

Agricultural Value Chains in Imereti and Racha

Greenhouse production of herbs

1 Introduction

The present research was carried out by the Czech University of Life Sciences Prague (Faculty of Tropical AgriSciences) in collaboration with People in Need and the Association of Young Economists of Georgia from July 2013 to June 2014. This study is a part of regional value chain analysis for the main products of agricultural sector in the Imereti region.

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 Neighbourhood 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 the 8 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. For greenhouse herbs, the districts are depicted in Table 1:

Table 1 - Selection of greenhouse herbs districts of Imereti Region

Greenhouse	Tskatulbo
herbs	Terjola
	Bagdati

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

July 2013 - production systems for the 8 main products in 11 Imereti districts

August 2013 - market screening and production systems analyses in 3 districts, which were identified as the key districts to be targeted for project implementation

November 2013 - pilot data collection for first product

March to June 2014 - gathering of data for remaining products and finalization

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 studies conducted by international organizations such as FAO and EU.

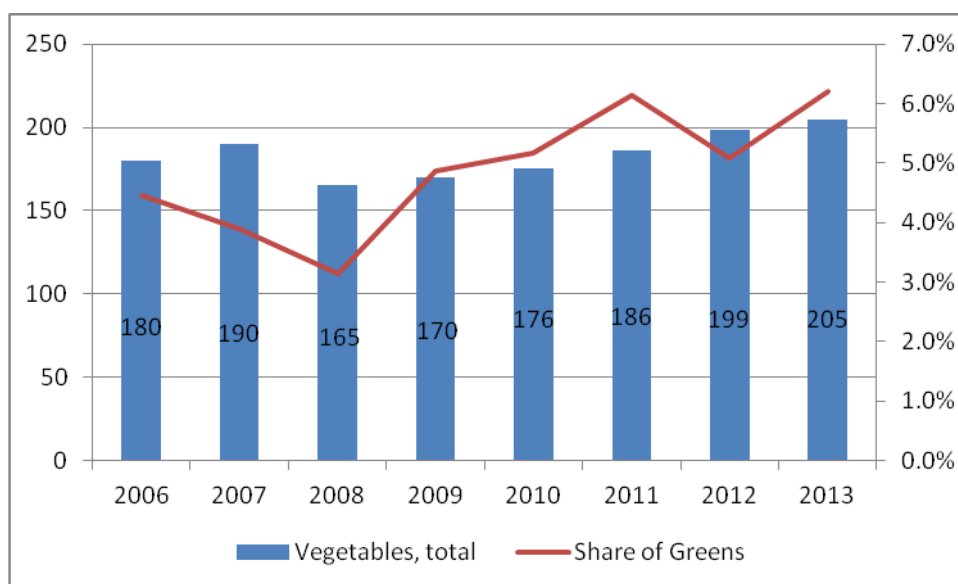
Special Note: Since out of target regions Greenhouse herbs production is developed only in Imereti region, **value chain report covers just Imereti Region.**

3 Greenhouse herbs industry as a sector of Georgian agriculture

Plant production under controlled conditions (in polythene greenhouses) is one of the most common agriculture production systems in the region. As herbs have the main production period from November till May, farmers are focused in summer season besides herbs for vegetable production in greenhouses and thus international databases usually provide statistics for both commodities together.

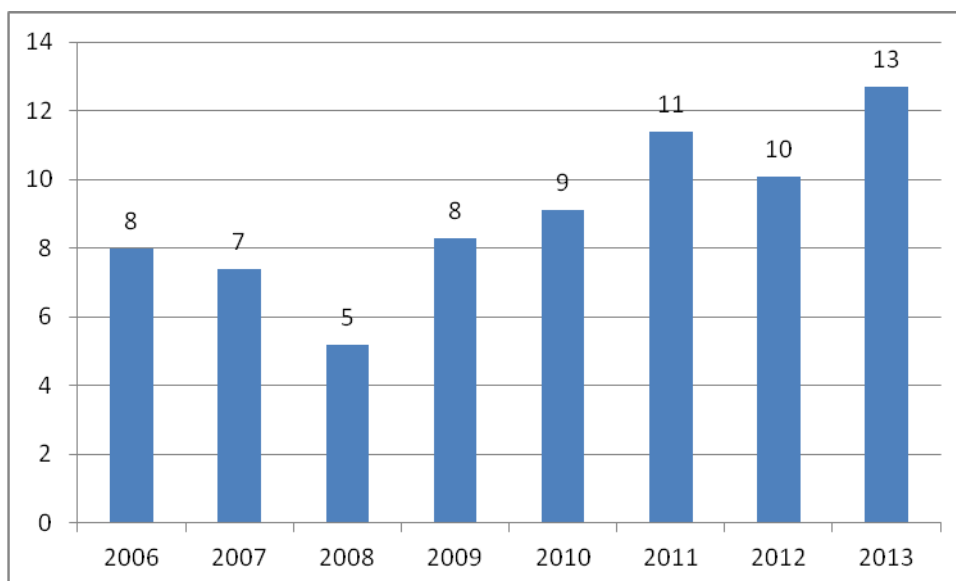
In Georgia, share of herbs represents 6.2 % of the total vegetable production which in 2013 reached 205 500 tons. Overall production trend in recent years is depicted in diagram 1 which is focused on production in holdings. Diagram 2 then clearly shows the production of herbs (together with the green onion) which from 2008 recorded a gradual increase. In the statistic is not included the production of households for their own consumption.

Diagram 1 – Production of vegetables (ths. Tons) and herbs share (%)¹



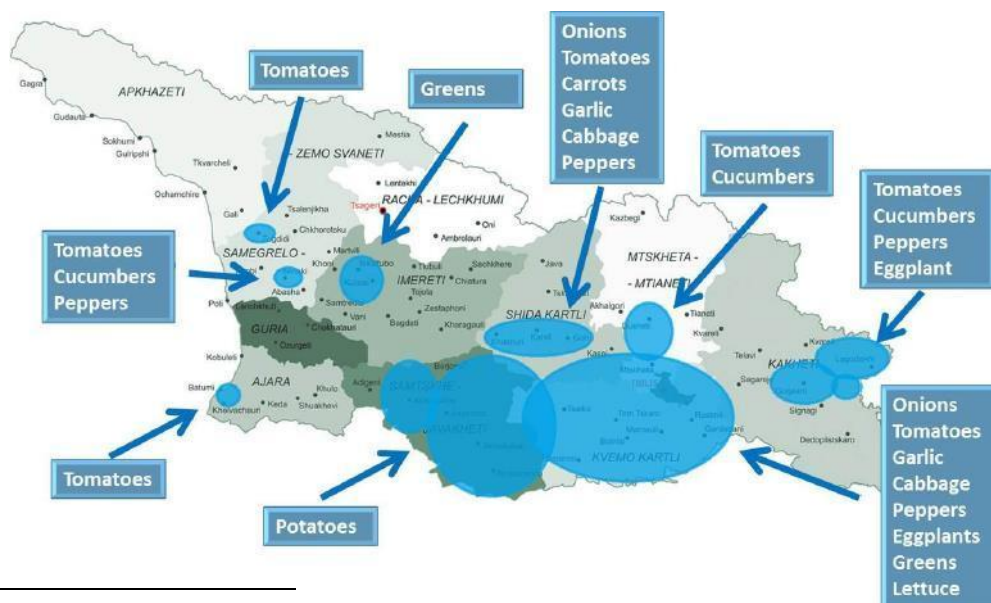
¹ National Statistics office of Georgia, <http://geostat.ge/>

Diagram 2 - Production of greens including green onion in thousand tons²



Farmers usually produce herbs and vegetables typical for Georgian cuisine. As a result of the break-up of the Soviet Union, Georgian producers and exporters lost their primary markets, and consequently suffered greatly. Input costs significantly increased and processing plants fell into disrepair, as did irrigation systems (USAID, 2010). As a consequence are lower yields, higher costs and a greater inability to export. Today, there is evident reluctance of farmers when it comes to trying new plant seeds or varieties, using better and more appropriate fertilizers, or using adequate and correct herbicides to reduce weed pressure and increase yields. Likewise, there is a shortage of agricultural machinery, although the various farm machinery centres have helped alleviate this issue to certain extent. The result is that farmers often face cheaper production imported from Turkey. As shows Figure 2, the most suitable regions for the greens production are Imereti and Kvemo Kartli regions. In Imereti region are produced mainly following herbs: dill, parsley, coriander, and saffron.

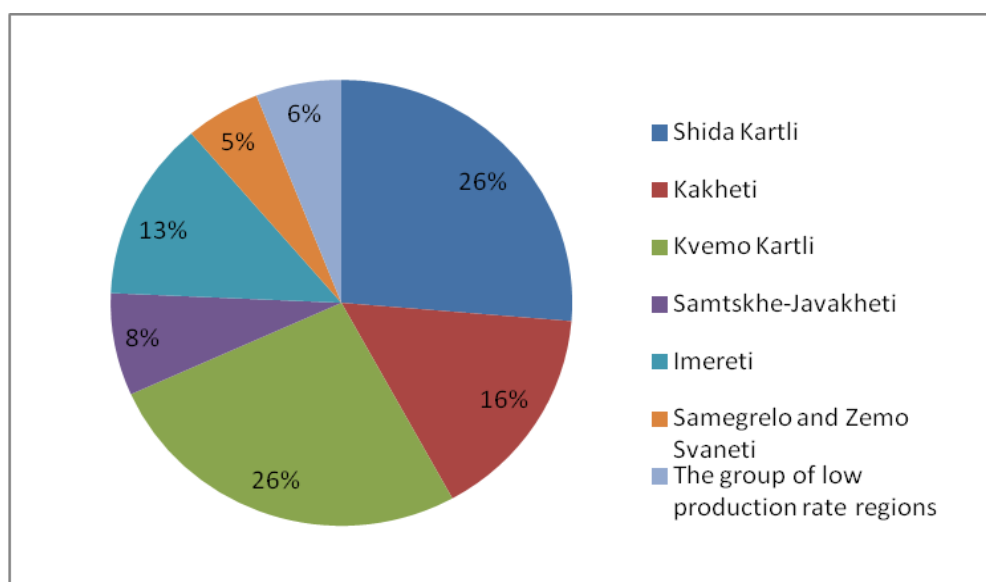
Figure 2 – Vegetable production zones in Georgia (source: USAID, 2011)



² National Statistics office of Georgia, <http://geostat.ge/>

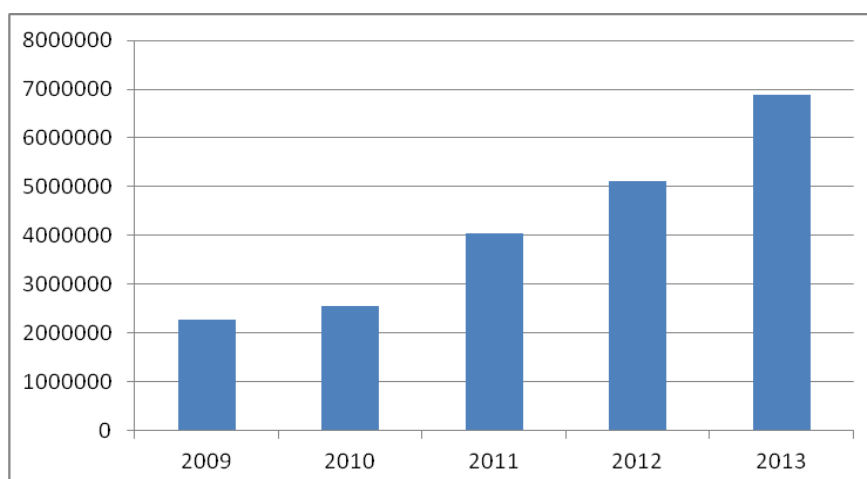
There is no official statistics available for regional share in herbs production. As for vegetables - Imereti region accounted for 13% of total country production in 2013. In addition, it is important that the production of vegetables in this region is being increasing. In comparison of 2006, in 2013 the vegetables production was increased by 64%. Considering that the share of greens in vegetables production is somewhat similar thought the years (5-6%), presumably production of greens also have increasing trend in Imereti.

Diagram 3- Regional shares in vegetable production by regions, 2013³



Production of herbs has certain export potential. Most common market was Russia, which was opened again for Georgian procures since 10th of November, 2014. Again data for namely the herbs export volume is not available, but according to Geostat data, the trend of vegetables (coming under the HS digit code 0709) export is going up and by 2013 it reached 6 885 294 USD.

Diagram 4 - Export of vegetables (HS digit code 0709), USD⁴



³ National Statistics office of Georgia, <http://geostat.ge/>

⁴ National Statistics office of Georgia, <http://geostat.ge/>

For EU countries, herbs are not also accounted separately and major statistical data comes under “Spices and Herbs” category. According to Eurostat data, in 2013, total EU28 imports of spices and herbs amounted to 520 thousand tonnes with a value of € 1.8 billion. Between 2009 and 2013 the volume of imports grew by an average of 4.1% per year. Imports of spices and herbs have continued to grow throughout the economic recession in the EU and imports do not fall when prices rise. Spices and herbs are a minor but important ingredient that contributes little to the total cost of the food in which they are used. The demand is inelastic to price changes. In 2013, direct imports from developing countries amounted to 303 thousand tonnes (57% of total EU imports), or € 926 million (53%).

Consumption by EU countries accounted for 340 thousand tonnes in 2012. Consumption grew by 2% per year between 2009 and 2011. In 2012, EU production of spices and herbs amounted to 135 thousand tonnes. In comparison, EU imports were 520 thousand tonnes. Production increased by 5.2% per year in volume between 2009 and 2012.

Main producing countries are those that have a significant amount of agricultural land, high domestic consumption and relatively low wages: Romania, Bulgaria and Hungary. Together these countries account for 87% of EU production.

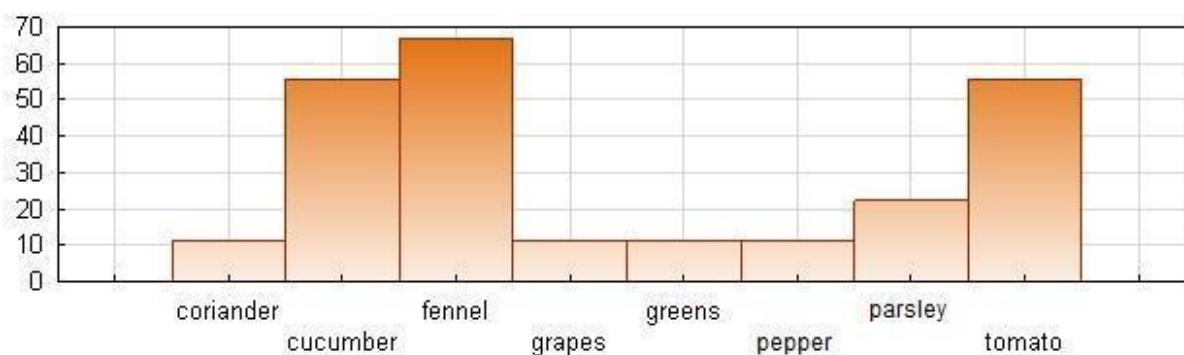
According to FAOSTAT, EU accounts for about 2.7% of global spice and herb production. Asia accounts for 80% and Africa 11%. Global production increased by 5.5% per year between 2009 and 2011.

4 Greenhouse herbs value chain description

4.1 Production systems

The most of vegetable production within Imereti is located in Tskaltubo district (though the production is developing fast also in Terjola and Bagdati districts). This can be demonstrated by annual cumulative production in 8 villages (Geguti, Patriketi, Tkachiri, Opshkviti, Muikhiani, Kvitiri, Meskheti, Partskhanakanevi) in Tskaltubo district amounting to 25,000 tons of herbs produced solely by small and medium size farmers. The estimations of the production are around 3,000 tons of dill, 500 tons of coriander, 1,500 tons of parsley, 250 tons of peppers. Significant share among herbs has also basil. Some vegetables especially cucumbers and tomatoes are grown, besides Tskaltubo, also in Vani and Bagdati districts. Figure 3 shows the main products cultivated by interviewed farmers.

Diagram 5 – Main products cultivated by greenhouse farmers in Imereti



During the last decade production and export of greens is increasing faster. In Imereti's lowland the agriculture based on greens has excellent soil conditions, climate and long-lasting traditions. Due to Georgia's long history of vegetable production, there are many experienced producers and specialized agronomists. Although the Russian embargo initially harmed processors and exporters, many of them have now developed contracts abroad and have the specialized equipment necessary to produce and sell preserved vegetables and vegetable juices outside of Georgia. In some villages well equipped farms are being developed. In spite of the fact that there are more than 12 thousand greenhouses in Tskaltubo municipality only, the regional production cannot satisfy increasing local and international demand. Partially, it is also based on lower quality of local products compared to EU standards. Based on the results from interviews quality standards in greenhouse production are perceived as a main obstacle to increase local farmers' production and ability to be competitive.

Even though the whole Tskaltubo district is oriented on greenhouse production, animal husbandry and corn cultivating is of high importance. In some villages fruit production and beekeeping is also expanding.

4.2 Productivity



Picture 1 – Bunch of dill

Georgia's humid, subtropical climate offers ideal climatic conditions for the herbs cultivation. Herbs cultivation takes advantage of quite a simple process, and when herbs are grown using greenhouses technology farmers can enjoy a yield of as many as 10 crops a year. About 500-600 kilograms of crop can be taken from one hectare of greenhouses. (Affinitas, 2012)

Herbs are grown in greenhouses from November till the end of April. At the beginning of the production period (at November and December) and at the end

(in April and May) coriander and

parsley can be even grown up outside regarding to very mild winter in Imereti region. The outside conditions in this time of the year are not suitable for the dill. Herbs grown in summer are supplied to the local market.

Based on conducted interviews is the most commonly grown herb dill as it takes only 6 weeks to get leaves about 20 cm high. Young leaves with a height of 15-20 cm is then harvested in bunches and shipped to market. For export are further packed in cardboard boxes. For the freshness preservation are herbs stored in cold storage facilities, however in Imereti there are not many.

For the soil cultivation are usually used small tractors. As the most of farmers do not own these facilities, they have to lease them from mechanization centers or bigger farmers. Tractor rent costs about 50 GEL per greenhouse. For comparison, purchase a small tractors costs 2300 GEL at Kutaisi local market. The absence of a critical mass of postharvest handling facilities – such as collection centers, cold storages, food packagers, and processors – also constrain opportunities for growth. Without these facilities, it is possible that any increases in productivity will be negated by the inability to sell excess supply or by supply degradation due to the lack of appropriate storage options (USAID, 2011).



Picture 2 – Small tractor for soil cultivation

4.3 The product chain typical for Imereti

Looking closely on distribution channels we can distinguish different channels used by small and large producers. In herbs production, small producers are family farms growing product on a small area or own up to five greenhouses (the average area of a green house is 500 sq.m.) and large producers owning several more than five greenhouses and some hectare of lands.

Figure 4 – Main supply chain for greenhouse herbs in Imereti

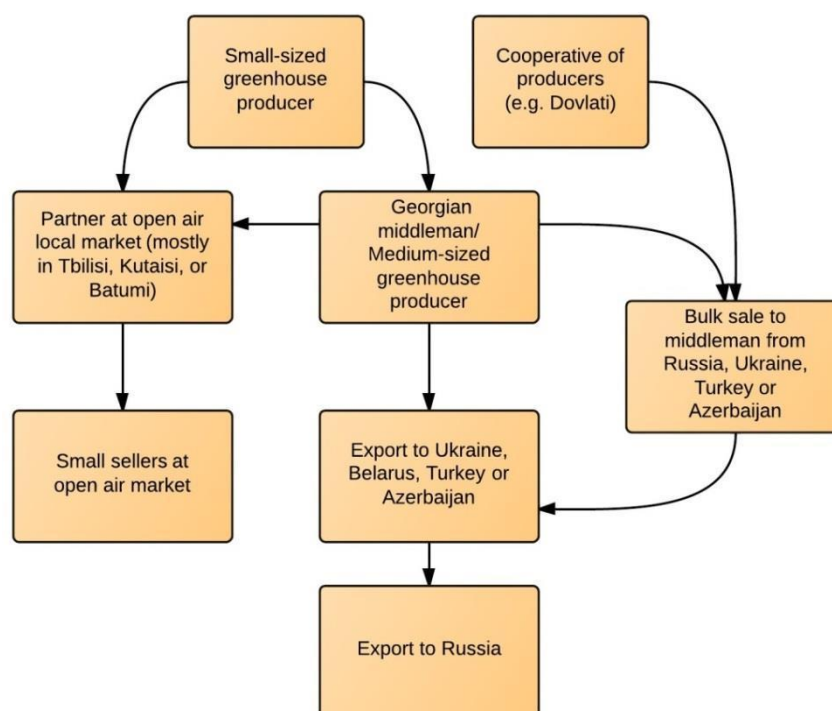


Figure 4 refers to small and medium-sized greenhouse producers where the key role is carried by six players:

1. **Small-sized greenhouse producers** are the villages' residents having an agricultural land property suitable for greenhouse production of herbs. Usually they dispose by the land area up to 2 000 m² cover by greenhouses in the range of 300 to 750 m². Herbs production is later on sell to partners on local market or to Georgian middleman. Production is purchased also by semi-commercial greenhouse producers.
2. **Medium-sized greenhouse producers or semi-commercial producers.** Medium-sized producers dispose by more than 2 000 m² of land suitable for herbs production often located in several places around the village. Semi-commercial producers are medium-sized producers who in addition to their own production buy the products of small-sized producers.
3. All above mentioned units can be associated into cooperatives to achieve better bargaining position in the market and thus better prices. They may dispose of warehouse, cold storage, packaging unit and their own transportation.
4. **Georgian middleman/ collection centres** buy the products from the residents and re-sell them further. They represent the units between the producers and middlemen from abroad. Some of them have also direct contacts for export in neighbouring countries or to the large

processors. Georgian middleman does not dispose by his own production; he operates purely as a re-seller.

5. **Foreign middleman** usually comes from Ukraine, Belarus, Russia, Turkey or Azerbaijan and he ensures export of the product to the foreign country. He buys the production in bulk from Georgian middlemen or sometimes he goes directly to small-sized producers and they negotiate the price. In abroad production is usually sells to small enterprises (supermarkets) or to agricultural market.
6. **Partner at open air local market** buys herbs directly from producers or Georgian middleman. Partner usually hires several market stalls and employs sellers. Partner at local market can be in one person also seller at local market.
7. **Small sellers at open air market** sell production directly to the final costumer.



Picture 3 – Herbs on the local street market

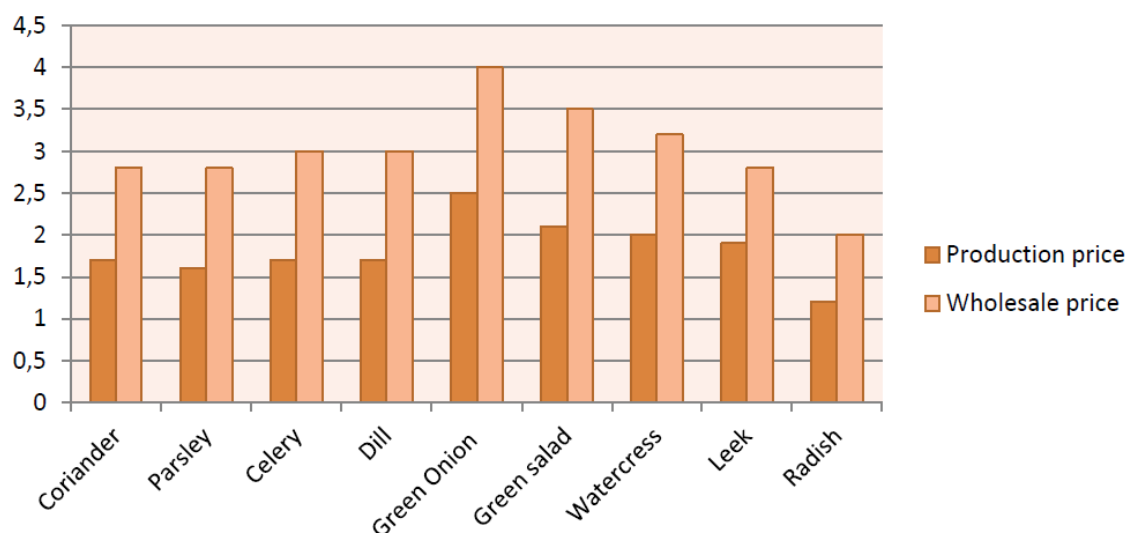
In 2011, the Customs Department of the Georgia's Revenue Service has registered 5,349 tons of herbs exported. The most traded product is the dill, which is mainly exported in the countries like Ukraine, Belarus, Azerbaijan, Lithuania, Latvia and Estonia. Given the current trade restrictions between Russia and Georgia, some of the Georgian entrepreneurs no longer export directly to Russia but rather set up the trade via a third country. Ukraine turns out to be the major importer of Georgia produced herbs, as its companies have the necessary certificates and trade relations to access markets not available to Georgian processors. Ukrainian processors purchases product from Georgia, complete the processing of the herbs, package, and label the product for sale in the retail market in Russia and EU countries. (Affinitas, 2012). Hereby it should be mentioned that since 10th of November, 2014 Russian market is reopened for Georgian Herbs' exporters with its new requirements and phyto-sanitary norms. National Food Agency of Georgia is responsible for consulting and providing the exporters with information in regard of this new opportunity.

4.4 Product prices

For most of producers agriculture represents the only income. As our research reveals the median value for share of family income from agriculture is 77.5 %.

The price of greens is changing according to the season. The highest price is recorded especially in winter, when temperature is very low and sometimes in summer, when weather is too hot. But changes in price may occur at any time through the year due to temperature fluctuation. As for example in summer 2014 retails price of 1 kg dill reached 18 GEL, Coriander price hit record with 30GEL per KG. This was purely caused by extremely hot weathers. Correspondingly, bad weather lasting several days has a great influence on harvest quantity. Also the price increase as the harvest of one season ends and the new one isn't grown yet, i.e. in April, May, and August. Producers' and wholesale prices in March 2014 are available in diagram 6.

Diagram 6 – Producers' and wholesale prices of greens in Imereti region in GEL/kg



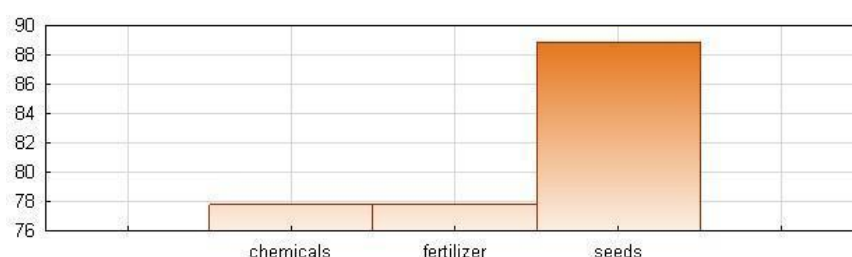
The retail prices are different by regions and cities. In Tbilisi prices are relatively higher. It is interesting that despite producers and wholes prices vary a little by type of greens; in retail stores the prices are usually similar for all types of Greens (except green union and Radish). During the same period average price for traditional types of greens was 4-5GEL per kg. So retail stores usually apply average 30% mark-up.

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

5.1 Supply of inputs

The small producers apply simple technologies, while larger producers are equipped with modern greenhouse constructions and irrigation system, and many of them produce for export. They also use seeds produced by experienced foreign companies that give possibility to increase productivity. However, majority of small producers cultivate products for the market, not for the self-consumption. The market is in general better organized for herbs, where efficient distribution and cold storing companies exist.

Diagram 7 – Main inputs purchased by greenhouse herbs producers



Main inputs to purchase are seeds, fertilizers and herbicides. Regarding to green seeds, they are imported mainly from Russia, Ukraine, and other European countries like Netherland and Switzerland. Main seeds producers are “Zaden” and “Braker’s Brothers”, some local farmers produce their own seeds. The most demanded varieties for dill are: “Aligatori”, “Royal” and “Superdukati”, for parsley it is local large leaf parsley. The retail sellers (at local market in Kutaisi) buy inputs in Tbilisi in specialized agro-shops of the importer. Prices for greens’ seeds are shown in Table 2 and most commonly used kinds of pesticides and herbicides are depicted in Table 3.

Table 2 - Prices of green seeds in GEL/kg

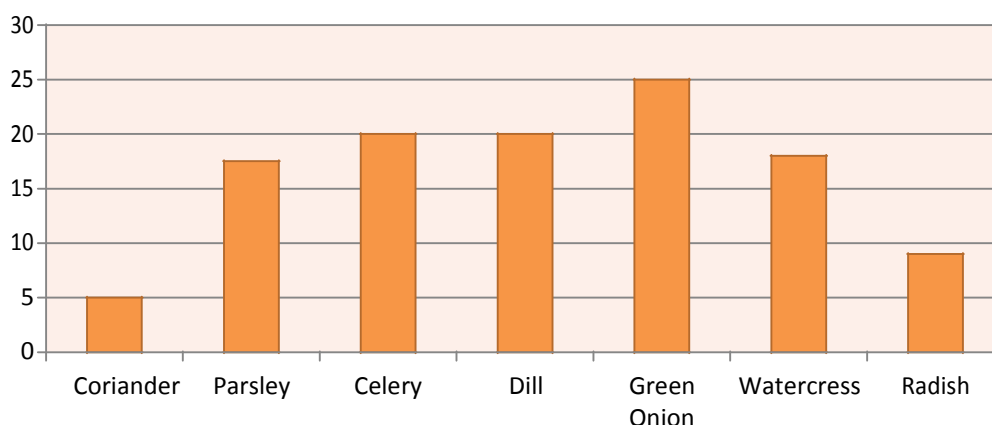


Table 3 – Pesticides and herbicides used for herbs

Name	Purpose	Price GEL/kg	Origin	Needed per 1 ha
“Ridomin Gold” composition: Mancousis 640 g.kg, Mefenoxam 40g/kg	Pesticides	45	Switzerland	2 kg
“Corz Super” composition: Mancouses 450g/kg, Cimoxalin 50g/kg	Pesticides	25	Bulgaria	2.5 kg
“Prome Gold” composition: Prometrine 500 g/kg	Herbicide	26	Bulgaria	2 kg
“Shock” composition: Glifosan 480 g/l	Herbicide	20	China	2 lt

Regarding to greenhouses, they are divided in two major categories. Low greenhouses are directly adjusted to the part of the land where crops are planted for about 3-4 weeks. Most often they are used when the plants need protection from the wind and when they are in the first stage of their growth. But if the crops need seasonal protection high greenhouses should be used. It has various shapes and heights. Such constructions provide entrepreneurs with the advantage to use it throughout the year as additional lighting, heating, irrigating and other essential systems can be attached to it. (Affinitas, 2013)



Picture 4 – Metal, wooden and combined construction of greenhouse

Price of greenhouses is determined by used material for construction (wood or metal) and roofing technologies, such as glass, special greenhouse tape, plastic, polycarbonate, etc. Special tap is relatively cheap technology. The average cost of one hectare greenhouse, with the height of 6 meters varies between \$150,000 - \$750,000. And the guarantee for such construction starts from 3 years. Polycarbonate greenhouse is more expensive, but in turn it has about 25 years of guarantee. The average cost for such building varies between \$1,000,000 - \$1,200,000. (Affinitas, 2013)

Differences can be seen also in irrigation system. In visited greenhouses was used automatic irrigation system hidden in the ground and sprinkler system.



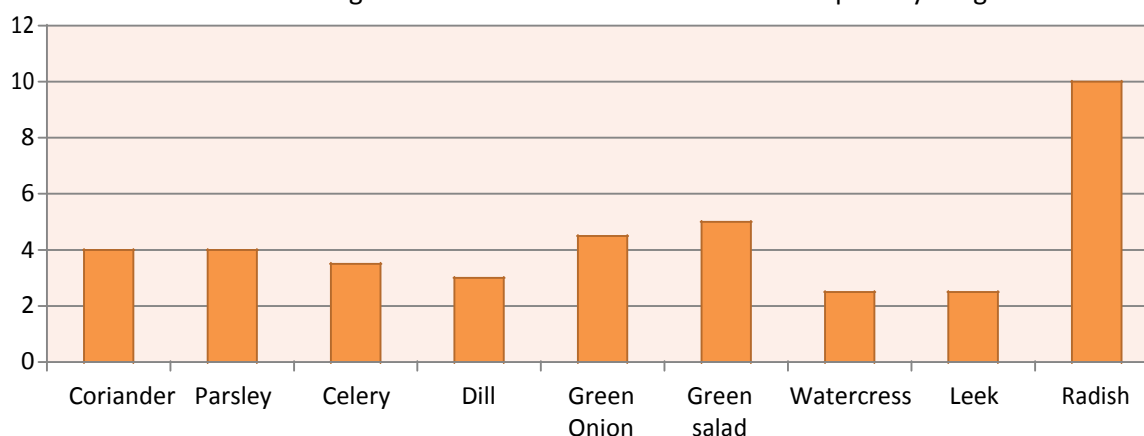
Picture 5 – Irrigation system in greenhouses

5.2 Demand

In Georgia, fresh herbs are sold mainly on local market or in small shops specialized on fruits and vegetables. Bigger supermarket chain is not available in Imereti. As for other large cities, supermarket chains also offer great variety of herbs. All demand on regional level for herbs is by 100 % covered from Georgian domestically production so no addition import is needed. Regarding to the export, the greatest demand for herbs is in winter months, when other countries are not able to meet the local demand for herbs.

On the market it is possible to find all commonly used herbs. Table 4 shows daily sales for common kinds of herbs.

Table 4 – Average Volume of herbs sold at local market per day in kg



Herbs represent important part of Georgian traditional cuisine and create a distinctive taste of each served food. They are used for sauces preparation, salads, and other specialties like Spinach or leek pkhali. All Georgian families consume herbs daily.

There is small and gradually increasing demand on fresh and/ or herbs that are more characterized for meditation and Asian cousin. This demand so far is satisfied through imported goods, sometimes large supermarkets and restaurants import this herbs and spices by themselves. These

herbs are: Oregano, Basil (Green), Rosemary, Sage, Thymiane, Carry leaves, etc. This kind of herbs can be successful sold in Tbilisi and maybe other few large cities. Anyway this is prospective opportunity for the local farmers to access new and increasing markets in case they also start producing new types of herbs along with traditional ones.

5.3 Related industries

Herbs are known for their positive impact for health of people, so the market with herbs for medicinal usage grows rapidly in recent years. However, as an industry the herb and medicinal plant sub-sector remains underdeveloped and unregulated in Georgia. Only a handful of companies and processors organize the collection of raw material and aggregate product for export. In this industry is seen a big opportunity for investment as according to the World Health Organization (WHO), 70 to 80 % of the world's population has used some form of alternative or complementary medicine of which herbal treatments are most popular. (GNIA, 2011)

In addition to fresh herbs, farmers also slowly discover capacities for their storing. Two main ways how to preserve herbs exist – drying and freezing. Drying works well for rosemary, sage, thyme, oregano or marjoram. A final way to store herbs is to add them to vinegars, olive oil, fresh butter or sea salt. Dried herbs are usually three to four times stronger than fresh plants. Freezing then generally works for tender leafy herbs, such as basil, parsley, dill and mints. (Martin, 2014)

On these terms, developing drying systems will increase income generating opportunities for local producers. They also they can produce and thus substitute imported dried non-traditional types of herbs for Georgian market. Later they will need simple packaging systems and new markets will become available as in Georgia, also in foreign countries.

5.4 Competition

In Imereti region, competition is very strong as many small farmers are growing herbs. It also determines the price on the market. Farmers and collectors usually have no signed contract with each other; relationships are primarily based on mutual trust. If the newcomer collector will offer a better price, farmer will contact his permanent collector and usually they will negotiate the price to the satisfaction of both.

As production increases among small farmers, the medium and large farms will face increased competition and oversupply domestically and will look for ways to access export markets to sell their products. To do so, these farms (and food processors as well) will need to obtain food safety certifications, such as GlobalGAP and HACCP, to satisfy export market standards. (USAID, 2011).

6 Strategic productivity and quality

6.1 Greenhouse herbs in relation to food safety and quality

Herbs in general have the irreplaceable benefits for human health as they protect against free radicals and carcinogens and exhibit antioxidant effects. However, the main challenges for growth of production for local retail and supermarket chains as well as international markets are issues related to quality and food safety. The common farmers, up to 5 greenhouses in average, usually have no certification about food safety and quality from accredited laboratory facilities as it is not needed for sales at a local market.

The modern legislative and system of monitoring of food quality and safety standards is missing in Georgia. There are no food safety management systems, no defined responsibilities within the food supply chain, the application of HACCP and traceability principles as well as requirements about labelling and packaging are not properly defined and enforced.

Quality of production is derived also from the fact that small farmers purchase low-quality, low-yielding seeds. Most small farmers purchase low-quality, low-yielding seeds from bazaars because they cannot afford to purchase high-quality seeds, with significantly higher yield potential. Another factor maintaining quality is available storing facilities. While many large farms have their own ad hoc storage facilities, many medium and small farms store their produce in basements and cellars, using standard residential air conditioners for climate control. These techniques usually result in a significant loss of both quality and quantity of the produce. (USAID, 2011)

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

Currently some of the large and small processors are exporting raw material with very little value added to importers who continue the processing abroad. In order to export just raw material to processors, the exporters need to have an accredited phyto-sanitary laboratory to test the goods, before the export can take place. Usually the importers conduct this process in the country they work, but since European countries require higher quality standards and traceability of organically produced products, Georgian exporters/processors will need to go through GLOBAL GAP process.

Without this certification can product be exported only to a limited number of markets, such as to CIS countries.

According to Georgian National Investment Agency (GNIA), there are 5 basic rules and regulations governing access to the EU markets (Affinitas, 2012):

1. **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.
2. **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.
3. **Marketing Standards** - a certificate of conformity to various EU market standards governing: quality (moisture, free from pests, cleanliness and classification), sizing, presentation and marketing.
4. **Plant Health Control** - this regulation protects against the spread of plant pests. A certificate must accompany imports of plants and plant products.
5. **Import License** - a license allowing the import agricultural products into the EU markets.

7 Operational productivity – processing, diseases and biological threats

7.1 Processing of greenhouse herbs

As the main product is represent by fresh herbs, almost no additional processing is needed. When herbs grow to the desired height of 15-20 cm, they are harvested in bunches and shipped to market. Harvest is usually ensured by family members or hired labour. One person is able to harvest between 20-25 kg of herbs per day for the salary about 10 GEL.

Main methods of herb preservation for later usage are drying, freezing or putting them in oil. Furthermore, herbs may be processed for the production of herbal tea, herb jelly or candies.



Picture 6 – Harvesting of dill

7.2 Transportation

For most small farms, the local fresh market is the best option for selling their produce despite of depressed price. However, some hire individual trucks to ship their produce to the major domestic markets, which increases costs dramatically and reduces farm profitability. Wholesalers often include transportation services when they make purchases from medium and large farms; however, these farms generally have their own trucks to ship their production to market (USAID, 2011).

Cost of transportation by cooler truck is varying between 30 – 40 GEL per 1 box of 30 kg. Usually one producer or collector is not able to fill the whole truck alone. For this purpose sender cooperates with others to fill the track. E.g. to Moscow transport takes 10 – 12 days by private company, by plane it is only 2 hours for the same price. Cargo flights to important international markets are missing.

One currently available option that many producers do not utilize is shipment by Georgian Railways refrigerated containers. Shipping by railway is a significantly cheaper option than shipping by truck throughout Georgia and to neighbouring countries. For example, to ship a 40-foot container (up to 34 tons) from Poti to Tbilisi by train would cost approximately GEL 400 for the entire container, while shipment by truck (including loading and unloading) can cost up to GEL 1,700 to ship the same amount (USAID, 2011).

7.3 Pests and diseases

Fresh culinary herb producers and handlers recognize that once fresh culinary herbs are contaminated, completely removing or killing pathogens is unlikely; therefore, prevention of microbial contamination at all steps from production to distribution is strongly favoured over treatments to eliminate contamination after it has occurred. (FDA, 2013)

Diseases are represented mainly by different kinds of blight which is characterized by a rapid discoloration and wilting of plant tissues or by small ball shaped pustules. Other frequently diseases occurring on herbs are Downy and Powdery mildew, Damping-off or Gray mold. Application of appropriate fungicide sprays is necessary to avoid them.

Regarding to pests the most occur is Armyworm (*Pseudaletia unipuncta*), Cutworm (*Agrotis* spp.) and Aphids (*Cavariella aegopodii*). Organic methods of controlling pests include biological control by natural enemies which parasitize the larvae. For application of chemicals, it is appropriate firstly to consult the situation in agro-shops. Several pests and diseases are depicted on Picture 7.



Picture 7 – Leaf blight symptoms on dill; Cutworm severing plant stem; Willow-carrot aphid colony
(Source: Plant Village)

8 Supply chain management – flow of goods and information in the chain

Value chain for the fresh herbs in Imereti is quite short as there is no additional processing of the product. There are no dominant stakeholders controlling or governing the chain. The biggest players on the market are represented by large factories which behave as collectors and major exporters (e.g. Herbia Ltd., Georgia Fresh Herbs Ltd.). As was already mentioned in previous chapters, farmers and collectors usually have no signed contract with each other. Relationships are primarily based on mutual trust. If the newcomer collector will offer a better price, farmer will contact his permanent collector and usually they will negotiate the price to the satisfaction of both.

9 Human resources, capital, and know-how in the fresh herbs supply chain

9.1 Know-how and access to extension services

Most of the herbs producers in Imereti have years of experience that are inherited within the family and the family business. However, respondents would welcome some specialized trainings about use of modern technologies and inputs to maintain the quality and yield at the international level.

Other source of information is represented by various NGOs which operate in the Imereti region, e.g. People in Need or USAID. Some farmers also transmit information between each other, use professional books or searching for internet resources. Missing information applies particularly to new markets and technologies. Sellers of inputs in agro-shops are getting advises and information about new products directly from distributors.

In recent years was developed a network of 33 Farm service centres under “Agribusiness Development Activity (ADA)” program and USAID’s “Access to Mechanization” program. These centres introduce new technology, seeds, and chemicals and provide limited training upon purchase; however, there still needs to be consistent training and seminars on new technologies and their application.

9.2 Opportunities for formal education

At this moment there are not known any official courses focused on herbs growing, quality enhancement, quality control, processing, marketing or certification in Georgia. This could be the opportunity for Georgian universities as they offer only courses within their bachelor and master degrees. Possibly there is a space for establishing new training centres.

9.3 Social capital and cooperation

Regarding the potential of cooperation between farmers, our results indicate that farmers cooperate on a very limited basis. The exception is a cooperative focused on production of fresh herbs called Dovlati. Other farmers indicated certain degree of cooperation only for purchasing of inputs (16.6 % of respondents), sharing of mechanization (16.6 %), transportation (11.1 %) and sharing of information (11.1 %).

10 Institutions and business environment

10.1 Association of herbs growers

In Imereti region is located **Tskaltubo Greens Growers Association (TGGA)** in the village of Kvitiri, Tskatulbo district. This association cooperates together with AgVANTAGE (ACDI/VOCA's Support Added Value Enterprises) to expand markets in the Moscow metropolitan area and in Russian cities by introducing specialty packaging, which has the potential to increase profit significantly. (Karchava, not dated)

10.2 Governmental support

Georgia has already implemented following incentives in order to stimulate growth and investments in agricultural sector, hence the sector concerning the herbs:

- 0% of property tax on small plots of land (less than 5 hectares)
- 0% of property tax on property transaction
- 0% of VAT on primary supply of agricultural products
- 0% of import duty on agricultural and other equipment (Affinitas, 2012)

Huge steps have been made in terms of attracting foreign direct investment (FDI) as well. Entities willing to establish agricultural processing enterprises are able to acquire agricultural land for only 20% of the market price.

11 Conclusions and recommendations

11.1 SWOT

S <ul style="list-style-type: none"> • High demand for herbs in traditional Georgian cuisine; • Health benefits • Competitive production price 	W <ul style="list-style-type: none"> • Quantity of herbs suppliers derived from land fragmentation; • Outdated machinery • Greens packing • Lack of capital for improvement • Lack of knowledge and training possibilities
O <ul style="list-style-type: none"> • Increasing demand for herbs at international markets; • Supply more fresh herbs to the food processing companies • Offer to the market frozen, pastes or dried herbs as value added or processed product • Cooperation of farmers in purchase of inputs, processing, marketing and selling in bulk • Penetration to the European market 	T <ul style="list-style-type: none"> • Inability to affect the market price • Barriers of entry to global market • Missing direct cargo flights to international markets • Improper use of agricultural chemicals and poor food safety practices

11.2 Improving or upgrading potential for Farmers

Introduction and support to dissemination of High quality high yielding seeds. Since many of small and medium farmers purchase low-quality, low-yielding seeds from bazaars, there is significant receive higher yield within the same area of greenhouses. The conducted research reviled that actual yielding potential is much higher than it is utilized by the majority of farmers.

Enhancing cooperatives' development. In case small and medium farmers will reach agreement and develop cooperation, their competitiveness will be increased significantly. They will become able to decrease production costs, purchase and share various inputs, develop own facilities for storing, drying, processing and transportation. In this way also their possibility to access national and or international markets will be seriously increased.

Developing proper storing facilities. Availability of storing facilities is important factor for maintaining quality. While many large farms have their own ad hoc storage facilities, many medium and small farms store their produce in basements and cellars, using standard residential air conditioners for climate control. These techniques usually result in a significant loss of both quality and quantity of the produced goods. Despite there are several successful and modern storing facilities in the region, their number and capacity is not sufficient for satisfying even current demand. Thus

farmers are not motivated to increase productivity. Proper capacity of storing will contribute to stable supply opportunities and pricing policy.

Increasing access to mechanization. Herbs greenhouse sector needs certain level of mechanization to boost productivity. Nowadays the level of mechanization is very low and farmers make ad hoc decisions while producing greens.

Identification and penetration new markets – national-wide and international. It is necessary to identify new markets as on local national also international levels. Along with sector's development opportunities for export will increase gradually. Sufficient governmental support and activity inducing EU standards, will lead to increased possibility to export in developed countries.

Producing nontraditional for Georgia herbs – Along with traditional direction farmers can also access to relatively small, but increasing market in Georgia for non-widely used herbs such as rosemary, oregano, Green basil, etc. In this way they will gain additional export opportunity as well.

12 References and bibliography

- Affinitas Consulting. 2012. Georgia agriculture: herbs culture, existing investment opportunities. (on-line) Available from: <http://emerging-markets-investment-news.blogspot.cz/2012/11/georgia-agriculture-herbs-culture.html>
- Affinitas Consulting. 2013. Greenhouse farming in Georgia. (online) Available from: <http://emerging-markets-investment-news.blogspot.cz/2013/01/greenhouse-farming-in-georgia.html>
- National Statistics office of Georgia, <http://geostat.ge/>
- National Food Agency of Georgia, <http://nfa.gov.ge/>
- Georgian National Investment Agency. 2011. Herbs and Medical Plants Sub-sector Overview. (online) Available from: <http://www.guam-organization.org/attach/herbs3.pdf>
- Karchava, I. Better Market Chains Give Georgians the AgVANTAGE. (on-line) Available from: [http://www.acdivoca.org/site/Lookup/WRFall04-Page8-BetterMarketChainsAgVANTAGE/\\$file/WRFall04-Page8-BetterMarketChainsAgVANTAGE.pdf](http://www.acdivoca.org/site/Lookup/WRFall04-Page8-BetterMarketChainsAgVANTAGE/$file/WRFall04-Page8-BetterMarketChainsAgVANTAGE.pdf)
- Martin C. 2014. Thyme for Herbs in Georgia. (online) Available from: <http://roswell.weedmanusa.com/news/thyme-for-herbs.html>
- USAID Economic Prosperity Initiative. 2011. Vegetable market assessment . (on-line) Available from: http://pdf.usaid.gov/pdf_docs/pnadz436.pdf
- U.S. Food and Drug Administration. 2013. Commodity Specific Food Safety Guidelines for the Production, Harvest, Post-Harvest and Processing Unit Operations of Fresh Culinary Herbs. (online) Available from: <http://www.fda.gov/downloads/Food/GuidanceRegulation/UCM337902.pdf>