The European Union
for Georgia

CZECH REPUBLIC
DEVELOPMENT COOPERATION

VALUE CHAIN ANALYSIS OF RASPBERRY
IN MTSKHETA-MTIANETI

PEOPLE IN NEED CZECH REPUBLIC

MPMC Research

Value Chain Analysis of Raspberry

In Mtskheta-Mtianeti

The project „**Regional Civil Society Organizations Supporting Free Trade with Europe**" is funded by European Union and implemented by *People in Need*

This publication has been produced with the assistance of the European Union. Its contents are the sole responsibility of People in Need and PMC Research Centre and do not necessarily reflect the views of the European Union.

Tbilisi, 2018

Research Coordinator: **Nino Khatisashvili**

Senior Researcher: **Ia Katsia**

Junior Researcher: **Mariam Saghareishvili**

Sopo Basilidze

The following civil society organizations actively participated in the research process:

- **Kazbegi Local Action Group;**
- **„Assosiation of Ecological Farmers of Georgia“ (SEMA);**
- **„Mindia“;**
- **„Dusheti Farmers’ Club“;**
- **„Social Solidarity“.**

Table of Contents

Tables

Figures

Maps

Executive Summary

The main goal of this value chain analysis is to study, evaluate and analyse the current situation in the raspberry sector, and provide suitable recommendations. Although raspberry production in Georgia currently takes place in low amounts, it is believed that this sector has the potential to satisfy local demand, substitute imports, and export the product to the European Union. It is for these reasons that raspberry cultivation has been chosen as a subject of study in the Mtskheta-Mtianeti region.

Georgia imports a considerable amount of raspberries due to limited volume and seasonality of local production. The lack of suitable refrigeration and storage facilities in the region, together with the low volume of raspberry harvest, does not allow for a round-the-year market supply of local produce. As a result, the gap on the market has to be filled through imports.

After achieving full coverage of the local market, Georgian raspberry producers will have the opportunity to supply their produce to the European market. Europe is the world's largest importer of raspberries. The average production price in Georgia is considerably lower than in many European countries. This will allow Georgia to become attractive for the European market, and to compete against other importers. The Deep and Comprehensive Free Trade Area Agreement (DCFTA) brings Georgian farmers closer to the EU market. Naturally, this is conditioned upon Georgian manufacturers adopting the standards and regulations stipulated within the agreement. DCFTA exempts most primary produce from tariff payments, which means that Georgia will be able to export raspberries to the European Union without duty payments or limitations.

Raspberry is regarded as one of the most profitable agricultural crops. It is also an attractive product due to its high cost, making its production profitable for small landowners. Current figures reflect a growing interest in raspberry production in recent years, which makes it possible to devise realistic forecasts regarding the development of this crop.

1. Introduction

Georgia has ancient agricultural traditions. Notably, around 43% of the Georgian territory is designated for agricultural purposes[1]. According to the data for 2017,[2] agriculture has a 7.2% share in the country's GDP, at a time when more than half of Georgia's population is officially employed in the agriculture sector. The majority of the people employed in agriculture are forced to work in that field due to lack of alternatives. They are not market-oriented, and they consume a large part of their produce themselves.

In the light of the existing problems, agriculture in Georgia faces the task of delivering products that have the potential to be competitive and highly profitable. Raspberry in the Mtskheta-Mtianeti region is regarded as one such product. Therefore, it is in our interest to fully analyse the processes associated with the production and sale of this crop. The core aim of this document is to analyse the value chain for raspberries in Mtskheta-Mtianeti, study the raspberry crop in detail and determine its future development.

Georgia currently produces raspberries in low quantities, but the crop has great potential for development. Almost every region in the country has certain places with favourable agroclimatic conditions for cultivating raspberries, which points towards the crop's development potential.

Interest towards raspberry production is growing due to existing market demand and consistently high price. Notably, raspberries are in demand both locally and on the European market. Therefore, we can be certain that they have a high export potential.

[1] Georgian Ministry of Regional Development and Infrastructure (www.mrdi.gov.ge)
[2] Geostat 2017

2. Aim of the Study

2.1 Overall Aim of the Project

The main goal of the project is to analyse the value chain for raspberries in the Mtskheta-Mtianeti region, as well as to enhance knowledge among civil organisations and other stakeholders at local level – both within the region and among the municipalities. This can be achieved by ensuring their active engagement at all levels of research.

2.2 The Aim of the Raspberry Value Chain Study

By analysing each link of the raspberry value chain, this study aims to identify specific weaknesses and discover opportunities for maximising the value and effect within the value chain. With the above in mind, it is important to look for ways to make production more effective, sustainable and profitable, as well as make the best possible use of the local market and enter international markets. The study will focus on the export potential on the European market.

In order to achieve these goals, the value chain analysis (VCA) will take the following factors into consideration:

- Factors connected to raspberry production;
- Raspberry value chain participants and the links between them;
- Cost and revenue analysis;
- Factors connected to achieving full coverage of the local market and substituting imports;
- Raspberry export potential on European and other markets around the world;
- Employment opportunities in raspberry production;
- SWOT analysis of the raspberry value chain.

3. Research Methodology

At various stages of the VCA, the following research methods have been used:

- Literature review – existing studies, articles and reports. Analysis of existing statistical data.
- Fieldwork: As part of the research process, representatives of civil society organisations (CSOs) conducted 23 face to face interviews, as well as 4 telephone interviews. The interviewees included farmers, agricultural retailers, experts and representatives of the relevant state authorities. Specific surveys were conducted based on questionnaires that were devised for each link of the value chain, based on which the specific surveys. Furthermore, meetings took place with three focus groups, each consisting of approximately six farmers.

The following qualitative value chain tools have been used in this study:

- Illustration of the value chain, which involves identifying all significant processes and participants of the interviews, field activities and the value chain, as well as the processes that connect all of the above to each other, and presenting them in the form of a grid map;
- Analysis of the management, coordination and control mechanisms associated with the raspberry sector, which involves analysing and evaluating various formal and informal institutions, regulatory norms and standards that exist within the sector;
- Analysis of the raspberry value chain modernisation opportunities.

Furthermore, the following quantitative value chain tools have been used in this study:

- Cost and revenue analysis – determining the added value created in each link for each participant within the value chain. This involves determining the costs, revenues and profits within the chain;
- Analysis of the revenue distribution within the chain, which involves determining the total revenues from various activities conducted by the participants;
- Analysis of the distribution of employment indicators within each chain link, and a general analysis of the employment potential.

3.1 Selecting the Product

Civil society organisations in Mtskheta-Mtianeti took part in a three-day value chain analysis training on 7-11 September 2017. The training fully covered all stages of the value chain implementation process. A meeting with stakeholders in the Mtskheta-Mtianeti region took place later. The list of attendees included specialists from various agricultural fields, farmers, experts and state representatives. The aim of the meeting was to identify the priority agricultural products for the region.

The following criteria were used by the participants to choose which crop to conduct research on:

- Full domestic market coverage and import substitution potential;
- Export potential of raspberries;
- Existing innovative approaches in the industry;
- Need for diversification;
- The crop's relevance to the Mtskheta-Mtianeti region (traditions, agricultural areas, climate, etc.).

The following products were selected by the stakeholders:

- Beans
- Potatoes

- Tomatoes
- Rose hip
- Blackberry
- Cherry plum (Tkemali)
- Raspberries

Having subsequently conducted consultations, preliminary research and source studies, the raspberry crop was ultimately chosen.

Relatively few farmers are currently involved in raspberry production, and the volume of production is low not only in Mtskheta-Mtianeti, but across Georgia. Nevertheless, based on the aforementioned criteria and consultations with stakeholders, it has been concluded that raspberry has the highest potential to achieve domestic market coverage and be exported to the European market.

4. Research Limitations

One of the main limitations of this study is the incomplete statistical information about the raspberry crop. Furthermore, the shortage of raspberry producers in the region meant that few focus groups and interviews could be organised. As it transpired, raspberry is mainly being produced for personal consumption.

A lack of studies and reports about the raspberry sector represents another major limitation.

5. Scope of Research

5.1 General Characteristics of the Mtskheta-Mtianeti Region

The region of Mtskheta-Mtianeti is located in north-eastern Georgia. Its area is 6785 m^2, which constitutes 10% of the Georgian territory.[3]

Map 1: Georgia and its regions

Mtskheta-Mtianeti has a population of 94,573 people (2.5% of the country's population).[4] Ethnic minorities (Ossetians, Azerbaijanis, Armenians, Assyrians, Russians) constitute 3.8% of the region's population. Approximately 40% of the population lives in the municipality of Mtskheta, while the Kazbegi municipality is the least populated part of the region (5%). Urbanisation at a low level, and 75% of the region's population lives in rural areas (2014 Census).

[3] Administration of State Representative Governor in the Municipalities of Dushetim Tianeti, Mtskheta and Kazbegi (mtskheta-mtianeti.gov.ge)

[4] 2014 General Population Census - Census 2014

Map 2: Mtskheta-Mtianeti and its municipalities

Mtskheta-Mtianeti includes the following self-governing entities: the municipalities of Dusheti, Tianeti, Mtskheta, Akhalgori and Kazbegi, as well as the self-governing city of Mtskheta. The region comprises a total of 480 villages, 6 small towns and 2 cities. The region is characterized by a multitude of sparsely populated villages. Only one village in the region (Mukhrani, Municipality of Mtskheta) has a population of more than 5,000, while 50 villages have a population of less than 10, and up to 60 villages are virtually uninhabited.[5]

Households constitute the vast majority (99.46%) of the agricultural holdings in Mtskheta-Mtianeti (see Table 1).

Table 1: Number of agricultural holdings in Mtskheta-Mtianeti by legal status

Region/Municipality	Total Holdings	Households	Legal Entities
Mtskheta-Mtianeti	31773	31602	171
Town of Mtskheta	1242	1225	17
Dusheti	9800	9765	35
Tianeti	4133	4130	3
Mtskheta	15181	15071	110
Kazbegi	1417	1411	6

Source: 2014 General Population Census

5.2 Agriculture in Mtskheta-Mtianeti

According to the most recent data (2014 Agricultural Census), Georgia has 778,000 hectares of agricultural land, of which 378,000 (47%) is arable land. Mtskheta-Mtianeti has 2.6% of the total agricultural land, and 3.2% of arable land (see Table 2).

[5] Administration of State Representative Governor in the Municipalities of Dushetim Tianeti, Mtskheta and Kazbegi (mtskheta-mtianeti.gov.ge)

Table 2: Agricultural land by forms of land use (ha)

	Agricultural Land	Arable Land	Land Occupied by Perennial Plants	Greenhouses	Natural Meadows and Pastures
Mtskheta-Mtianeti	20 829	12253	1238	25	7313
City of Mtskheta	264	184	20	0	60
Dusheti	7171	4167	192	1	2810
Tianeti	4790	1725	46	2	3017
Mtskheta	8124	6077	979	21	1047
Kazbegi	480	99	1	1	378

Source: 2014 General Population Census

Table 3: Average area and number of land plots in use

	Average Area of Land in Use	Average Number of Land Plots in Use	Average Area of Land Plots in Use
Mtskheta-Mtianeti	0.7	1.9	0.37
City of Mtskheta	0.24	1.34	0.18
Dusheti	0.78	2	0.39
Tianeti	1.21	1.96	0.61
Mtskheta	0.58	1.86	0.31
Kazbegi	0.39	1.96	0.2

Source: 2014 Agricultural Census of Georgia

As we can see, the average area of a land plot in use in each of the region's municipalities (0.61 ha) is considerably less than the equivalent figure for Georgia as a whole (1.31 ha).

The geographic location of the municipalities determines the development of its various agricultural areas. The region produces both one-year and perennial crops, albeit in small volumes, which is probably due to the small average area of the land in use.

Aviculture (poultry production) and animal husbandry are also practiced in the region. However, Mtskheta-Mtianeti is not among the country's leading regions in these areas, either. The region's climate and fertile soil ensure that agriculture has a high potential here. However, there are no raspberry processing, delivery or storage facilities in the region, which creates substantial barriers for producers.

According to data obtained from the Ministry of Agriculture, a total of 4249 enterprises were operating in the country's agro-food sector as of 2017. Mtskheta-Mtianeti was home to the least number of enterprises after the Racha-Lechkhumi and Lower Svaneti region. Only 6% of the enterprises were operating in the food processing industry.

Table 4: Distribution of enterprises operating in the agro-food sector by region

Region	Small Enterprise	Medium Enterprise	Large Enterprise
Georgia	3621	338	290
City of Tbilisi	1483	144	126
Adjara	283	32	15
Guria	104	7	11
Imereti	422	24	12
Kakheti	396	38	28
Mtskheta-Mtianeti	**61**	**4**	**8**
Racha-Lechkhumi and Lower Svaneti	32	3	1

Source: Georgian Ministry of Environmental Protection and Agriculture, 2017

One of the most significant state programmes, Plant the Future, deals with the development of perennial crops, including raspberries. The programme will allow perennial gardens to be cultivated in every region in Georgia.

Table 5: Plant the Future – Data by Region

Region	**Number of Beneficiaries**	**Area**	**Agency Co-funding**
Total	519	3.599	18.048.524
Kakheti	129	1.211	5.208.736
Mtskheta-Mtianeti	16	63.7	391.536
Lower Kartli	79	515	2.306.735
Samegrelo	38	311	823.196
Imereti	29	186	845.591
Guria	18	105	586.647

Source: Agricultural Project Management Agency

According to the data for 2017, a total of 43.6 hectares of raspberry gardens were cultivated across Georgia as part of the Plant the Future programme, of which 6.6 hectares were cultivated in the Mtskheta-Mtianeti region.

6. Brief Overview of the Raspberry Sector

6.1 Global Raspberry Production

Raspberry constitutes one of the most significant and financially profitable berry crops (N. Kljajić, 2013). The rich taste and health benefits of the fruit are well known. Moreover, these benefits are fully preserved in frozen state, and partially preserved in case of thermal processing. According to the UN Food and Agriculture Organisation (FAO), there are 45 raspberry producing countries in the world. In 2016, they accounted for a total of 795,249 tonnes of raspberries. Europe produces more than any other continent (498,353 tonnes, or 62.7% of global produce), followed by South America (280,415 tonnes, or 35.2% of the total).

Table 6: Global raspberry production by region

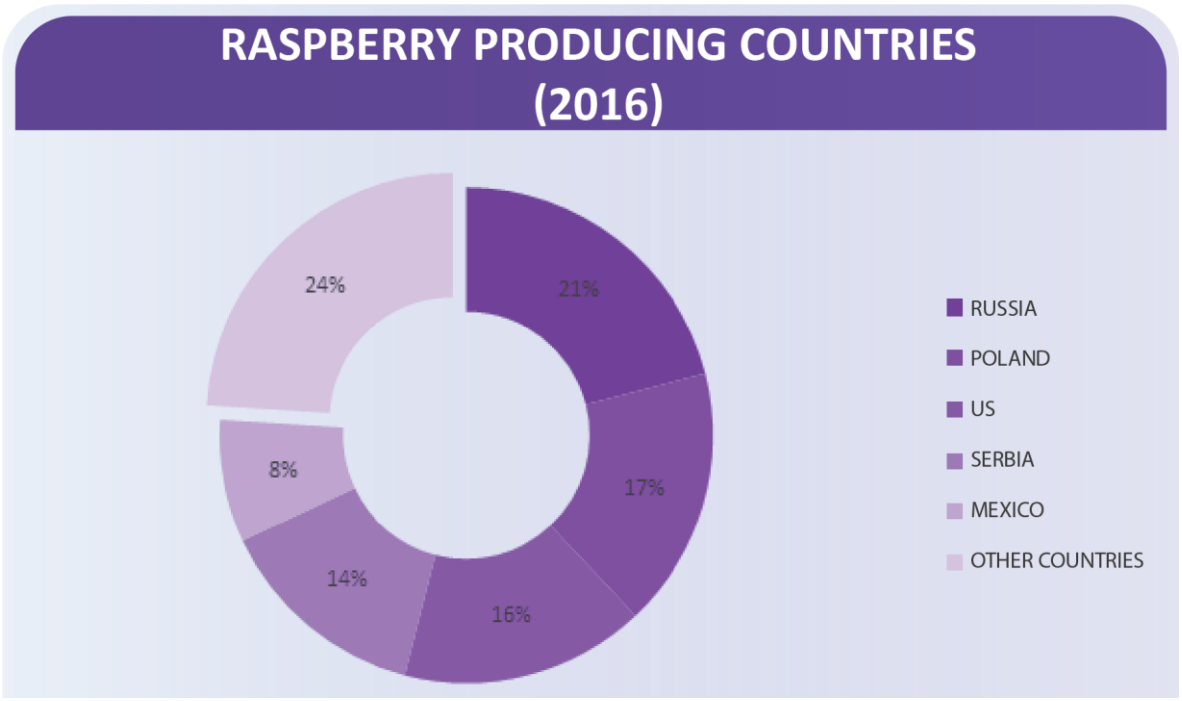
Region	Tonnes
World	**795 249**
Asia	15 372
Africa	404
Europe	498 353
Oceania	705
North and South America	280 415

Source: FAOSTAT 2016

Russia is the world's largest producer of raspberries (164,602 tonnes as of 2016), followed by the United States (137,829 tonnes), Poland (129,063 tonnes), Mexico (112,661 tonnes) and Serbia (61,875 tonnes). Together these countries produce almost 76% of the world's raspberries. The remaining countries in the top 10 of raspberry producers are Ukraine (31,920 tonnes), Chile (19,132 tonnes), Spain (17,808 tonnes) and Portugal (16,972 tonnes).[6]

[6] UN Food and Agriculture Organisation, 2016

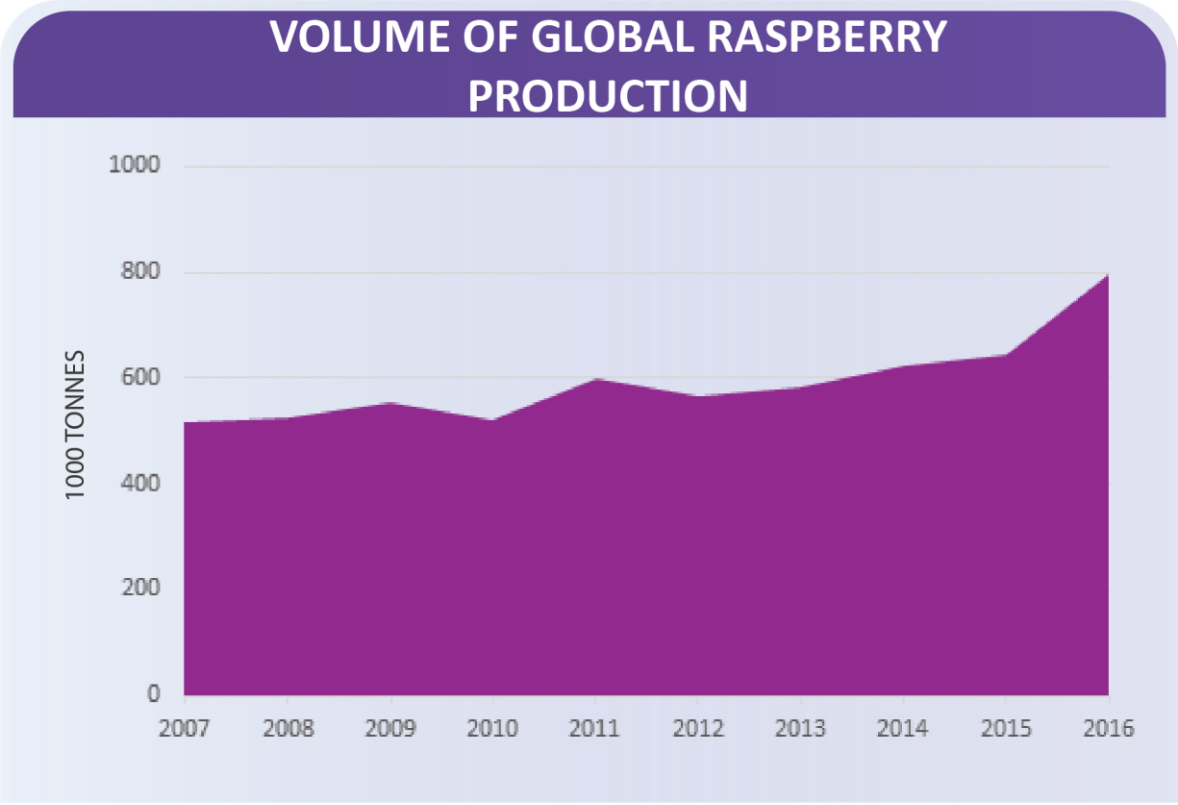
Figure 1: Global raspberry producing countries



Source: FAOSTAT 2016

According to the 2017 data from the UN Food and Agriculture Organisation, raspberry production in Poland decreased by 23%. Globally, however, raspberry production has been growing (see Figure 2).

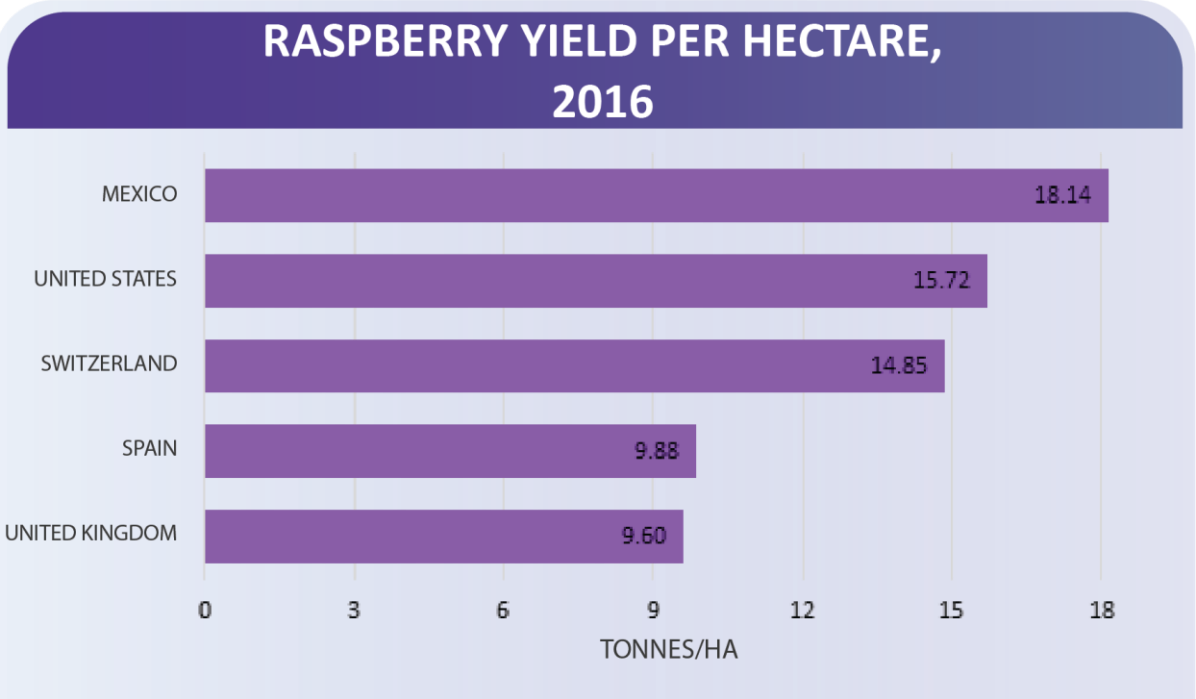
Figure 2: Volume of global raspberry production (2007-2016)



Source: FAOSTAT 2016

Raspberries are becoming increasingly popular, and the global demand is growing each year.[7] Based on data from the U.S. Department of Agriculture, the per capita consumption of raspberry increased by 475% between 2002 and 2012. Growing demand has led to an increase in global production rates (see Figure 2)

Figure 3: Countries with highest raspberry yield per hectare



Source: FAOSTAT 2016

The highest raspberry yield per hectare is recorded in Mexico. The United Kingdom completes the top 5 of the most productive countries with 9.6 tonnes/ha. The average global raspberry yield is 5.9 tonnes/ha.[8]

6.2 Global Raspberry Trade

According to 2016 data from Comtrade, Mexico is the world's largest exporter of fresh raspberries, followed by Spain and the United States (see Table 7).

Table 7: World's largest raspberry-exporting countries

Exporting Country	1000 tonnes
Mexico	75.596
Spain	41.105
United States	27.990
Poland	14.860
Portugal	14.420

Source: Comtrade, 2016[9]

[7] Global Fresh Berry Trends: Focus on the European Market
[8] UN Food and Agriculture Organisation, 2016
[9] Comtrade and Trademap methodology places raspberries, blackberries, mulberries and loganberries in the same category.

The United States is among the world's leading countries both in terms of raspberry exports and imports. The top 5 of largest importers also includes three European countries.

Table 8: World's largest importers of fresh raspberries

Importing Country	1000 tonnes
United States	92.424
Canada	34.669
Germany	31.554
United Kingdom	20.877
France	20.428

Source: Comtrade, 2016[10]

The situation is different with regards to frozen raspberries.

The world's largest importer of frozen raspberries is Germany, accounting for 22% of the global imports (99,950 tonnes), followed by France with 9% (43,937 tonnes).

Germany imports 43% of its frozen raspberries from Serbia, and 30% from Poland. Similarly, 46% of France's imports come from Serbia, and 11% from Poland.

Table 9: World's largest importers of frozen raspberries

Importing Country	Tonnes
Germany	99,950
France	43,937
United States	42,938
Belgium	30,894
Netherlands	26,752
Austria	22,191
United Kingdom	19,926
Canada	16,986
Russia	14,978
Belarus	14,569

Source: Trademap, 2016

The European Union represents the world's largest market for frozen raspberries. The increasing popularity of the fruit has led to a stable growth in both imports and consumption of frozen raspberries in Europe.

A total of 452,736 tonnes of frozen raspberries were imported globally in 2016. Countries of the European Union accounted for approximately 69% of these imports. There has been an increase in the import of both fresh and frozen raspberries. The volume of fresh raspberries imported by the EU countries in 2017 grew by 82% compared to 2013, and by 13% compared to 2016. At the same time, the volume of frozen raspberry imports grew by 20% compared to 2013, and by 10% compared to 2016.

The average price of imports in the EU is $ 2.46/kg for frozen raspberries and $ 7.59/kg for fresh raspberries.[11] The average producer price in the EU is $ 5.28/kg. Naturally, prices vary from one

[10] Comtrade and Trademap methodology places raspberries, blackberries, mulberries and loganberries in the same category.

[11] Price of raspberries imported into the EU divided by the volume of import.

country to another. Thus, Poland has the lowest producer price among the EU countries at $ 1.4, while Switzerland has the highest at $ 11.96.

Table 10: Raspberry producer price (USD/kg, 2012-2016)

Country	2013	2014	2015	2016
Denmark	11.72	12.03	9.76	10.05
Switzerland	12.53	12.85	12.24	11.96
Belgium	16.57	13.53	13.68	8.24
France	3.92	3.65	3.28	-
Germany	7.41	7.36	6.81	6.98
Spain	5.04	5.59	5.14	-
Poland	1.61	1.51	2.10	1.35

Source: FAOSTAT

7. Analysis of the Georgian Raspberry Sector

Raspberries can be cultivated in almost every region in Georgia. It is a known crop in this country, yet it has mainly been found in the wild, used in small agricultural holdings, as well as for personal consumption. Raspberry is an important fruit due to its nutritional value (vitamins, organic acids, carbohydrates). Raspberries are mainly consumed in Georgia in fresh form, as a desert. They are also processed into products such as marmalade, jam, compote, syrup, etc.

Raspberry production is still regarded as a family activity in Georgia. Raspberry gardens are usually small in size and cover an area of less than 0.5 hectares.

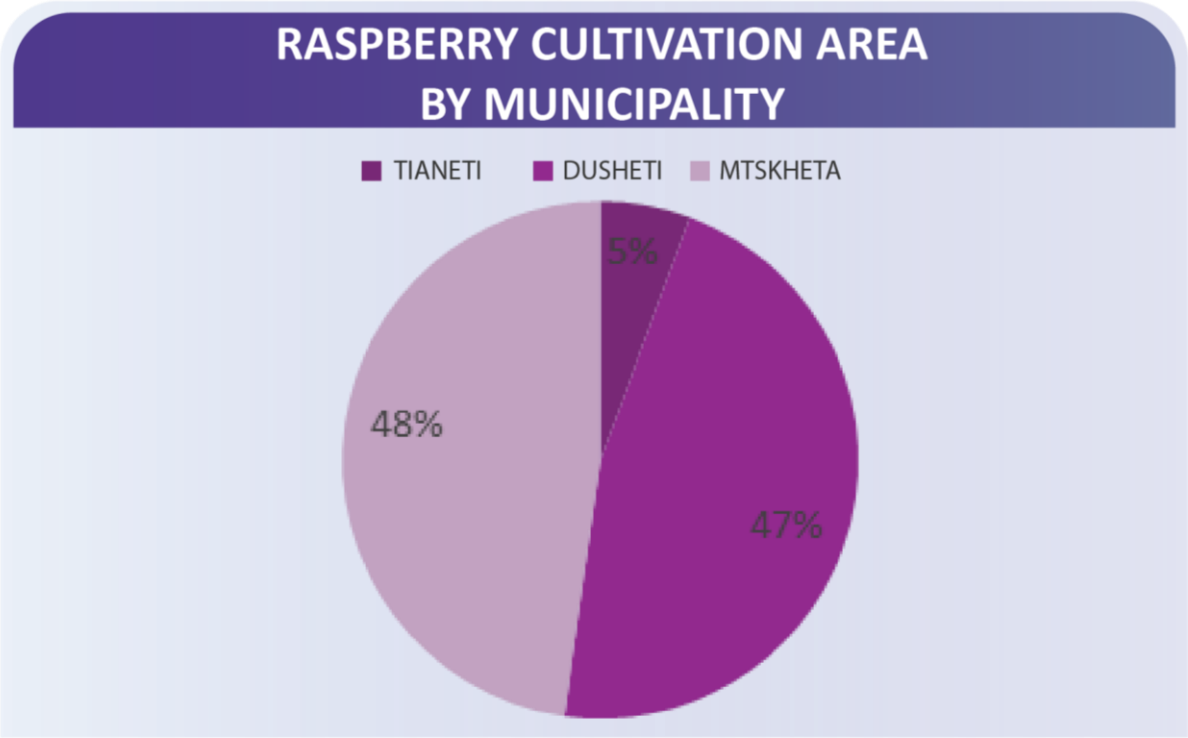
The National Statistics Office of Georgia (GeoStat) began publishing raspberry production data in 2016. Total raspberry production across the country amounted to 200 tonnes in 2016, but grew by 50% based on preliminary data for 2017. A breakdown of official production data by region has not been possible due to insufficient observations.

Notably, preliminary GeoStat data for 2017 shows that raspberry is the only perennial crop whose production increased compared to 2016.

According to the Georgian Ministry of Environmental Protection and Agriculture, the volume of raspberry production in Georgia is considerably higher than shown in official data. Based on the said data, Georgia produces 1016 tonnes of raspberries, with the Inner Kartli region accounting for 47% of the total.

Based on the same data, raspberry plantations in Mtskheta-Mtianeti cover an area of 17.8 hectares and produce 30 tonnes of fruit. The region has many new plantations that have not yet been fully developed. Therefore, production is likely to increase substantially over the coming years. Many families are cultivating raspberries exclusively for personal consumption on 30-40 m^2 plots of land. However, research has shown that raspberry production is gradually transforming from a family activity into a larger-scale industry. The municipalities of Mtskheta and Dusheti account for the largest raspberry cultivation areas within the region.

Figure 4: Raspberry cultivation area by municipality



Source: Mtskheta-Mtianeti Regional Information and Consultation Centre at the Ministry of Agriculture

According to the 2014 General Population Census, there are 158 berry-producing farmers in Mtskheta-Mtianeti, accounting for 3% of the nationwide total. The majority of the existing agricultural holdings are farmers who cultivate an area of less than 0.5 ha.

Table 11: Agricultural holdings dealing with berries[12]

Region/Municipality/City	Total agricultural holdings with berries
City of Mtskheta	2
Dusheti	12
Tianeti	2
Mtskheta	141
Kazbegi	1
Mtskheta-Mtianeti Total:	158

Source: 2014 General Population Census

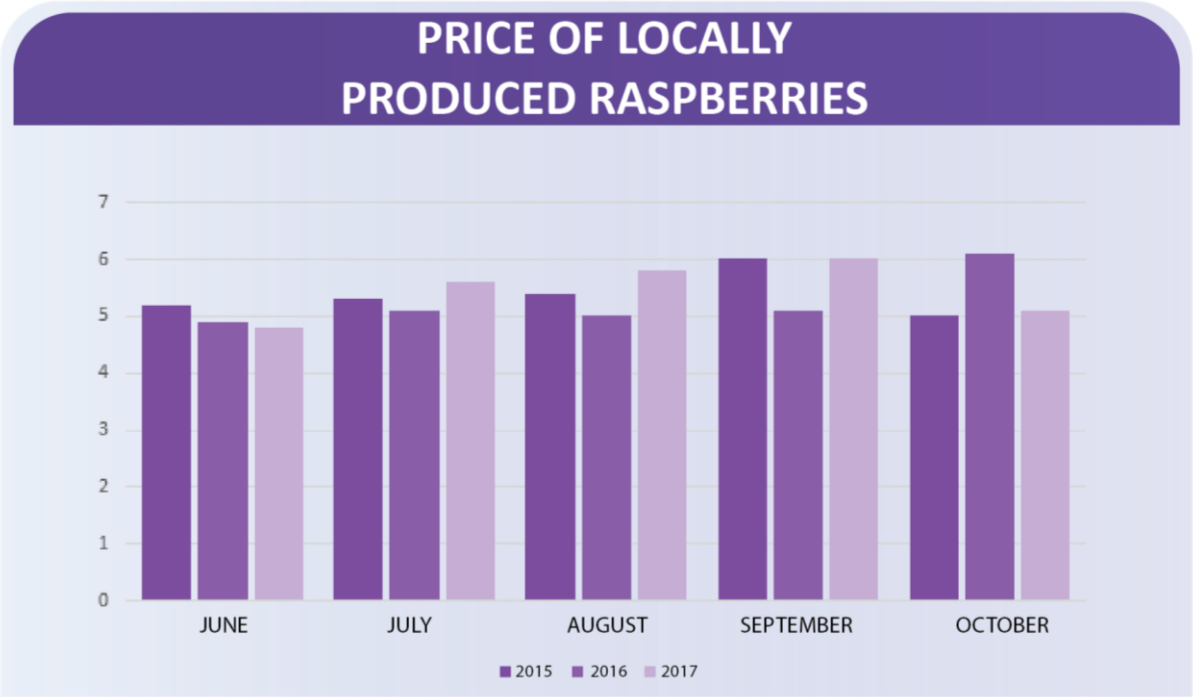
However, raspberry production has taken new forms in recent times. It has grown from a household into a farming economy, and demand for larger-scale production has constantly increased. One of the main reasons for these changes is the fact that the state has recognised raspberries as a highly profitable crop, and considers its cultivation (together with that of other berries) a priority.

Interviews conducted during the research process have shown that the current raspberry yield does not satisfy local demand, which also accounts for a near-total lack of exports. The interviews also revealed that the price of raspberries ranges between ₾5 and ₾6 per kilo during spring, growing to ₾8-9 in autumn due to lower availability. The Georgian Ministry of Environmental Protection and Agriculture has determined the average price of raspberries across Georgia to be ₾5.5.

[12] Strawberries, raspberries, redcurrant, gooseberries, etc.

Such high prices are due to low levels of production and competition on the market. Naturally, the sale price also varies according to the quality of the fruit. Thus, damaged raspberries are ₾1-2 cheaper. Local produce is substituted by frozen imports from abroad during winter, with prices ranging between ₾25 and ₾32.

Figure 5: Producer price of raspberries in Georgia



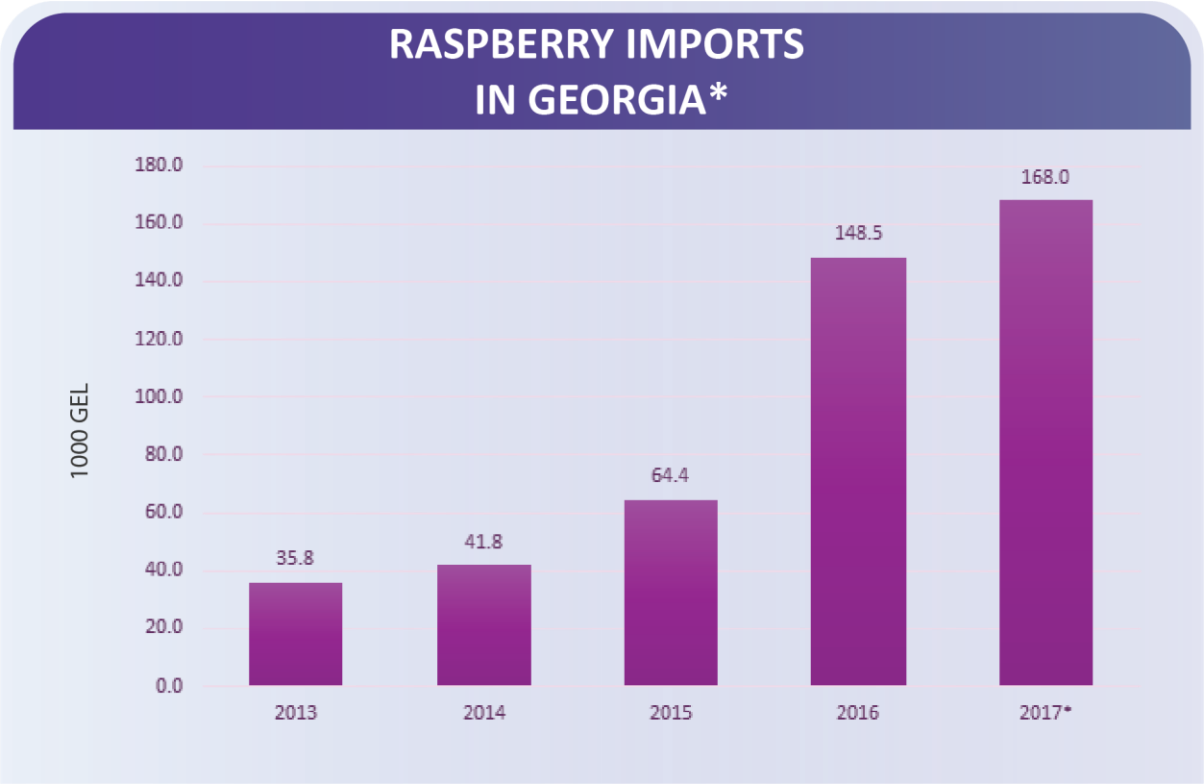
Source: Georgian Ministry of Environmental Protection and Agriculture

7.1 Raspberry Export and Import

According to the National Statistics Office of Georgia, the export of raspberries to other countries does not currently take place. Moreover, raspberries are not produced in sufficient quantities to even satisfy demand on the local market.

Local produce is substituted by frozen raspberries that are imported from abroad. Georgian raspberries are almost completely absent from the local market during the winter (off-season).

Figure 6: Raspberry imports in Georgia (2013-2017)[13]



Source: GeoStat

The growing local demand for raspberries is illustrated by the annual increase in imports. The majority of raspberry imports in Georgia come from Poland, Belgium and Germany. Due to the absence of the local produce on the market during winter, there are no local alternatives to imports, and the off-season price of raspberries is very high. Frozen raspberries cost between ₾ 25 and ₾ 32 in supermarkets, which is quite expensive for this type of product. By increasing production and developing refrigeration/storage facilities, Georgian farmers can substitute the imports, as well as store the raspberries and sell them at a time and price that is suitable to them.

Although virtually no raspberries are currently being exported, there is a considerable potential in this regard. The price of berries in Europe is high during the period between the end of May and mid-July, before the start of the berry-picking season. Georgian producers can use this opportunity and supply the European market with their products precisely during this period.

7.2 Raspberry Types and Cultivars

Raspberry is a perennial shrub, found both in wild and cultivated forms. The following raspberry cultivars are most commonly found in Georgia:

- Nova
- Caroline
- Patricia
- Biuriskina
- Polka
- Heritage
- Raska

[13] Combined data for raspberries, blackberries, mulberries and loganberries

- Tulameen
- Josephine
- Jacqueline

The cultivars are subdivided into two groups: summer-bearing (Nova, Killarney, Encore, etc.) and autumn-bearing (Caroline, Polka, Autumn Bliss, Autumn Britten). The summer cultivars bear fruit from July until the end of August, while the autumn cultivars bear fruit from August until the end of October. It is preferable that both groups of cultivars are represented in the gardens, in order to ensure that raspberries can be harvested throughout the year.

Around 90% of the surveyed farmers cultivate the Caroline cultivar, stating that it best adapts to the local environment and yields more than the other cultivars. Other relatively popular cultivars are Josephine and Nova.

Below are the biological and agricultural characteristics of some of the cultivars that can potentially be cultivated in the region:

Tulameen: a summer-bearing cultivar that is found across the world, and is regarded as one of the best raspberry cultivars. The ripening process takes place from the beginning until the middle of July.

Heritage: an autumn-bearing cultivar that stands out through its resistance to diseases. The ripening process takes place from the end of August until the middle of October.

Caroline: an autumn-bearing cultivar that is one of the most widely cultivated varieties of raspberry in the Samtskhe-Javakheti region. Useful for production in greenhouse facilities. The ripening process takes place from the end of July until the middle of October.[14]

[14] agrokavkaz.ge

8. Results of the Study

8.1 Raspberry Value Chain Participants in Mtskheta-Mtianeti

The following links are included in the Mtskheta-Mtianeti raspberry value chain:

Nurseries
There are several producers of raspberry saplings in the region. They are mainly distributing foreign cultivars of the plant, which are later cultivated locally. However, none of these regional producers are certified, which creates a problem regarding the quality of the saplings. Since saplings brought in from abroad are not adapted to the local environment, they often fail to yield the quantities of the fruit that are expected by the farmers.

Suppliers of plant protection products and fertilizers
Each municipality has shops where farmers can purchase fertilizers and pesticides. Due to the recent growth in demand, these stores have also added bio products to their stock. Demand for fertilizers and pesticides for raspberries has also increased. Farmers mostly shop at the Gori fertilizer and pesticide store due to a broader choice of products. The products come with manuals which explain how they ought to be used by farmers.

Laboratory and irrigation
Research revealed that farmers do not analyse the soil, in spite of this being part of the early stages of the production process. Neglecting this service renders the use of fertilizers less effective, as the needs of the soil are not being determined. Soil analysis must be followed by special recommendations being devised by specialists. Furthermore, the installation of a drip irrigation system is a necessity for raspberry and other berry plant producers. Such a system costs ₾ 6000/ha to install. However, participants in the Plant the Future programme will have their costs partially covered by the state. The absence of an irrigation system significantly reduces the productivity of each hectare of land.

Processing / refrigeration facilities
The region does not have a raspberry processing plant, or refrigeration and storage facilities that will allow the fruit to be stored in accordance with the appropriate standards. Due to the low volume of production, fresh raspberries are only sold on the local markets. These are mainly the markets of Tbilisi and the municipalities of the Mtskheta-Mtianeti region. The high demand for raspberries allows farmers to sell their products quite quickly (within one or two days), which currently reduces the need for refrigeration and processing facilities. However, future growth in production will make it difficult for the fruit to be sold quickly, and the harvest will therefore have to be stored. Subsequently, this will become a problematic link within the value chain. In the absence of refrigeration and processing facilities, it will not only be difficult to sell the product, but also to increase the volume of production. Thus, these are interrelated issues that can only be resolved through a comprehensive approach to each one of them.

Development of processing facilities is hindered by the low volume and relatively high price of raspberries on the Georgian market. Interviews revealed that farmers are reluctant to submit their products to processors, as they are offered no more than ₾ 2-3 per kilogramme. The processors themselves believe that raspberries are overpriced due to low availability, and that growth in production will lead to a price reduction. Subsequently, processors may receive more raspberries in the future.

Small farmers, who only sell raspberries at farm-gate and on the local market
The average area of the land plots on which raspberries are cultivated by the surveyed farmers is 0.3 hectares. These farmers mainly sell their product at farm-gate to neighbouring households and on the

local market. On average, farm-gate sales account for 5-10 kg of raspberries per buyer. Most farmers transport their products themselves. There are also many who only produce raspberries for personal consumption. The majority of the surveyed farmers have stated that they initially decided to cultivate raspberries on a trial basis, and now wish to expand production, having familiarised themselves with its specifics. These farmers have quite a limited access to information. They mainly share their experiences amongst each other, and are using fertilizers and pesticides at their own risk, since there are virtually no industry specialists in the region who could provide them with qualified advice at various stages of the raspberry production process.

Medium-scale farmers, who sell raspberries at farm-gate, on the local market, as well as to re-sellers and pastry shops

This group of farmers includes producers who cultivate raspberries on land plots that are larger than 0.5 hectares. These farmers cooperate with Intermediaries who personally collect the raspberries from the producers. On some occasions, the Intermediaries pick the fruits themselves, in which case the price of the product is reduced. The farmers also sell raspberries to pastry shops. They sometimes travel to Tbilisi and sell their product directly to the consumer. Due to the limited availability of the product, it can be sold quickly and easily.

The research showed that due to the low volume of production, farmers have not yet considered exporting their product. In future, they plan to team up with other interested farmers and collectively achieve production in sufficient quantities to be able to enter the European market.

Intermediaries

This group mainly purchases raspberries directly from the producer. The majority of medium-scale farmers sell their produce through these Intermediaries, who proceed to re-sell the product to pastry shops and markets. On some occasions, they re-sell the produce themselves.

Market retailers

Retailers sell raspberries supplied by small and medium-scale farmers on the local municipal markets in Mtskheta-Mtianeti. Retailers can also be found in the markets of Tbilisi, where they are supplied by Intermediaries.

Supermarkets

Supermarkets represent one of the final steps in the value chain. None of the farmers surveyed for this study have any dealings with the supermarkets. This is due to the low volume of raspberry production. Supermarkets therefore prefer to receive the produce from Intermediaries. They sell Georgian raspberries seasonally, while during the off-season, the Georgian produce is substituted by imports.

Pastry shops

Pastry shops also buy produce from medium-scale farmers. Raspberries as pastry ingredient are becoming increasingly popular. They are purchased both locally by regional pastry shops and their counterparts in Tbilisi. Local pastry shops mainly buy the product directly from the farmers.

Consumer

As mentioned earlier, raspberries are not currently being exported due to the low production volumes. Consumers can purchase the product in supermarkets, as well as in open markets. Raspberries in Georgia are either consumed in fresh form, or used at household level for the production of marmalades, jams, compotes and pastries.

8.2 Illustration of the Mtskheta-Mtianeti Raspberry Value Chain

Figure 7: The existing raspberry value chain (Grid Map)

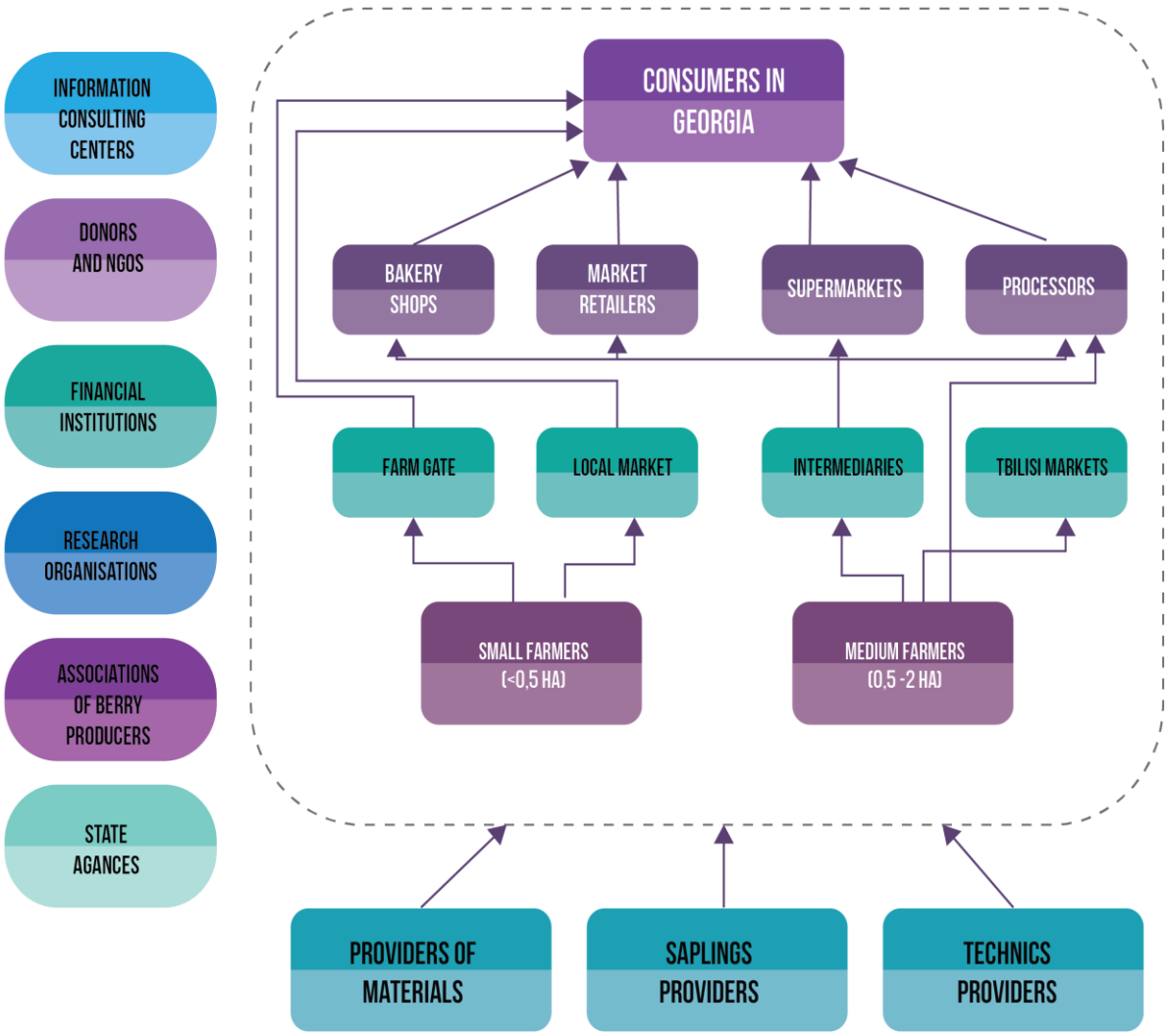
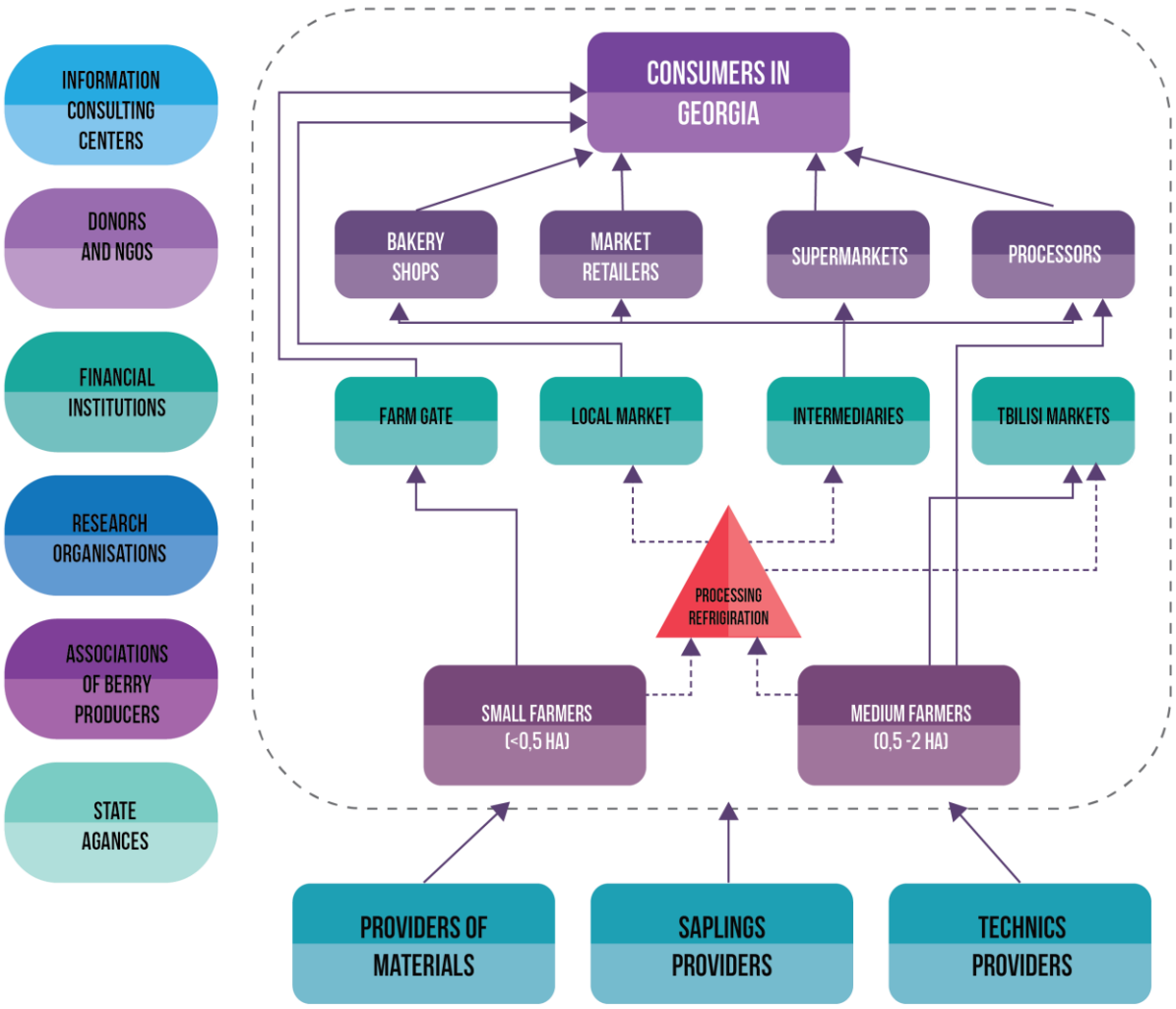


Figure 7 illustrates the existing value chain, which mainly includes small and medium-scale farmers, while Figure 8 presents a hypothetical chain, where broken lines depict refrigeration and storage businesses. Adding this link will create added value inside the chain. Farmers will be able to sell their produce directly to the refrigeration/storage businesses. They will also be able to store their product and sell it at a time of their choosing.

Figure 8: Hypothetical raspberry value chain (Grid Map)



8.3 External Factors Affecting the Raspberry Value Chain

State authorities and information / consultation services

There are agricultural consultation centres operating in each municipality, which provide information about any projects initiated by the Ministry of Agriculture or donor organisations. They provide farmers with information regarding raspberry production. However, they do not employ agronomists who are knowledgeable in this field and are able to provide raspberry producers with qualified advice.

Interest in raspberry production has recently grown through the introduction of the state programme Plant the Future. The programme, which has been implemented by the Ministry of Agriculture since 2015, co-funds berry fruit gardens and sapling businesses, among others. Raspberry plantations are being funded in almost every region in Georgia. Based on the programme, the share of the state funding is 70%, including 50% of the cost of the drip irrigation system and 50% of the sapling business. This project also includes technical support, which comes in the shape of farmer training. However, Plant the Future has a significant limitation that was identified during the research process, as many respondents stated that they were unable to participate in the programme, as they were required to

own a land plot that is at least 1 ha in area. This has prevented many farmers from being able to benefit from the programme.

International organisations

The USAID-funded Growth programme issues grants that are aimed towards developing berry crop nurseries in Georgian regions. Aside from the financial aspect, this also includes technical support (training and consultation). The focus of the programme is the development of micro, small and medium-scale enterprises in priority sectors such as fruit gardens, berry production, vegetable production, apiculture, tourism and services (including information technologies).

Furthermore, under the USAID-funded New Economic Opportunities Initiative (NEO), a grant competition has been announced for the purpose of setting up intensive berry gardens in the Inner Kartli and Mtskheta-Mtianeti regions. It also includes two components – financial and educational.

Several processors in Mtskheta-Mtianeti have also received funding under the USAID project REAP that is operating in the region.

Financial institutions (banks, microfinance organisations and insurance companies)

Accessing finances is a problem for small farmers in the raspberry sector, as well as Georgian agriculture as a whole. Development and maintenance of a raspberry garden is associated with considerable expenses. Therefore, access to funding is an important component, and is regarded as one of the major obstacles by the farmers. Banks are not issuing long-term loans to small farmers without a collateral, while microfinance organisations are only issuing loans at high interest rates.

Although the lack of access to funding is often seen as an obstacle for farmers, many of them have benefitted from the cheap agricultural loan programme implemented by the Agricultural Project Management Agency. The Plant the Future programme also significantly helps farmers who are involved in this field. Due to the fact that raspberry production in Mtskheta-Mtianeti takes place on a small scale, only a few of the respondents have obtained a loan thus far.

Sectoral association

January 2017 saw the establishment of the Georgian Berry Growers' Association, which aims to:

- ✓ Implement and promote berry production;
- ✓ Lobby for legislation to support agriculture;
- ✓ Protect consumer rights;
- ✓ Establish a qualified advice service for farmers;
- ✓ Help establish a market for berry products;
- ✓ Enable growth, certification and export of berry holdings in Georgia.

Research organisations

No thorough research has been conducted into the field of raspberry production, which is probably due to the fact that intensive production only started in Georgia a few years ago. Qualified research and appropriate recommendations would significantly boost the development of this sector.

9. Cost and Revenue Analysis

9.1 Production Costs and Revenues

Raspberry is regarded as a high-revenue crop, as its price is consistently high. Approximately 30% of the planted crop can be harvested in the first year, 70% in the second year, and the full amount in the third year.

It must be emphasised that the following analysis applies to the cases where raspberry gardens are being maintained using the correct agricultural practices.

One of the first steps in developing a raspberry garden is conducting a soil analysis, the average cost of which is ₾ 100. Rectifying any existing problems in the soil is always easier before the planting of the crop. Samples should be collected from several places on the land plot. The soil must be tested for the following components: pH content, organic materials, saltiness, macro and micro element content and nematodes.[15]

Cultivating raspberries costs approximately ₾ 25,000-30,000 per ha, including certified saplings and an irrigation system. The cost of a drip irrigation system is ₾ 6000, while the average price of filters is ₾ 4000. Between 7000 and 9000 saplings can be planted on 1 ha of land. Ideally, the distance between the plant bases should be 35 cm, and the distance between rows at least 2 m, so that they can easily be moved in case of using equipment. One sapling costs between ₾ 1 and ₾ 2.5 in local nurseries. As for the imported saplings, their price can reach up to ₾ 6.5.

1 ha of land requires fertilizers worth approximately ₾ 600-800. It is important to protect the raspberry plantation from pests and diseases. A plantation must be sprinkled with pesticides 4-5 times during a season. 1 ha of raspberry plantation requires approximately ₾ 1200-1500's worth of pesticides.

Raspberry fruits are quite fragile. Therefore, farmers often place the product inside the container in which it gets transported for sale. Farmers often use two containers for picking raspberries – one for larger fruits, and the other for small and medium-sized ones, thereby helping to ease the problems associated with sorting. Raspberry fruits ripen unevenly, so they must be picked every two days. The harvesting season usually occurs twice: from June until August and from September until November. The daily salary of a hired fruit picker is ₾ 25-30.

A plantation remains functional for 10-12 years. If maintained appropriately, it can yield 8-10 tonnes of product per hectare. In the world's leading raspberry-producing countries (the United States and Switzerland), 15-18 t/ha are being harvested under the conditions of intensive care.[16]

Revenues are determined by the volume of the raspberry harvest, its quality and its price. Under the conditions of average productivity (8 t/ha), the net income amounts to ₾ 22.410 per hectare.

Various economic indicators have been calculated based on information obtained from the interviews. The average annual income from cultivating raspberries amounts to ₾ 34.000/ha, the average costs to ₾ 11.590/ha, and the average profit to ₾ 22.410/ha. The average price figure used for the calculations was ₾ 5. The interviews revealed that the price of raspberry increases during autumn. However, the minimum price was used for the calculations.

[15] USAID, NEO,2014

[16] agronews.ge

Table 12: Economic indicators for raspberry production[17]

#	Indicators	Results
1	Total cost (GEL)	11.590
2	Yield (kg/ha)	6.800
3	Average sale price (GEL/kg)	5
4	Revenues (GEL)	34.000
5	Profit (GEL)	22.410
6	Prime cost (GEL/kg)	1.7
7	Profit margin (GEL/kg)	3.29
8	Profit margin (%)	65%

Source: Author's calculations based on interview results. Assumed yield – 8 tonnes, allowing for a product loss of 15%.

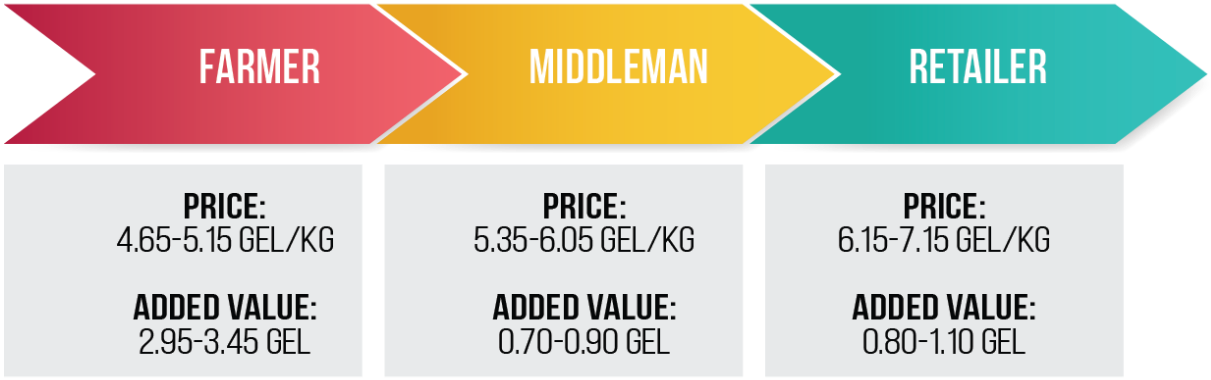
Calculating the cost of raspberry production involves using the best practice example, whereby a farmer maintains the raspberry garden using best agricultural practices. The largest part of the total cost is taken up by the salaries for hired fruit pickers (₾ 25-30 per day). These calculations apply to the remonant raspberry cultivars, which have to be picked every other day.

The total cost includes the cost of maintaining 1 ha of raspberry plantation. The prime cost of 1 kilogram of raspberries is ₾ 1.7.

9.2 Added Value Analysis

The price difference between the various links of the chain represents the added value for each link. Since raspberries in Georgia are mainly used in fresh, rather than processed or frozen state, the value accumulated within the chain is relatively low.

Table 13: Added value in each chain link



Source: Author's calculations based on interview results[18]

As mentioned earlier, the produce is mainly sold on the local and Tbilisi markets. The raw product is sold on the local market, while frozen raspberries are imported during the off-season. The value chain generates ₾ 5.3 per kilogram of raspberries. It is interesting to observe the distribution of value inside the chain.

[17] Costs per hectare: Land cultivation - ₾ 300; weed removal - ₾ 240 ლარი; purchase/use of fertilizers - ₾ 800; purchase/use of herbicides and other means of protection / treatment - ₾ 1500; picking - ₾ 7500; transportation - ₾ 250; security guard - ₾ 1000.

[18] *Note: Assumed prime cost of raspberries for the farmer: 1.7 GEL/kg*

Table 14: Distribution of value inside the chain by participant

Source: Author's calculations

We shall also consider an alternative, hypothetical value chain that includes storage and refrigeration costs. According to industry experts, the cost of storing raspberries in a refrigerator is no more than ₾ 0.10-0.15 per kilogram for 10 days, assuming that the farmer will be able to sell the product within the 10 day period. Longer storage will increase the cost accordingly. The cost of rapid refrigeration is ₾ 0.50/kg.

Table 15: Added value in each alternative chain link

Source: Author's calculations based on interview results[19]

Storing raspberries in a refrigeration facility prior to sale will increase the added value created by the farmer. Naturally, this will lead to a small increase in the sale price. However, the price of raspberries will decrease due to increased production and supply.

9.3 Trade Relations and Export Potential

Due to a virtual lack of export of raspberries from Georgia, it would be interesting to consider the opportunities offered by the international markets. Georgia is a member of the following important trade units[20]:

- Most Favored Nation
- Generalized System of Preferences (GSP)
- Multilateral international free trade agreements
- Deep and Comprehensive Free Trade Area Agreement with the European Union (DCFTA), which came into force on 1 September 2014.
- Bilateral international free trade agreements

DCFTA will benefit raspberry producers in Georgia in several ways. First of all, the quality of raspberries will increase, and the public will have access to a better product on the domestic market. In a longer-

[19] *Note: Assumed prime cost of raspberries for the farmer: 1.7 GEL/kg*
[20] Georgian Ministry of Economy and Sustainable Development

term perspective, the farmers will see their revenues increase as a result of new business opportunities and economic growth stimulated by European integration.

The trade agreement with the EU offers raspberry producers in Georgia an opportunity to access the European market. Naturally, this is conditioned upon Georgian manufacturers adopting the standards and regulations stipulated within the agreement. Foremost of all, the product must be safe to consume. The use of pesticides and any harmful additives in the production process is prohibited. The product must also be free from heavy metallic elements. All sanitary and phytosanitary norms must be maintained. Raspberry producers are required to implement appropriate standards of hygiene. Raspberries are not washed after being picked. It is therefore vitally important that all works during the picking season are conducted with clean hands. The EU pesticide database determines acceptable levels for 457 different varieties of pesticides in the case of frozen raspberries.[21]

Raspberry producers must have a phytosanitary certificate, which costs ₾ 25, while the price of heavy metal analysis is ₾ 150-170. Raspberry exports to the European Union are free from any duties.

One of the most significant documents that enables products to be successfully sold in the EU is the GLOBALG.A.P. Certificate, which acts as a ticket to the European market. The authority which issues this certificate is not represented in Georgia, with the nearest issuing office being located in Turkey. The cost of the GLOBALG.A.P. Certificate is $ 10,000, of which $ 5,000 are taken up by consultation costs. The remaining $ 5,000 cover the costs of auditing and certification services. The average cost of transporting raspberries in a 20 ton capacity refrigerated truck is € 4,500. Furthermore, insurance costs of 0.2-0.35% of the invoiced amount are also to be taken into account.

Since raspberry is not currently being exported, we have calculated potential export costs and profit. The indicators below have been calculated for the event that farmers decide to export raspberry to the European Union.

Table 16: Economic indicators for raspberry production in case of export to the European Union[22]

#	Indicators[23]	Results
1	Total cost (GEL)	56.575[24]
2	Yield (kg/ha)	6.800
3	Average sale price (GEL /kg)	12.93[25]
4	Revenues (GEL)	87.924
5	Profit (GEL)	31 349
6	Prime cost (GEL /kg)	8.31
7	Profit margin (GEL /kg)	4.6
8	Profit margin (%)	36%

Source: Author's calculations based on interview results.

Naturally, raspberry producers who are oriented towards the EU market have greater expenses, as they have to obtain various certificates and implement various regulations in the production process

[21] EU Pesticides database

[22] Costs per hectare: Land cultivation - ₾ 300; weed removal - ₾ 240 ლარი; purchase/use of fertilizers - ₾ 800; purchase/use of herbicides and other means of protection / treatment - ₾ 1500; picking - ₾ 7500; transportation - ₾ 250; security guard - ₾ 1000.

[23] Figures based on several interviews with experts.

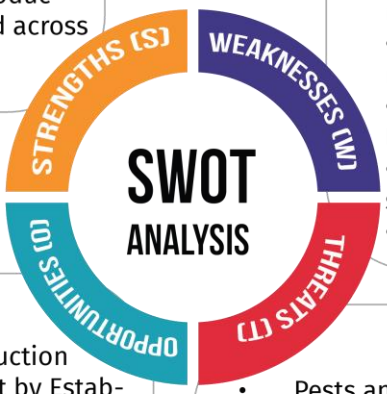
[24] Based on assessment by several experts, the following additional costs apply in the event of the product being exported to the European market: GLOBALG.A.P. Certificate cost - ₾ 24,500; phytosanitary certificate - ₾ 25; heavy metal analysis - ₾ 160; transportation costs - ₾ 13,500; insurance- ₾ 17,584.

[25] The average raspberry production price in the EU has been used as the sale price figure.

in order to satisfy certain standards. The calculations have shown that in spite of the high costs, exporting the product will considerably increase the profit. However, these calculations are hypothetical, and the price of raspberries in the EU is used as the average production price.

Aside from the food safety regulations, EU countries also require raspberries to be of the same species, in order to ensure uniformity of the product's size and quality. Raspberries must also be exported regularly and in large quantities, which is currently impossible for a single producer.

10. SWOT Analysis of the Raspberry Sector in Mtskheta-Mtianeti



- Favourable climate for production
- Government support (through the Plant the Future programme)
- High prices
- Potential to generate higher profit from a small plot of land (relative to other crops)
- High demand on local and external markets
- Rich taste and health benefits
- Growth of the berry production industry in Georgia and across the world

- Development of the sector only started a few years ago
- Low standard of production
- Lack of qualified workforce, and a general shortage of labour
- Lack of industry knowledge and experience
- High share of labour costs within total cost
- Lack of raspberry processing facilities in the region
- Lack of shock freezers (blast chillers) and storage facilities for raspberries in the region
- Lack of coordination among raspberry producers
- Difficulties associated with raspberry picking
- Lack of irrigation in many villages
- Land fragmentation and land shortage
- Lack of industry specialists

- Quality improvement
- Development of bio production
- Collective offer of product by Establishing a union of farmers and
- Establishment of processing plants
- Job creation opportunities
- Import of raspberry cultivars that are suited to local environment
- Satisfying local demand through increased production
- High export potential
- Deep and Comprehensive Free Trade Area Agreement with the European Union (DCFTA)
- Cheap resources (electricity, water, labour)

- Pests and diseases
- Price decrease in case of increased production
- Failure to satisfy European market standards
- Natural disasters

11. Potential of the Raspberry Sector

At farming level, raspberry production in Georgia began approximately 3-4 years ago. There are many new plantations that have not yet been fully or even partially developed. Therefore, production is expected to increase over the coming years.

Raspberry picking requires a lot of caution. Between 15% and 20% of the fruit can become damaged during the picking process, rendering it unsuitable for market sale. Farmers use the damaged fruit to produce jam and marmalade. However, an increase in production will require the establishment of a processing facility, creating added value in the chain. Raspberries are a perishable product, meaning that they must either be sold quickly, or stored in appropriate conditions. Furthermore, raspberries are substantially more expensive during the off-season, allowing farmers to generate higher profit.

Raspberry production requires a lot of manual work, particularly during the picking process, which considerably increases the production costs. Many small farms abroad are implementing the 'You Pick, We Pick' practice, whereby buyers can pick the raspberries themselves. In this case, the sale price of the fruit is reduced. This practice has been implemented by several farmers in Georgia, thereby reducing their production expenses.

Interviews and focus group meetings revealed that most farmers plan to focus on raspberry production and increase their output. However, a lack of experience and information is causing the farmers considerable difficulties. They mostly obtain information from each other, or through the television channel Saperavi TV.

As mentioned earlier, demand on the local market is high, coming both from consumers, as well as supermarkets and pastry shops. Current levels of production cannot satisfy the demand. It is therefore necessary to first achieve full coverage of the local market. Georgian producers must be able to supply raspberries throughout the year, thereby substituting imports.

Georgian raspberries have a high export potential. As mentioned earlier, demand on raspberries is constantly growing in Europe. It must also be noted that raspberries are harvested considerably earlier in Georgia (end of May) than in many other European countries, where the harvesting process usually starts in July. This provides Georgia with the opportunity to export its produce at a relatively high price. The primary cost of raspberry production in Georgia is lower than in Europe, which puts the Georgian products in an advantageous situation. Moreover, the DCFTA allows Georgian producers to export their products to the European Union without any limitations or duty payments. This means higher quality, increased production volumes, and the opportunity for farmers to generate higher profits.

11.1 Employment Prospects and Generation of Income

As mentioned earlier, raspberry production is a labour-intensive process. The workforce is involved at various stages of the production process. Work includes hoeing, weeding and lopping. Harvesting is the most labour-intensive process that requires appropriate knowledge. Therefore, numerous persons are employed during the fruit picking season in addition to the farmers and their families. Thus, an increase in raspberry production will increase employment in this field. Workers are normally paid between ₾25 and ₾30 per day.

One of the advantages of the Mtskheta-Mtianeti region is its proximity to large markets such as Mtskheta, Gori and Tbilisi. This reduces the transportation costs and the risks of fruit damage.

Raspberry production mainly involves small farmers, many of whom only produce the fruit for personal consumption. Even those who are motivated by commerce produce raspberries in low quantities. However, high market prices motivate farmers to seek to increase production. At present, income from raspberry sales only constitutes 15-20% of their total income.

Due to the fact that the average land area in Mtskheta-Mtianeti is quite small, development of the regional agricultural sector requires the introduction of crops that can generate high profits on small areas. Raspberry is one such crop.

11.2 Environmental Impact

The state is actively considering enabling bio production in Mtskheta-Mtianeti, with the prospect of it becoming the country's leading bio production region in the future. However, the region does not have much experience with using bio fertilizers and pesticides. Switching to bio production would help reduce harmful impact on the environment. It can also be regarded as a niche market in Georgia.

Agro-shops need to add more bio products to their stock, while farmers have to be provided with qualified advice about which products to use, and within which time limits.

12. Discussion and Recommendations

12.1 Main Obstacles Faced by the Raspberry Sector

The research revealed several obstacles, which have been divided into the following groups:

- Weather-related risks. Wind and drought inflict the most damage upon the fruit;
- Diseases and pests: Raspberry bugs, bud moths and raspberry stem flies. Dangerous diseases include anthracnose, botrytis and ash;
- Lack of knowledge, information and experience with regards to tackling diseases;;
- Problems associated with fruit pickers / labourers. Raspberry picking requires specific knowledge, as the fruit can easily be damaged during the picking process. It is also a labour-intensive process, and finding qualified workers is often difficult;
- Low-quality saplings. Interviews and focus group meetings revealed that plants often yield less fruit than they are supposed to. Possible reasons include the farmers' lack of knowledge about how to properly maintain their gardens, or the use of saplings that are not adapted to the local environment. Therefore, appropriate cultivars must be imported and planted;
- Farmers wishing to participate in the Plant the Future programme must own at least 1 hectare of land, which represents an obstacle due to a shortage of land in the region;
- Raspberries are a perishable product, and must therefore be sold quickly. Therefore, an increase in production will require the establishment of suitable storage and processing facilities, as well as shock freezers, in the municipalities. This will help farmers store the product rather than having to sell it immediately. The price of raspberries is substantially higher during the off-season, when we find only imported products on the market.

12.2 Recommendations

The research produced the following main recommendations:

- Immediate priorities must include development and expansion of production, and achieving full coverage of the local market. Local producers must respond to the annual growth in demand by increasing production accordingly.
- As mentioned on numerous occasions earlier, one of the most significant components of raspberry value chain development is the establishment of refrigeration / storage facilities in the region. This will allow farmers to create added value in the chain. As production is increased, farmers must have the opportunity to store raspberries for as long as they want, and sell the product throughout the year. Season-oriented sales will allow them to sell their produce in winter at a higher price, as well as substitute and rival imports.
- The price of raspberries is high throughout the year, both in Georgia and abroad. Demand currently exceeds supply on the Georgian market, which naturally affects the price. An increase in production will reduce the market price of raspberries, which will allow processors to purchase more fruit and expand production.
- The average producer price in Georgia is considerably lower than in many European countries. This makes Georgia attractive for the European market. However, the European Union demands not only certain standards in quality, but also certain volumes of produce. This constitutes a problem, as raspberries are not yet produced in large quantities in Georgia. Furthermore, raspberries must be homogeneous, and of the same species. These problems can be resolved by establishing cooperatives that use the same cultivar for production.
- In order to generate more value within the chain, it is necessary to resolve problems in each of the chain links. Foremost of all, it is important to increase farmers' awareness within this field. Farmers must have access to the necessary training. The Berry Growers' Association

could become involved in this process, improving its capabilities and subsequently conducting farmer training on its own base. It would also be beneficial for the farmers to have access to literature on the subject of raspberry production, which has already been published by several non-governmental organisations (USAID, NEO).

- It would helpful for farmers to be shown successful examples and receive information about the best international practices with regards to raspberry production. Agricultural tours to leading European raspberry-producing countries could be organised for farmers to familiarise themselves with the methods used abroad. It would be also beneficial to invite industry specialists from abroad to visit Mtskheta-Mtianeti and inform local farmers about the best raspberry production practices. As there are very few industry specialists in Georgia, it would be beneficial for agriculturalists to undergo training in raspberry production.
- It would be beneficial to establish a raspberry garden demonstration plot in the region, where farmers will be able to learn about the methods of maintaining raspberry plants. State support for the implementation of standards and technologies will help establish a high-quality raspberry production economy.

Bibliography

1. *Agricultural Product Value Chain for Berry Production in Imereti and Racha*, Association of Young Economists Georgia
2. David Picha – *Raspberries – A Farmer's Guide*, USAID, NEO, 2014
3. *Georgian Ministry of Agriculture – 2016 Activity Report*
4. *Global and Local Raspberry Supply Chains: National-Level Report of Serbia*, Faculty of Economics, University of Belgrade, 2015
5. *Mtskheta-Mtianeti Regional Development Strategy 2014-2021*
6. *Tendencies Related to the Production of Raspberry in the Republic of Serbia*, Economics of Agriculture, 2013; available at: http://www.ea.bg.ac.rs/images/Arhiva/2013/Broj%201%20-%202013_%20Issue%201%20-%202013/3%20-%20Kljajic,%20Vukovic,%20Arsic.pdf

Online Sources:

1. Administration of State Representative Governor – www.mtskheta-mtianeti.gov.ge
2. agronews.ge
3. www.agrokavkaz.ge
4. www.comtrade.un.org
5. www.fao.org/faostat
6. www.geostat.ge
7. www.trademap.org
8. www.zrda.georgianneo.ge

Appendix

Respondent	Job Title
1. Tamriko Ghanishashvili	Farmer
2. Imeda Khutsishvili	Farmer
3. Darejan Tigishvili	Farmer
4. Donari Bulauri	Farmer
5. Eka Navrozashvili	Farmer
6. Vladimer Vardosanidze	Farmer
7. Mari Kaishauri	Farmer
8. Meri Polodashvili	Farmer
9. Otar Namoradze	Farmer
10. Rusudan Cherkezishvili	Farmer
11. Tsatsa Baghashvili	Farmer
12. Ana Sinjaradze	Farmer
13. Nino Papiashvili	Farmer
14. Otar Potskhverashvili	Farmer
15. Ruizan Terashvili	Farmer
16. Giorgi Koreli	Farmer
17. Merab Zhghenti	Farmer
18. Davit Aleksidze	Farmer
19. “Agroline”	Cooperative
20. “Gea”	Cooperative
21. Nani Tetruashvili	Employee of the Dusheti Information and Consultation Service of the Ministry of Agriculture
22. Paata Ivanauri	Category I Senior Specialist at the Tianeti Municipal Information and Consultation Service of the Ministry of Agriculture
23. Nikoloz Kiknavelidze	Head of Mtskheta-Mtianeti Self-Government at the Ministry of Agriculture
24. Gela Chkhutiashvili	Seller, fertilizer and pesticide shop owner
25. Givi Gachechiladze	Frozera
26. Teona Zedelashvili	REAP