



Market Opportunities for Livelihood Improvement

MOLI in Kakheti Project

Baseline Survey

Table of Contents

1. Methodology.....	1
1.1. Summary of Questionnaires	1
2. Overview of Beneficiaries and Target Group	3
3. Results of Household Surveys	5
3.1. Income generated by livestock production by beneficiary households	5
3.2. Income per year from selling milk and dairy products	5
3.3. Income per year from selling beef cattle	5
3.4. Productivity of dairy and beef cattle production by target households.....	6
3.5. Sales of milk, dairy products and beef cattle by households.....	9
3.6. Price premium for milk, dairy products and beef cattle produced by beneficiaries	12
3.7. Cattle mortality and morbidity rates	13
3.8. Number of livestock related goods and services households can access.....	14
3.9. Number of SSSLH regularly using and paying for veterinary and breeding services	15
3.10. Number of prophylactic treatments for cattle per household	16
3.11. Number of households participating in animal health schemes through nakhiris.....	16
3.12. Number of villages or nakhiris using bulls' rotation scheme	17
3.13. Number of calves produced by AI or improved bull servicing.....	17
3.14. Number of farmers applying two or more improved production practices	17
3.15. Percentage of milk and dairy products sold by subsistence and semi-subsistence households..	18
4. Target Groups.....	22
4.1. Feed Mills	22
4.2. Quantity of feed supplements and animal nutrition products sold by feed mills	22
4.3. Number of feed mills acting as an extension service points	23
4.4. Machinery Service Providers.....	25
4.5. Dairy Enterprises.....	28
4.6. Governance	32
List of Annexes	34
Annex 1 - Households Baseline Survey Questionnaire	34
Annex 2 - Stakeholders Baseline Survey Questionnaire	34
Annex 3 – List of villages	34
Annex 4 - Baseline data collected from Potential Stakeholders.....	34
Annex 5 – Baseline data collected from interviewed farmers.....	34

1. Methodology

This report was prepared by HEKS-EPER staff assigned to the MOLI in Kakheti project, with additional input from Association Caucasus Genetics (ACG) and the Association of Business Consulting Organizations (ABCO).

The Households and Stakeholders individual baseline surveys were carried out from May 7 – 31, 2012. The surveys took place in 55 villages covered by the MOLI in Kakheti Project in the districts of Sagarejo, Signaghi and Dedoplistskaro, Kakheti region. The survey sample size constituted 71% of the 77 villages in these districts.

Research teams conducted more than 1,060 structured interviews with agricultural households. Care was taken to include both remote and roadside villages, to ensure representation of subsistence households (with 1-3 head of milking cows) and semi-subsistence households (with 4-9 milking cows). Fifty additional interviews were conducted with potential stakeholders including: i) Feed mills; ii) Machinery service providers; iii) Dairies and Milk Collection Centers (MCC), and; iv) Local Governments were also included.

To ensure accuracy and consistency by enumerators from project partners (from ABCO and ACG), staff of the project implementation unit conducted interviews in all three target districts. PIU results were compared against results from partners and potential discrepancies were identified and investigated. The cross-checking process led to exclusion of problematic data related to one question which is discussed in greater detail below. In all other cases suspect data was found to be valid.

The purpose of the baseline survey is primarily provide a reference point against which the impact (broadly defined) of project interventions can be measured. Results from the survey will be supplemented by government statistics, information collected during creation of business development plans and other sources. To ensure readability while maintaining precise measurement points for later comparisons, tabulated results are included in Annex 3.

The survey also provides a more detailed understanding of beneficiaries and their current position in the livestock sector and access to the relevant different services and to gain a basic understanding of the situation of beneficiaries. A limited amount of analysis is included in this summary as a supplement to information found in previous research studies.

1.1. Summary of Questionnaires

Three types of questionnaires were developed:

- Questionnaires for household survey;
- Questionnaires for stakeholder's survey;
- Questionnaires for local government.

All three questionnaires were designed to obtain qualitative as well as quantitative data and were orientated to capture all livestock related data pertaining to service availability, market demand, income generation, animal health and nutrition, participation in decision making on a local level etc. Copies of the questionnaires can be found in Annexes 1 and 2.

The questionnaire for households was developed to quantify household-related indicators from the project measurement plan. Indicators related to households include:

- Income generated by livestock production for beneficiary households;
- Productivity of dairy and beef cattle production by target households;

- Sales of milk, dairy products and beef cattle by households;
- Price premium for milk, dairy products and beef cattle produced by beneficiaries;
- Cattle mortality and morbidity rates;
- Number of productivity related goods and services livestock producing households can access;
- Number of SSSLH regularly using and paying for veterinary and breeding services;
- Number of prophylactic treatments for cattle per household;
- Number of households participating in animal health schemes through nakhiris;
- Number of villages or nakhiris using bull rotation schemes;
- Number of calves produced by AI or improved bull servicing;
- Number of farmers applying two or more improved production practices (AI, bull rotation, grain based feed, improved fodder, prophylactic veterinary treatments);
- Percentage of milk and dairy products sold by subsistence and semi-subsistence households;
- Number of farmer households participating in project value chains who have input into governance and opportunities for advocacy related to issues facing the livestock sector.

The questionnaire for stakeholders was developed to quantify stakeholder related indicators from the project measurement plan. Stakeholder related indicators include:

- Quantity of feed supplements and animal nutrition products sold by feed mills (Feed mills);
- Number of feed mills acting as extension service points (Feed mills);
- Area planted to fodder crops and quality of fodder harvested (Machinery Service Providers);
- Annual sales of dairy enterprises (Dairy enterprises);
- Percentage of milk and dairy products that are rejected or discounted for quality reasons (Dairy enterprises);
- Number of subsistence and semi-subsistence households dairy enterprises buy from (Dairy enterprises);
- Number of farmers producing according to plans agreed with dairy enterprises (Dairy enterprises);
- Quantity and quality of milk and dairy products sold by farmers (Dairy enterprises);
- Number of changes made by dairy enterprises to improve food safety, quality management and general business practices (Dairy enterprises).

The questionnaire for local government was developed to measure governance related indicators in the project measurement plan. These indicators include:

- Number of decisions or actions taken to improve pasture and common land management
- Number of decisions or actions taken on animal movement routes or other livestock-related DRR issues
- Number of other policy or investment decision relating to livestock that are taken
- Number of gender action plans implemented by public sector actors

2. Overview of Beneficiaries and Target Group

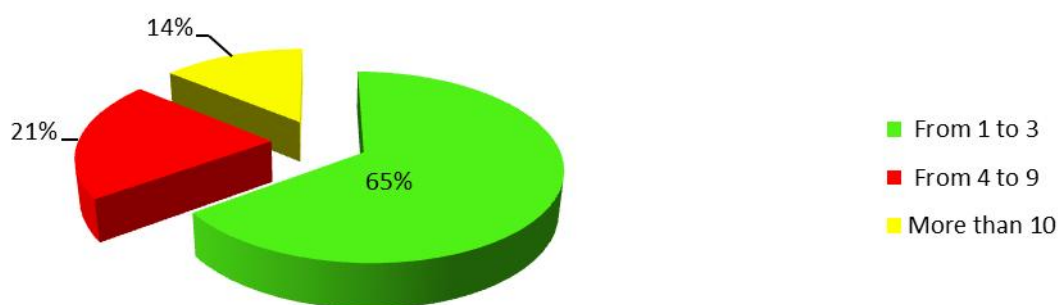
To provide gender disaggregated data both male and female beneficiaries were interviewed – 200 females and 860 males. Wherever possible, female headed households were identified and interviewed in order to provide more detailed information about women's participation in the livestock sector.

Beneficiaries

	District	Total number of villages	Share	Number of Households	Share	Number of Interviews	Share
1	Sagarejo	43	55 %	12,800	48 %	550	52 %
2	Sighnaghi	19	25 %	8,300	31 %	275	26 %
3	Dedoplistskaro	15	20 %	5,550	21 %	235	22 %
	Total	77	-	26,650	-	1,060	-

Among the interviewed households 7 % were led by a woman, 72 % by a man and 21% of households were lead jointly. The majority of households can be classified as subsistence livestock producers, having 1-3 milking cows.

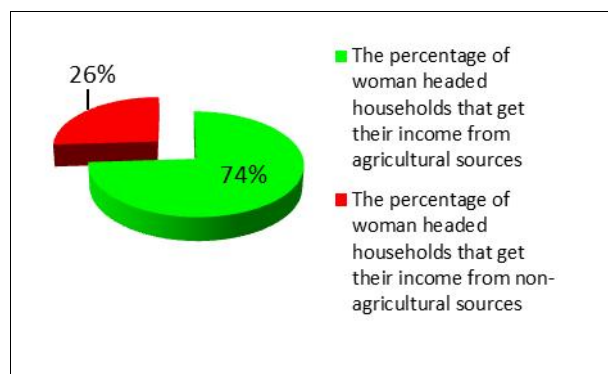
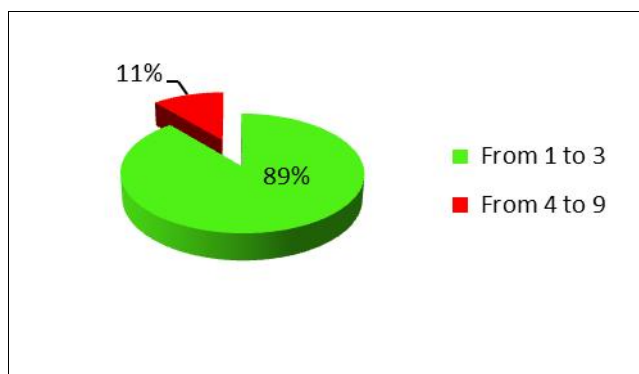
The diagram below shows the structure of cattle ownership by households that own cattle:



When the data is disaggregated for female headed households, a significantly different picture emerges. Eighty-nine percent of female headed households with cattle are subsistence livestock producers and no female headed households had more than 10 cattle. As noted in the research papers, this situation is influenced by the preference for younger female headed households to work off-farm, as shown by the higher rate of non-farm incomes for female headed households (26%) compared to other households (18%). The lack of labour (particularly for elderly widows) also contributes to high rates of subsistence cattle production by female headed households.

Ownership of Cattle by Female Headed HH

Sources of income for Female Headed HH



The project target group, largely consisting of enterprises operating in interconnected market systems, is a highly diverse group of small and medium businesses. Female participation in these businesses varies from non-existent in machinery service centers to modest in dairy enterprises, but none of these businesses were 100% female owned and operated.

Target Group

District	Feed Mills			Machinery Service			Dairies			MCC		
	Total	Interviewed	Share	Total	Interviewed	Share	Total	Interviewed	Share	Total	Interviewed	Share
1 Sagarejo	39	5		30	11		-	-		-	-	
2 Signaghi	19	8		18	7		7	5	-	2	1	-
3 Dedoplistskaro	15	7		13	8		8	6		1	1	
Total	73	20	27%	61	26	42%	15	11	75%	3	2	75%

Due to the structure and methodology of the project, detailed baseline data will be collected for each target enterprise in Business Development Plans. Data collected by this baseline will provide a measurement point for key sectors, while information from Business Development Plans will be used as a baseline for individual businesses and aggregated to provide data for the project as a whole.

3. Results of Household Surveys

3.1. Income generated by livestock production by beneficiary households

On average, subsistence and semi-subsistence farmers in the target area who sell livestock products earn an average of 1,350 GEL per household per year by selling milk, dairy products, meat and live-weight cattle. For all subsistence and semi-subsistence farmers including those who do not sell any livestock products average income from sale of livestock products is 700 GEL per year. For all female headed households, the corresponding figures are lower at 1,200 GEL per year and 385 GEL per year.

3.2. Income per year from selling milk and dairy products

Because the majority of households are subsistence livestock producers who consume most of their own production, income generated from the sales of milk and other dairy products are very little. On average, subsistence and semi-subsistence farmers currently selling milk and dairy products earn an average of 1,150 GEL per household per year. All subsistence and semi-subsistence households including those with no sales earn an average of 230 GEL per year from selling milk and dairy products. For female headed households, the corresponding levels of income are 480 GEL per year and 155 GEL per year.

Type of farmer	No income		< GEL 100		GEL 100 - 300		GEL 300 - 500		GEL 500 – 1,000		> GEL 1,000	
	#	%	#	%	#	%	#	%	#	%	#	%
Subsistence	379	86%	37	95%	62	82%	87	87%	77	67%	48	17%
Semi-subsistence	56	12%	2	5%	11	14%	12	12%	33	29%	107	37%
Big	8	2%	0	0%	3	4%	1	1%	5	4%	132	46%
Total	443	-	39	-	76	-	100	-	115	-	287	-

3.3. Income per year from selling beef cattle

There are two ways of selling of cattle – (i) as a meat and (ii) alive. When cattle is sold a meat the farmer goes with a buyer (mainly butchers) to the slaughter house, where, after slaughtering the cattle, buyer pays to the farmer per kilo of meat recovered. Conversely, when cattle are sold alive the buyer pays according to the live weight.

The two following sections deal with sales of beef cattle, which excludes sales of calves. Because dairy cows must be impregnated to ensure lactation and cattle are almost always slaughtered in slaughter houses, it is assumed that all households must sell beef cattle or calves from time to time and that many sell both. Households that sell beef cattle and meat, average sales are 1,450 GEL per household per year. The average for all subsistence and semi-subsistence households is 470 GEL per household per year of meat and livestock products. For female headed households, the corresponding income is 720 GEL and 230 GEL.

Income per year from selling meat

Type of farmer	No income		< GEL 100		GEL 100 - 300		GEL 300 - 500		GEL 500 – 1,000		> GEL 1,000	
	#	%	#	%	#	%	#	%	#	%	#	%
Subsistence	611	69%	2	100%	8	100%	12	71%	28	68%	29	28%
Semi-subsistence	184	21%	0	0%	0	0%	3	18%	8	20%	25	25%
Big	95	11%	0	0%	0	0%	2	12%	5	12%	48	47%
Total	890	-	2	-	8	-	17	-	41	-	102	-

Sales of beef cattle as meat is not a very popular option, which is only practiced by about 15% of farm households. Compared to sales of live cattle, this option requires more time and travel by farmers. Additionally, if cattle are slaughtered at local slaughterhouses onward sale of meat is largely limited to the local market rather than the much larger Tbilisi market or export markets in Azerbaijan.

Income per year from selling beef cattle by live weight

Type of farmer	No income		< GEL 100		GEL 100 - 300		GEL 300 - 500		GEL 500 – 1,000		> GEL 1,000	
	#	%	#	%	#	%	#	%	#	%	#	%
Subsistence	611	69%	2	100%	8	100%	12	71%	28	68%	29	28%
Semi-subsistence	184	21%	0	0%	0	0%	3	18%	8	20%	25	25%
Big	95	11%	0	0%	0	0%	2	12%	5	12%	48	47%
Total	890	-	2	-	8	-	17	-	41	-	102	-

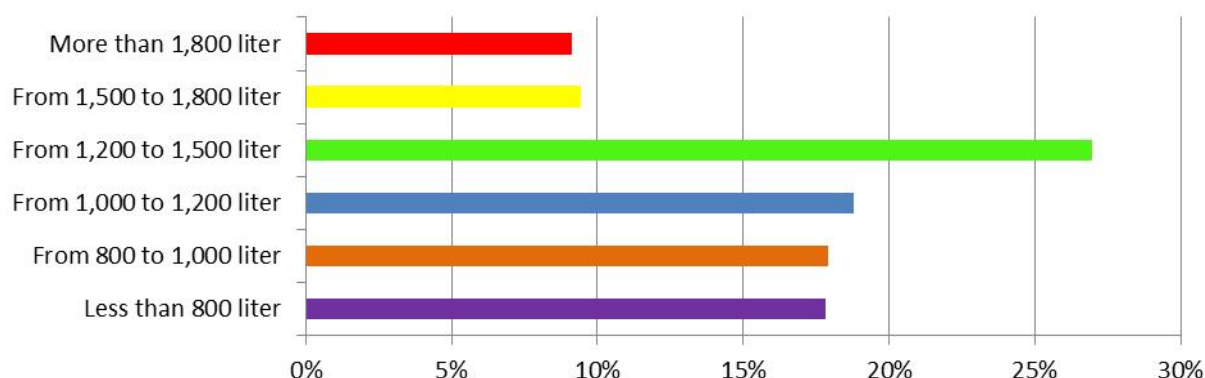
The share of farmers who has no income from the sales of live animal is lower than the share of farmers who do not sell meat, but still a large majority. The remaining households either sell only calves (not finished beef cattle) or in rare cases consume slaughtered cattle themselves.

It is also noticeable that quite a number of farmers have more than GEL 1,000 from the sales of live cattle. These usually are semi-subsistence and big farmers who together constitute 35% of the total number of interviewed farmers.

3.4. Productivity of dairy and beef cattle production by target households

Milk production per cow over one lactation period

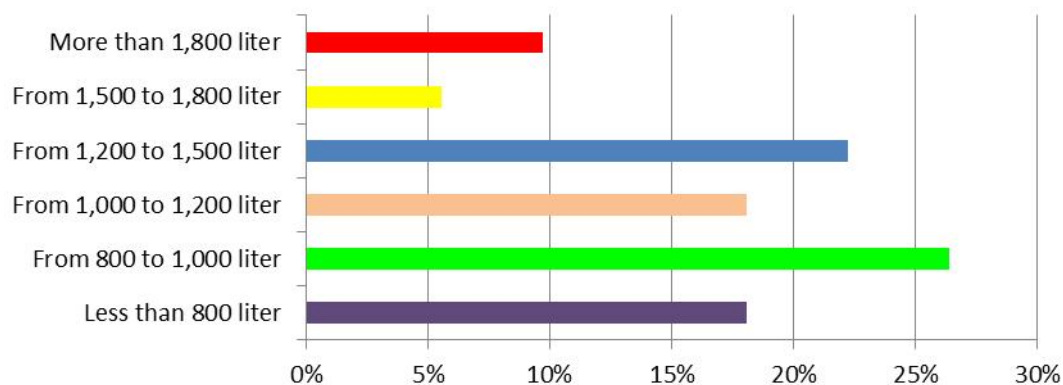
Productivity for all subsistence and semi-subsistence households



Vast majority (80%) of interviewed farmers reported that annual volume of milk produced by one cow during a normal lactation period is less than 1,500 liters. For comparison, the average volume of milk collected from one cow during one lactation period in Armenia is about 2,000 liters.

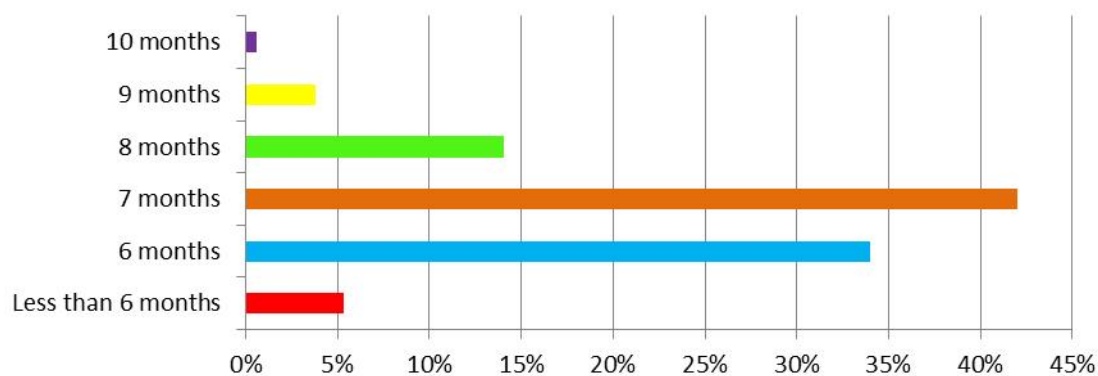
Based on collected information it can be calculated, that the current average annual volume of milk from one head of milking cow is 1,200 liters. For female headed households, the results are not substantially different, with an average of 1,130 liters.

Dairy Productivity for Female Headed Households



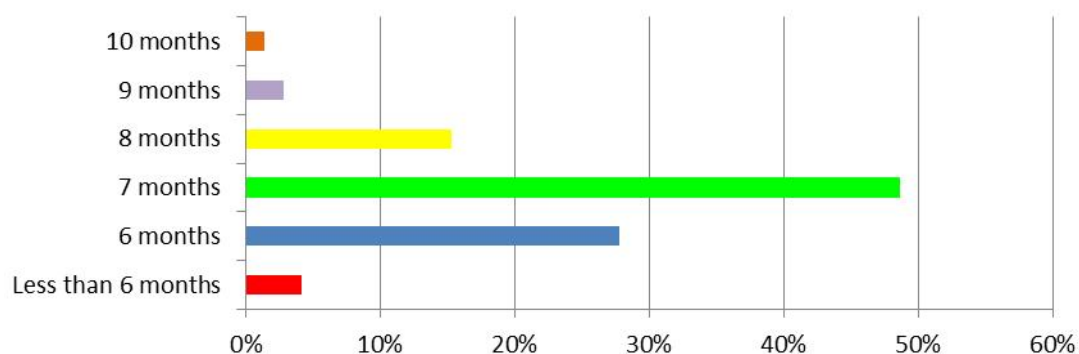
Length of lactation period

Length of lactation period for all households



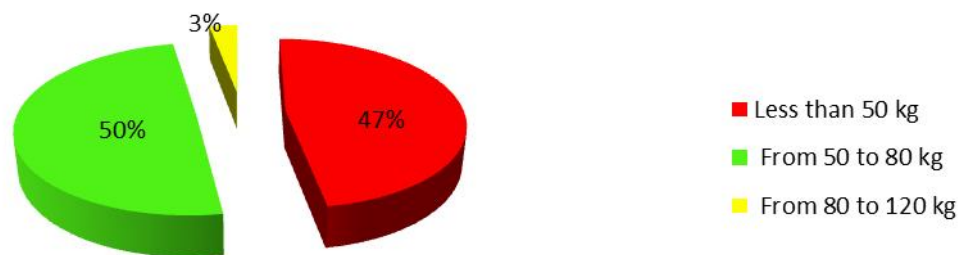
The chart above shows that more than 80% of interviewed farmers reported lactation periods of 7 months or less. Detailed calculation of the average lactation period based on interview responses was 6.8 months, or 210 days. The length of lactation period reported by female headed households was also 7 months.

Lactation period for female headed households



Using 1,200 liters average annual volume of milk from one head and an average length of lactation, the average daily volume of the milk produced is 5.8 liters per cow over a bit less than 7 months. However, this statistic is not standardized across a 305 day lactation period, as is common practice in international statistics. Using the international standard lactation period the average output per day is under 4 liters per day.

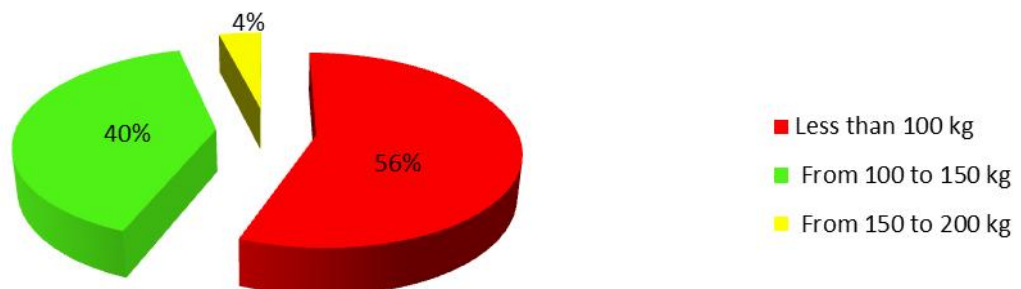
Live weight of 3 months old calves



Despite the fact that 47% of interviewed farmers reported that live weight of 3 months old calves is less than 50 kg, 50% of farmers reported that the weight of 3 months old calf is between 50 and 80 kg. As a small bodied breed, Caucasian Brown calves at 3 months of age should be approximately 70 kg, so 50% of calves are in this range at 3 months of age.

Live weight of 6 months old calves

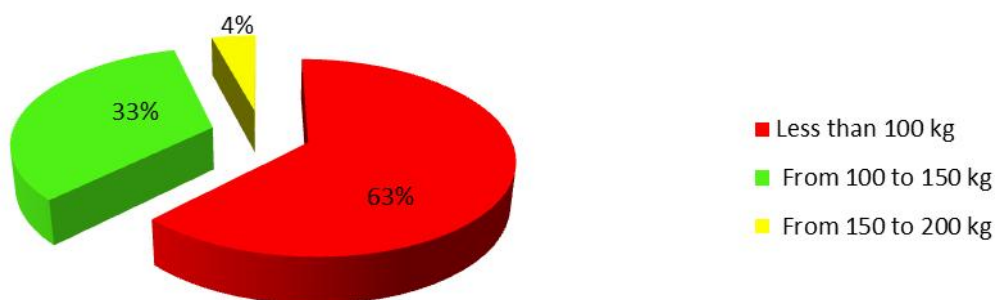
Weight of calves for all households



The situation with the calves of 6 months age is a bit different, as majority (56%) of interviewed farmers reported that live weight of is less than 100 kg. After 6 months only 40% of farmers have calves weighing between 100 and 150 kg, which is the normal range for a healthy 6 month old Caucasian Brown calf. This shows that serious productivity problems occur long before the onset of cold temperatures and poor quality winter pastures.¹

Weight of calves for female headed households

¹ Major productivity losses between 3-6 months of age are due to weaning without supplementing calves' diets with concentrate and because pasture quality decreases quickly at this time. Calves with low weights after 6 months are unlikely to recover condition later in the year and smallholders often sell calves aged about 6 months, so the weight of calves at 6 months is a useful indicator for the project.



Female headed households reported a statistically significant increase of underweight calves at 6 months of age compared to other households. This suggests that poor feeding practices and/or earlier weaning are practiced by female headed households.

✚ Yield of meat at slaughter (dressing percentage)

Few farmers have a precise knowledge of the amount of meat resulting when a cow is slaughtered, a factor that is also known as the dressing percentage or meat recovery rate. The dressing percentage was therefore measured as three separate categories corresponding to good (greater than 50%), below average (40-50%) and very poor (below 40%).



The vast majority (94%) of farmers reported that yield of meat out of live weight is not more than 50%. The very high number of farmers reporting a dressing percentage of less than 50% shows that there is significant room for improvement.

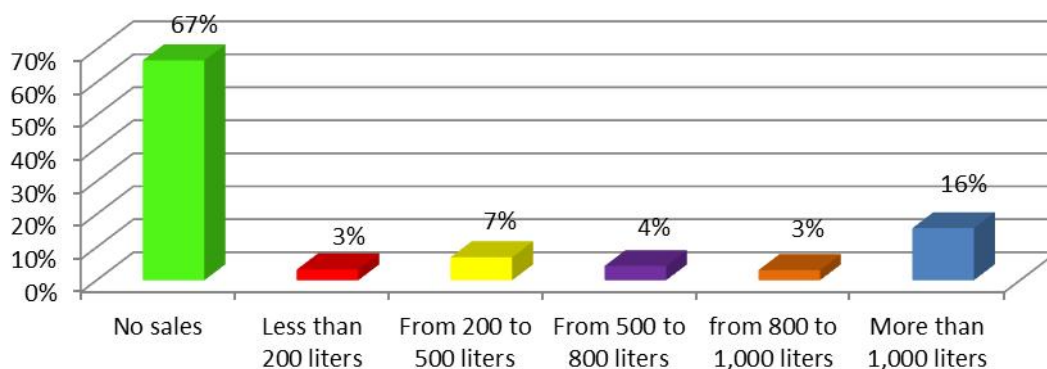
3.5. Sales of milk, dairy products and beef cattle by households

Overall, subsistence and semi-subsistence who sell products sell an average of 900 kg of milk, 145 kg of processed dairy products and 420 kg of beef cattle per year. The corresponding figure for female headed households is 670 kg of milk, 130 kg of processed dairy products and 250 kg of beef cattle and meat per year, all of which are significantly lower than other households that sell these products.

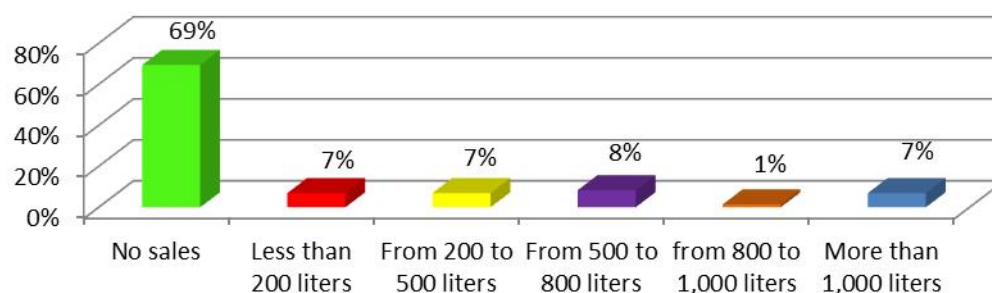
For all subsistence and semi-subsistence producers, average sales are 240 kg of milk, 55 kg of processed dairy products and 160 kg of meat or live weight cattle per household per year. Additionally, 16% of households sell both milk and processed dairy products while 38% sell no dairy products at all.

✚ Volume of fluid milk sold per year

Fluid milk sold per year by all households



Fluid milk sold by year for female headed households



Two thirds of farmers interviewed reported that they do not sell any fluid milk at all. This roughly corresponds with the 65% of farmers who have 1-3 cows and who consume most of their own production. These farmers rarely have sufficient fluid milk available to attract buyers, confirming research results that found they usually processed surplus milk into cheese or other dairy products for sale. Other farmers who do not sell milk are either farmers who process their milk before selling it, or who focus on beef production using purchased bull calves.

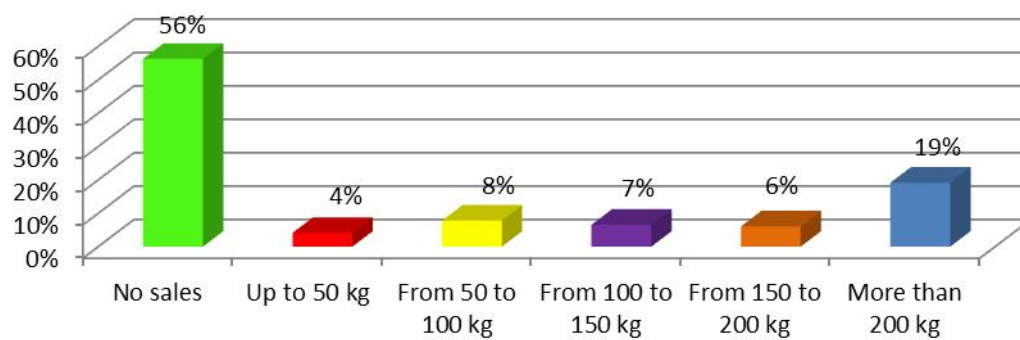
The farmers who sell more than 1,000 liters of milk are primarily commercial farmers who own more than 10 head of cattle. The absolute number of commercial farmers interviewed during the research was 150, while the absolute number of the farmers who sell more than 1,000 liters of milk is 165. These results suggest that a small number of semi-commercial farmers are also able to sell large quantities of milk and may be good models for others.

Volume of dairy products sold per year

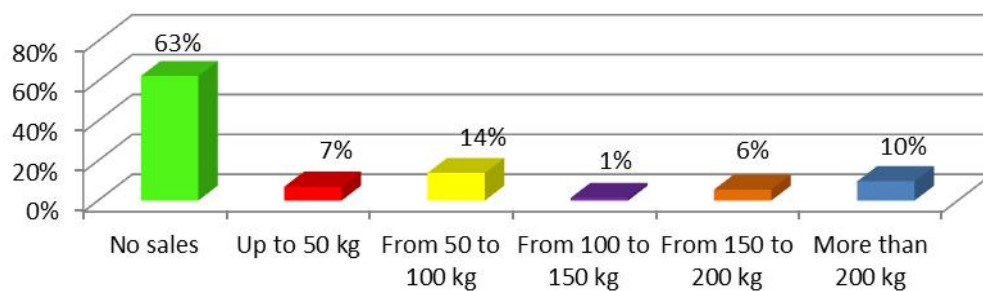
Roughly similar conclusions can be made on the sales of processed dairy products, which include various cheeses, matsoni and other products except fresh fluid milk. Here, however, the percentage of farmers reporting that they sell no dairy products is lower than for fresh milk, confirming the greater importance of processed product sales for smaller farmers. It is likely that this number underestimates the real importance of dairy product sales because a substantial number of the people who sell no dairy products are selling large quantities of milk.

On average, subsistence and semi-subsistence households who sell processed dairy products sell 145 kg of dairy products per year. For all subsistence and semi-subsistence households, including those who do not sell processed dairy products, the figure is 55 kg per year.

Dairy products sold per year by all households



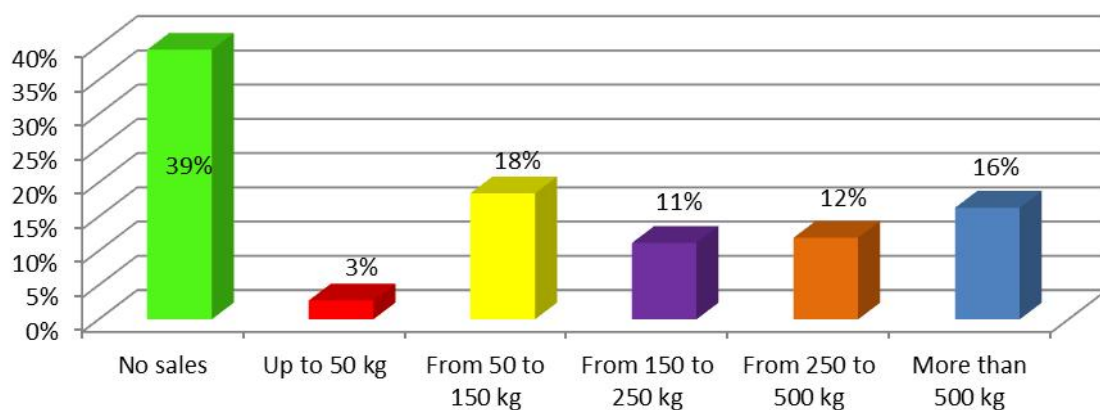
Dairy products sold per year by female headed households



Quantity (kg) of meat (live weight) sold per year

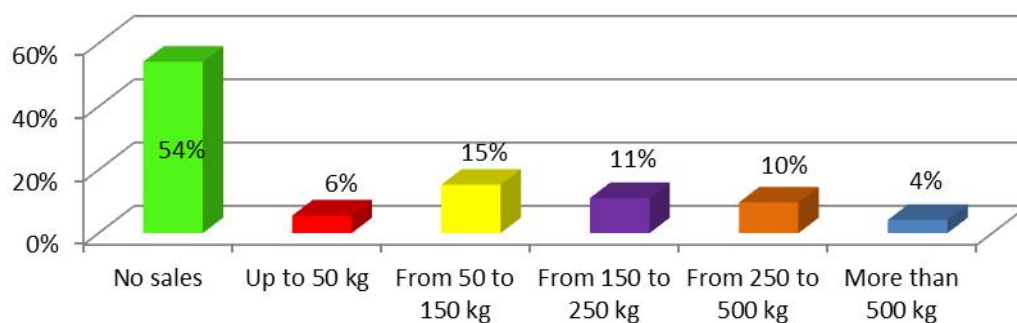
The majority of Subsistence households 77% (and 34% of all interviewed respondents) do not keep beef cattle at all. That means that biggest share of beef cattle producers are semi-subsistence households and commercial farmers.

Beef cattle sales per year by all households



From the diagram above it can be concluded that most farmers who sell beef cattle sell at least 2 calves or 1 older animal per year, which mainly is due to the far economics structure and cash flow requirements.

Beef cattle sales by year for female headed households

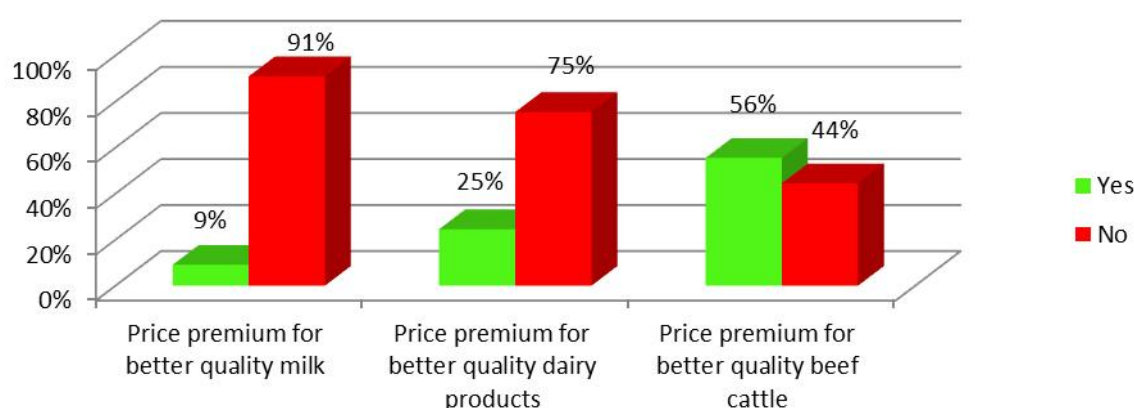


3.6. Price premium for milk, dairy products and beef cattle produced by beneficiaries

The baseline survey was designed to capture information about the availability and use of premium payments for livestock products.

📊 Price premium for better quality milk

The household survey found almost no evidence of price premiums for sale of better quality milk. This issue was confirmed by stakeholders such as milk collection centers and dairies. The most common explanation given is the serious shortage of milk in late Autumn and Winter, when dairy enterprises depend on every single milk supplier they can find, reliable or unreliable. Because they do not want to lose their low-season milk suppliers, dairies and MCCs pay equal “market price” for milk even for low quality milk during the surplus season to protect their relationships with milk producers.



📊 Price premium for better quality dairy products

A somewhat different situation exists for processed dairy products – which is mainly homemade cheese. Because quality and taste of cheese depend on fat content, and because cheese is mainly sold through intermediaries, some of these intermediaries pay more for better quality cheese.

However, price premiums are not widespread and 75% of respondents reported that they do not receive a price premium for better quality cheese. Rather than price incentives, the main financial benefit of producing high quality cheese is ease of sales in the peak production season when a glut of cheese floods the market.

📊 Price premium for better quality beef cattle

In most cases farmers can receive a price premium for better quality beef cattle as they sell them alive to the butchers, the main buyers of beef cattle. Butchers easily can evaluate the yield of meat out of live weight and assess whether animal is in good body condition. Another explanation for the high prevalence of premium prices for good quality cattle is high demand for beef cattle, which stimulates competition by buyers. While formal systems for paying premiums do not exist, experienced buyers use visual inspections to make reasonably accurate guesses.

3.7. Cattle mortality and morbidity rates

Animal health issues for all households over last 3 years

Type of farmer	Distribution of Cattle Mortality, Morbidity and Infertility per Household					
	Cattle mortality		Animal illness and disease		Animal infertility	
	#	%	#	%	#	%
Subsistence	245	36%	515	75%	206	30%

Semi-subsistence	154	70%	190	86%	138	62%
Big	149	100%	144	97%	120	80%
Total	548	-	849	-	464	-

Animal health issues for female headed households over past 3 years

Type of farmer	Number of female headed households reporting losses over past 3 years					
	Cattle mortality		Animal illness and disease		Animal infertility	
	#	%	#	%	#	%
Subsistence	17	27%	35	55%	30	47%
Semi-subsistence	4	50%	7	88%	6	75%
Total	21	-	42	-	36	-

The above statistics show that animal health problems are most common on big farms due to the greater number of animals. They also indicate that female headed households experience lower levels of animal diseases than other households, but significantly higher levels of deaths and infertility.

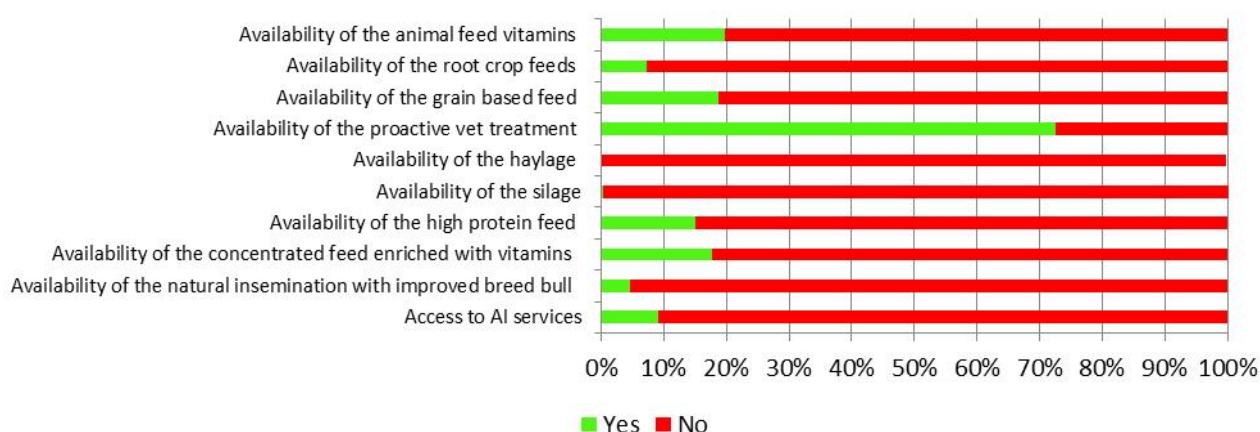
Controlling for the number of animals on farms, mortality, morbidity and infertility rates per cow over a 3 year period for all households are:

Size of Holdings	Mortality	Illness and Disease	Infertility
Subsistence	18%	39%	15%
Semi-Subsistence	10%	13%	9%
Commercial	7%	7%	5%

Comparing these statistics, small farms least often experience losses due to mortality, morbidity and infertility but cattle on small farms are most likely to die, get sick or become infertile.

3.8. Number of livestock related goods and services households can access

On average subsistence and semi-subsistence households have access to less than 2 (true average of 1.6) productivity related goods and services, usually including veterinary services. The following diagram provides information on productivity related goods and services livestock producing households can currently access.



Key points from the survey are that that:

- No silage or haylage is available in the project target area.
- Less than 10% of farmers can access root crops such as forage beet for feed, natural insemination with improved breed bulls or AI services.

- Less than 20% of farmers can access concentrated feed enriched with vitamins, grain based feed, animal feed vitamins and high protein feed;
- Prophylactic veterinary treatment is the only service that is available in the majority of villages. Even this service remains unavailable to a sizeable minority of respondents, mainly from Sagarejo and Dedoplistskaro districts.

Access to services by SSSH

# of services farmers can access	Absolute number	%
Less than 2	645	70%
2	111	13%
3	57	6%
4	36	4%
More than 4	62	7%

3.9. Number of SSSLH regularly using and paying for veterinary and breeding services

Regular usage of paid veterinary service

While veterinary services are available to over 70% of farmers, 47% of respondents use veterinary services regularly and 53% percent do not. However, 59% of respondents pay for veterinary services at least one time per year. By comparing the two numbers, it can be concluded that 12% of households use veterinary services reactively when cattle are sick.

Frequencies of payment in cash for veterinary services

Type of farmer	Never		Once in a year		Twice per year		From 3 to 5 times per year		More than 5 times per year	
	#	%	#	%	#	%	#	%	#	%
Subsistence	302	44%	172	25%	171	25%	34	5%	11	1%
Semi-subsistence	103	47%	31	14%	52	23%	28	13%	7	3%
Big	46	31%	34	23%	51	34%	15	10%	3	2%
Total	441	-	238	-	283	-	77	-	21	-

Frequency of payment in cash for veterinary services by female headed households

Type of farmer	Never		Once in a year		Twice per year		From 3 to 5 times per year		More than 5 times per year	
	#	%	#	%	#	%	#	%	#	%
Subsistence	33	52%	13	20%	17	27%	1	2%	0	-
Semi-subsistence	5	63%	1	12%	1	12%	0	-	1	12%
Total	38	-	14	-	18	-	1	-	1	-

Usage of AI services and / or improved breed bulls for natural insemination on a regular basis

Greater than 99% of interviewed farmers do not use AI services and / or improved breed bulls for natural insemination on a regular basis. Only 7 out of 1060 households interviewed reported that they

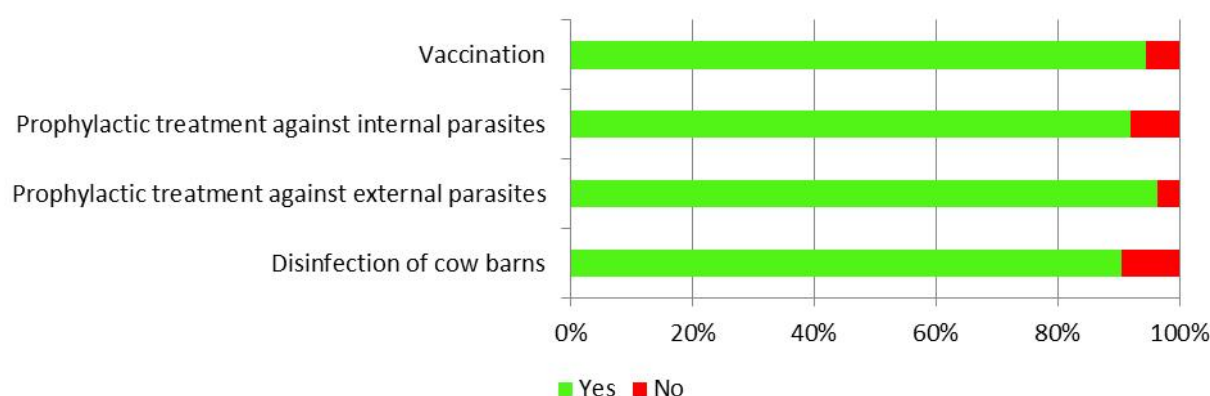
use either of these two practices on a regular basis. This is slightly lower than the number of households that have a high genetic potential calf (1.5%, discussed below), indicating some residual from previous projects. This is also much lower than the percentage of households participating in bull rotation with regular bulls (14%, discussed below).

3.10. Number of prophylactic treatments for cattle per household

Use of preventive treatment

The vast majority of farmers use preventive treatments at least one time per year. Clearly, administration of preventive treatments is done by household members themselves as rates of preventative treatments are higher than rates of veterinary service use. Preventative treatments are generally applied one time per year.

The chart below provides the information what type of preventive treatments are used in target districts:



Animal health exams and testing

The nearest laboratory to the project target area, who provides animal blood analyses services is located in town Gurjaani. This causes additional cost for the farmer to travel there to conduct blood analyses mainly for brucellosis, so only 25% of interviewed farmers reported that they do this type of analyses. It should be noted that about half of the farmers who conduct blood analyses are subsistence farmers. This surprisingly high ratio is likely influenced by the fact that these farmers consume their own products and are concerned about transmission of zoonotic illnesses such as brucellosis.

3.11. Number of households participating in animal health schemes through nakhiris

Usage of vet services through nakhiris on a regular basis

Eleven percent of interviewed farmers reported that they use vet services through nakhiris on a regular basis, while the vast majority do not. Distributions of these 11% of farmers by target districts are as follows:

- Sagarejo district – 14% (81 respondents out of 550);
- Signaghi district – 8% (24 out respondents out of 275);
- Dedoplistskaro district – 2% (5 respondents out of 235);

The project team originally identified this as a potential error by interviewers, but after a close review of responses found that the results are due to differences in vaccination practices between districts. The higher rates in Sagarejo and Signaghi districts are related to government sponsored vaccinations in areas

close to animal migration routes. These vaccinations are delivered by state contracted veterinarians through nakhiris, increasing the frequency of nakhiri based veterinary services.

3.12. Number of villages or nakhiris using bulls' rotation scheme

Usage of bull rotation in villages

Initial data suggested that 41% of respondent participated in bull rotation schemes in their villages or nakhiris. Due to an error on the part of enumerators, data from Sagarejo was not reliable and was therefore excluded except for data collected directly by PIU staff. When the incorrect data is removed from the data set, 14% of respondents report that they use some form of bull rotation.

District	# of Respondents	# Using Bull Rotation	%
Sagarejo	25	1	x
Signaghi	275	30	
Dedoplistskaro	235	46	
Total	535	77	14.4%

While bull rotation with high genetic potential bulls is very rare (see following section), bull rotation with local bulls to avoid inbreeding is more frequent. In most cases this is due to bigger farmers who bring in bulls to breed with their herds, but a few instances of purchase of bulls from outside the target area were found. Overall, 14% of nakhiris participate in bull rotation schemes but only to avoid inbreeding and use of bulls with verifiably high genetic potential are much lower (less than 1%, as discussed above).

3.13. Number of calves produced by AI or improved bull servicing

Number of calves produced by AI servicing

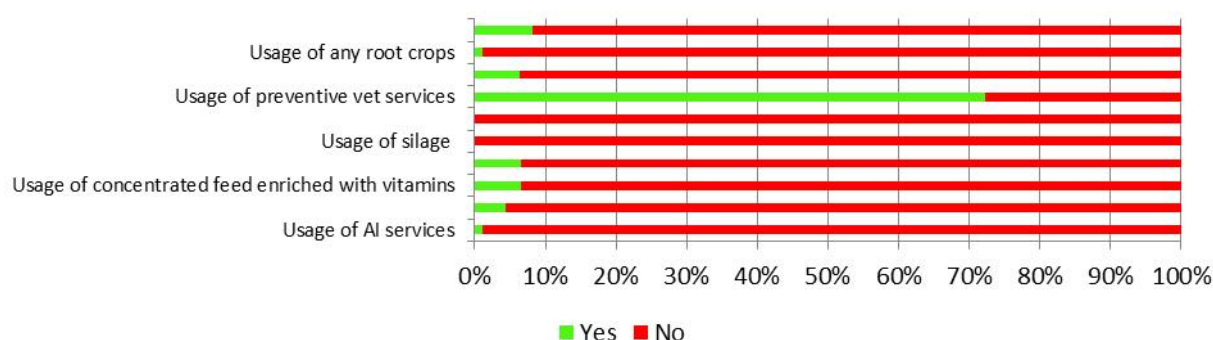
Despite the fact that 10% of respondents have access to AI services, only 1% of interviewed farmers have calves produced by AI servicing and their absolute number was only 7. This can be partly explained by the large number of interviews in Sagarejo, where no AI technicians are working but this result is also very low in Signaghi and Dedoplistskaro where AI service is available and where previous projects promoted this technology.

Number of calves produced by improved bull servicing

Only 5% of respondents have access to natural insemination with improved breed bulls, but 1.5% of interviewed farmers reported that they have calves produced by improved bull servicing. In total, only 16 farmers out of 1060 said they had calves produced by these bulls. In some cases these bulls were left by traditional projects operating in the project area, but in a few cases these bulls are bull calves produced through AI and retained for breeding purposes.

3.14 Number of farmers applying two or more improved production practices

Use of improved production practices by all households



Based on collected data, it can be determined, that:

- No (i) silage or (ii) haylage are used in project target area;
- Less than 5% of interviewed farmers reported usage of root crops for feed, natural insemination with improved breed bull and AI services;
- Less than 10% of interviewed farmers reported use of concentrated feed enriched with vitamins, grain based feed, animal feed vitamins and high protein feed;
- Proactive vet treatment (paid and not paid) is used by most farmers;
- Only 17% of interviewed farmers use two or more improved production practices.

Overall, the rates of service usage are substantially lower than the availability, except for veterinary treatments. Low uptake of new technologies even where they are available implies that factors other than availability (such as poor marketing, lack of extension service or low purchasing power) are important to underinvestment in the sector.

Use of services by all households

# of services farmers apply	Absolute number	%
Less than 2	772	85%
2	70	8%
3	41	4%
4	16	2%
More than 4	12	1%

Use of services by female headed households

# of services farmers apply	Absolute number	%
Less than 2	63	88%
2	4	6%
3	3	4%
4	1	1%
More than 4	1	1%

Use of productivity enhancing goods and services by female headed households is slightly lower than for all households, but the difference is not statistically significant.

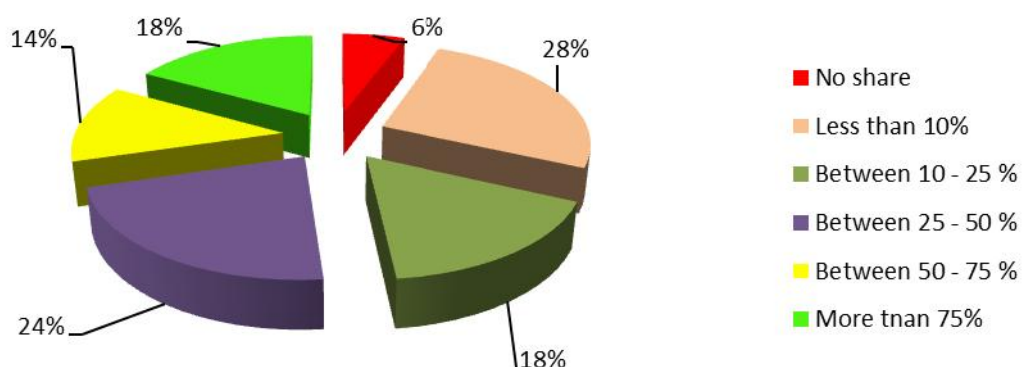
3.15. Percentage of milk and dairy products sold by subsistence and semi-subsistence households

Share of income generated from livestock in a household

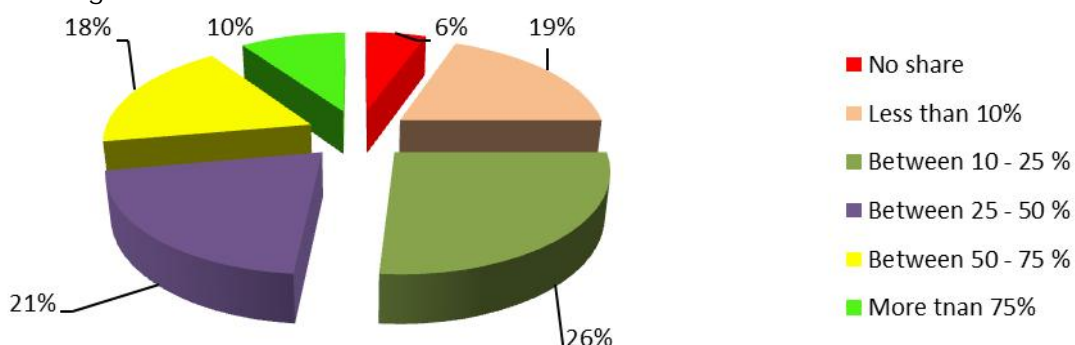
As it was mentioned previously 67% of farmers reported that they do not sell milk, 56% reported that they do not sell processed dairy products and 39% of farmers do not sell live weight cattle. However, only 6% of households reported that they received no income from sales of livestock or livestock products. From this, we can conclude that many households sell only one or two products but that collectively milk, processed dairy product and beef cattle production are a source of income for almost all households. Increasing income generating opportunities from livestock can therefore have an impact on the vast majority of farm households.

There is a 4% discrepancy² between the information collected in this question and information provided when results are tabulated for reported sales of milk, processed dairy products, meat and live weight beef cattle. The most likely be because a small number of households (40 in total) “rounded down” their responses if they sold extremely small quantities of these products, but responded positively when all income from livestock were aggregated. Because single, direct questions have less room for error the project will use the lower figure of 6% as the baseline number of households with no income from selling livestock.

Share of income generated from livestock in all households



Share of income generated from livestock in female headed households



The share of income derived from livestock rearing in female headed households is relatively similar to other households, but with a significantly larger number receiving 10-25% of income from livestock and less receiving greater than 75% of income from livestock.

Agriculture activity as a main source of income

² 10% of households indicated they have no income from livestock products (milk, processed dairy products, meat or live weight cattle).

82% of interviewed respondents said that agriculture was their main source of income. 193 households said that agriculture was not their main source of income, of which 145 had 1-3 cows, 35 had 4-10 cows and 13 had more than 10 cows. The substantial number of households with most income coming from non-agricultural sources means that it is necessary for the project to carefully screen out these households when counting the number of beneficiaries in the future.

✚ Number of households with more than 10 pigs

Only 0.3% (3 farmers out of 1060) have more than 10 pigs. From this we can conclude that pig ownership is not an important factor in the definition of beneficiaries.

Number of households with more than 100 sheep

It was identified during the survey, that 11% of households (115 farmers out of 1060) households have more than 100 sheep. Of the total 115 large sheep farmers, 90 households (equal to 78% of all large sheep farmers) were Azeri Georgians from Iormuganlo village cluster in Sagarejo district. Of the 115 people who had more than 100 sheep, 18 households had 1-3 cows, 34 households had 4-10 cows and 63 households had more than 10 cows.

Monitoring of project beneficiaries in Sagarejo district will require particular care to count only beneficiaries who have less than 100 sheep. In other working areas this is not expected to be a significant issue because the vast majority of households with more than 100 sheep also have more than 100 cattle.

3.16. Number of farmer households participating in project value chains who have input into governance and opportunities for advocacy related to issues facing the livestock sector

During the survey 24% of interviewed farmers reported that they take part in the governance and advocacy processes related to improvement of the livestock sector. This is mostly related to decisions taken at village level about land use or assignment of land to nakhiris rather than having input into formal decisions taken by municipal governments. This is confirmed by the responses of local government, who have taken very few livestock related decisions over the past 3 years.³

³ See the final section of the report for more details.

4. Target Groups

4.1. Feed Mills

20 feed mills operating in target districts were interviewed, including 5 in Sagarejo, 8 in Signaghi and 7 in Dedoplistskaro. The feed mills operating in the target district mainly provide milling service in return for in-kind payment in grain. The purpose of the survey was to determine the:

- Quantity of feed supplements and animal nutrition products sold by feed mills;
- Number of feed mills acting as an extension service points.

4.2. Quantity of feed supplements and animal nutrition products sold by feed mills

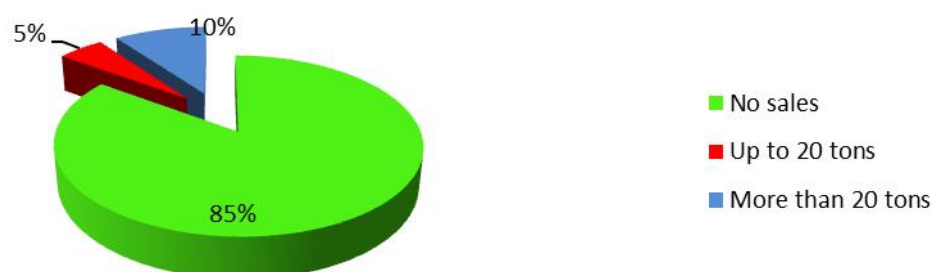
Only 15% of feed mills sell any animal feed products (including both by-product based feed and concentrated feed), and only 10% of mills sell more than 20 tons of animal feeds annually. The remaining 85% of mills only provide milling services to farmers. The 2 mills that sold more than 20 tons did so both regular animal feeds and for concentrated animal feed. While few mills sell feed, those that do sell large quantities.

Total amount of regular animal feed sold per year

By-product based animal feed is overwhelmingly composed of wheat bran or grain collected from in-kind payments with smaller amounts of sunflower oil cake where this is available in sufficient quantities. These feedstuffs are used to feed a variety of animals, but are especially important for pigs and cattle.

Out of 20 interviewed feed mills:

- Only 2 of them sell more than 20 tons of regular animal feed per year;
- Only 1 sells less than 20 tons of regular animal feed per year;
- The remaining 17 mills (85%) have no sales of regular animal feed.

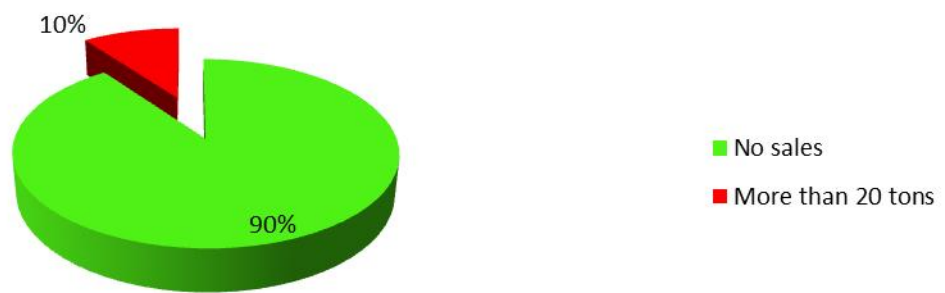


Animal feed sold per year

Total amount of concentrated feed sold per year

Currently, only two feed mills sell more than 20 tons of concentrated feed per year, when the other 18 (90%) do not have any sales of concentrated feed at all. The two mills that sell concentrated feed are the same ones that sell more than 20 tons of regular animal feed.

Total amount of concentrated feed sold per year

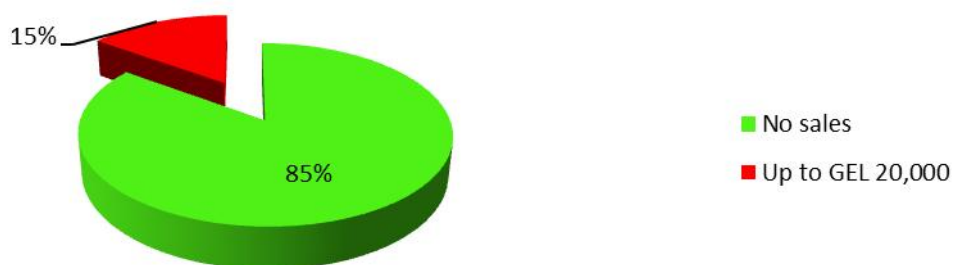


Amount of mineral, vitamins and protein additives that you sold per year

The research identified zero feed mills offering minerals, vitamins and protein additives to farmers.

Amount of seeds sold per year

Only three feed mills out of 20 offer seeds to farmers and their last year sales were up to GEL 20,000. 85% of mills do not sell seeds, which corresponds with their focus on feed milling services. The mills that sold seeds were the same ones that sold animal feeds.



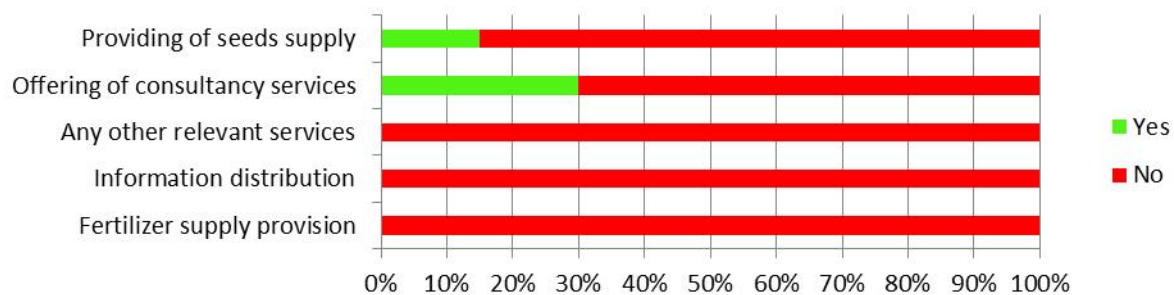
Amount of seeds sold per year

4.3. Number of feed mills acting as an extension service points

Provision of additional service to farmers

65 % (13) of interviewed feed mills provide additional services to farmers, while 35% (7) do not provide any additional services at all.

Out of these 13 only 3 or 15% of the total provide seeds for sale and 6 mills (30% of the total) provide consultancy services on the usage of seeds and animal feeds. Fertilizer supply and general agricultural extension support are not provided by any mills interviewed in the target district.



Provision of services

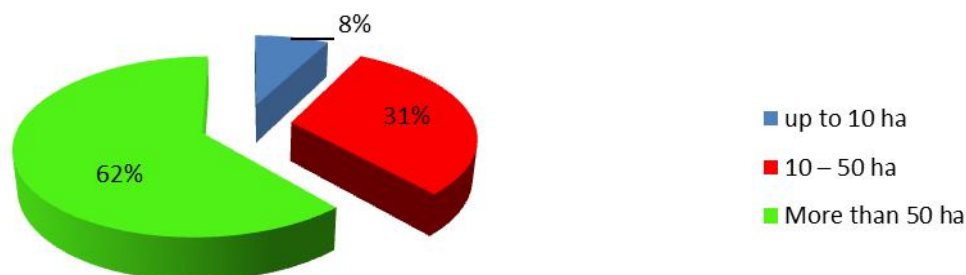
Number of women involved in milling businesses

There are only three feed mills with women involved in the business, all of whom provide accountancy services. The remaining 85% of mills interviewed are operated by men only.

4.4. Machinery Service Providers

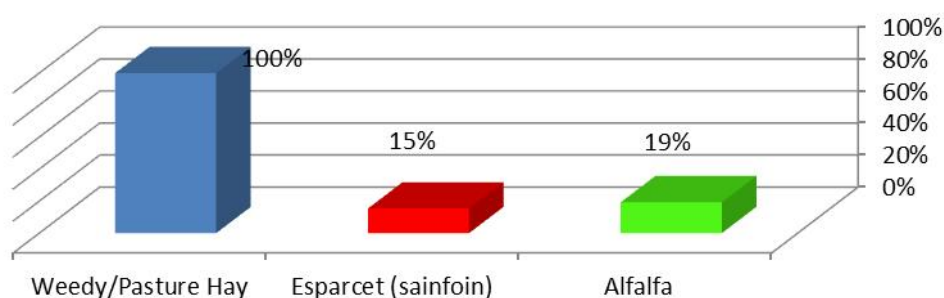
Machinery service is present almost in every village in the target district. Among those 26 machinery service providers (MSP) were interviewed – 11 in Sagarejo district, 7 in Sighnaghi and 8 in Dedoplistskaro. The purpose of the survey was to determine the area planted to fodder crops and quality of fodder harvested by these businesses.⁴

Size of the plot where hay bales are prepared



The distribution of machinery services in the target district is fair and most machinery service providers bale reasonably large areas of hay over the course of 1 year. However, there is an apparent discrepancy between the perceptions of farmers who feel that inadequate machinery services are available and service providers who feel that there is adequate capacity. The divergent views are due to the fact that hay is commonly cut only one time per year, resulting in very high demand for a short period of time and unutilized capacity the rest of the season. Lengthening the season by encouraging earlier and repeated cuttings would benefit both farmers and machinery service providers.

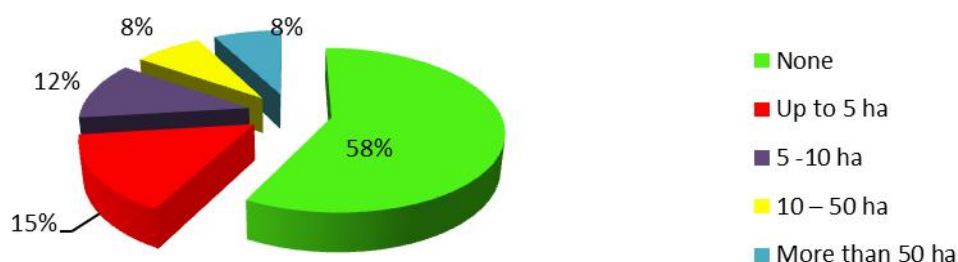
Type of hay harvested



The main quality issue is the type of the hay prepared in the target district. As shown in the chart, only a few people harvest any alfalfa or sainfoin in the target district. By contrast, all service providers produce weedy pasture hay, which is of comparatively low nutritional value for cattle although it is superior to pastures for winter feeding.

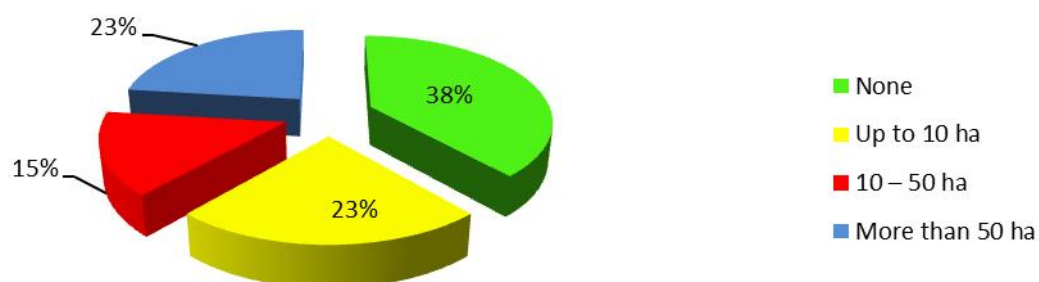
⁴ Total production volumes in target districts will be tracked through official government statistics.

Size of the plot where forage crops were planted last year

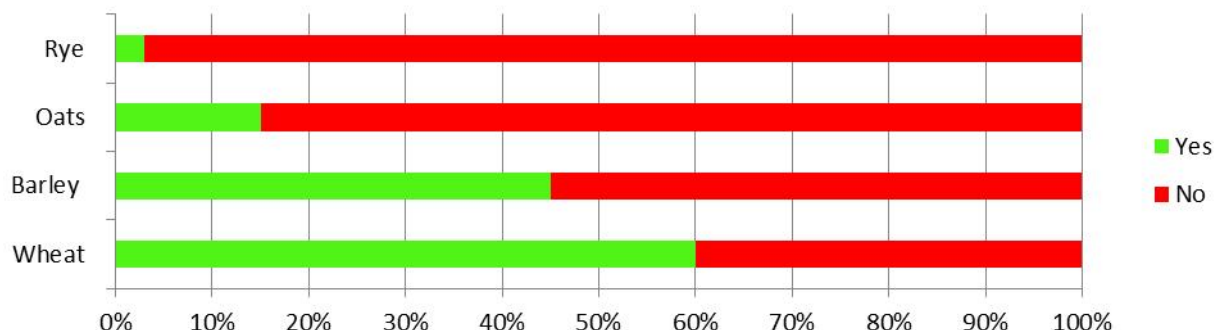


As shown in the chart below 58% of machinery service providers did not plant any hectares of new forage crops last year. Of the remainder, only 16% planted sizeable areas of forage crops, with the remainder planting small areas. The low rate of new plantings corresponds with data showing high amounts of weedy pasture hay harvested and low quantities of good quality forages harvested. Because sainfoin is replanted every 2-3 years and alfalfa is replanted every 5-7 years (by local practice), some of this planting is to replace old stands and a small amount represents expansion of cultivated area, particularly in Sagarejo where government sources report 190 hectares of new alfalfa was planted last year.

Size of the plot where straw was prepared



Type of the straw prepared



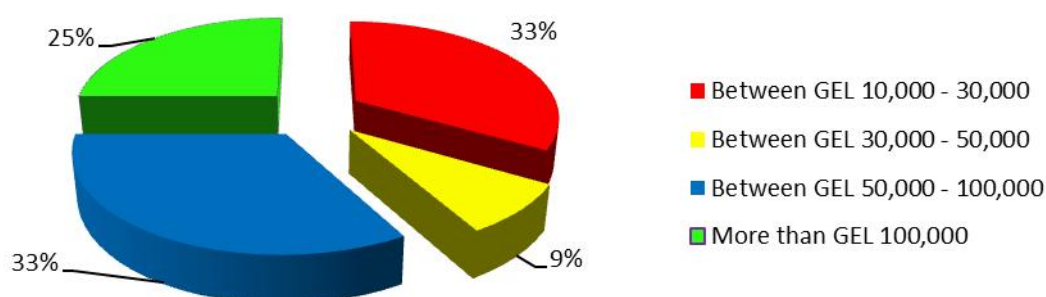
Number of women involved in business

No women were found to be working in machinery service businesses at any levels.

4.5. Dairy Enterprises

Dairies that buy and process milk into finished products are present only in Dedoplistskaro and Signaghi Districts. Only one Milk collection center used to operate in Sagarejo district but even it is no longer operating. So in two target districts Dedoplistskaro and Signaghi, 13 Dairy enterprises were interviewed during baseline survey research and Sagarejo was excluded. For the purposes of the survey, enterprises that included both milk collection and dairy processing were counted only as dairy processors.

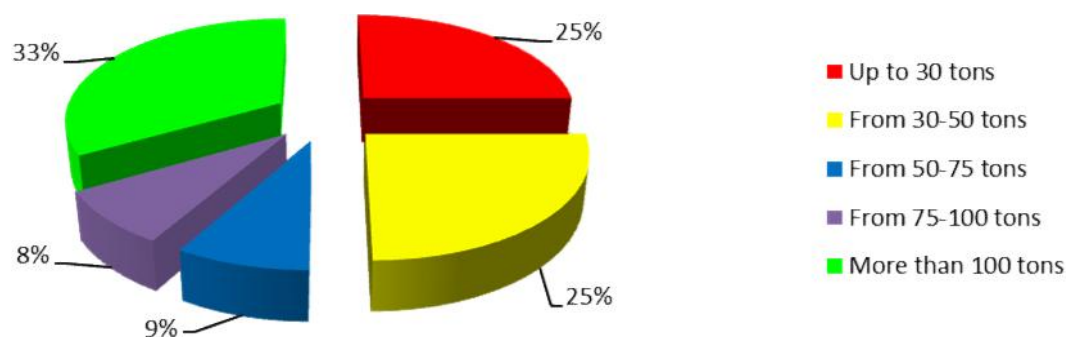
Annual sales of dairy enterprises



Turnover of the enterprise per year

The average turnover of dairy processing enterprises and milk collection centers is 75,000 GEL per year with a wide range in of responses. Total turnover by the 13 operating dairy enterprises and milk collection centers in the target area is 975,000 GEL per year. For the purposes of the baseline, non-operational businesses were not included but a number of these businesses exist in the target area.

Because companies that are close to the old 100,000 GEL cutoff (recently changed to 200,000 GEL) for VAT exemption have an incentive to under-report income, it is possible that these results underestimate total turnover. Detailed and accurate information about turnover of each dairy enterprise will be collected in Business Development Plans after trust has been developed between the project and businesses. This information will be used as baseline data for individual enterprises and will be aggregated to provide detailed information about all enterprises actually participating in the project.



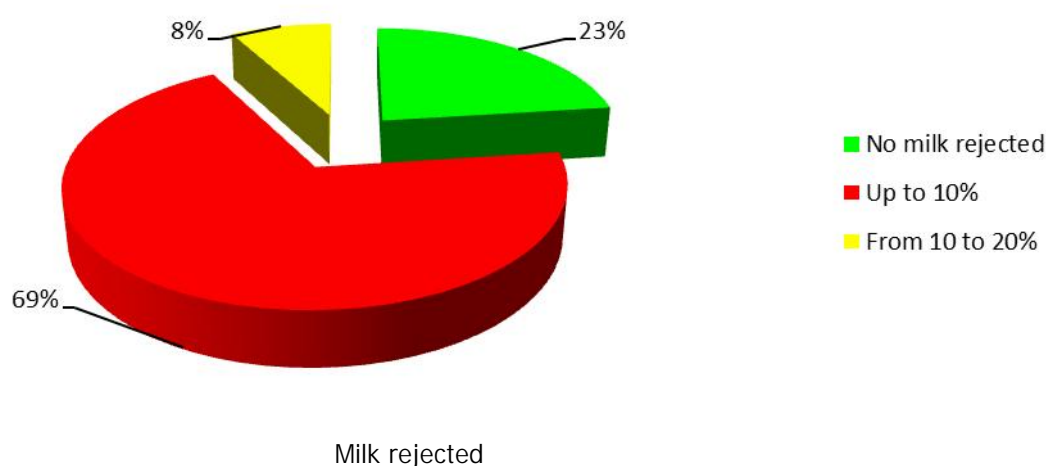
Volume of milk purchased

Data for the volume of milk purchased for processing or resale by dairy processors and milk collection centers was examined to confirm whether data for financial turnover was correct. Based on expected prices for milk and dairy products, volumes reported and turnover reported are aligned.

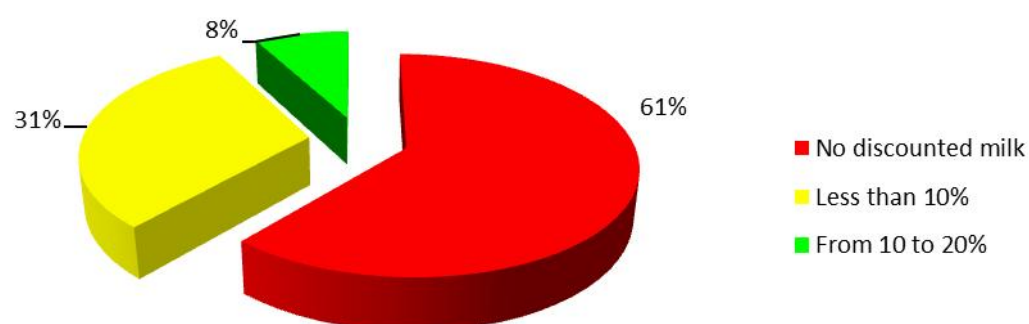
✚ Share of milk rejected due to quality issues per year

The volume of the milk rejected due to the quality issues is relatively moderate, with 69% of businesses rejecting up to 10% of the milk purchased throughout the year. An additional 23% of the interviewed did not reject milk at all. On average only 5% of milk shipments are totally rejected over the course of the year, with lower rates in the winter when cooler temperatures slow spoilage. An additional 2% of milk is purchased at a discount due to low quality.

Dairy enterprises seem not to be very concerned with the quality of the milk they buy, largely because most of them make cheese and do not require the same level of quality as fluid milk packers do. The primary reason for rejection of milk is high acidity which is checked at the dairy. As a result, project activities may increase rejection rates temporarily as farmers and processors begin to focus more on quality.



✚ Share of the discounted low quality milk that you buy form farmers per year

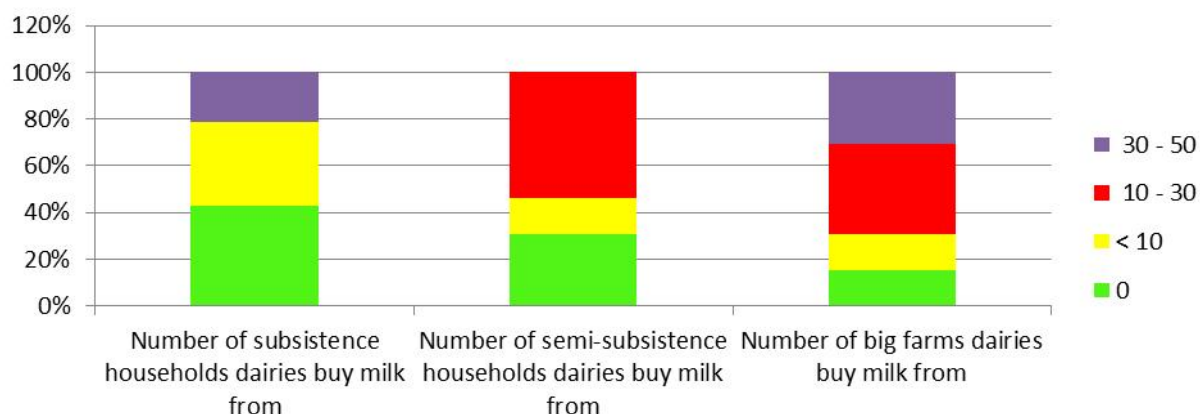


✚ Number of subsistence and semi-subsistence households dairy enterprises buy from

Dairies and MCCs in the two target districts mainly buy milk from semi-subsistence and big farms. Usually they have more than 10 such milk suppliers and few subsistence households. In total, dairy enterprises

interviewed (excluding cheese traders) buy from a total of 275 subsistence and semi-subsistence livestock farmers.

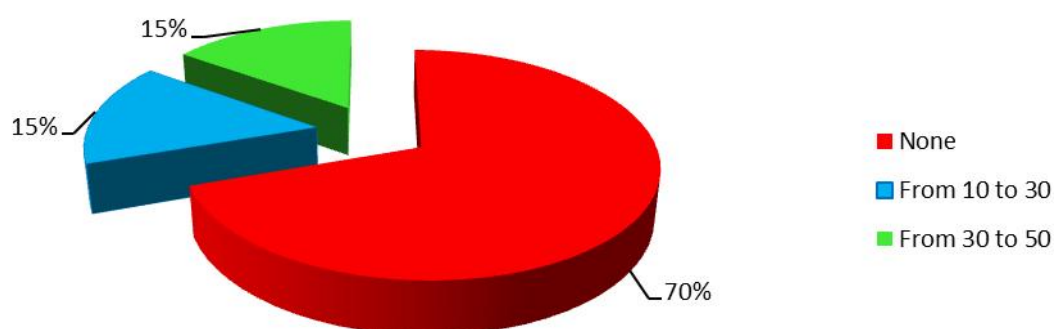
Distribution of farm sizes purchased from



Number of supplier farmers who dairy / MCC works on a basis of preliminary agreement

Planning and creation of production and purchase agreements is not common in the target area. Currently, dairies only have some form of agreement with a total of 120 dairy farmers. Because the baseline covers all dairy enterprises in the target area, this number is definitive, however individualized baseline information for each enterprise will be provided in Business Development Plans. This additional baseline information will be aggregated and used to update the measurement plan.

The main reason for the small quantity of farmers producing according to a plan is that 70% of enterprises never create plans or agreement with any farmers. The lack of planning goes a long way to explain why production and marketing continues to suffer from such strong seasonality, despite year round demand for the cheese and other products produced by dairies. A small amount of planning should have large benefits for both producers and processors.



Quality of the milk supplied by farmers

The majority businesses consider milk provided by the farmer to be good in quality, with 54% of interviews. 31% of businesses consider the milk they buy acceptable and 15% considers it bad quality. There were no cases of very good or excellent assessments of quality in milk supplied from farmers. This means that most dairies are getting milk that is just good enough to make cheese, and that small dairies themselves have low expectations of quality.

Large dairies, which were not included in this interview, use milk for more quality sensitive products and processes and have a lower perception of milk quality in Kakheti.

- ✚ Investment of time or money to improvement safety of milk and dairy products during the last three years

Food safety is an issue of primary importance for dairy enterprises, as food safety standards will start to be enforced in the near future. Despite the looming threat to their businesses, more than a half (7 out of 13) of dairy enterprises have not invested into improvement of food safety issues over the last 3 years. 6 out of 13 dairy enterprises invested at least some money or time in food safety improvements during the last 3 years.

Additional, detailed information for each target enterprise will be contained in Business Development Plans. This information will serve as baseline information for individual enterprises and will be aggregated for use in project reporting.

- ✚ Investment to improve product quality

The picture for food quality improvements is even worse than for food safety. Only 4 out of 13 enterprises (31%) have invested in quality improvements over the last 3 years while 9 have not.

Additional, detailed information for each target enterprise will be contained in Business Development Plans. This information will serve as baseline information for individual enterprises and will be aggregated for use in project reporting.

- ✚ Usage of modern business administration to keep financial records

In general terms the enterprises suffer quality, safety and management issues. Only 3 out of 13 enterprises keep books for financial records and use modern business administration tools. The remaining 10 out of 13 use only the most basic financial administration in order to meet basic legal requirements.

- ✚ Number of women involved in business

As for gender related issues, out of 12 interviewed enterprises only one had a woman involved into activity, where the rest subsequently were managed by man men.

4.6. Governance

- ✚ Decisions have been taken during last three years to improve the management of common lands and pastures

The only pasture and common land management decision implemented during last three years was in Dedoplistskaro where the district government decreased the annual rental fee for 1 ha pastures by 80% - from GEL 16.0 to GEL 7.0. However, the original price 16 GEL was very high compared to other areas of Georgia, and according to Georgian law the annual rental fee for 1 ha of pasture must be between GEL 5.0 and to 16.0.

Aside from decisions related about the price of pasture rental, no other decisions have been taken about pasture remediation, improvement of management practices or allocation of grazing rights to commonly managed land.

- ✚ Decisions have been made during the last three years related to animal movement routes

Sighnaghi is the only district where local government made decisions related to animal migration routes. Two decisions were made in this district, one related to sheep movement routes near the village Saqobo and another for to the area along the Iori river.

- ✚ Decisions have been made during the last three years related to DRR

In all three target districts only a few decisions have been made related to Disaster Risk Reduction. In Sagarejo no decisions were taken, although investments were made to alleviate flooding in the area by decision of higher levels of government. Sighnaghi district made 3 decisions related to river bank reinforcement and in Dedoplistskaro three decisions were taken on replacement and replanting of wind breaks. (Planting of windbreaks was managed and implemented by a German sponsored development project rather than by the district independently).

- ✚ Action plans have been elaborated by NGOs during the last three years related to gender issues

No actions were undertaken in Sagarejo and Dedoplistskaro regarding gender issues. In Sighnaghi two meetings have been held to discuss gender issues but no further steps have been taken to develop or implement gender action plans.

- ✚ Policy or investment decisions have been made in relation to livestock during the last three years

No decisions made regarding other livestock related policies or investments during the last three years in any of the target districts.

List of Annexes

Annex 1 - Households Baseline Survey Questionnaire

Annex 2 - Stakeholders Baseline Survey Questionnaire

Annex 3 – List of villages

Annex 4 - Baseline data collected from Potential Stakeholders

Annex 5 – Baseline data collected from interviewed farmers