

Survey into the dairy and beef business in Racha

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Executive Summary

The objective of the research was to provide an overview of the meat and dairy sector in Racha with an aim to assessing the viability of both sectors and the various ways that the project could work with the sectors to improve them.

The research was based on desk analysis of economic data, open interviews with experts, vets and large farmers in Racha and outside as well as open and closed interviews with 42 recipients of CARE grants in Racha. We also included some preliminary results from a visitor survey conducted in the summer of 2011.

The number of head of cattle and consequently the level of milk and meat production has been in decline in Georgia for the last decade. That said, according to government data, while Georgia has become increasingly self-sufficient in milk, it has become less self-sufficient in beef. There is no government data on the region of Racha specifically, but there are multiple anecdotal sources which suggest that the cattle stocks have dropped precipitously.

The households in our sample of CARE grant recipients, had an average of 5 cows (including calves) including an average of 2.6 milking cows. This particular group seemed to be seeing its numbers increase, as 50% of the farms we spoke to had grown and only 14% had shrunk in the last 12 months. Across the whole population, the average increase was slightly less than one cow per household.

The direct costs of keeping these cattle were fairly low. Cattle cost around 60 GEL per winter in hay and less than 10 GEL on average in veterinary costs.

Cows in Racha are fairly low-yield milk producers. Our survey suggested a current yield of 5-6 liters per day with as much as 9 liters per day in high season. The main reason for this low yield, according to the farmers and experts we spoke to is poor grazing. Only one farmer suggested they needed different breeds and no-one suggested veterinary care or inputs.

The main cost for most farmers is winter feed. Most farmers feed only hay which is provided from communal village hay-pastures. Transportation of hay for one cow for one winter is about 60 GEL. A couple of farmers fed the cattle other food they grew themselves (like small potatoes) but most did not supplement the hay with anything else.

We asked separately about sickness and veterinary care. 8 households had at least one sick cow in the last 12 months and most of these had mites. In 10 out of 11 cows involved, a vet was called and the vet cost an average of 20 GEL. We also asked about inoculations and found that 25 of the farmers we spoke to inoculate in some way and this costs 3 GEL per cow.

The main way in which milk is consumed in Georgia is through the production and consumption of cheese. All of the households we spoke to both produced and sold cheese. Production of milk and cheese is extremely seasonal with a peak in May, June and July. Prices for cheese are fairly constant throughout the year. In the rest of Georgia cheese is a lot more expensive in the winter. In Racha, the increase in production in the summer does not result in a reduction of price because the influx of tourists results in a dramatic increase in demand at the same time.

Total annual sales of cheese for one household seem to be around 850 GEL with slightly over twice as much cheese produced as sold. Whether this excess production is consumed, traded or given to the extended family, is unclear. The variation in overall cash income per household is extreme with 26% making less than 300 GEL in the year and around 50% making less than 500. Three households make more than 2000 GEL per year in cheese sales alone.

There is a fairly wide range of different paths for selling cheese, including sales by the farmer directly on the market, sales in the village and sales to visitors. However, around 90% is sold directly from the farmers to the consumers, which probably partly explains the fairly high prices that farmers receive. There is little evidence of obvious barriers to market inside Racha.

Around 80% of households also sell liquid milk at some point in the year, though most of that is between June and August. While the value this sale puts on milk is far higher than the implied value on milk suggested by cheese sales, relatively little milk is sold and total average monthly revenue rarely goes over 20 GEL. Most of that is sold to visitors.

Only 12% of farmers said that if they had a male calf they would fatten it for a couple of years before selling it for beef and none of the farmers we spoke to seem to be raising a significant number of beef cattle. Our interviewee households produced three calves, on average, per year, or one per cow. Cattle are usually sold after 2 months for slightly less than 200 GEL. Females are far more likely to be kept than males, though males may be kept as potential bulls.

If calves are kept to fatten for beef then there seems to be a consensus that they need to be kept for 1.5 or 2.5 years. Keeping a calf for the 6 months after it is weaned, and then killing it, is generally considered a poor option as the young cattle gain little weight in that period. However, even this extension in the holding of cattle does bring substantial returns. A calf kept over the summer will probably gain 25% in value in 6 months. If placed in good grazing the return on investment (even taking into account grazing costs) may be as high as 40%.

Keeping cattle over the winter and the following summer (so until they are 1 year and 8 months) certainly increases the value of the cow and will offer significant return on investment in any scenario. As a result, it looks clear that the main reason this does not happen more is a combination of cash-flow and risk aversion.

That said, it does not necessarily follow that a very high investment strategy is the right one. This initial assessment (which is, of course, highly provisional) seems to suggest that good grazing offers a far higher return on investment than paying for expensive feed (which is currently not available in Racha anyway). Paying for mountainous grazing may bring with it other issues, like greater risk of accidental death, and a more complete model of these scenarios would have to take these risks into effect. But these provisional investigations do seem to suggest that failure to take advantage of high-mountain grazing is a missed opportunity in Racha.

The last data source we looked at for this project was a visitor survey recently finished by CARE International. 2/3 of the 449 visitors questioned in the visitors survey stay in their own house in Racha. Most of the rest are staying with relatives. Only 1% are staying in a hotel or guest-house. 26% of those interviewed were staying 3 weeks, 44% were staying a month and 22% for one month.

During that time, in relation to the dairy and milk sector, 68% said they bought Imeruli cheese. Out of those who bought cheese, about 1/2 bought less than 5kg and about half bought more. About 1/4 of those interviewed buy butter (averaging 3.75 kg), about 1/4 buy milk (averaging 14 liters) and about 10% buy matsoni (averaging 11 kg).

We also found that 68% buy beef and about half of them buy more than 5kg and about half of them buy less than 5kg.

Finally, based on all of our analysis, the prospects for future demand in milk products and beef in Racha seem to be good. The structure of cheese pricing clearly indicates that demand is largely dependent on tourism. Therefore, as long as tourism continues to grow in Racha one would expect demand for cheese to

grow also. And there are a range of obvious reasons why one would expect tourism to continue growing, particularly as the result of improving roads and tourism infrastructure generally.

Methodology

The objective of the research was to provide an overview of the meat and dairy sector in Racha with an aim to assessing the viability of both sectors and the various ways that the project could work with the sectors to improve them.

The research methodology involved five components. First, we conducted desk research. This involved discussions about the CARE Racha project and a review of project documents. It also involved review of government data on the milk and dairy sector in Georgia generally and any information on Racha-Lechkhumi in particular.

Second, we gained a list of experts from CARE and contacted them to discuss the overall structure of meat and dairy production. This allowed us to formulate a questionnaire that would fit with the realities on the ground.

Third, as there is no central list of farmers in the region which we could use as a population from which to sample, we took a list from CARE of farmers who had been recipients of CARE and AbkhazInterCont (AIC) grants. The grant recipients had received assistance from either CARE or AIC which allowed them to purchase a cow. There were several criteria based on which grantees were selected. Preference were given to low-income families with demonstrated record of owning cattle previously. Applicants whose conditions were particularly difficult, such as a single mother with schoolchildren or adolescents at risk in the family, were given additional points.

In total, we had a list of 78 individuals who had received either CARE or AIC grants. The selection criteria suggest that our pool of respondents tended to be more vulnerable than average people in Racha. We attempted to contact everyone on the list, and made three follow-up calls for any non-responses over the course of three consecutive days. At the end of that time, we had a total of forty-three completed interviews. Neither the sampling methodology or the sample size were considered sufficient to make strong claims about the general population, however, it is hoped that the results are indicative of general trends and, at least, representative of the population of CARE grant recipients.

In addition, a basic tenet of statistical methodology is that the less variation in the general population, the smaller the sample of that population needs to be in order to be representative. Both CARE's experience and the results to the survey suggest a significant degree of uniformity in the cattle owning population, therefore, even though the sample is fairly small it may be representative.

The results were input into an excel database configured to facilitate aggregation of data. Excel was used in order to make future use of the dataset by CARE easier. It was subsequently reviewed and cleaned by GeoWel staff.

Fourth, GeoWel developed a number of questions for the visitor survey that CARE was carrying out at the same time. These questions related to the purchasing patterns of visitors to Racha both while visiting the region and when returning home. As visitors to Racha are considered to be the major consumer market of Racha agricultural goods, it was considered that this information might offer a useful demand supplement to the other information, which largely focuses on supply.

Finally, we conducted a range of follow-up interviews to try and answer the questions generated by a preliminary assessment of the data. These interviews were directed at original interviewees to try and clarify certain issues or to expand on closed questionnaire answers. They were also conducted with experts as the questionnaires threw light on some issues that often benefited from expert interpretation.

1 Background

1.1 General pattern of milk and beef production in Georgia

National statistics, though problematic in a range of ways, are the only place where one can gain an insight into the aggregate national picture of the number of cattle, dairy cows, milk and cheese production and the dynamics of prices. In the table below we have summarized the situation for numbers of cattle and milking cows in Georgia as a whole for the last 6 years.

Figure 1: Number of cows and milking cows (2005-2010)

	2005	2006	2007	2008	2009	2010
Number of cattle (thousand head)	1,191	1,080	1,049	1,046	1,015	1,049
Of which milking cows (thousand head)	710	591	541	561	538	562

Source: GeoStat (2011), Agriculture of Georgia 2010, Tbilisi, p60

It is worth noting that while the number of cattle has fallen, the composition of cattle holding has not. A consistent 99.6% of these cattle are held by family small holdings, rather than large agricultural businesses.

As one can see, there was a fairly significant drop in the number of cattle from 2005 to 2006 and, as one would expect, this resulted in a similar drop in the production of milk and meat.

Figure 2: Per Capita Milk Production 2005-2010

	2005	2006	2007	2008	2009	2010
Milk Production (thousand tonnes)	756	606	625	646	551	587
Meat production (slaughtered weight ths tons)	104.7	83.3	73	57.3	54.3	56.4
Beef production (slaughtered weight ths tons)	46.4	33	31.3	25.1	29.2	26.7
Average yield of milking cows and buffalo Kg per year	1040	960	1170	1172	1263	1270
Average daily yield over 6 month cycle (kg per day)	5.8	5.3	6.5	6.5	7	7

Source: GeoStat (2011), Agriculture of Georgia 2010, Tbilisi, p68 and GeoStat (2009), Agriculture of Georgia 2008, Tbilisi, p80.

Over the same period, according to official statistics, national prices have been increasing faster than inflation for milk and beef.

Figure 3: Price of milk and milk products

	2005	2006	2007	2008	2009	2010
Price of fresh milk (GEL per liter)	1.12	1.14	1.4	1.77	1.82	1.4
Imeretian cheese	4.19	4.85	5.25	6.27	5.50	6.16
Price of cheese relative to previous year	-1.5%	+16%	+14%	+10%	-13%	+12%
Price of beef	+17.3%	+18.1%	+0.6%	+9%	+1.3%	+4.7%

Source: GeoStat (2011), Agriculture of Georgia 2010, Tbilisi, p20+21 and Geostat (2009), Agriculture of Georgia 2008, Tbilisi, p21+22

The Government also provides an account of milk and beef production, import and holdings and uses this to make estimations of levels of consumption and levels of Georgia's self-sufficiency.

Figure 4: Supply and utilisation of milk and milk products

Indicators	2005	2006	2007	2008	2009	2010
Supply (ths . tons)						
Opening stocks	18	18	20	17	20	16
Domestic production	756	606	625	695	551	588
Import	268	136	77	51	50	48
Total supply	1042	760	722	763	621	652
Utilization (ths . tons)						
Feed	17	13	14	15	12	10
Food	988	711	678	712	581	613
Waste	15	14	12	14	11	8
Export	4	2	1	2	1	6
Closing stocks	18	20	17	20	16	15
Total utilization (incl. stocks)	1042	760	722	763	621	652
Per capita intake						
Population, ths . persons	4289	4401	4382	4385	4436	4469
Kg/year	230	162	155	162	131	137
Gr/day	631	443	424	445	359	376
Kcal/day	382	268	256	263	215	227
Proteins , gr/day	20.8	14.6	14	14.7	11.8	12.4
Fats , gr/day	10.1	7.1	6.8	6.9	5.7	6
Self-sufficiency ratio, %	74	82	89	94	92	93

Source: GeoStat (2011), Agriculture of Georgia 2010, p91 and and Geostat (2009), Agriculture of Georgia 2008, Tbilisi, p101

Although production of milk has gone down by about 22%, imports have also gone down, according to government data, suggesting that overall consumption of milk and milk products has declined in the years from 2005-2010 and also suggesting that local production now accounts for a higher level of local consumption than it used to, represented by a self-sufficiency rate going from 74% to 93%.

Figure 5: Supply and utilisation of beef

Indicators	2005	2006	2007	2008	2009	2010
Supply (ths . tons)						
Opening stocks	0.7	0.6	0.5	0.4	0.6	0.4
Domestic production	46.4	33	31.3	25.1	29.2	26.7
Import	7.3	8	11.5	12.1	9	7.8
Total supply	54.4	41.6	43.3	37.6	38.8	34.9
Utilization (ths . tons)						
Feed	0.1	0.1	0.1	0.1	0.1	0.1
Food	52.5	39.8	41.7	35.9	37.7	33.9
Waste	1.1	1.1	0.9	0.5	0.6	0.5
Export	0.1	0.1	0.2	0.5	0	0
Closing stocks	0.6	0.5	0.4	0.6	0.4	0.4
Total utilization (incl. stocks)	54.4	41.6	43.3	37.6	38.8	34.9
Per capita intake						
Population, ths . persons	4289	4401	4382	4385	4436	4469
Kg/year	12	9	10	8	9	8
Gr/day	34	25	26	22	23	21
Kcal/day	68	50	53	45	47	42
Proteins , gr/day	5	3.7	3.9	3.3	3.5	3.1
Fats , gr/day	4.2	3.1	3.3	2.8	3	2.6
Self - sufficiency ratio, %	87	81	73	68	76	77

Source: GeoStat (2011), Agriculture of Georgia 2010, p87 and and Geostat (2009), Agriculture of Georgia 2008, Tbilisi, p97

Beef production has fallen even more dramatically over the period, dropping by 42% and, imports have fluctuated fairly significantly, though in 2010 they are fairly similar to where they were in 2005. As a result, the proportion of local production in local consumption has fallen from 87% to 77%. It is also worth noting that while there are no current national statistics on the most recent increases in beef prices, there have been fairly dramatic increases in the price of beef in the last 6 months or so, a fact often attributed to the enactment of new health and safety legislation.

While Government data is not representative at the level of a region as small in population as Racha (see below) Government data does give one a national breakdown of cattle, milk and beef production.

Figure 6: Number of Milkers by Region (as of end of year, ths . heads)

	2006	2007	2008	2009	2010
Georgia	591.2	541	560.6	537.6	561.7
Adjara	60	50.8	42.3	42.9	38.9
Imereti	97	95.9	97.9	94.9	101.1
Samegrelo and Zemo Svaneti	92.1	94.5	101.1	100.6	88.3
Shida Kartli	49.9	41.6	42.6	44.9	46.9
Kakheti	52.3	43.9	49.3	48.2	47.3
Kvemo Kartli	95.7	96.9	109	86.4	106.1
Samtskhe-Javakheti	60.4	54.8	49.5	56	61
Other regions	83.8	62.6	68.9	63.7	72.1

Source: GeoStat (2011), Agriculture of Georgia 2010, p62

As one can see, dairy cows are fairly well disbursed across the country but are most highly concentrated in Imereti and Kvemo Kartli.

Figure 7: Breakdown of beef production by region in slaughtered weight (ths tonnes)

	2005	2006	2007	2008	2009	2010
Georgia	46.4	33	31.3	25.1	29.2	26.7
Imereti	8.7	5.1	5.6	4.9	5.6	5.4
Samegrelo and Zemo Svaneti	7.3	3	3.4	2.2	4.3	4.5
Shida Kartli	3.5	3.7	3.5	1.7	1.6	3.5
Kakheti	5.7	4.7	3.3	3	4.1	2.5
Kvemo Kartli	7.6	7.4	4.8	5.9	6.3	3.6
Samtskhe-Javakheti	5.4	3.2	4	2.8	2	2.8
Other regions	8.2	5.9	6.7	4.6	5.3	4.4

Source: GeoStat (2011), Agriculture of Georgia 2010, p70

Beef production has a slightly different profile and is concentrated in Imereti and Samegrelo and Zemo Svaneti. Shida Kartli may be slightly under-represented here because it exports large quantities of live animals to Azerbaijan.

1.2 Patterns of Production in Racha

As one can see from the regional breakdown in the data above, the government data is not detailed enough to allow an assessment of the picture of milk and dairy in Racha. The main reason for this is that the administrative district of Racha-Lechkhumi and Kvemo Svaneti has the smallest population of any region in Georgia. With only 12,455 families or 30,420 people it represents less than 2% of the population of the country.¹

Therefore, very little government economic data is released that documents this region specifically. This problem is compounded by the fact that the CARE program for the region only covers the municipalities of Oni and Ambrolauri, containing 6,856 families – or about 1% of the population.²

¹ Social Services Agency (June 2011), *Number of families registered in the unified database and receiving subsistence allowance* (<http://www.ssa.gov.ge/index.php?mid=1304&lang=2>)

² Social Services Agency (June 2011), *Number of families registered in the unified database and receiving subsistence allowance* (<http://www.ssa.gov.ge/index.php?mid=1304&lang=2>)

What little data that does exist at that level of detail relates to the population, which is based on a 2001 census and the number of people who receive targeted social assistance. The targeted social assistance program is a means-tested cash benefit that is given to Georgia's poorest family. In Georgia as a whole about 10% of the population receive this benefit. In Racha-Lechkhumi and Zemo Svaneti it is given to 30% of the population with Shida Kartli the next highest recipient at 17%. This would seem to suggest that Racha-Lechkhumi and Zemo Svaneti is significantly the poorest region in the country.

In the absence of government statistics one is forced to rely on experts in the region for a general sense of the dynamics of the agricultural sector. Gabriel Chikvaidze, an employee of the National Food Agency in Ambrolauri, told us about the dynamics of cow numbers in the region. According to him, when the Soviet Union collapsed, there were roughly 20-25,000 cows in Racha. The number gradually decreased to 15,000 in 2005 and then further down to 8,000 in 2011. The numbers are not based on official statistics, but are rather the estimations of local vets based on the inoculations they conduct periodically. One problem with this is that majority of the population does not do inoculations as a preventive measure, so the numbers provided by Mr. Chikvaidze could be very inaccurate.

2 Survey Data

The 42 respondent families that answered our questionnaire were able to give us a snapshot of CARE program recipients at the current time. The first questions we asked related to the number of cattle each family have and the dynamic of that number in the last year. The statistical average number of cows held by each family (including calves) was 5, including 2.6 milking cows and one calf (consistent with convention in the region we consider any cow under one year old to be a calf). Of these 5 cows, on average four were female and one was male.

Figure 8: Breakdown of number of cows per household

Number of cows per household	Number of households	% of total households
1-3	6	14%
4-6	26	62%
7-9	7	17%
More than 9	3	7%
Total	42	100%

The majority of household have 4-6 cows, while 17% have more than 6 and 14% and less than 4. We also looked at the dynamic of this number of cows over the last 12 months. To do this we took the total number of cows added (bought or born) and subtracted the number lost (died or sold).

Figure 9: Aggregate number of addition/loss in cows per household in last 12 months

Total number gained	Number of households	% of total households
-2	1	2%
-1	5	12%
0	15	37%
1	9	21%
2	7	17%
3	3	7%
4	1	2%
5	1	2%
Total	42	100%

For each of our households the number of cows has gone up by slightly less than one cow per family. But here the distribution is very unbalanced with 14% of surveyed households showing an aggregate loss and 36% of total households showing no aggregate change at all. 49% of households grew in total with 21% of household grew by 1, 17% by 2 or 11% (5 households) increased by 3 or more.

We also tried to assess the main costs involved in keeping and raising cattle.

Figure 10: The main costs involved in keeping cattle in last 12 months

	Number of farmers who have this cost	Average annual costs per farmer (out of those who show that cost)	Average annual costs per farmer (across the interviewed households)
Feed costs	38	317	287
Veterinary costs	8	33	6.2

The two main costs were the costs of feed, mainly for the winter months, and the cost of vets. About 90% of the farmers paid for feed, usually hay and this cost an average of 317 Gel per farmer per year, or 60 GEL per cow. They charge for the hay usually represents the cost of transportation and some labor costs, the farmers do not have to pay for the land or for the cut-grass as the hay fields are generally owned by the villages and the hay these villages produce is divided, for free, amongst the households of the village.

On top of that, only 8 or 19% said they incurred veterinary costs and these averaged 33 GEL. The average veterinary cost for the whole population was 6.2 GEL per year.

Some farmers inoculate their animals (for different diseases). The cost per inoculation is around 3 GEL. None of the farmers we spoke to pay for grazing.

In order to try and get a sense of the nature of the farms more generally, we also asked the households what other animals they kept.

Figure 11: Animals other than cows owned by households

	Number of households	Average number of animals (out of those who keep animals) (unit)
Chicken	29	14
Pig	22	4
Horse	4	2
Turkey	2	20
Sheep	1	5

On top of keeping animals we asked them about the plants they grow. The average area of land where interviewed farmers can grow plants is 0.3 hectares and the breakdown of products they grow and annual production of those plants is listed in Figure 12.

Figure 12: Agricultural products grown by households

	Number of households	Average volume of agricultural products (out of those who grow the crop) (kg)
Potatoes	18	650
Vegetables	8	64
Maize	30	386
Wheat	2	300
Grapes	7	861
Beans	32	57

However, only 16 of the 42 households said that they sold any agricultural products other than milk and cheese.

3 Dairy production

The main focus of the research was to understand the nature of dairy production in Racha. Therefore the questionnaire tried to establish the level of milk production and cheese production as well as the costs associated with these activities.

3.1 Milk production

Before trying to get month specific data we simply asked the farmers for their estimation of current daily yield.

Figure 13: Total and average yield per cow in September 2011

Average yield	
Sum of no milking cows	111
Sum of current yield	585
Average yield per milking cow in September	5.3

This allowed us to calculate the current average yield per milking cow as just over 5 liters per day. We were also able to look at the level of variation that exists in this yield across the interviewee households.

Figure 14: Range of average yield per cow in September 2011

Average yield per cow	Number of households	% of total households
Less than 4 litres	9	21%
4 - 5.5 litres	17	40%
6-8 litres	12	29%
More than 8	4	10%
Total	42	100%

We also asked the interviewees to estimate the average yield per day for a milking cow over the course of the last twelve months.

Figure 15: Yield per cow per day

Month	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Average yield per cow (in liters)	5.9	5.2	4.2	3.7	3.4	3.9	6.3	7.7	9	8.9	7.8	7.1
Households milking their cows	42	40	30	15	9	12	22	28	40	41	42	41
Share of households milking their cows	100%	95%	71%	36%	21%	29%	52%	67%	95%	98%	100%	98%

3.2 Reasons for low milk productivity

In addition to trying to understand the current situation, the research also tried to investigate some of the ways in which the situation could be improved. When we asked the interviewees why they thought that cows did not produce more milk, the answer was almost entirely uniform. 40 of the 42 suggested poor grazing was the problem. Only one person suggested that the cattle breeds were the problem and no-one suggested that disease, the lack of vets or lack of other inputs (like feed) was the problem.

This assessment was largely confirmed by the vets and experts we spoke to. The general sense was that while there are villages near the mountains which have good grazing areas, the villages alongside of Rioni river have poor grazing and there is no practice of taking cows to alpine pasture. Also, there is no combined feed available in Racha.

Figure 16: The main thing that stops your yield from being higher

Reasons	No of households
Poor grazing	40
Bad breeds of cattle	1
Milk is given to calves	1
Total	42

Nonetheless, we still asked a range of questions to assess other potential reasons for low productivity. First we asked about the prevalence of disease. We knew from work in other parts of Georgia that foot and mouth was a significant problem last year in some parts of Georgia.

About 20% (or a total of 8) of the interviewees said that they had at least one cow that had experienced some disease amongst their cattle in the last twelve months. Six of these had only one sick cow. One of the interviewees had two sick cows and one had three.

7 out of the 11 sick cattle had mites, 2 had Piroplazmoz (“tsieba”) and other two were sick with cattle worm and udder disease. All of them were female. 72% (or 8 from 11) had stopped milking while they were sick, though usually only for a few days. 10 of those 11 had used a vet and the average cost for the VET was 20 GEL.

However, in general we found that accidents were a far greater risk to the cattle than sickness. Amongst our interviewees a total of 17 cattle had died unintentionally in the last 12 months. Four of these died from illness and two of those were weak calves. 13, however, died from ‘accidents’ including being taken by wolves (6 cows) and bears (2 cows), choking (3 cows), hit by lightning (1 cow), drown in river (1 cow).

Figure 17: Breakdown of the cattle that died cattle in last 12 months

Reason why died/Gender	Male	Female	Total
Sickness	2	2	4
Accident	3	10	13
Total	5	12	17

We also asked if they farmers had their cattle inoculated.

Figure 18: No of farmers who inoculate for each disease

Disease	No of farmers	% of total
Foot and mouth	9	21%
Piroplazmoz (“tsieba”)	1	2%
Pastereloz (“kapo”)	7	17%
Emzimatosis diseases (“chirichina”)	6	14%
Other	4	10%
DK	4	7%

A total of 25 farmers had inoculated against some kind of disease and 6 out of those had inoculated against 2 different diseases.

We also asked about the feeding of cattle during the winter. All 42 interviewed farmers said they use hay to feed cattle during winter. 37 from 42 farmers buy hay and average costs for cattle feed during winter is 211 GEL.

We found that no supplemental feed is provided in the summer, though some farmers do recognize that in order to fatten beef cattle it might be a good idea to keep them at home and give them supplemental feed. But no-one we spoke to did that.

3.3 Costs of milk and cheese production costs

As we knew from preliminary interviews and from our general knowledge of dairy farming in Georgia, the vast majority of milk in Georgia is consumed as cheese. Other milk products are also consumed such as matsoni (a kind of Georgian yoghurt), butter, sour cream etc. But the volumes are relatively small. Also, relatively little liquid milk is consumed in Georgia and most consumption comes from children. Therefore, we asked most of the detailed questions about cheese production.

All of the households we spoke to make cheese. We asked them the type(s) of cheese. Some make more than one, but in Figure 19 we list the main type of cheese they make

Figure 19: Types of priority cheese produced by households

Type of priority cheese	No of households	% from total households
Imeretian cheese	31	74%
Georgian cheese	8	19%
Rachuli cheese	2	5%
Sulguni	1	2%
Total	42	100%

The main cheese produced in Racha is Imeretian cheese, though a significant minority make ‘Georgian’ cheese. We also asked them how much cheese they make in a given day over the course of the year. Below are listed the averages.

It is also useful to know the amount of milk needed to produce certain types of cheese.

Figure 20: Amount of milk

Type of cheese	Milk taken to produce (average)
Imeruli cheese	7.8
Georgian cheese	8.0
Rachuli cheese	8.0
Sulguni	7.5

3.4 Revenue of keeping dairy cows

In assessing the revenue from keeping dairy cows we tried to assess the volumes and values of the goods that they produced and sold. We have already shown the quantity of milk that they estimated they produced.

Figure 21: Average volume of produced and sold cheese by months in 2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Average production of milk (for whole population)³	59	89	261	406	678	689	617	551	470	389	238	106	
% of households producing cheese	31%	29%	45%	62%	95%	95%	98%	98%	98%	95%	50%	38%	
Average production of cheese per day (out of all respondents)	0.42	0.38	0.83	1.33	2.38	2.47	2.17	1.94	1.62	1.55	0.64	0.47	
Average production of cheese per month (out of all respondents)	13	11	25	40	71	74	65	58	49	47	19	14	
Average sales of cheese per month (kg) (out of all respondents)	3.1	3.2	5.3	11.2	17.3	27.0	24.7	26.7	17.3	16.3	3.8	2.5	158.4
Average price of cheese	5.8	5.9	5.7	5.4	5.2	5.1	5.3	5.7	5.4	5.3	5.6	5.7	
Average monthly revenue	18	19	30	61	90	138	131	152	93	86	21	14	853.7

On average, this research suggests that a households generates an average of about GEL 850 per year from cheese production in Racha, However, this is based on the numbers they provided for ‘sales’ and those figures suggest that the household only sells around 1/3 of the cheese they produce, all year around. This number seems low and so may suggest that cheese is being traded or ‘given’ to an extended family. This number also does not includes the cheese that the family consumes.

The breakdown of that annual cash-income is as follows:

³ Our survey results here clash with both national statistics and with the opinion of local experts. The total volume of milk produced per household suggested by this is a total or 4500 liters, which would be 1730 liters per year. National statistics suggest, and local experts agree, that for the lower yield areas of Georgia 1000-1200 liters per annum is more likely. This discrepancy probably reflects a systematic tendency to miscalculate averages. The numbers are still useful for providing a dynamic, but for actual numbers one should probably reduce the numbers given here by 1/3. Note that if this survey is used for M+E on these households, these inflated figures, rather than the expert figures should be treated as the benchmark.

Figure 22: Average annual income from cheese sales

Average annual income from cheese sales (GEL)	Number of households	% of total households
Less than 300	11	26%
300-600	9	21%
650-900	11	26%
1000-2000	8	19%
more than 2000	3	7%
Total	42	100%

Interestingly, this research does not confirm the suggestion that prices on average go up in the summer, though this had been widely reported before. But it does confirm that the summer does not experience the drop in price experienced in the rest of Georgia. In the rest of Georgia there is a very significant difference in price over the season, with prices going down in the summer as supply goes up dramatically. In Racha while production and sales go up dramatically in June, July and August, price stays fairly stable, since the number of visitors to the region means that demand goes up correspondingly.

We also tried to assess the way in which mode of sale impacted on the price but this did not suggest a clear variation between different modes of sales, with between 5 and 6 GEL produced per cow.

Figure 23: Breakdown of cheese price by modes of sales

Modes of sales	Average annual price of cheese	No of households
Go around the population of a village or town	5.6	4
Neighbors	5.0	1
On the market myself	5.5	18
Send to Tbilisi	4.8	3
To supermarkets and shops	5.6	2
Visitors	5.3	14
Grand Total	5.5	42.0

We also thought it important to check what the largest producers do with their cheese. 4 out of the top 5 producers, whose average annual income from cheese sales is more than 1500 GEL, sell cheese on the market themselves and the other one at supermarkets and shops.

In addition to the sale of cheese we also asked if farmers sold milk and milk products other than cheese. 79% said they also sold only milk, only one person said they sold other milk products other than cheese and 19% said that they sold no other milk products. We then asked those who sell milk, the volume they sell and how much they sell for.

Figure 24: Average volume and price of sold milk by per household by months in 2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
% of households who sell milk	7%	10%	10%	12%	21%	38%	52%	60%	10%	12%	10%	7%
Average volume of milk sold per month for whole population (litres)	0.8	1.2	1.9	2	5.1	9.4	17.3	17.1	1	1.4	1	0.7
Average price of milk (per litre)	1.2	1.2	1.1	1.3	1.4	1.4	1.4	1.4	1.2	1.2	1.3	1.4

Curiously, this average price suggests that liquid milk is quite a lot more valuable than milk that is turned into cheese. At about 5.5 GEL per kilo and since it takes 8 liters of milk to make one kilo of cheese, this values the milk in cheese at 69 tetri, or around ½ the cost of fresh milk. However, what is clear is that this market is extremely limited, seasonal and probably already fully served.

There are no milk collection centers in Racha so we did not ask about commercial sale of milk.

4 Meat production

In essence, our research suggested that in so far as there is any production of meat in Racha it is almost entirely the result of either unwanted calves being sold for veal or old dairy cows that are no longer productive. There are a number of indications of this. First, only one cow over one year old was ‘sold’ in the last twelve months. All the other sales were of calves (less than one year old).

Figure 25: Categories of female and male calves born in last 12 months

Categories:	Male	Female	DK	Total
No of calves	65	44	4	113
No of died calves	2			2
No of sold calves	43	19	4	66
Average age of sold calves	3 months	2 months	4 months	
Number of kept calves	20	25		45

Second, if one looks at the profile of what happened to calves, significantly more male calves were reported born than female calves in the last 12 months and 2/3 of the male calves had been sold. The male calves that remained were generally being kept to raise as new bulls and were not being raised for beef. We also asked people what they would do with a male calf

Figure 26: Answers to the question, if you have a male cow, what do you expect to do with it?

	Number of households	% of total households
Sell it a couple of months after birth	28	67%
Will fatten for several years and then sell	5	12%
Will keep as bull	5	12%
change to female	2	5%
Sell it immediately after birth	1	2%
Fatten it over the summer and sell it in the autumn	1	2%
Total	42	100%

When we asked people what they would do if they got a male calf, only 12% said they would fatten it for several years before selling it.

Also there is little indication that female cows are having their lives ended before the end of their productive lives as dairy cows. The number of years female cows are kept before killing for meat is 11.5 years.

Only 17% (or 7 farmers from 42 interviewed) said they sell the cow meat. 5 from these 7 farmers sell meat on the market themselves. The others sell meat to middle-men (traders, butchers, etc). All 7 sell meat locally.

Initial discussions had suggested that the main cost in raising cattle for meat was the cost of summer grazing – so our questions centered around that. Only one farmer we spoke to, however, sent his cattle for summer grazing. We therefore asked the rest, why not?

Figure 27: Why don't you send your cattle to the mountain grazing?

	Number	% of total
It is too far away	3	7%
There is no-one who could take them	8	20%
I don't have enough cows to make it worthwhile	2	5%
There is plenty of grazing near my home	23	56%
I have not considered it	2	5%
Other	3	7%
Total	41	100%

These answers are hard to interpret. Lack of good grazing is seen as a problem, but the main reason that people give for not sending their cattle to mountain grazing is that there is 'plenty of grazing near my home'. The main reason for this apparent contradiction seems to be that most farmers simply do not consider different grazing locations as a possibility. For milking cows, high mountainous grazing would create logistical difficulties, particularly in relation to milking and cheese production and for others the cost entailed are not considered justified. Therefore, for most farmers, while they recognize the problems created by low quality grazing, it is still considered 'good enough' not to warrant a change.

4.1 Revenue produced by meat sales

While few farmers described themselves as meat sellers, the sale of cattle is certainly a significant source of income for dairy farmers. Most farmers currently sell their calves at around 2 months old. At this age they will be around 50 kilos in weight and their live weight (with some variation) value will be around 3-4 gel per kilo (usually closer to 4 GEL per kilo for veal). This values your calf at around 150-200 GEL.

As producing a calf is a necessary part of dairy farming one can consider this income more or less free.⁴ As the average household produce an average of 3 calves per year this can produce a cash income of 500-600 GEL per year.

⁴ The one cost that is incurred is the cost of the milk that the calf drank and the cow which would have been available for sale if the calf had been killed the day it was born. But this is never done and is an opportunity cost that we do not need to consider. Some farmers had also suggested that milk produced in the first month is not good anyway.

4.2 When to sell cattle for meat

One of the questions that came up in the process of our discussions was the issue of when to sell unwanted calves for meat. At the current time the majority of our respondents either sell or consume the calves after a couple of months.

There are a number of reasons for this. First, cashflow. At two months old the calves represent a guaranteed 200 GEL income with no further waiting. Any other variation on the beef production choices from that point onwards constitutes at least some waiting and most variations for how to fatten the cow and when to kill it also include additional capital outlay.

The second reason to slaughter calves early is that it reduces risk. Keeping the cattle any longer involves the risk of them dying, usually from some form of accident. Therefore, if one is risk averse, taking the money when it is a sure thing is a reasonable option.

Third, keeping calves longer entails more work. Keeping the cattle, particularly if they have to be taken to grazing some distance away, may involve considerable work so the returns have to be matched against that work.

Fourth, the farmers may lack the physical infrastructure to keep the cattle longer. As is discussed below, there is a wide consensus that fattening cattle only over one summer makes little sense (though our analysis disputes these conclusions). Therefore, cattle that are fattening need to be kept for at least one winter and (in most cases in Georgia) usually two. This requires both money for feed and space (usually inside a barn).

However, we wanted to at least make some rough estimates on the costs and revenue produced by different models of beef-raising. To do this we used information collected from farmers in Racha on the different potential costs of raising beef cattle. We also spoke to a large farmer who raises a lot of beef in Samtskhe-Javakheti. Samtskhe-Javakheti is an interesting region for our purposes because it is also mountainous, experiences long winters and has access to high-mountainous grazing. However, beef cattle farming is well known in this region and is often done on a fairly large scale.

Through these discussions we were able to build three models of meat production and then look at the costs and revenue differed at varying points in the production process. The three models we considered were, minimal investment, where only minimal costs were incurred to keep the animal alive, in this case, paying for winter hay. Mid-level investment paid for both summer grazing in high mountainous pastures but also only paid for hay in the winter. The maximum investment was when the farmer paid for summer grazing and a combination of hay, silage and high calorie mixed animal feed.

The main costs we consider, consistent with our discussions of farmers, are feed and access to grazing. Winter feed of just hay is 60 GEL for a calf and 120 GEL for an adult cow. In Samtskhe-Javakheti the beef farmer also used silage and a mixed feed of oats and barley. In addition to the hay, silage cost this farmer 50 GEL for a calf and 100 GEL for an adult cow. Feed cost 150 GEL for per winter for a calf and 300 GEL for an adult cow. Summer grazing, we were told, would be 30 GEL for 3 summer months for a calf and 45 GEL per for an adult cow.

Using this data we were able to calculate the following basic business calculations.

Figure 28: Cost and revenue expectations for raising one calf for beef.

		Low Input	Medium Input	High input
Sale as 2 month old calves	Revenue/Profit	200	200	200
Sale in the autumn of Year 1	Revenue	245	315	315
	Cost	0	30	30
	Profit	245	285	285
Sale in the autumn of Year 2	Revenue	420	560	980
	Cost	60	135	335
	Profit	360	425	645
Sale in the autumn of Year 3	Revenue	770	1050	1750
	Cost	180	300	900
	Profit	590	750	850

In the above chart there are basically nine different simplified P+Ls which show the revenue, costs and profit determined by which kind of input model you use and the time at which you sell. Therefore, if you sell in the autumn of year 1 using the low input model, you have a revenue of 245 GEL but no costs, so that revenue is pure profit. If you wait until the following autumn to sell, you will have incurred 60 GEL in costs, but your revenue will have gone up to 420, providing a profit of 360.

This is all fairly complicated, and the details of it clearly need to be assessed when beef farming is under consideration for the rest of this project. However, a couple of things are clear. First, if cash-flow allows, even keeping the calf one summer is worthwhile, assuming it does not generate considerable extra work. Second, if there is time and space, keeping the cow until it is 1.5 years is a fairly safe option and, if combined with good grazing, can be a low-investment, high return activity even if there is no expensive mixed-feed in the winter.

Third, these figures need to be checked by a more systematic experimental process, but this initial assessment seems to suggest that good grazing offers a far higher return on investment than paying for expensive feed (which is currently not available in Racha anyway). Paying for mountainous grazing may bring with it other issues, like greater risk of accidental death, and a more complete model of these scenarios would have to take these risks into effect. But these provisional investigations do seem to suggest that failure to take advantage of high-mountain grazing is a missed opportunity in Racha.

5 Market issues

Most of what has been discussed up to this point is the pattern of cattle-holding, as well as milk and cheese production. Another issue the research considered was the way in which the different goods are sold. As most farm revenue comes cheese production we focused on that first.

Figure 29: Who do you usually sell your cheese to?

	Number	% of total
On the market myself	18	43%
Visitors	14	33%
Go around the population of a village or town	4	10%
Send to Tbilisi	3	7%
To supermarkets and shops	2	5%
Neighbours	1	2%
Total	42	100%

The most obvious significant factor of the methods of sale is that very few of them involve an intermediary. At least 88% are direct sale in one form or another (depending on how one characterizes the sale to Tbilisi).

As one can also see, the single biggest strategy for selling cheese is to sell it directly on the market. 18 interviewees sold the cheese directly on a market stall and 2 sold to supermarkets and shops. For the remaining 22, who sold through alternative routes, we asked them why they didn't take cheese to the market.

Figure 30: Why don't you take the cheese to the market to sell it?

	Number	% of total
It is how I get the highest price	8	36%
I don't have enough cheese to sell on the market myself	7	32%
It is too expensive to travel to the market	1	5%
Prefer to sell to visitors	3	14%
Situational constrains	2	9%
DK	1	5%
Total	22	100%

So, relatively few of the cheese-sellers are failing to sell on the market for reasons of any simple constraint.

We also asked a number of questions about cheese storage as, we our initial investigation had led us to believe that prices might actually be higher in the summer. With that thought in mind, we asked the farmers how much capacity they had for cheese storage and if they held cheese in the spring to sell in the summer or in the autumn to sell in the winter. The average capacity of cheese storage is 92 kg.

Figure 31: Categories of cheese storage capacity by households (q20)

Cheese storage capacity (kg)	No of households	% of total
Under 20	3	7%
20-50	14	33%
60-100	13	31%
over 100	8	19%
Don't know	4	10%
Total	42	100%

Figure 32: Do you store cheese at any time of the year in order to sell it later when the price is higher

	Number	% of total
Yes I store it in spring for sale in summer	15	16%
Yes I store it in autumn for sale in the winter	3	6%
No	24	77%
Total	42	100%

That farmers only 22% of farmers store cheese at all to sell at another time, is perhaps unsurprising given that there is little price variation over the year.

We also asked about where people sell milk and meat.

Figure 33: Who do you usually sell your milk/meat to?

	Milk sales	% for total milk sales	Meat sales	% of total meat sales
Go around the population of a village or town	6	18%	1	14%
On the market	7	21%	5	71%
To supermarkets and shops	1	3%		
Visitors	21	59%		
Different ways, depending on season			1	14%
Total	35	100%	7	100%

As one can see, milk is largely sold to visitors with the rest being sold around the village or on the market.

In the sale of meat, the six out of the seven farmers who said that say they sell meat, kill the cow themselves, one out of the seven sells the whole cow. 5 of the 7 farmers sell their meat on the market, one of those that does not said that the reason they do not take meat to the market is that it is too expensive to travel to the market, and another mentioned that it is too difficult to sell on the market.

6 The productive value of a dairy cow

By looking at the cash generated by a given value of cheese, one can see how much cash income is produced by one cow, or a given household. In the analysis below we calculate the cash generated by a cow based on the answers to survey questions about income. However, for the level of consumption, we work backwards from an assumed total volume of milk of 1100 liters, which is a volume that seems reasonable in the light of government statistics and our discussion with experts.

We, therefore, put a cash value on the milk that is not sold (either in liquid or cheese form), by treating that it as though it were all turned into cheese and sold, as this seems to present the most realistic opportunity cost of consumption.

Figure 34: Summary profit and loss for household and individual cow with implied values

Summary P+L	Milking cow	Household
	2.6 cows to a household	
Cash revenue cheese	330	854
Cash revenue calves ⁵	124	329
Cash revenue milk	29	81
total cash income⁶	483	1264
Value of cheese consumed (5.5 Gel per kilo) ⁷	413	1056
Value of calve not sold (4 Gel per kilo)	81	211
total implied income	494	1267
Costs		
Feed ⁸	53	287
Veterinary	1.14	6.2
Inoculated (assuming milking cows are inoculated)	3	7.8
Average cost of cow that dies ⁹	123	444
total costs	180	745
Total cash profit	303	518
Total profit + implied income	797	1785

The most immediate conclusion of this P+L is that, as one would expect, the vast majority of the income generated by dairy is in the milk rather than the beef sector and about twice as much cheese is consumed

⁵ Each cow has cash income of less than one calf because, on average, not all are sold. Remaining calf value is in implied income.

⁶ All the cash income figures are based on reports of household sales. The same applies to costs. Individual cow revenue are household revenues divided by the average 2.6 cows per household.

⁷ This works on the assumption that 1100 liters of milk are produced per year by each cow and that any not sold as milk is turned into cheese with a conversion ratio of 8 litres of milk makes one kilo of cheese. Even though some of the milk is certainly consumed in the home in liquid form, the best way to value it is to treat it as though it had been made into cheese, as this is the most realistic opportunity cost. The value of cheese given here is at the low-end of market rate.

⁸ This is based on averages from interviews, though it was suggested to us that proper feeding should cost closer to 100 GEL.

⁹ The likelihood of a cow dying and a calf dying multiplied by their relative weights.

7 The visitors' survey

In addition to the research conducted by our team, a visitors' survey in Racha was conducted by Care International Caucasus in the summer of 2011. The main purpose of the survey was to find out who visits Racha during the summer period and what economical benefits summer visitors bring into the region. The survey covered two main municipalities of Racha; Oni and Ambrolauri. It included a total of 449 interviewees; 271 surveyed in Ambrolauri municipality and 178 in Oni municipality.

The interviewees were asked a wide range of questions about their trips to Racha. In this analysis we will only look at the answers provided in so far as it directly impacts dairy and meat consumption. The first questions gave us a basic profile of the visitors.

Figure 35: Where are you staying in Racha?

Place:	No of visitors	% of total
Own house	296	66%
Relative's house	132	29%
Friend's house	14	3%
Guesthouse	6	1%
Missing answer	1	0%
Grand Total	449	100%

2/3 of those interviewed were staying at their own house while all but 1% of the rest were staying with friends or relatives.

Figure 36: How long are you going to stay in Racha?

Duration:	No of visitors	% of total
1 week or less	32	7%
3 weeks	117	26%
1 month	197	44%
2 months	97	22%
3 months	6	1%
Grand Total	449	100%

The average time that the interviewees said they were staying in Racha was 33 days, though 44% of them were staying in Racha for one month, 33% for three weeks or less and the other 23% for two months or more.

In terms of dairy specifically, the visitors were asked if they buy particular products while staying in Racha, how much and for what price. From the list of 27 products provided, we have looked at beef and 6 dairy by products Imeruli cheese, Sulguni cheese, milk, Matsoni, butter and curds.

The highest demand products was Imeruli cheese which was bought by 304, or 68% of all respondents. In the table below we have a breakdown of how much, and from where the respondents claimed to buy the cheese.

Figure 37: Amounts of cheese purchased by respondents.

Amount of Imereli Cheese Purchased	Percentage of respondents	No of respondents
Zero	32%	144
5 kg or less	35%	157
6-10 kg	24%	108
11-15 kg	5%	20
16-20 kg	3%	12
More than 20	2%	9

About 1/3 of respondents buy nothing at all, 1/3 buy something but less than 5kg and 1/3 buy more than 6kg.

In addition, 56% of interviewed visitors who buy Imeruli cheese, buy that cheese directly from farmers and other 44% in local agricultural markets. The average price they give is 6.1 GEL per kilo.

Figure 38: Dairy products purchase by different types of markets.

Dairy products	Number of people who buy	From local farmers		In local agricultural markets		From sellers coming up to the village	
	% of total interviewed	Average (kg)	Range (kg)	Average (kg)	Range (kg)	Average (kg)	Range (kg)
Butter	24%	4.0	0.3-30	3.5	0.5-20	4.4	2-8
Milk	23%	13.8	1-60	14.3	1.5-60		
Matsoni	10%	7.5	1-20	16.6	1-200		
Sulguni cheese	1%			18.4	2-50		

Other popular dairy products for the interviewed visitors are milk and butter, as almost 1/4 of them buy each of these dairy products. The visitors buy an average of 14 litres of milk and 3.5-4 kg of butter during their stay in Racha.

We also found that 68% or 306 interviewees from 449 interviewed said they buy beef during staying in Racha.

Figure 39: Different amounts of beef bought by different groups

Amount of beef purchased	% of surveyed	No of surveyed
0kg	32%	144
2 kg or less	8%	36
3-5 kg	31%	138
6-10 kg	21%	92
11-20 kg	6%	26
More than 20	3%	13

About half of those who purchased beef bought less than 5kg and about half bought more. In addition, 78% of visitors who said that they buy beef, buy it in local agricultural market and another 22% buy from local farmers.

We were also interested whether visitors bought some locally produced dairy products upon leaving Racha. Only 27 or 6% of all interviewed visitors buy any kind of dairy products or beef upon leaving Racha. 24 of them buy cheese. On average they bought 11 kg Imeruli and 6 kg Sulguni cheese.