the household groups more profitable and provide sustainable markets especially during the fasting seasons.

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References

- Adebabay Kebede. 2009. Characterization of Milk Production Systems, Marketing and On- Farm Evaluation of the Effect of Feed Supplementation on Milk Yield and Milk Composition of Cows at Bure District, Ethiopia. MSc Thesis, Bahir Dar University.
- Aklilu Nigussie. 2014. Women's workload and their roles in livestock production in pastoral and agro-pastoral communities of Ethiopia. Research Brief, TRB-08-2014. East Africa TIRI Research. April 2014. <http://lcccrsp.org/wp-content/uploads/2011/02/TRB-08-2014.pdf> Last accessed on June 2, 2015.
- Aklilu Nigussie, Dana Hoag and Tigist Alemu. 2014. Women's workload and role in livestock production in pastoral and agro-pastoral communities of Ethiopia: The case of Afar. African Journal of Agricultural Economics and Rural Development ISSN: 2141-5091 Vol. 2 (4), pp. 138-146, June, 2014. Available online at www.internationalscholarsjournals.org
- Almaz Mesfin. 2008. Comparative Study on the Performance of Dairy Cooperative Input and output Marketing In Astbie Womerta, Alamata and Enderta woreda In Tigray Region Ethiopia. MSc Thesis, Mekelle University, Ethiopia
- Asaminew Tassew and Eyassu Seifu. 2009. Smallholder Dairy Production System and Emergence of Dairy Cooperatives in Bahir Dar Zuria and Mecha Woredas, Northwestern Ethiopia. World Journal of Dairy & Food Sciences 4 (2): 185-192, 2009
- CSA, 2014. Federal Democratic Republic of Ethiopia Central Statistical Agency. Agricultural Sample Survey, 2013/14 [2006 E.C.], Volume II, Report on Livestock and Livestock Characteristics (Private Peasant Holdings). Statistical Bulletin 573. August 2014.
- EADD (East African /dairy Development Project). 2006. Gender, Dairy Production and Marketing. Baseline Survey Report No 6. Survey methodology and overview key results of the household survey.
- Embaye Kidanu Kindeya. 2010. Analysis of Butter Supply Chain: The Case of Atsbi-Wonberta and Alamata Woredas, Tigray, Ethiopia. MSc thesis Haramaya University, Ethiopia
- Francesconi, G. N.; Ruben, R. 2012. The Hidden Impact of Cooperative Membership on Quality Management: A Case Study from the Dairy Belt of Addis Ababa. Journal of Entrepreneurial and Organizational Diversity, JEOD - Vol.1, Issue 1 (2012).
- Haile Welearegay, Zelalem Yilma and Yosef Tekle-Giorgis. 2012. Challenges and opportunities of milk production under different urban dairy farm sizes in Hawassa City, Southern Ethiopia. African Journal of Agricultural Research Vol. 7(26), pp. 3860-3866, 10 July, 2012. Available online at <http://www.academicjournals.org/AJAR>
- IPMS Improving Productivity and Market Sccess of Ethiopian Farmers (2005). Ada'a – Liben woreda pilot learning site diagnosis and program design. IPMS (Improving Productivity and Market Success), A.A. Ethiopia.
- Kassahun Melesse and Jeilu Jemal. 2013. Dairy Technology Impacts on Livelihoods of Dairy Producers in Central Ethiopia. International Journal of Food and Agricultural Economics. ISSN 2147-8988, Vol. 1 No. 1. pp. 109-118. <http://www.foodandagriculturejournal.com/109.pdf>
- Kassahun Melesse, Bilatu Agza and Adey Melesse 2014. Milk marketing and post harvest loss problem in Ada'a

- and Lume districts of east Shoa Zone, Central Ethiopia. *Sky Journal of Food Science* Vol. 3(4), pp. 027 - 033, July, 2014 <http://www.skyjournals.org/SJFS>
- Lemlem Aregu, Bishop-Sambrook C, Puskur R and Ephrem Tesema. 2010. Opportunities for promoting gender equality in rural Ethiopia through the commercialization of agriculture. IPMS (Improving Productivity and Market Success) of Ethiopian Farmers Project Working Paper 18. ILRI (International Livestock Research Institute), Nairobi, Kenya. 5 pp.
- Mohamed A.M. Ahmed, Simeon Ehui, and Yemesrach Assefa. 2004. Dairy development in Ethiopia. EPTD discussion paper No. 123. International Food Policy Research Institute. Washington, DC 20006 U.S.A.
- Million Tadesse, Adey Melesse, Azage Tegegne and Kassahun Melesse. Gender and Urban Dairy Production system, the case of Debre Zeit town, Ethiopia. Ethiopian Society of Animal Production (ESAP) 2014. Livestock and Economic Growth: Value Chains as Pathways for Development. Proceedings of the 21st Annual Conference of the Ethiopian Society of Animal Production (ESAP) held in Addis Ababa, Ethiopia, August 28-30, 2013. ESAP, Addis Ababa 193 pp.
- Mohammed Endris Harun. 2014. Women's workload and their role in agricultural production in Ambo district, Ethiopia. *Journal of Development and Agricultural Economics*. Vol. 6(8), pp. 356-362, August 2014. http://ms.academicjournals.org/article/article1405608226_Harun.pdf Last accessed on June 2, 2015.
- Randall Bluffstone, Mahmud Yesuf, Bilisuma Bushie, and Demessie Damite. 2008. Rural Livelihoods, Poverty, and the Millennium Development Goals: Evidence from Ethiopian Survey Data. *Environment for Development*. Discussion Paper Series June 2008, EfD DP 08-07. <http://www.rff.org/RFF/Documents/EfD-DP-08-07.pdf>
- Sintayehu Yigrem, Fekadu Beyene, Azage Tegegne and Berhanu Gebremedhin. 2008. Dairy production, processing and marketing systems of Shashemene–Dilla area, South Ethiopia. IPMS (Improving Productivity and Market Success) of Ethiopian Farmers Project Working Paper 9. ILRI (International Livestock Research Institute), Nairobi, Kenya. 29 pp.
- SPSS (2011). *Statistical Procedures for Social Sciences (SPSS)*. IBM® SPSS® Statistics 20. IBM Corp.. Chicago, USA.
- Tadele Alemayehu and Nibret Moges. 2014. Study on Reproductive Performance of Indigenous Dairy Cows at Small Holder Farm Conditions in and Around Maksegnit Town. *Global Veterinaria* 13 (4): 450-454, 2014. Available online [http://www.idosi.org/gv/gv13\(4\)14/4.pdf](http://www.idosi.org/gv/gv13(4)14/4.pdf)
- Wytze Brandsma, Dawit Mengistu, Binyam Kassa, Mahlet Yohannes, Jan van der Lee. 2012. The Major Ethiopian Milksheds. An assessment of development potential Milk value chain, stakeholders, production potential, market potential and possible intervention areas. Wageningen University and SNV Ethiopia.