Agricultural Value Chain in Imereti and Racha regions

Fruit processing

1 Introduction

The present research was carried out by the Association of Young Economists of Georgia in collaboration with Czech University of Life Sciences Prague (Faculty of Tropical AgriSciences) and People in Need from July 2014 to May 2015. This study is a part of regional value chain analysis for the main products of agricultural sector in Imereti and Racha regions.

The goal of this analysis is to provide background information and baseline data for subsequent implementation stages of the project Enhancing Small Farmers' Cooperation and Productivity in Imereti Region financed in the framework of European Neighborhood Programme for Agriculture and Rural Development in Georgia (ENPARD Georgia) - Small Farmers Co-operation component.

This research would not have been possible without funding from the ENPARD Georgia and Czech Development Agency project "Support for Cooperatives in Imereti, Georgia".

2 Methodology

The research team followed an approach that allowed handling several issues concurrently. Data collection was organized and methods selected in order to assess specific issues from different angles supported by a triangulation of qualitative and quantitative methods. After the identification of local products with the highest development potential (based on local expert and government officials interviews), we carried out a more detailed survey thematically focused around each selected product. The survey revealed that fruit processing is very poorly represented in target regions. There are no any organized fruit farms that produce fruit and deliver for processing. In this terms only two directions are identified – sour plump souse producing and draying wild fruits collected in forests. There is no any fully organized fruit producing factories in target regions, accordingly project team has interviewed representative of fruit producing factory outside Imereti and Racha regions. The factory is situated In Kaspi (eastern part of Georgia). For fruit processing analysis, following districts were covered:

Table 1-Municipalities related to fruit processing in Imereti and Racha regions[1]

Fruit species	Municipality	Processing Factory
Forest wild Apple	Terjola, Ambrolauri	Ambrolauri
Persimmon	Zestafoni, Terjola, Tskaltubo	Ambrolauri, Baghdati
Sour Plums	Zestafoni, Terjola	Terjola

[1]Note – One interview have been conducted with representative of fruit processing factory outside Imereti and Racha regions.

The field data focused on agricultural product in the Imereti Region was collected in following stages:

April 2015 - gathering field data for main products
May - June 2015- finalization of reports

For the analysis mainly qualitative research based on key-informants and group of farmers is used, which is designed to reveal a target group's range of behaviour and the perceptions that drive it with reference to specific topics or issues. As a main qualitative research method is used method of semi-structured in-depth interview. Interviews were conducted with small number of key informants who must have first-hand knowledge about examined issue. Each interview took from 1 to 1.5 hours. Diversity of key informants was important to cover whole value chain from suppliers to the local market. It means to identify and interview different-sized farmers (from small subsistence to commercials), collectors, middlemen, processors, sellers on a local market, exporters, together with agro-shops selling seeds or seedlings and different kinds of tools, technology, pesticides, herbicides, fertilizers or other inputs.

Main field data collection instruments for Fruit processed production value chain included (spatial distribution is visualized in picture1):

In depth Interviews with fruit producing farmers
In depth Interviews with representatives of fruit processing farmers/small factories
Interviews and observations of input supplier shops

Market screening of processed fruit products

Picture 1 - Map of locations for data collection in Imereti and Racha

Fruit Producer farms
Inventory Stores
Wholesaler
Fruit processing farms

However, it should be taken into consideration that qualitative research is only part of the project that

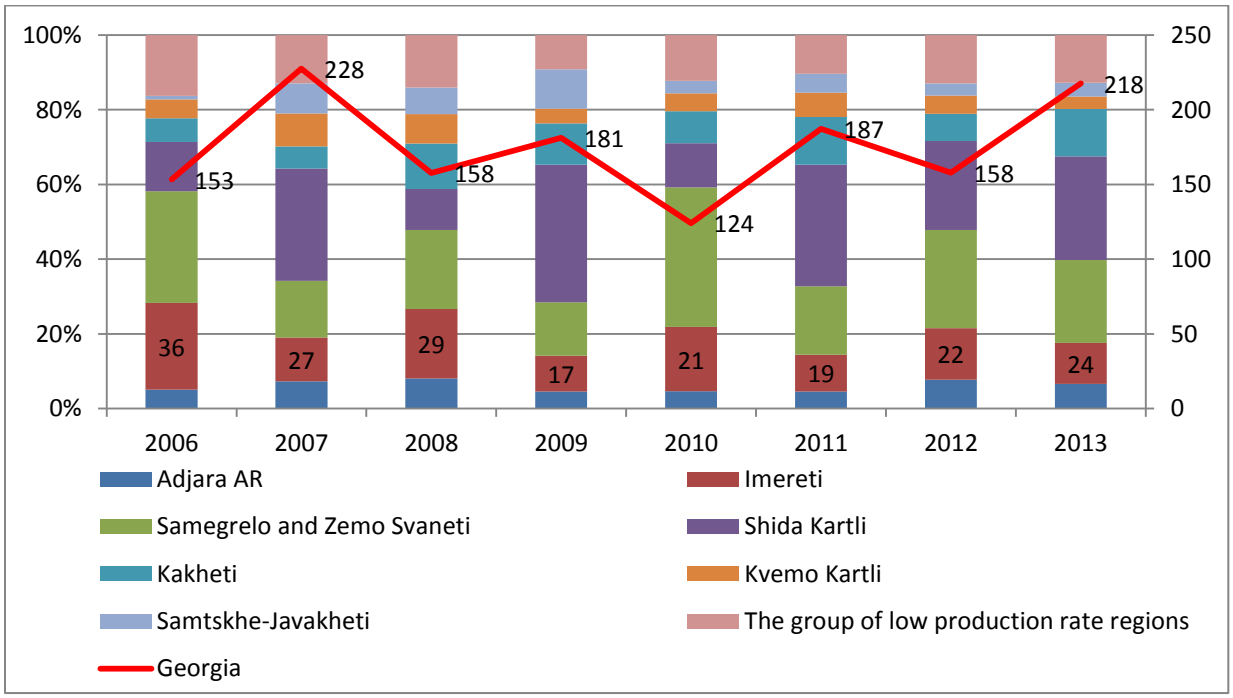
generally reflects the most widespread information. The secondary quantitative and qualitative data is based on the unity of consolidated researches including official statistical data.

But still, it is necessary to bear in mind, that the qualitative research is only partially representative and captures mainly general and the most frequent information. The secondary quantitative and qualitative data relies heavily on an examination of existing, accumulated research, combining official government data with other available related studies. Due to the lack of agricultural activity in Racha region[2], National Statistical Bureau of Georgia does not publish any specific data regarding this agricultural sector.

3 Fruit processing as sector of Georgian agriculture

Fruit farming is one of the most traditional forms of agriculture in Georgia. It is common in almost all parts of the country and due to the natural and climatic conditions of the different regions the species of fruit are wide and diverse. Diagram 1 shows the fruit production volume of the country by years and regions, which clearly demonstrates that compared to 2006 production capacity had increased by approximately 40% in 2013, mainly on account of apple, peach and nut production (see Table 2). At the same time share of fruits produced in Imereti region (same data for Racha is not available), shifted from 23% (36 ths. tones) in 2006 to 11% (24 ths tones) in 2013. Dominant regions in fruit production traditionally are Shida Kartli and Samegrelo Zemo svaneti.

Diagram 1 – fruit production in Georgia (without grapes) (Ths tons)[3]



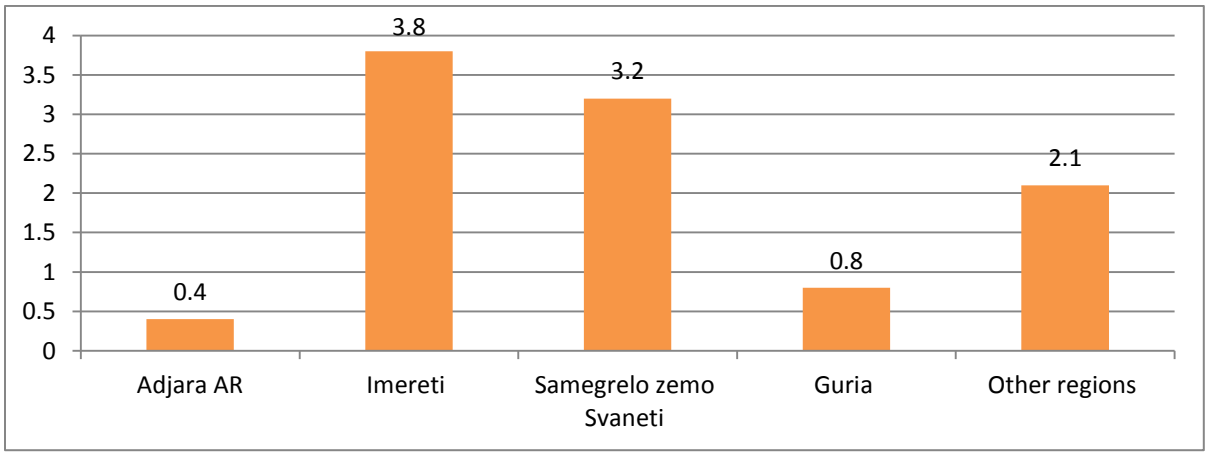
[2] – there is no any fruit producing farms in Racha region
[3] The national statistics office of Georgia www.Geostat.ge

Table 2 - Fruit production in Georgia by species[4] (Ths tons)

Species	2006	2007	2008	2009	2010	2011	2012	2013
Apples	32,8	101,3	41,5	80,7	21,1	64,3	45,0	68,6
Pears	22,5	19,6	16,4	11,1	13,7	17,6	16,1	17,0
Plums	12,8	16,3	12,6	6,3	6,7	7,2	10,7	8,7
Cherries	4,8	5,5	4,0	4,0	3,0	2,7	5,1	5,6
Peaches	5,3	8,2	13,7	17,6	6,9	19,1	7,1	23,7
Sour Plums	24,3	18,6	18,0	6,9	11,9	9,7	13,7	10,3
Walnuts	3,9	11,8	6,2	8,2	6,1	5,7	4,8	10,8
Hazelnuts	23,5	21,2	18,7	21,8	28,8	31,1	24,7	39,7
Tangerine	48,4	93,6	51,6	90,5	48,6	53,1	71,1	107,1
Orange	1,9	3,7	1,9	1,5	1,4	0,6	3,5	1,4

Official statistical data is not available for any type of fruit in Racha due to its low level of production. The analysis of official statistical data shows that out of all regions Imereti is on first place in sour plum production (see diagram 2). Even though the production of other fruits is quite diverse in Imereti, it is well below the production volume of other regions. Also, as Table 2 shows, in 2013 the sour plum production of the country compared to 2006 had decreased by approximately 2.4 times. Hereby, it is important to underline that sour plump is the only fruit, which is processed in Imereti Region.

Diagram 2 – Sour Plum production by regions. 2013[5] (Ths tons)



There are two main directions of fruit processing in the target region: dried fruit and sour plum sauce. About 80% of the dried fruit is wild apple, but wild pear, persimmon and plum are also used. Both Imereti and Racha have factories that produce these products. A sour plum processing factory is located in Terjola, where there is also a stock of raw materials, while a great portion of the dried plum sauce produced is exported.

[4] The national statistics office of Georgia www.Geostat.ge
[5] The national statistics office of Georgia Geostat.ge

However, official statistics on fruit export and import levels are only available in terms of country and not regions. Data analysis shows that in recent years both export and import has increased (see Diagram 3 and 4). Export volume do not exceed 5% of total fruit production and presumably, this share is mainly accumulated from export of citrus type of fruits, which is being exported to Russia, Ukraine, Belarus and other post soviet countries. As for import, again there is no official data available in terms fruit types, but according to expert evaluations, it' composition should be based on imports from Turkey, Greece and other countries mainly in winter time (for such fruits as are: apples, orange, and other exotic fruits).

Diagram 3 – Fruit export from Georgia[6] (ths tons)

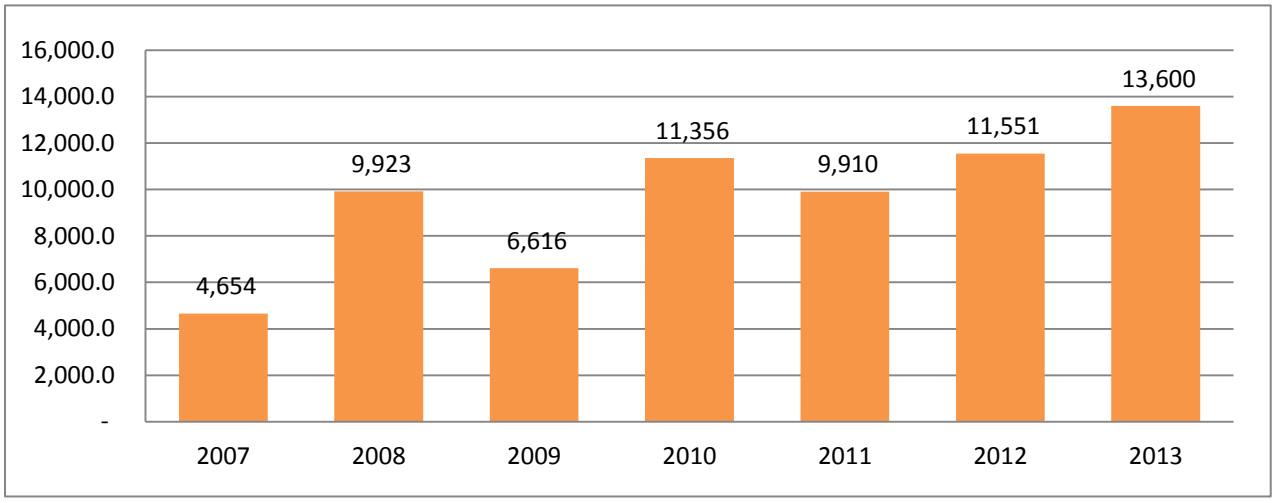
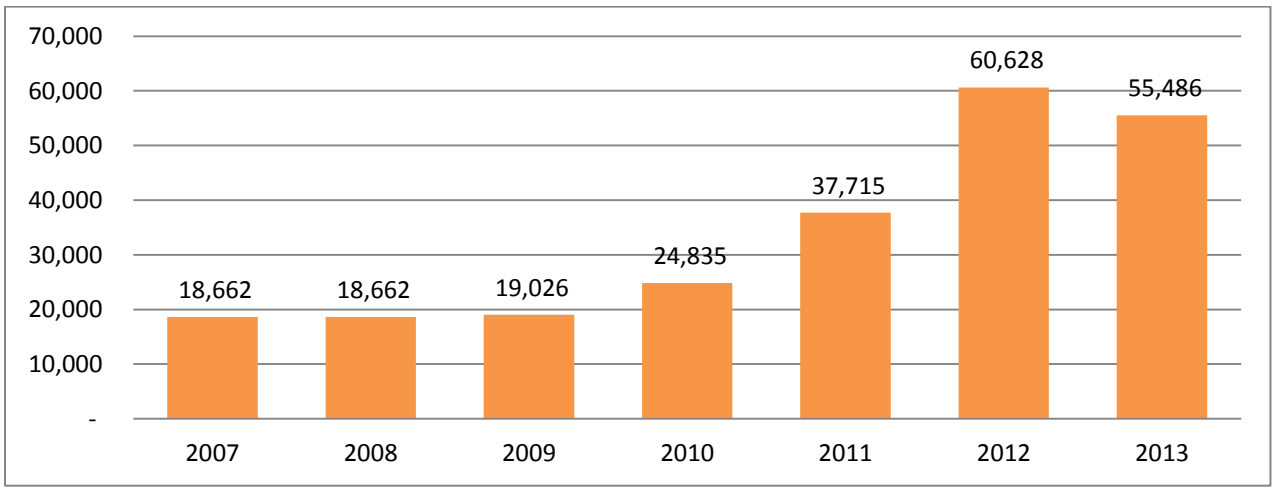


Diagram 4 – Fruit import in Georgia[7] (Ths tons)



An analysis revealed that out of all fruit species produced in the target regions only sour plums and fruits (used for drying) are used for processed, which are mainly panta (Wild apple). However, the development of these areas is essential in order for entrepreneurs to produce competitive final products and not semi-finished ones, which require further processing.

[6] The national statistics office of Georgia www.geostat.ge
[7] The national statistics office of Georgia www.geostat.ge

4 Fruit processing value chain

4.1 Production systems

Almost all rural households in the Imereti and Racha regions have a small number of different fruit trees in their yards, which are typically used only for their own consumption and not for industrial purposes with a few exceptions. The reason for this is that these yards areas are small and have a low average yield compared to other regions, which is determined by the specific climate and soil conditions. At the same time these fruit trees are not considered by the households as a source of economic activity, but are just providing products for own consumption. They do not see any economic potential in this direction.

The main fruits which are found in the family farms of the Imereti and Racha regions are apples, pears, plums, sour plumps, persimmon, cherry, kiwi, peaches, etc.; most of these types are grown semi-wild. Farmers generally are not using fertilizers for the plants, pruning, cultivating the land, etc.

Picture 1 - Apple garden in Terjola

Research has shown that there are less than 10 family farms, which grow fruits (mainly apples) for commercial purposes and only 2-3 operational fruit processing factories of a small size. In Imereti region only a few apple orchards can be found[8]. However, the average size of these orchards is quite small, approximately 2-3 hectares, with the biggest orchard 6 hectares and the smallest 1 hectare. Apple orchard cultivation requires an initial investment of about 5-6 thousand Gel per 1 hectare of land. But it also should be mentioned, that these apples are not used for further processing and are sold thought Georgia after harvesting.

As for those fruit spices that are processed in Imereti and Racha region, cultivation and/or any agricultural practice not applied due to following reasons: (1) dried fruits: - raw materials are collected in the forests; (2) sour plump sauce – there is no any orchard of sour plump, but almost all households have trees of sour plump in their yards and do not perform any specific tree caring actions.

This research has revealed the potential of wild apple extraction and processing, which is abundant in the districts of the regions of Racha and Imereti, for example in the forests of Tkibuli. There is a dried fruit company in Ambrolauri which annually buys about 1,000 tons of wild apples for drying. The price for 1 kg of raw fruit purchase is about 0.15 Gel and the average cost of dried fruit is 2-2.1 GEL while the selling price is about 1.7 euros, which equals to 4.4 GEL, a profit margin of about 100%. 95% of the product is intended for export and at present has only one company buyer, "Martin Bauer", while the remaining 5% is purchased by local fruit tea producers like "Gurieli". In addition, it should be noted that the market demand is much higher than the company's production capacity. Also according to the

[8] There is not any of the organized orchards for other fruits.

assessment of the company's management, they use approximately 20% of the wild apple crop, which means that there are raw materials which can be used to increase production volume.

The manufacturing process of the dried fruit is technically quite simple. The apples are washed, cut and placed in a dryer at the desired temperature.

Taking the above given information into consideration, it can be concluded that the production of dried wild apples in this region is very promising. For example, the profit margin is very high, and there is no need for additional spending for its cultivation since the yield can be obtained in its natural state.

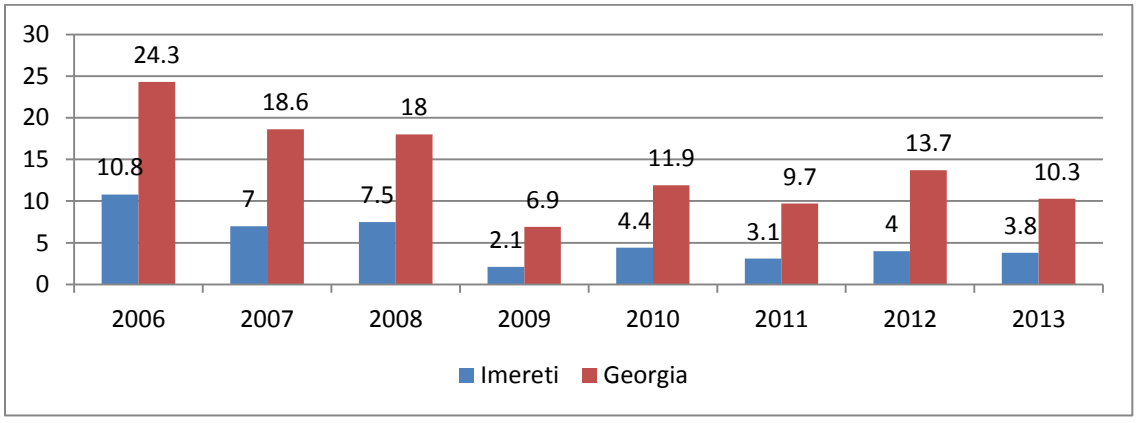
Another product that is being processed in Imereti region is sour plump, as mentioned above there is no any orchards of this fruit. There are only 2 entrepreneurs, which collect from the local rural population the sour plump and produce the sour plum sauce - Tkemali (it has a form of pure and special combination of spices and herbs are added). The average purchase price of raw material that entrepreneurs pay to farmers is 0.3 GEL per kilogram. Purchased raw materials are processed and plum porridge – sauces are made, which is almost 100% exported, mainly to Russia, Belarus, and the Baltic States. Its price on the foreign market is stable and is estimated at about – 2-GEL per kilogram of sauce. This product is in exported in large plastic containers. Later the source is bottled in the foreign country for selling it to final consumer.

4.2 Productivity

It is impossible to assess productivity of wild apple (Panta), since there is no data available on how much of these fruits are ordinary collected per tree in the forests. (Wild apples grow in forests, their Latin name is Malus Orientalis). As for sour plum, despite this fruit is harvested within households, there are no any orchards, hence, there is no any productivity data as well. Generally, the harvest per tree depends on weather conditions and there is no any agricultural treatment performed by families.

Anyway, sour plum (Latin - Prunus cerasifera)production in the Imereti region is number first in the country; but according to official data, its production volume in recent years has seen reductions in all regions including Imereti.

Diagram 5 – Sour plum production in Georgia and Imereti region[9] (Ths tons)



[9] The national statistics office of Georgia Geostat.ge

The study showed that there are no specially cultivated sour plum orchards in the region, in which the products are deliberate, but there are a few, or sometimes more than a dozen, plum trees found in the agricultural land of almost every household. Accordingly, the plum trees in the region are grown semi-wild, without any significant care - spraying, pruning, etc.

Sour Plum sauce is quite popular with locals and is mostly consumed as a household product. Since the production technology required for this product is quite simple, almost every household in rural areas prepares it at home. The yield of the processed raw material required for the finished product is about 75%.

Despite only above mentioned fruit types are processed in Imereti and Racha regions, there could be processing potential for other fruits as well. These fruit types are: apple, Pear, cherry, peach, kiwi, etc. At the moment, the harvest volume of these fruits are too small for processing purposes and needs huge investments for developing proper orchards and later relevant processing lines.

Apples

Top-quality apple products are derived at an altitude of 700-1200 meters. An apple tree begins to bear fruit after 5-6 years of being planted, and it reaches maturity at 9-10 years and has an exploitation period of approximately 25-30 years or more.

There are more than 10,000 world-known apple varieties, 200 of which can be found in Georgia. The Imereti region mainly has "astrakhanuli red", or as it is called in Georgia, "May apples". This species is suitable for direct/immediate consumption and is not for processing since its market price is higher than the price after processing.

These apples are well accustomed to the climate and soil conditions of Imereti and care is relatively simple. The exact time of harvest depends on the weather conditions, although it usually starts at around the end of May and lasts for 50 days. Consequently, farmers provide the product for the market gradually. The harvest in the region is fully intended for the local market (Tbilisi, Kutaisi, Zestafoni, etc.). The average selling price of the product on the market is 1.5-2 GEL per 1 kg. Manufacturers deliver the products on the market by themselves, or by intermediaries.

The yield of May apples is between five to 10 tons per hectare, while in other regions, for example, in the Shida Kartli region, the apple yield is approximately 30-40 tons per hectare.

Pear, cherry, peach

There are no industrial orchards of pear cherry or peach in Imereti and Racha regions. Pear trees owned by households are used for their own consumption and only a small number of products can be sold on the market. Generally, the climate and soil of Imereti and Racha are not sufficient for pear cultivation; therefore the study may conclude that at this stage pear production and processing in this region is not promising. The same can be said about cherries and peaches.

Kiwi

Georgia has about 2.500 tons of kiwi harvest each year. The harvest is mainly intended for the local market. Zemo Svaneti, Imereti, Guria and Lagodekhi are districts where kiwi is grown; however Georgia also imports kiwi from Turkey and Iran. According to the Ministry of Agriculture 70% of the sold kiwi are local, while 30% are imported.

Kiwi is a subtropical crop, which can be grow only in a limited geographical area of the Imereti region – in a part of the Khoni area. According to the study, the kiwi plantation area is no more than a dozen hectares (500 trees are planted on each hectare) and the average yield per hectare is not more than about five tons. The kiwi is sold on the market in its natural state and is not processed (for example, for jam or juice production).

Production of dried astringent persimmon and persimmon

Research has shown that the region is rich with persimmon, fig trees, a fruit which is used for dried fruit production. Most of the fruit is processed in family farms by hand, which means drying fruit in an open manner. There is one micro size factory for drying. The fruit is skinned and emptied, and then placed in a drying chamber and the product later packed. The production volume is extremely low and is intended to be sold for New Year celebration.

4.3 Fruit processing chain typical of Imereti and Racha regions

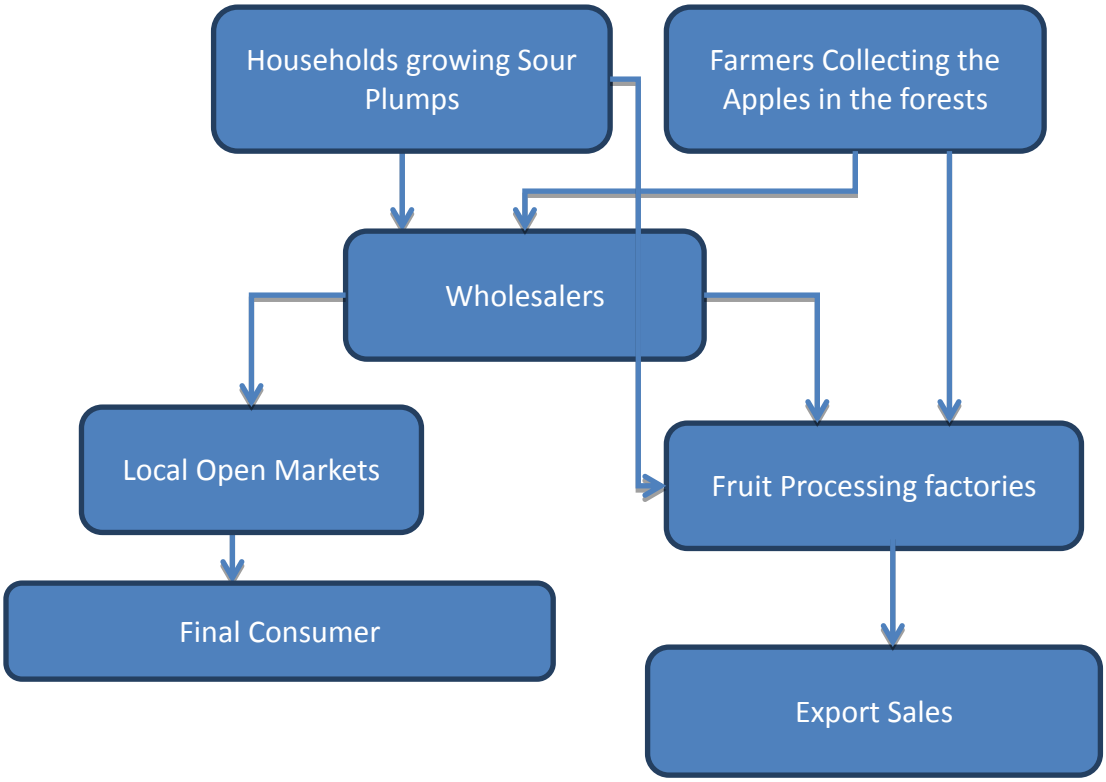
Households growing sour plum, farmers collecting the wild apples in the forests – the process of harvesting raw materials for producing the sour plump sauce and dried panta (wild apples) do not carry business character. Rural population just sells excess sour plumps to wholesaler or delivers themselves this fruit to the factories. As for Panta they are collected in forests by locals and this process is usually organized by wholesalers or fruit processing factory.

Local wholesalers - they have verbal agreement with rural population, which have sour plump trees, later they buy it from them during may-July period (when the fruits are mature) and sell it to local processing factories with preliminary agreed prices and amounts. They also deliver the product to local markets, but no more than 10%. Wholesalers also organize wild apples collection process. In summer time they hire local farmers to go in forests and later deliver the wild apples to factory located in Ambrolauri municipality. Wild apples are not sold on local markets.

Local open market – Rarely farmers, mainly wholesalers provide the sour plumps to the local market of nearby cities and areas. Sour plump is usually bought by urban population for producing and stocking the sauce for own consumption.

Fruit processing factories – local wholesalers take collected fruit to processing factories, where the raw materials are processed and final products are made, greatest part of which is exported in post soviet countries - Russia, Ukraine, Belarus (plump sauce) and EU – Germany (dried fruits). The enterprises have established relationships with foreign consumers over the years, which make it easier for them to sell products. Despite their production volume is small, at this stage expansion or diversification of the export market is not planned

Scheme 8 - Fruit processing value chain in Imereti and Racha regions



4.4 Production Prices

Prices for fruit and its processed products diverse according to the season and species. For the purposes of this analysis, the prices of products which are produced in Imereti and Racha were studied. The prices of similar and related products produced in other regions are also interesting to note[10]. Table 3 shows average fruit price in Imereti and Racha regions, which are and can be processed in case of sufficient volume.

Table 3 – Average fruit price in Imereti and Racha regions

Product	Weight	retail price (GEL)	Wholesale price (GEL)
Apple	1kg	1,5-2	0,1
Wild apple	1kg	1,5-2	0,15
Dried wild apple	1kg		4.4

[10] Note: Kiwi and Bali are not sold by wholesalers, while wild apples and the dried fruit of wild apple are exported

Sour Plump	1kg	0.8	0.3
Sour plump Sauce	1kg		2
Peach	1 kg	1,5-2	0,5
Plum	1 kg	4	2
Kiwi	1 kg	1,5-2	
Bali	1 kg	2,5-3	

The prices are mainly changed in accordance with the amount of harvest. A small amount of crop causes prices to rise and vice versa. The entrepreneurs said that the variation range is about 20%. In case of proper Investment, there is an opportunity in Imereti and Racha regions to be developed fruit processing industry as a major field of business. Kula is a fruit processing factory situated eastern part of Georgia (in Kaspi), and its products are highly demanded on the market. If fruit processing develop in target regions, it will have almost the same opportunity of success. Table 4 describes the prices of most popular products, produced by Kula.

Table 4 – Average price of processed fruit products in Kula factory

Product	Size	retail price (GEL)
Peach juice	1 liter	3.50
Apple juice	1 liter	3.00
Plum jam	900 gr	3.30
Apple jam	900 gr	3.00
Yellow plums	545 gr	2.30
Peach compote	850 gr	3.00
Dried plum	1 kg	23

5 Competitiveness diamond – input conditions, demand conditions, related industries, context

5.1 Supply of inputs

As mentioned above there is very limited potential in Imereti and Racha regions for fruit processing, since fruit orchards are not developed at all. At the same time the sour plump sauce and dried wild apples have certain export potential in case entrepreneurs manage to extend their production line and develop packaging system in order to produce final products for direct sales.

Production line -production line, which is the most important component for processing sour plumps, is quite expensive; therefore, the regions' enterprises mainly use old Soviet-made equipment, which in most cases cannot produce relatively highly-technical products with good quality.

Picture 3 - Fruit boiling pots

According to the interviewe special production line, products produced by this type of line do not require additives to increase their storage time, since it uses ultraviolet radiation to increase preservation. The main manufacturers of this type of production line are from Italy, Germany, Switzerland, etc. The average cost is about 400,000 to 600,000 EUR, depending on the line and terms of service. At the moment, existed entrepreneurs engaged in sour plump sauce production use just old type boiling pots, later they dispense the sauce into large plastic containers and sell it to export markets without any additional packaging or labelling. As for the company located in Racha region, which produces dried wild apple, they use mainly two lines – one is sorting and another drying. For drying they use special industrial drying ovens, average price of such line is 50000 GEL.

Packaging systems –Mainly glass, cardboard and plastic containers are used in this sector. Their prices depend on the type of container; the most expensive are glass containers, which are mainly imported from Ukraine, Russia and Armenia. However, factories in the regions are not been using any of them; they use cardboard packaging (for dried fruit), or plastic containers of different sizes. Plum sauce is exported in large-sized plastic containers (average 200kg). There is certain space for development and hence increased income, in case these entrepreneurs have bottling and labelling lines. Thus they could export finished product – ready for sales to final consumer.

Additives are also necessary for production, although they are inexpensive and can be purchased in Tbilisi, Georgia. The main additives used in sour plum production are Potassium sulphate and potassium benzoate. Their price per kg varies from 5 to 7 GEL, and consists around 2 percentage of total producing costs.

Raw materials - The main expense of production is the fruit itself. In order to make sour plum sauce, 90% of the sauce is plum puree and 10% spices and water. In order to make 1kg of 8% moisturized dried fruit, about 6 kg of raw fruit is needed. In the case of fruit juice about 50% of it is fruit, while the rest is sugar and water. In the case of jams 65-70% is fruit and 30% is sugar and waterAt the moment, along with absence of modern production line absence of orchards of raw materials is key challenge for sector development.

Labor force. In this field labor demand is characterized by seasonality. In particular, they hire workers during processing period, mainly in late spring and summer time. According to the surveyed entrepreneurs, the share of labor costs does not exceed 10-15% of the total costs of production. Workers are paid on daily basis – average 15-20 GEL per day. High qualifications are not required for the employees therefore recruitment usually is not a problem. However, the situation is different in the Racha region, for the company, which produces dried wild apples and collects them from the forest. Since the region is mountainous, the use of machines for transportation of collected goods from the forests is not possible, also nearby high villages are not populated anymore, so they need to hire people from other locations – that causes certain problems for the producer or wholesaler – which organizes the collection process.

Picture 4 - Raw material sorting machines used by a factory in Imereti region

5.2 Demand

On one hand sour plum sauce is included in daily ration of each Georgian household, but on another almost no one buy readymade sauce- urban families buy the sour plump in open markets, and rural one have at least one tree of it and they make the sauce with their traditional recipe and stock it for whole year. Throughout the country there is only one factory, which makes this sauce and sells in glass bottles (Kula, located in Shida kartli region) in Tbilisi and few other big cities. Hence, there is almost not demand on readymade product within the country. In a long run period families may start buying factory produced plump sauce, while the supply should be adequate to meet the demand with regard to taste as well as packaging.

Hence, key demand for proceeded products in Imereti and Racha regions are on foreign markets. At this stage only "Geoflower Ltd" exports products, dried wild apples, to the EU, in particular Germany. The company exports 95% of its production. They export approximately 160 tons of dried fruit annually, with 1.7EUROs (4.4 GEL) price per kg. The key challenge the company meets is the limited volume of raw materials and not the demand on foreign markets. In case they manage to increase the production, they will easily increase the sales, without any additional promotional or other related affords.

Those entrepreneurs in Imereti region, which make sour plump sauce, also sell 100% of their product in export markets.

Plum sauce production companies are oriented only on the Russian markets, mainly to Russia and also Belarus. Their export price is about 2GEL per KG of product. They send product to foreign middleman in large container, which later bottles the sauce and sells to final consumer. There is no any official data available on the sauce export volume, but the survey revealed that annually average 350 tons of sauce is exported by Imereti region entrepreneurs.

In terms of other processed fruit products, like jams, juices – there should be certain demand, but official data is not available. But again, if not including Tbilisi and other 2-3 cities, all the households prefer to make and stock jams and compotes by themselves.

5.3 Related Industries and their Income

The factories located in Imereti and Racha do not perform any additional tasks, with the only exception of one company in Racha which sometimes performs additional activities - for example drying evening primrose root, nettle leaves, blackberry leaves, Immortelle flowers, etc. However, their contribution to the total amount of income is very low.

For business diversification purposes, fruit processing enterprises in the east of Georgia are also processing other agricultural products, such as vegetables, which is a good decision, since both are highly dependent on climatic conditions and, therefore, in the case of insufficient fruit or vegetable crops one will fill in for the other, which contributes to the financial stability.

It is possible for Imereti and Racha to use, even partially, the experience of eastern regions of Georgia and to thereafter take up the work of processing in other fields.

5.4 Competition

Generally, there is competition between fruit processing factories in Georgia, especially for those which sell natural Juices. Competition on the Georgian market is quite high because of the number of producers, and is mainly between imported and local products. Local products are slightly more expensive although it is the belief of the consumers that local products are more natural and therefore of better quality. But juice is not produced in Imereti and Racha regions and due to the exiting competition it has very limited potential for further establishment.

Current processing entrepreneurs within the region are fully oriented on export markets. They claim that the demand in foreign markets is much higher than one producer can accommodate, therefore there is practically no competition in the field. The study showed that local producers do not have a problem in the realization of their products and at times are even unable to meet demand.

6 Strategic productivity and quality

6.1 Production of processed fruit in relation to food safety and quality

The quality of the processed fuit products is subject to the control of the state which is the obligation of the national food agency. This entity gives out a certificate after a proper inspection of the product is conducted, which is obligatory for the distribution of the product both for the local market and for export. The factories in the regions are inspected periodically and thereafter receive a certificate.

In order to confirm the quality of the products individual companies in the region (for example the fruit processing factory in Racha) receive ISO 22000 certificates which are not mandatory but an important mechanism for export since it has a so-called 'Traceability Plan', which reduces quality-related risks during the production process.

6.2 Phyto-sanitary, hygienic and quality requirements required for export

Agricultural products have to respect European animal and plant health and hygiene rules to enter the EU. This is required for all imports, wherever they come from in the world. The DCFTA will help Georgian products meet the requirements, where they do not already do so. In order to develop the field of fruit farming and export the products for the European market must abide by the regulations of European law, which state the following:

- **The Basic Law on Food**: Regulation (EC) No 178/2002 laying down the **general principles and requirements of food law**, establishing the European Food Safety Authority and laying down procedures in matters of food safety;
- **Food labelling rules**: (Directive 2000/13/EC) to ensure that the product label meets all the specific requirements (product treatment, perishable dates, place of origin, etc.), is accurate and does not mislead the consumer. From 2015 will be replaced by Regulation (EU) No 1169/2011 on the provision of food information to consumers.
- **Hygiene Regulations** (Regulation (EC) No 178/2002) - possibly the most difficult requirement for processors to satisfy at this point in time, since current operators typically do not have adequate facilities, equipment or systems to ensure proper hygiene standards.
- **Processing Standards** - a certificate of conformity to various EU market standards governing: quality (processing facilities, additives)
- **Plant Health Control** - this regulation protects against the spread of plant pests. A certificate must accompany imports of plants and plant products.
- **Import License** - a license allowing the import agricultural products into the EU markets –For Georgia that also includes "GSP+" standard.
- **Permitted food additives** and their provisions: Regulation (EC) No 1333/2008 of the European Parliament and of the Council of 16 December 2008 on food additives

7 Operational productivity – processing, transportation, diseases and biological hazards

7.1 Processing

A study showed that two main products are produced as a result of fruit processing in Imereti and Racha: dried fruit and plum sauce. More specifically a large portion of the sour plum sauce is produced in the factory of Terjola. The raw material is collected in nearby villages and regions, and the product is then exported. As for the production of the dried fruit the largest factory is in Racha. There is also a small factory in the municipality of Baghdati. These factories do not use any special or modern production line for processing.

The production of dried fruit is quite simple. The fruit is cleaned, sliced (for example apples and plums) and some fruits are skinned (for example khurma) and placed in a drying chamber. The fruits are dried at 70-80 degrees. The manufacturers say that the lower the temperature at which the fruit is dried the better the taste although this slows down the process and subsequently less products are produced. The dried fruit intended for export is packaged and placed in cartons or polyethylene boxes and sent in containers.

The production of plum sauce is also very simple. The plums are cleaned, selected, and then boiled, and after being grated the plum porridge is already semi-fabricated. A plum processing factory is located in Imereti where raw materials are also collected. One kg of plum sauce requires approximately 1.3 kg of plums. Since the production is intended for export to Russia, it is placed in large size (about 200 kg) containers and exported by automobiles where the wholesale buyers pack it for retail sale.

7.2 Transportation

The study found that products processed in the regions of Imereti and Racha are mainly intended for export to Russia and Europe, particularly Germany. Vehicles are used for transportation to Russia, while goods are first transported by car and then shipped to Germany. The average price to transport to Russia is 3500 GEL for a container (13-ton container); while in Germany it costs about 3500 GEL. The manufacturers say that foreign buyers purchase the products from the factory and organize transportation by themselves.

A small portion of the product, intended for the domestic market, is mostly bought directly at the factory or delivered directly to a couple of trade facilities by wholesaler via cars.

7.3 Diseases and Chemical treats

According to the study, the majority of the fruit crops are not under risk of disease. The experience of the entrepreneurs shows that the biggest problem which they encountered over the years was the harsh spring climate, which had a negative impact on the fruit harvest and therefore on its yield. The entrepreneurs stated that this happens approximately every 5-7 years and during these periods alternative places must be found to purchase the raw fruit.

8 Supply Chain Management – Flow of Goods and Information in the Chain

It has already been stated above that producers almost never sell the processed fruit to retail market; therefore they do not have distribution channels. Most of them have one or two buyers, who transport the product by themselves. The small amounts of product, which are intended for the local consumers, are transported using the everyday transportation of the farmers themselves.

9 Human resources, social capital and know-how

9.1 Know-how and access to extension services

The study showed that fruit processing in Imereti and Racha regions not actually require high technology. The production of dried fruit and plum sauce is conducted in traditional way. The factories use almost the same to household technologies except that the fruit is dried in special drying chambers.

The governmental system of extension and training does not exist. Existed entrepreneurs just verbally share experience and knowledge between each other. At the same time they do not look for receiving such services.

9.2 Opportunities for formal education

There are practically no means of receiving formal knowledge regarding modern technology of processing fruit. The University of Agriculture in Tbilisi is the only entity with a bachelor and master's programs related to this industry. Although, there are some universities that offer programs in fruit production, but not in processing technologies.

9.3 Social capital and cooperation

The level of cooperation in the field is quite low and limited to information exchanged by personal relationships. The small amount of entrepreneurs poses a problem with the formation of cooperatives. In the case of more entrepreneurs farmers would be able to create orchards together as well as divide costs of transportation, stock materials and conduct other activities. They might even be able to create a joint brand and processing factory.

Nowadays, there are too few producing factories, and almost no orchards. In Imereti there are small sized, up to ten apple orchards, which produce the apple type for direct sales in fresh form. Hence, there is no much opportunity and space for cooperation considering current state of development and capacity of local producers and farmers.

10 Institutions and business environment

10.1 Business environment

The interviewed entrepreneurs did not express any complaints towards the business environment. They generally did not encounter any formal or non-formal barriers.

Generally it can be said that the business environment of the country is liberal, the volume of taxes is low, it is simple to start a business, property rights are protected and no barriers were placed on the market.

The key barrier for existed factories is low access to finances, absence of modern production line and in bad weather seasons – low volume of raw material.

10.2 Governmental support

There are no state programs which are specifically aimed towards the development of the field of fruit processing, although some general programs might have a positive impact, including the programs executed by the Ministry of Agriculture: Produce in Georgia; Preferential agro-credit; Cooperative Promotion Project, etc.

The study showed that the main directions in which entrepreneurs need state support are the following:

- Purchase modern equipment through leasing, in order to re-equip enterprises and increase productivity;
- Short-term preferential credits to purchase seasonal raw materials which need to be stocked within the factories beforehand.

11 Conclusions and recommendations

11.1 SWOT

S • Ecological and natural raw materials • Stable demand for processed fruits	W • Lack of modern technologies and equipment • Low access to financial resources • Insufficient supply with raw material supply (No orchards of needed fruit)
O • Increased access to foreign markets • Creation of the orchards of the demanded fruits • Developing cooperation	T • Unfavourable weather conditions; • Natural disasters ; • Unpredictable Russian Market

11.2 Fruit processing value chain improvement potential

The study conducted in the regions of Imereti and Racha as well as the enterprises located elsewhere and the analyses of statistical information obtained from various sources made it clear that there are many different kinds of fruit in farms and household farms but only a few of them have industrial potential. Most are consumed in households and only a small part is put on the market.

Building fruit (especially sour plump) orchards - most likely, there does not appear the potential for relatively high-tech enterprises for fruit processing (juices, jams, fruit purees and other products) because of low fruit production in the target regions. But sour plump orchard would have significant potential, especially in Imereti region, since it is a highly-demanded product on local and export markets. This would lead to extension of current processing factories and may facilitate creation of new ones.

Improvement of processing technologies - The study showed that in Imereti and Racha there are only few factories which use simple technology and outdated processing techniques. It is important for factories to be equipped with modern production lines in order to develop a factory, which would produce different types of plum sauce (with different structure and spices) for retail sale in small packaging. If the factory were to have decent management it would be competitive both on the domestic and external market and would be sold for a higher price. The same can be said about dried fruit. The existent factories do not have proper packaging line that will allow them to produce final product ready for retail sales.

Diversification - The diversification of production, for example vegetable processing, or ability to use different methods of processing fruit, would bring a certain stability to enterprises and would expand their target markets. At the moment existing entrepreneurs do not see such an opportunity, but in reality they work just one season in a year. In case they start processing of other types of fruits or vegetables, they can improve usage of capacity.

12 Bibliography

- Informational portal for farmers www.agrokavkaz.ge - Apples, species of apples

  http://agrokavkaz.ge/dargebi/mebageoba/mebagheoba-vashlis-baghis-gasheneba.html
- National statistics Bureau of Georgia - Perennial crops in Georgia: www.geostat.ge; http://pc-axis.geostat.ge/Menu.aspx?rxid=c8ca81e9-2824-4c5b-a46a-c80202913531&px_db=Database&px_type=PX&px_language=en
- Ministry of Agriculture of Georgia, Information for farmers, Consultation centers – http://moa.gov.ge