

# Modernization of the Vocational Education and Training and Extension Systems Related to Agriculture in Georgia

Deliverable #2: Final Assessment Report Draft 01

Prepared for: The United Nations Development Programme (UNDP)

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May, 2018 Tbilisi, Georgia



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## 1. Background

The agricultural sector plays an important role in the social and economic development of Georgia as it is the dominating source of financial and non-financial income for the rural population. The development of a high-quality training and extension system is an important element in providing support to the farming world that will provide farmers with the necessary knowledge to increase their productivity and income.

To this end, UNDP and SDC have jointly launched and implemented the project – 'Modernization of the VET and extension system related to agriculture in Georgia' in 2013.

The project aimed to contribute to the development of a system of high quality vocational training and extension services in agriculture that would result in the improved livelihoods of the rural population. The project contributed to the development of:

- Innovative, relevant, effective and high-quality VET and extension services offered by the public and private sector.
- Systems to produce qualified human resources (multipliers) that offer various types of training and services to farmers and capacitate them with knowledge and practical skill is set up in close collaboration with national partners and other SDC projects.
- Public-private cooperation and a partnership model for coordination and provision of VET and extension services in agriculture.

The United Nations Development Program designed and developed the systems for delivery of flexible and demand driven vocational education training and re-training programmes in agriculture. The training to farmers was provided by the public and educational institutions along with private institutions and service providers. The goal of the VET models and new training programmes was to increase the farmers' knowledge, followed by the quality improvement of their produce and finally steady increase in their productivity and income.

In the framework of the project, there were farm consulting and farmers' training activities implemented in three regions (Samtskhe Javakheti, Samegrelo Zemo Svaneti and Racha Lechkhumi Kvemo Svaneti) through different interventions:

- Face to face consulting of 1,426 farmers;
- Group consulting of 6,076 farmers;
- Short term trainings of 2,693 farmers.

Together with farm consulting and training, the implementation of modular programs in VET institutions resulted in 363 VET graduates who graduated the targeted VET colleges and got employed in 2014-2016 years.

The Project Logical Framework clearly defines the overall goal of the project and the set of impact indicators that are to be used to measure the impact of the project:

- Improved living conditions of rural population;
- Increase in farming and non-farming income;
- Increase in gross margin of top 5 crops;



- 70 % of a) all graduates of modular programmes, (b) of all trained farmers and (c) of all advised farmers are applying improved agricultural practices, gained knowledge and/or recommendations.

In order to inform SDC and UNDP about the impact of the project on beneficiaries and directions of the future intervention ACT implementing Project Impact Assessment. The main goal of the Final Project Assessment was to collect, analyse and provide traceable information on wider economic effects of the project: "Modernization of the VET and Extension System related to Agriculture in Georgia" on farmers, VET students and rural households'.

This document presents the final results of the assessment of the above mentioned activities and the project's achievements compared to target indicators.

### 2. Assessment Methodology

The project impact assessment was based on the collection of the data from the project beneficiaries, both the farmers and the graduates of the VET agricultural programs.

#### Farmers Survey

The overall goal of the farmers' survey was to assess to what extent, if any, the project activities influence the farming activities and the overall quality of life of the farmers. More specifically, assessment focused on measuring project outcomes against the indicators outlined in the Project Logical Framework. Quantitative survey method using face-to-face interviewing with CAPI (Computer Assisted Personal Interview) technique has been applied for farmers' survey.

A sample frame for the farmers' survey was represented by the list of project beneficiary farmers provided by UNDP. A total of 600 farmers were visited and interviewed in three target regions (Samtskhe Javakheti, Samegrelo Zemo Svaneti and Racha Lechkhumi Kvemo Svaneti) within the frames of the assessment. 200 farmers were randomly selected in each region from the total pool of project beneficiaries. The table below shows the distribution of the total pool of farmers across target regions as well as that of the survey sample.

### Table 1. Farmers' Survey Sample

Region	Number of farmers in the initial dataset (provided by UNDP)	Number of unique farmers	Number of completed interviews
Samegrelo-Zemo Svaneti	1517	1045	200
Racha-Lechkhumi	2078	728	200
Samtskhe-Javakheti	827	767	200
Total	4422	2540	600



### VET Graduates' Survey

The overall goal of the VET graduates' survey was to assess to what extent, if any, the project activities influenced the graduates' decision to apply improved agricultural skills and gain knowledge and/or recommendations in practice, as well as assess the overall satisfaction with the program. VET graduates' survey applied quantitative survey methodology with CATI (Computer Assisted Telephone Interview) technique.

The sample frame for the VET graduates' survey was represented with the list of VET graduates' who have completed agricultural modular programs in target VET institutions in 2014-2016 years. Namely, UNDP provided the survey team with the full list of the VET graduates of six target VET institutions for further processing and application.

At the initial stage of the survey implementation the ACT database team, together with the sampling expert, conducted the preliminary processing of the graduates list. Specifically, the list of the graduates of the six institutions were unified and checked whether all cases were unique or the information needed for fieldwork implementation was included in the database. As a result of the preliminary analysis, the final cleaned dataset of VET graduates was created and handled to the field department for further processing (See annex #4: VET Graduates' Sample Frame).

The table below shows the allocation of the sample frame among different VET institutions:

VET College	N of graduates	Number of completed interviews
Aisi (Kachreti)	114	27
Erkvani (Racha)	80	26
Iberia (Kutaisi, Bagdadi)	121	41
Opizari (Akhaltsikhe)	200	59
Prestige (Telavi)	161	53
Sh. Meskhia (Zugdidi, Senaki)	78	23
Total	754	229

#### Table 2. VET Graduates' Survey Sample Frame



## 3. Owerview of Agricultural Sector

### **Domestic Production**

Compared to other sectors of the economy, value added created in Georgian agriculture<sup>1</sup> increases at the slowest pace. During 8 years, from the economy-wide decline in 2009 until 2017, real value added generated in agriculture rose by 12.1%, which is equivalent to 1.4% average annual increase. Additionally, agricultural growth is not stable. It experiences negative or near zero increase for some years and positive for the others. In 2017 overall economic growth of the economy amounted to 5%, while agricultural sector shrank by 2.7%.

Figure 1. real growth of agricultural value added (at basic prices) and real growth of GDP (at market prices) – 2009-2017



Source: National Statistics Office of Georgia. Note: 2017 data are preliminary.

In 2017, agricultural value added was equal to 2.7 billion GEL, which accounted for 8.2% of the Gross Domestic Product<sup>2</sup>. Since 2008, the share of agriculture fell below 10% and remained roughly stable. In comparison with its contribution to GDP, the percentage of people employed in agriculture is very high. 43.1% of the total number of employed persons, work in agriculture. However, most of them are self-employed. According to business statistics, from the total number of hired people, only 1.9% are employed in the given sector.

From the other perspective, 42.8% of the entire population live in rural areas, where most of the people are involved in farming activities. In rural areas, the rate of self-employment (share of self employed in overall number of employed – first quarter data of 2018) is 74.4%. According to

<sup>&</sup>lt;sup>1</sup> Agriculture, forestry and fishing.

 $<sup>^2</sup>$  Due to unavailability of corresponding data for calculating value added by activities related to processing of agricultural produce, only rough measure of its contribution to GDP can be calculated. In 2017, the share was equal to 6.3%. In the previous years, it varied around 6-7%.



National Statistics Office of Georgia, vast majority of self-employed work in rural farms, have a land or livestock and use gained products for both their own consumption and sale. Review of poverty measures prove that economic hardship is more widespread in the countryside. The share of people living under absolute poverty line is equal to 25.5% in rural areas and 16.9% in urban regions. Therefore, development of agribusiness can positively affect people living in the countryside and help eradicate rural poverty.

According to the Rural Development Strategy of Georgia 2017-2020, non-diversification and low agricultural productivity are the limitations of the rural economy. According to the document<sup>3</sup>, one of the major obstacles to agricultural growth is land fragmentation as a result of 1992-1998 land reform. Additionally, lack of access to financial resources, insufficient utilization of innovations and up-to-date knowledge are considered to be barriers to agricultural development.

### International Trade

In 2017, trade (sum of exports and imports) by agricultural products<sup>4</sup> constituted 18.2% of the total foreign trade. In the given year, exports of agricultural products amounted to 777 million USD, while imports were 1.5 times higher and amounted to 1,172 million USD (see Figure2). From 2009 until 2017, exports of agricultural produce increased at a higher rate compared to imports. During this period, value of exports rose by 145.5%, while imports went up by 47.4%.



Figure 2. Imports, exports and trade balance of agricultural products 2009-2017 (million USD)

Source: National Statistics office of Georgia. Note: 2017 data are preliminary.

<sup>&</sup>lt;sup>3</sup> Rural Development Strategy of Georgia 2017-2020 - <u>http://enpard.ge/en/wp-content/uploads/2015/05/Rural-Development-Strategy-of-Georgia-2017-2020.pdf</u>

<sup>&</sup>lt;sup>4</sup> 01-24 codes from HS 2012 (animal products - 01-05, vegetable products - 06-15, foodstuffs - 16-24).



Based on 2017 data, the share of imports of agricultural products in total imports was equal to 14.7%, out of which animal products 5 constituted 19.9%, vegetable products 6 – 30.7% and foodstuffs 7 held the highest share equal to 49.4%. Exports of agricultural products, which accounted for 28.5% of total exports was divided up into animal products, vegetable products and foodstuffs with the percentages: 10.5%, 21.7% and 67.9% correspondingly. On Figure 3 export and import values of the given categories are presented for 2013-2017.





Source: National Statistics office of Georgia. Note: 2017 data are preliminary.

In 2017, five most important export categories were 1. wine of fresh grapes<sup>8</sup> (22.0% of total exports of agricultural products), 2. undenatured ethyl alcohol, spirits, liqueurs and other spirituous beverages9 (16.3%), 3. mineral waters10(12.3%), 4. Hazelnuts and other nuts11(10.7%), 5. cigars, cheroots, cigarillos and cigarettes12 (5.4%). In 2017, the share of hazelnuts and other nuts in agricultural exports was equal to only 10.7% (3.0% of total exports). However, in the previous years, corresponding percentage for the product was much higher. It held the first position among agricultural goods since 2009. The reason for the reduction of exports was infestation of stink bug, which heavily damaged the harvest of hazelnuts. The product from Georgia is mostly traded to the European Union. In 2017, 65% of the hazelnuts and other nuts was sold to the European Union. In the category of the product, shelled hazelnuts and filberts13 is the most common produce (95.5%

- <sup>7</sup> 16-24 codes by HS 2012
- <sup>8</sup> 2204 by HS 2012
- <sup>9</sup> 2208 by HS 2012
- <sup>10</sup> 2201 by HS 2012 <sup>11</sup> 0802 by HS 2012
- <sup>12</sup> 2402 by HS 2012
- <sup>13</sup> 080222 by HS 2012
- 000222 0y 113 2012

<sup>&</sup>lt;sup>5</sup> 01-05 codes by HS 2012

<sup>&</sup>lt;sup>6</sup> 06-15 codes by HS 2012

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in 2017). In 2016, the share of shelled hazelnuts and filberts sold by Georgia in world exports of the product was equal to 8.2%14.

In 2017, wine of fresh grapes held 6.3% in total exports from the country. The percentage for mineral and aerated waters was 3.5 %. Grape wines and mineral and aerated waters are the products for which Russian market is still important. In 2016, 63% of grape wines with pack less than 2 liters15, which is a typical product of the relevant category (96.1% in 2016) and 43% of mineral and aerated waters16 (99.5% of the corresponding category) was sold in Russia17.

Georgia has adopted several liberal trade regimes, which make favorable conditions for agricultural exports as well. One of the most important among them is Deep and Comprehensive Free Trade Area Agreement (DFCTA) with EU, which came into force in 2014. According to 2017 data, agricultural exports to the European Union constitute 18% of total agricultural exports. However, in that year, both the value of exports to the EU and its share decreased compared to the previous year. In 2016 and 2015 the proportion was around 30%. Reduction of export value was primarily caused by sharp decline of exports of hazelnuts and other nuts. Five most frequently traded product categories to the EU are presented on Figure 4.



Figure 4. Exports of agricultural products to the EU (% of total) – 2016

Source: National Statistics office of Georgia.

#### **Regional Contribution**

Different regions make uneven contribution to the gross value added of the economy. Based on 2016 data, almost half (48.8%) of the GDP is generated in the capital and the other half in the rest

<sup>&</sup>lt;sup>14</sup> Source: Observatory of Economic Complexity

<sup>&</sup>lt;sup>15</sup> 220421 by HS 2012

<sup>&</sup>lt;sup>16</sup> 220110 by HS 2012

<sup>&</sup>lt;sup>17</sup> Source: Observatory of Economic Complexity



of the country. In case of agriculture, regional contribution to national production is presented on Figure 5. Kakheti and Kvemo kartli are the regions, where the highest amount of agricultural products is produced (20% and 18% respectively). Shida kartli and Mtskheta-Mtianeti; Imereti, Racha-lechkhumi and Kvemo svaneti also make a valuable contribution, however both of them unite two regions of the country.



Figure 5. Regional structure of agricultural value added 2016

Source: National Statistics office of Georgia. Note: 2017 data are preliminary.

### Samegrelo-Zemo Svaneti

Area of Samegrelo-Zemo Svaneti is equal to 7,468.2 square kilometers, which is the same as 10.7% of the total area of the country. As of the January 2018, population of the region is 320.8 thousand people (8.6% of the population of the country). According to 2017 data, unemployment rate in Samegrelo-Zemo Svaneti is equal to 8.6%, which is much lower than the measure calculated for the whole country (13.9%). On the other hand, similar to other rural territories, self-employment rate is very high at 65.4%.

In 2016, value added created in Samegrelo-Zemo Svaneti amounted to 2,064 million GEL and accounted for 7% of aggregate value added. Agricultural production plays a significant role for the region. Its contribution to regional added value is one of the highest (around 20%) with Transport and Communication and Public administration. In 2016 the contribution of agriculture to regional economy noticeably decreased (to 13.8%). According to the data of National Statistics office of Georgia, which is based on household survey, in 2017, average monthly income for the region from selling agricultural products was equal to 6.8 million GEL. This was equivalent to 7.6% of gross income of the population in the region.



Figure 6. Gross value added of Samegrelo-Zemo Svaneti (at current prices, mil. GEL) and its division by economic activities – 2009 - 2017



Source: National Statistics office of Georgia.

From agricultural crops, maize and hazelnuts have the highest production volume in Samegrelo-Zemo Svaneti (in tons). In 2016, more than half (51.9%) of the total production of hazelnuts was produced in the region. According to the strategy of Development for Samegrelo-Zemo Svaneti 2014-2021, most of the crop that was produced in the area, was traded abroad. In the same year, 52.1 thousand tons of maize was produced in the region, which corresponded to more than fifth of the gross production of the country (21.4%).



Figure 7. Crop production in Samegrelo-Zemo Svaneti (thousand tones) – 2016



Source: National Statistics office of Georgia.

Other plants that are cultivated in Samegrelo-Zemo Svaneti are tea (1.1 thousand tones – 36.7% of total the production), pears (3 thousand tones - 28% of total the production), sour plumes (2.5 thousand tones – 26.3%), subtropical fruit (3.4 thousand tones – 21.5%), citruses (3.1 thousand tones – 4.7%), vegetables (5.2 thousand tones – 3.7%), haricot beans (0.2 thousand tones – 3.4%), walnuts (0.1 thousand tones – 2.8%), apples (1.8 thousand tones - 2.8% of), grapes (2.4 thousand tones – 1.5%) and peaches (0.3 thousand tones - 0.9%). Crop production in the region is presented on Figure 7.

Samegrelo-Zemo Svaneti holds the fourth position in meat production after Kvemo kartli, Imereti (15.4%) and Kakheti (14.5%). In 2016, 7.7 thousand tons of meat18 was produced in the region, which is 11.6% of the total meat production of the country. As cows are relatively more widespread in the region, beef comprise the highest share of the total meat production of Samegrelo-Zemo Svaneti (3.2 thousand tons of slaughtered weight – 14.9% of the total production), which is followed by pork by 2.5 thousand tons (15.5% of the total production) and poultry by 1.8 thousand tons (7.7%).

Additionally, production of other animal produce is quite common in the region. In 2016, 71 million liters (13.2% of the total production) of milk from dairy cows and buffalos was produced in Samegrelo-Zemo Svaneti. Production of honey amounted to 0.3 thousand tones (14.3% of the total production) and eggs produced in the region was equal to 5% of the total production (eggs are mostly produced in Kvemo kartli (38.5% of the total production), Kakheti (19.6%) and Tbilisi (15.7%)).

### Racha-Lechkhumi and Kvemo Svaneti

The area of Racha Lechkhumi and Kvemo Svaneti is 6.6% of the total area of the country (4600 square kilometers), where live 0.8% of the entire population (30 thousand people as of January 2018). According to 2017 data, unemployment rate in Imereti; Racha-Lechkhumi and Kvemo Svanetil is equal to 14%, while self-employment measure stands at 57.3%19.

In 2016, value added generated in Imereti; Racha-Lechkhumi and Kvemo Svaneti amounted to 3,074 million GEL, which corresponds to 10.5% of the aggregate value added (second largest contributor after Tbilisi). Similar to other regions, agricultural sector plays a significant role in the regional economy. Additional value created in agricultural sector of Imereti; Racha Lechkhumi and Kvemo Svaneti was equal to 423.5 million GEL in 2016, which accounted for 13.8% of the regional economy and 16.1% of agricultural value added of the country. In 2017, the share of average monthly income obtained from selling agricultural products for the population living in Racha-Lechkhumi and Kvemo Svaneti was 5.5% in total income of the region.

<sup>&</sup>lt;sup>18</sup> Slaughtered weight

<sup>&</sup>lt;sup>19</sup> National Statistics office of Georgia prepares several of statistical data, including employment, production and income data, for Imereti, Racha-Lechkhumi and Kvemo Svaneti as a whole. Therefore, given statistics cannot be discussed separately for Racha-Lechkhumi and Kvemo Svaneti.





Figure 8.Gross value added of Imereti; Racha-Lechkhumi and Kvemo Svaneti (at current prices, mil. GEL) and its division by economic activities – 2009 - 2017

Source: National Statistics office of Georgia.

According to the production data, Racha-Lechkhumi and Kvemo Svaneti separately produce rather low amount of agricultural products. In 2016 2.8 tons of grapes (1.8% of the aggregate production), 2.2 thousand tons of maize (0.9%), 0.7 tons of vegetables (0.5%), 0.4 tones apples (0.6%), 0.2 thousand tons of haricot beans (3.4%), 0.2 tons of walnuts (5.6%), 0.1 tons of pears (0.9%) and 0.1 tons of plums (1.2%).

From animal products only milk has notable production level. In 2016, milk production in the region amounted to 7 thousand tones, which corresponds to 1.3% of the total milk production.



Figure 9. Crop production in Racha-Lechkhumi and Kvemo Svaneti (thousand tones) – 2016

Source: National Statistics office of Georgia.



### Samtskhe-Javakheti

The area of Samtskhe Javakheti is equal to 6412.8 square kilometers (9.2% of the population). Population of the region amounts to 155.9 thousand people (as of January 2018, 4.18% of the total population). According to 2017 data, unemployment rate in Samtskhe-Javakheti is one of the lowest among other regions and is equal to 5.9%, while self-employment rate is at 69.8%.

According to 2016 data, value added generated in Samtske-Javakheti was equal to 883.7 million GEL, which is the same as 3% of the gross value added. Compared to the other regions, agriculture makes the highest contribution to the value added of Samtske-Javakheti region (30.7% in 2016) followed by Kakheti (29.9%). Contribution of agricultural value added of the region to the gross agricultural value added of the country was equal to 10.3%.

Figure 10. Gross value added of Samtskhe-Javakheti (at current prices, mil. GEL) and its division by economic activities – 2009 – 2017



Source: National Statistics office of Georgia.

From agricultural crops potatoes have the highest production volume in Samtske-Javakheti. In 2016 160.5 thousand tons of potatoes was produced in the region, which corresponded to 64.5% of the total potato production. Other crops that are produced in Samtskhe-Javakheti are barley (10.8 thousand tones in 2016, 22.9% of the total production), wheat (5.3 thousand tones – 4.2%), annual grasses (4 thousand tones – 67.8%), perennial grasses (3.8 thousand tones – 7.7%), vegetables (3.7 thousand tones – 2.6%), maize (2.7 thousand tones – 1.1%), apples (1.5 tones, 2.3%), plums (1.2 tones, 14.1% of the total production), grapes (1 tone – 1.8%), haricot beans (0.4 thousand tones – 6.9%), walnuts (0.2 tones – 5.6%) and pears (0.1 tones, 0.9%).

Figure 11. Crop production in Samtskhe-Javakheti (thousand tones) – 2016



Source: National Statistics office of Georgia.

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Production of animal products is quite high in the region. Samtskhe-Javakheti is the second by milk production after Imereti. In 2016 76.4 million literes of milk was produced in the region, which was equal to 14.1% of the aggregate production. Out of which 99% was dairy cows and buffaloes milk (75.6 million liters) and only 1% was the milk from sheep and goats. In the same year, wool production was equal to 0.2 thousand tones. The latter corresponded to 10% of entire wool production. Production of honey was equal to 0.2 thousand tones (9.5% of the total production). On the other hand, only 4.1% of meat was produced in Samtskhe-Javakheti (2.7 thousand of slaughtered weight), out of which 1 thousand tones was beef, 1 thousand tone was pork, 0.5 tones - sheep and goat and 0.2 poultry meat. Production of eggs in Samtskhe-Javakheti was equal to 10.1 million pieces, which accounted for 1.7% of the total production of eggs.

## 4. Main Findings



### **VET Graduates**

Four major VET directions were targeted in scopes of the assessment: veterinary, crop production, winemaking and beekeeping; although graduates of other programs (farmers, cheese processor, tractor driver) were interviewed thy are not analyzed as a separate group due to the small number of cases.

The main reason students decide to enroll in VET schools is related to their expectation that skills and knowledge acquired at VET would help them to <u>start up / develop own business</u>. Thus VET is not considered as an alternative of higher education and people with different backgrounds enter modular programs: representation of students with complete secondary and higher education is almost equal and no major trends are related to the place of residence: share of rural or urban residents among VET graduates is balanced.

Assessment reveals high satisfaction level of VET school graduates. NPS (Net Promoter Score) index shows <u>extreme loyalty</u> of the graduates and SCI (Secure Customer Index) proves that the majority of graduates are committed to the VET colleges and would recommend to friends and relatives as well.

Employment rate of the graduates of modular programs of VET institutions is quite high (72%) including hired employment, self-employment and seasonal jobs. At the same time, majority of surveyed VET graduates are either employed with the profile same to the VET program or similar to it. As reported by the big majority of graduates (above 80%) they are able to apply improved agricultural practices and knowledge gained at VET colleges to some extent.

Graduation of the VET program is considered to have had the most positive impact on graduates' financial standing as a majority of them report that <u>their income increased as a result of graduation</u> of VET college: veterinary – 66%, crop production – 59%, winemaking – 60%, beekeeping – 84%, other program graduates – 75%.

Although the assessment results are quite positive in general, some interesting trends are observed according to the programs.

- <u>Winemaking</u> appears to be the most attractive program for young generation who seek for better employment conditions, high income and opportunity to start up own business; although the graduates of winemaking programs are least satisfied with VET school experiences compared to the graduates of other programs. Dissatisfaction of the graduates of winemaking programs might be caused due to the mismatch of their expectations towards the VET outcomes and actual experience – they would like VET institutions to be more oriented on practice and to help students to apply obtained knowledge and skills on real job.
- Among the surveyed VET programs <u>crop production</u> is more female dominated one while women are underrepresented at all other programs. Compared to others, graduates of crop production programs are least entrepreneual as women are less



likely to start up own business and the mainly desire for improved working conditions. It should be noted that unemployment rate is highest among the graduates of crop production programs and they are more likely to perform unqualified work.

- <u>Beekeeping</u> is the most "aged" program but the most promising at the same time, Graduates of beekeeping programs are mostly satisfied with VET experience and are more business oriented compared others.
- Graduates of <u>veterinary</u> programs have highest salary rates compared to other program graduates.

### Farmers' Survey

Farmers integration in local agricultural community significantly varies across regions. Farmers from Samtske-Javakheti and Racha-Lechkhumi actively cooperate with local farmers' service centers and are united with other farmers in frames of cooperatives or associations, while farmers from Samegrelo are quite passive in this regards.

Beneficiary farmers from all three target regions are <u>extremely satisfied</u> with attended trainings and obtained extension services – satisfaction level is above 90% in case of trainings as well as extension services. Their satisfaction with provided services motivates them to further develope farming skills and the most preferred form of knowledge sharing is short term trainings. Every second farmer is even ready to attend paid trainings with the full or partial contribution. Development needs are quite diverse and region specific: residents of Samegrelo would prefer to learn more about hazelnut's diseases and means of prevention; famers from Samtskhe-Javakheti are interested in bee-keeping and animal husbandry; farmers from Racha-Lechkhumi would prefer to improve general farming practices.

Big majority of beneficiary <u>farmers (84%) report the apply improved agricultural practices and knowledge</u> gained during the trainings and through extension services. In additions, outcomes of the intervention are considered effective in terms of <u>developing existing farm and / or for expending farming activities</u> (85%).

Apart from an overall positive evaluation, improved agricultural practices are considered as a precondition for <u>agricultural productivity increase</u>: 66% of farmers from Racha-Lechkhumi Kvemo Svaneti, 40% of farmers from Samegrelo-Zemo Svaneti and 65% of farmers from Samtskhe-Javakheti report that their farm's productivity increased as they started applying gained knowledge and improved practices.

The same time significant number of farmers from all tree target regions confirm that improved agricultural practices resulted in <u>increased farming income</u>: 60% of farmers from Racha-Lechkhumi Kvemo Svaneti, 42% of farmers from Samegrelo-Zemo Svaneti and 66% of farmers from Samtskhe-Javakheti.



Agricultural activities are the core of the livelihoods of beneficiary farmers as almost half of the members of interviewed farming households have no non-agricultural income, thus families are fully dependent on the farm production.

Annual total income of farming households varies significantly across the target regions: farmers from Samegrelo-Zemo Svaneti state that their total income, including income from farming as well as non-farming sources is about GEL 7,900; annual income of the farmers from Racha-Lechkhumi Kvemo Svaneti is about GEL 11,600 and the figure is significantly higher for the farmers from Samtskhe-Javakheti – GEL 23,400. As for the income generated from agricultural sales, Samtske-javakheti shows the highest performance with an annual average of GEL 14,900; while total household income was lowest among the farmers residing in Samegrelo-Zemo Svaneti, income generated from agricultural sales is higher compared to Racha-Lechkhumi Kvemo Svaneti – GEL 3,500 and GEL 2,500 respectively.



## **5. Assessment Results**

### 5.1. VET Graduates' Survey Results

### Profile of VET graduates

A total of 229 graduates of the agricultural modular programs of target VET institutions were inquired in the scopes of the survey. Distribution of the survey sample according to the VET colleges as well as the agricultural programs is presented in the tables below (see tables 1, 2).

VET school	Quantity	Percentage
Aisi (Kachreti)	27	12%
Erkvani (Racha)	26	11%
Iberia (Kutaisi, Baghdati)	41	18%
Opizari (Akhaltsikhe)	59	26%
Prestige (Telavi)	53	23%
Sh. Meskhia (Zugdidi, Senaki)	23	10%
Total	229	100%

Table 3. Distribution of VET graduates' according to the VET schools

Table 4. Distribution of VET graduates' according to the agricultural programs

Agricultural Program	Quantity	Percentage
Veterinary	83	36%
Crop Production	71	31%
Winemaking	36	16%
Beekeeping	19	8%
Other Programs (farmers, cheese processor, tractor driver)	20	9%
Total	229	100%

The analysis of the demographic characteristics of VET graduates reveal important tendencies. While the average age of VET graduates is 33, winemakers appear to be the youngest segment with an average age of 25 and bee-keepers are the eldest – average age of this group is 44.

As for the gender, 54% of VET school graduates are men and 46% are women. It is quite interesting that the share of men is at least 1.5 times higher on almost every program, with the only exception being the crop production direction dominated by women – 77% of the graduates of this program are women. Women seem to be least interested in bee-keeping (21%).

Drogram		Gender		
Program	Average age	Men	Women	
Veterinary	32	63%	37%	
Crop Production	34	23%	77%	
Winemaking	25	67%	33%	
Beekeeping	45	79%	21%	
Other programs	35	85%	15%	
Total	33	56%	44%	

Table 5. Age and gender distribution by programs



Also, the distribution of rural and urban residents among VET school graduates is balanced, differences are observed across the programs; namely, village residents are more actively presented on winemaking programs (64%) while urban residents dominate the field of bee-keeping (74%). The share of those with complete secondary and higher education among the graduates of modular programs in VET institutions is almost equal (37% and 34% respectively); thus VET school is not considered as an alternative of higher education, as those with higher and secondary education enroll there almost equally.

Development of the family business appears to be the main motivator for VET students to enter the schools – 56% of the respondents decided to enroll to the VET college hoping to extend the family farming activities. Besides, their decision was largely affected by reputation of VET school and expected increase of employment opportunities (37%-37%). Quality of education and informed recommendation also influenced their decision making process.

### Figure 12. Factors Affecting the Choice of Professional Course



Development of a family farm or own business is even more important for bee-keepers as majority of them were mostly occupied with family farm even before entering the college. Entrepreneurship is the least evolved among the graduates of crop cultivation related programs.

### Graduates' Satisfaction and Assessment of VET Institutions

The majority of VET school graduates specializing in the field of agriculture are satisfied with the factors such as: quality of education, organization of education process, availability of study materials, administration and infrastructure. It is quite interesting that they are the least satisfied when evaluating the factors they classified as a main reason for enrolling in VET school. Only 41% of VET school graduates believe that experience gained in VET school will help them in finding a job. In addition, when evaluating other factors, a relatively smaller number of graduates agree with the statement that VET school prepared them for starting up their own business or expanding-developing an already existing family farm. It should be mentioned that the satisfaction with enrolling in VET school is lower in the 17-24 age group (87%) compared to elder graduates – 100% of the respondents aged 55 years and older are satisfied. As it seems, VET graduates specializing in the field of agriculture are generally satisfied with the quality of studies and study environment, but they need more in terms of applying obtained knowledge in practice. It needs to be mentioned that this attitude was the most clearly pointed out with graduates of the wine-making course.



### Figure 13. Evaluation of VET School



Reportedly the absolute majority of VET school graduates (92%) are either very satisfied or satisfied with their decision to obtain vocational education in VET school. Only a few of them expressed dissatisfaction and none of the graduates seem to be extremely unsatisfied.

### Figure 14. Satisfaction level of VET graduates



Although the satisfaction is prevailing among all graduates, still some differences are observed across programs as well as VET colleges. A relatively lower satisfaction level is observed among the graduates

![](_page_21_Picture_0.jpeg)

of wine production programs; considering that graduates of these programs represents two VET schools "Prestige" and "Erkvani" only, the satisfaction level of these particular VET institutions is also relatedly lower.

Program	Very satisfied	Satisfied	Neither satisfied, nor dissatisfied	Dissatisfied
Veterinary	57%	37%	5%	1%
Crop Production	70%	27%	3%	
Winemaking	31%	50%	14%	6%
Beekeeping	63%	32%	5%	
Other programs	55%	30%	10%	5%

### Table 6. Satisfaction level of VET graduates by programs

### Table 7. Satisfaction level of VET graduates by colleges

	Vory satisfied	Satisfied	Neither	Dissetisfied
VETSCHOOL	very satisfied	Satisfieu	dissatisfied	Dissatistieu
Prestige	36%	49%	9%	6%
Erkvani	42%	39%	15%	4%
Iberia	59%	39%	2%	
Opizari	71%	24%	5%	
Aisi	70%	26%	4%	
Sh. Meskhia	70%	30%		

![](_page_22_Picture_0.jpeg)

High satisfaction level of VET school graduates is proved by NPS (Net Promoter Score) index as well. On 1-point scale NPS index of the graduates of the modular agricultural programs of VET schools is 0.98 (98%) showing extreme loyalty of the graduates and their willingness to recommend it to friends and relatives.

In order to triangulate graduates' satisfaction with VET colleges another analytical tool has been applied. According to the SCI (Secure Customer Index) a majority of graduates fall into the two main categories – secure and favorable groups (38% and 47%, respectively) proving that the majority of graduates are committed to the VET colleges and would recommend to friends and relatives as well.

### Figure 15. Net Promoter Score

NPS – Net Promoter Score is an index ranging from -1 to 1 that measures the willingness of customers to recommend a service / product to others. It is used as a proxy for gauging the customer's overall satisfaction with a service / product and the customer's loyalty to it. NPS is determined by subtracting the percentage of customers who are detractors from the percentage who are promoters.

**SCI – Secure Customer Index** is calculated based on three different questions; these are: how satisfied is the respondent, would s/he recommend the same service to others and if making the decision again, would s/he still choose the same service. SCI segments the audience into four main categories: 1. Secure customers, 2. Favorable customers, 3. Vulnerable customers, 4. At risk customers. Secure customers are the most loyal followed by favorable group.

0%

### Figure 16. Secure Customer Index

Secure group	E Favorable group	■ Vulnerable group	At risk group	
38%		47%		14%

When looking at satisfaction levels across the programs, wine making programs show slight underperformance. Namely, a share of the secure group among whine makes is 19% while the average makes 38%.

As for the differences across the schools, "Aisi" and "Sh. Meskhia" colleges show highest performance, while "Erkvani" and "Prestige" have the smaller number of satisfied graduates (59%, 49% and 19%, 28% respectively).

According to the study results, skills and knowledge acquired at VET colleges are largely applied in practice by the graduates – on a 5-point scale, the practical application of the gained knowledge scores 4.1 (above 80%) and the figure is even higher among veterinarians. As for the improvement of employment conditions and increase of income as a result of VET graduation, the score makes 3.7

![](_page_23_Picture_0.jpeg)

(74%) and 3.1 (62%) respectively. While development / starting up own business was one of the main motivators for enrolling in VET schools, on 5-point scale outcome of the VET graduation is scores 3.4 (68%).

![](_page_23_Figure_2.jpeg)

Figure 17. Assessment of VET graduation outcomes

In general, men show higher satisfaction with different aspects of the VET graduation, namely:

- More men report application of knowledge and skills acquired at VET school in practice;
- More men think that their income increased as a result of VET graduation;
- More man think that VET graduation helped them in setting up their own businesses;

As for the age differences, younger graduates (17-24 years) are less satisfied for several reasons:

- They report that they can not apply in practice knowledge acquired in VET school;
- Their work conditions and income are not as improved as in other graduates' cases;
- They were not able to set up new business.

On the contrary, elder graduates report that VET schools helped them to start up their own business and they have better working conditions and increased income as a result of VET graduation.

### **Employment and Income of VET Graduates**

A majority of the graduates of agricultural modular programs are employed although every fifth of them (21%) are still looking for a job. Employment status as well as employment field significantly varies across the graduates of different programs. Namely, unemployment is more prevalent among the graduates of crop production programs and this group of graduates appear to have the least self-employment opportunities. In general, 37% of graduates are hired employees although bee-keeping specialist are less presented in this group (11%) as the highest percentage of self-employment (53%) is reported among them.

![](_page_24_Picture_0.jpeg)

### Figure 18. Employment Status

![](_page_24_Figure_2.jpeg)

Satisfaction with current job in general is quite high – 76% of VET graduates report they are somewhat or fully satisfied with current employment conditions. At the same time 57% of graduates, and no differences are observed across the programs, think that their job matches qualification level they have achieved. Still 28% of the respondents comply that they are overqualified as the current job does require less skills and knowledge they can offer to the employer.

Figure 19. Satisfaction with Current Job (n=174)

![](_page_24_Figure_5.jpeg)

The majority of graduates of agricultural modular programs of target VET institutions are either employed with the profile same to the VET program or similar to it (52% and 13%, respectively). Survey results show that besides the fact that crop cultivation program graduates are experiencing problems while seeking a job, a share of those who do not work according to the specialisation acquired at VET, is higher among the representative of this group as well.

![](_page_25_Picture_0.jpeg)

### Figure 20. Employment Profile

![](_page_25_Figure_2.jpeg)

The annual salary of an average VET graduate varies between GEL 6,000 to GEL 9,000. Graduates of veterinary programs report the highest salary as well as total income considering all income sources while beekeeping appears to be less paid. On the other hand, graduation of the VET program seems to have had the most positive impact on beekeepers financial standing as a majority of them (84%) report that their income increased to some extent as a result of graduation of VET college.

	Annual	Reported Income	
VET Program	Annual Salary (GEL)	Total Annual Income (GEL)	Increase as a result of VET Graduations
,	9,216	10,764	66%
Crop Production	6,948	8,304	59%
Winemaking	6,720	8,544	60%
Beekeeping	6,096	7,956	84%
Other programs	7,246	9,692	75%

### Table 8. Financial Income

Gender analysis of the income level show that annual salary of female graduates is about 35% lower compered to men; differences are observed by the place of residence as well – urban graduates generate on average 20% more personal income compared to rural ones.

### **Post VET Experience**

Graduates demand for further education and professional development is quite high. Every third graduate (33%) attended additional training after the VET graduation and absolute majority of all graduates wants to participate in more trainings (84%) either receive extension service (81%). Graduates of veterinary programs express higher desire for further development, training and education compared to graduates of other programs.

![](_page_26_Picture_0.jpeg)

58% of graduates state they are ready to go abroad for temporary job and 66% would agree to participate in internship program with a symbolic remuneration. For sure while discussing future plans, age is an important differentiator: graduates aged 45 and older are less motivated to go abroad for temporary work and they and internship programs are not attractive for them.

![](_page_27_Picture_0.jpeg)

### 5.2. Farmers' Survey Results

### **Evaluation of Agricultural Trainings and Extension services**

Based on the study results the topics of provided trainings and extension services significantly varies by regions. The largest portion of farmers interviewed in Racha-Lechkhumi and Kvemo Svaneti attended trainings (69%) and extension services (79%) in regard with bee-keeping. 28% of farmers in Samtskhe-Javakheti attended trainings on the same issue while 38% of farmers obtained extension service. Half of the farmers (50%) interviewed in Samtskhe-Javakheti attended trainings about animal husbandry while extension service on the same issue was attended by more farmers (65%). As for Samegrelo-Zemo Svaneti, trainings attended by the farmers (79%) and extension services (71%) referred to hazelnut production.

![](_page_27_Figure_4.jpeg)

Figure 21. Main Topics of Attended Trainings and Extension services

Beneficiary farmers' satisfaction with attended trainings and obtained extension services is quite impressive, although it needs to be mentioned that overall, interviewed farmers are more satisfied with trainings (93%) than with extension services (82%). The analysis of the data by target regions show that farmers from Samegrelo-Zemo Svaneti and Racha-Lechkhumi and Kvemo Svaneti prefer trainings over extention services while farmers from Samtskhe-Javakheti consider extension services to be more effective.

![](_page_28_Picture_0.jpeg)

![](_page_28_Figure_1.jpeg)

### Figure 22. Satisfaction with Attended Trainings and Obtained Extension Services

As reported by beneficiary farmers, an absolute majority of them apply skills and knowledge acquired during the trainings and as a result of obtaining extension services in practice, on their own farm – 84%. On the other hand, the farmers think that outcomes of the intervention have had a real positive effect on their farming activities either in terms of developing existing farm, or for expending farming activities.

### Figure 23. Application of acquired knowledge and skills and evaluation of its effectiveness

![](_page_28_Figure_5.jpeg)

Apart from an overall positive evaluation, a significant number of farmers report a positive trend of agricultural productivity as a result of attending trainings and receiving extension services: 66% of farmers from Racha-Lechkhumi Kvemo Svaneti, 40% of farmers from Samegrelo-Zemo Svaneti and 65% of farmers from Samtskhe-Javakheti. Although the share of farmers who think that trainings and extension services positively affected their farm productivity is smaller in Samegrelo region, on the other hand those farmers report higher influence of the intervention: farmers think that their farm productivity has increased on average by 48% as a result of attending trainings and receiving extension services. This figure is lower in the case of Racha-Lechkhumi Kvemo Svaneti and Samtskhe-Javakheti.

![](_page_29_Picture_0.jpeg)

### Figure 24. Increase in <u>Agricultural Productivity</u> and Reported Increase Value

![](_page_29_Figure_2.jpeg)

![](_page_29_Figure_3.jpeg)

![](_page_29_Figure_4.jpeg)

![](_page_30_Picture_0.jpeg)

### Farmers' Knowledge and Skills Needs

According to the survey results farmers would love to deepen their knowledge and develop agricultural skills in the future. Although the figures somewhat vary across regions, still farmers' desire to develop farms through improved knowledge and skills is quite high and makes up on average 81%. Farmers from Racha-Lechkhumi Kvemo Svaneti are most active in this regard (94%). As for the desired form of learning and development, short term trainings are the most favorable followed by extension services and information campaigns. Although the active farmers prefer to improve skills and knowledge with short terms activated allowing them to be actively involved in farming practice, still every tenth farmer (11%) would love to go for full scale VET education. Field demonstrations are believed to be an effective knowledge sharing method by 86% of interviewed farmers.

![](_page_30_Figure_3.jpeg)

### Figure 26. Desire to Improve Farming Skills and Preferred Forms of Development

The topics and issues farmers are focused on in terms of development are different across target regions. Namely, farmers from Samegrelo would prefer to learn more about hazelnut's diseases and means of their preventions; famers from Samtskhe-Javakheti are interested in bee-keeping and animal husbandry and farmers from Racha-Lechkhumi would prefer to improve practical farming skills in general.

In scopes of the survey farmers were asked whether they would invest in development, specifically would they attend trainings for a certain fee. 35% of interviewed farmers do not wish to participate in trainings for any fee and every fifth of them (21%) is ready to fully fund trainings necessary for their farming activities. They survey shows that the most effective way to involve farmers in paid trainings is offering them co-funded sessions and farmers from Samtske-Javakhety are the most motivated in this regard.

![](_page_31_Picture_0.jpeg)

![](_page_31_Figure_1.jpeg)

![](_page_31_Figure_2.jpeg)

### Farmers Integration in Local Agricultural Community

Farmers integration in local agricultural community significantly varies across regions. Farmers from Samtske-Javakheti and Racha-Lechkhumi actively cooperate with local farmers' service centers (65% and 59%, respectively) while the figure is significantly lower in the Samegrelo region (29%). The most common forms of cooperation are individual meetings and group meetings arranged at farmers service centers.

![](_page_31_Figure_5.jpeg)

Figure 28. Cooperation with Farmers Service Centers and Means of Cooperation

In general, farmers think that consultation and information services for local farmers have been improved over the past years including services offered by municipal as well as private providers.

![](_page_32_Picture_0.jpeg)

![](_page_32_Figure_1.jpeg)

### Figure 29. Change in Farmers' Information and Consultation Services (municipal and private)

As for membership in the agricultural cooperatives and associations, every fifth beneficiary farmer (27%) report they are members of cooperatives, although the situation is absolutely different in target regions. Membership in cooperatives is the most common practice in Samtskhe-Javakheti (47%), while only 13% of beneficiary farmers from Samegrelo unite with other farmers. Knowledge sharing is perceived to the main benefit of uniting with other farmers followed by increased chances to expand production and access markets.

![](_page_32_Figure_4.jpeg)

Figure 30. Membership of Agricultural Cooperative and/or Association and its Perceived Benefits

### Access to Finance and Agro-insurance Services

As research results demonstrate, almost every fifth farming household (18%) had an agricultural loan to finance the farm's operations from a bank, a micro-credit organization, a savings and credit association, or a government or donor sponsored credit program in 2017. The highest credit usage is observed among the farmers residing in Samtskhe–Javakheti – 33%, while only 5% of beneficiary farmers from Racha-Lechkhumi use credit funds for agricultural production.

As for the agro-insurance, this is a very rare practice among beneficiary farmers – only 5% of farmers report having agricultural insurance and this service is more common in Samtskhe-Javakheti compared to Samegrelo and Racha-Lechkhumi.

![](_page_33_Picture_0.jpeg)

![](_page_33_Figure_1.jpeg)

#### Figure 31. Use of Agricultural Credit and Agro-insurance

### Table 9. Amount of Loans obtained by Farmers in 2017

	Mean Value (GEL)	Min	Max	N of cases
Racha-Lechkhumi Kvemo Svaneti	16,267	700	105,000	9
Samegrelo-Zemo Svaneti	12,350	270	70,000	28
Samtskhe-Javakheti	26,034	700	180,000	59
Total	20,305	270	180,000	96

### **Agricultural Activities of Project Beneficiaries**

The sample of the farmers' survey is represented by the beneficiaries of the "Modernization of the VET and Extension System related to Agriculture in Georgia" project. Namely, farmers who have received extension services through individual or group consulting have undergone short-term training on various issues. Additional sampling criteria implied selecting farming households that were farming no less than 150 m2 of land during 2017, or farming households that owned at least one animal (cattle, pig or sheep) for food production or at least 10-12 units of poultry, rabbits or more than three bee hives during the 2017 agricultural season.

### Land Cultivation and Crop Production

As research results demonstrate, an absolute majority of the project beneficiary farmers cultivate land and are involved in crop production activities. Although the figure is above 90% in all three target regions, still some minor differences are observed: almost every beneficiary farmer from Samegrelo cultivates crops while the figure is a bit lower in the case of Racha and Samtske-Javakheti.

![](_page_34_Picture_0.jpeg)

![](_page_34_Figure_1.jpeg)

![](_page_34_Figure_2.jpeg)

The average area available to farming households significantly differs across regions making av. 7.51 ha in Samtskhe-Javakheti and 2.85 ha and 2.34 ha in Racha and Samegrelo, respectively. Analysis of the data according to the land ownership status reveals that although the area of the owned land plots is similar in all regions (around 2.5 ha) farmers from Samtkje-Javakheti tend to rent land plots for agricultural purposes, making their crop production activities broader.

		Racha-Le Kvemo	Racha-Lechkhumi Samegrelo-Zemo Sa Kvemo Svaneti Svaneti		Samegrelo-Zemo Svaneti		Javakheti
	Land Cultivation	Mean (ha)	5% Trimmed mean <sup>20</sup>	Mean (ha)	5% Trimmed mean	Mean (ha)	5% Trimmed mean
1	Area available	2.85	1.80	2.34	1.90	7.51	5.01
2	Area Cultivated	1.52	1.00	2.22	1.79	5.33	3.89
3	Area Uncultivated	1.33	0.64	0.12	0.03	2.18	0.53
4	Owned	2.31	1.70	2.19	1.78	2.63	2.12
5	Rented	0.52	0.00	0.11	0.00	4.13	1.72
6	Used for free	0.03	0.00	0.05	0.00	0.75	0.10

### Table 10. Land Cultivation

In order to analyze crop cultivation patterns by the project beneficiary regions, two main criteria have been applied: (1) frequency of cultivation of a crop by a beneficiary farmer and (2) amount of harvest received in total from each crop. While determining the top cultivated crops, both criteria are worth considering.

The regional specifics widely define types of crops cultivated, diversity of crops, as well as average harvest amounts.

<sup>&</sup>lt;sup>20</sup> Trimmed Mean is a method of averaging that removes a small percentage of the largest and smallest values before calculating the mean. After removing the specified observations, the trimmed mean is found using an arithmetic averaging formula. The trimmed mean looks to reduce the effects of outliers on the calculated average.

![](_page_35_Picture_0.jpeg)

Table 11. Top Crops by Regions

Racha-Lechkhumi Kvemo Svaneti		Samegrelo-Z	emo Svaneti	Javakheti	
Cultivated	Sold	Cultivated	Sold	Cultivated	Sold
<ul> <li>Tomato - 75%</li> <li>Cucumber - 74%</li> <li>Dry beans - 74%</li> <li>Maize - 71%</li> <li>Technical grapes - 69%</li> </ul>	<ul> <li>Technical grapes - 19%</li> <li>Walnut, nut, almond - 9%</li> <li>Cucumber - 4%</li> <li>Tomato - 4%</li> <li>Potato - 4%</li> </ul>	<ul> <li>Walnut, nut, almond - 88%</li> <li>Maize - 73%</li> <li>Cucumber - 34%</li> <li>Tomato - 33%</li> <li>Sub-tropical fruit (persimmon, pomegranate, fig) - 28%</li> </ul>	<ul> <li>Walnut, nut, almond - 51%</li> <li>Sub-tropical fruit (persimmon, pomegranate, fig) - 11%</li> <li>Cucumber - 6%</li> <li>Tomato - 5%</li> <li>Citrus (lemon, tangerine, orange) - 4%</li> </ul>	<ul> <li>Potato - 79%</li> <li>Forage for animal (hay, straw, stubble) - 45%</li> <li>Wheat - 25%</li> <li>Cash crops (soya, barley, oats) - 20%</li> <li>Maize - 15%</li> </ul>	<ul> <li>Potato - 67%</li> <li>Wheat - 12%</li> <li>Cash crops (soya, barley, oats) - 8%</li> <li>Forage for animal (hay, straw, stubble) - 7%</li> <li>Beet - 5%</li> </ul>

The tables below present the top 20 most frequently cultivated crops for each region as well as the harvest average volumes for each crop.

Table 12.	Top 2	0 Crops	Cultivated	by the	Beneficiary	Farmers in	Racha-Lechkhumi	Kvemo	<u>Svaneti</u>
Region									

Crops	Cultivated Crops	Harvest - Mean Value / Kg	5% Trimmed Mean
Tomato	75%	127.81	101.44
Cucumber	74%	59.76	46.34
Dry beans	74%	66.42	54.12
Maize	71%	455.34	341.26
Technical grapes	69%	1114.17	748.71
Apple	65%	390.00	272.43
Drupaceous fruit (cherry, plum, peach, cherry plum)	63%	302.38	189.83
Walnut, nut, almond	62%	94.89	80.49
Pear	59%	201.52	128.70
Potato	44%	625.46	320.51
Forage for animal (hay, straw, stubble)	41%	5,184.41	1,673.86
Onion	37%	44.21	29.28
Garlic	34%	17.26	14.90
Greens, radish	32%	9.79	0.60
Carrot	23%	16.49	13.91
Beet	21%	24.75	18.75
Grapes	21%	63.03	56.03
Berries (strawberry, raspberry, blackberry, blueberry)	20%	39.38	24.59
Greens, green beans, pea	16%	26.56	24.17
Watermelon, melon, pumpkin	13%	86.62	42.34

![](_page_36_Picture_0.jpeg)

Crops	Cultivated Crops	Harvest - Mean Value / Kg	5% Trimmed Mean
Walnut, nut, almond	88%	999.69	899.87
Maize	73%	2,104.66	1,606.27
Cucumber	34%	703.95	304.70
Tomato	33%	378.13	197.58
Sub-tropical fruit (persimmon, pomegranate, fig)	28%	360.76	310.95
Forage for animal (hay, straw, stubble)	25%	1,355.56	1,356.17
Drupaceous fruit (cherry, plum, peach, cherry plum)	21%	141.12	100.74
Technical grapes	15%	442.27	407.47
Citrus (lemon, tangerine, orange)	12%	489.58	432.04
Potato	11%	424.29	358.10
Apple	11%	90.63	83.47
Pear	11%	206.18	172.97
Greens, green beans, pea	9%	55.00	54.17
Onion	7%	21.50	18.06
Eggplant	6%	40.00	38.33
Garlic	5%	16.29	15.10
Dry beans	5%	70.50	55.89
Berries (strawberry, raspberry, blackberry, blueberry)	5%	42.50	
Laurel	5%	343.33	331.48
Greens, radish	4%	504.17	393.41

### Table 13. Top 20 Crops Cultivated by the Beneficiary Farmers in <u>Samegrelo-Zemo Svaneti</u> Region

## Table 14. Top 20 Crops Cultivated by the Beneficiary Farmers in Samtskhe-Javakheti Region

Crops	Cultivated Crops	Harvest - Mean Value / Kg	5% Trimmed Mean
Potato	79%	28,508.92	18,062.14
Forage for animal (hay, straw, stubble)	45%	16,713.60	12,136.30
Wheat	25%	7,517.00	6,106.67
Cash crops (soya, barley, oats)	20%	6,623.08	5,295.73
Maize	15%	754.64	638.10
Beet	9%	9,388.50	5,709.33
Cabbage	7%	13,325.00	12,022.22
Dry beans	7%	138.46	136.90
Apple	7%	1,329.17	1,301.85
Drupaceous fruit (cherry, plum, peach, cherry plum)	5%	384.29	380.32
Tomato	4%	2,758.33	2,223.15
Walnut, nut, almond	4%		
Carrot	3%	1,034.08	982.06
Onion	2%	1,380.00	
Greens, green beans, pea	2%	266.25	267.22
Pear	2%	157.50	156.67
Berries (strawberry, raspberry, blackberry, blueberry)	2%	1,150.00	
Cucumber	1%	350.00	
Eggplant	1%		
Garlic	1%	45.00	

![](_page_37_Picture_0.jpeg)

Crop sale results is also region dependent issue in terms of sold crops as well as sales volume.

Crops	Cultivated Crops	Harvest - Mean Value / Kg	5% Trimmed Mean
Technical grapes	19%	1646.76	946.40
Walnut, nut, almond	9%	135.00	115.56
Cucumber	4%	131.86	118.45
Tomato	4%	187.14	190.71
Potato	4%	1237.50	114.67
Apple	4%	1175.00	1127.78
Dry beans	3%	185.00	180.56
Drupaceous fruit (cherry, plum, peach, cherry plum)	3%	1275.00	1077.78
Forage for animal (hay, straw, stubble)	2%	20833.33	
Maize	1%		

Table 15. Top 10 Crops Sold by the Beneficiar	y Farmers in Racha-Lechkhumi Kvemo Svaneti Region
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### Table 16. Top 10 Crops Sold by the Beneficiary Farmers in Samegrelo-Zemo Svaneti Region

Crops	Cultivated Crops	Harvest - Mean Value / Kg	5% Trimmed Mean
Walnut, nut, almond	51%	1062.12	956.62
Sub-tropical fruit (persimmon, pomegranate, fig)	11%		
Cucumber	6%	2190.91	1873.23
Tomato	5%	1257.14	1224.60
Citrus (lemon, tangerine, orange)	4%	585.71	545.24
Maize	3%	1883.33	1798.15
Laurel	3%	343.33	331.48
Potato	2%	883.33	862.04
Berries (strawberry, raspberry, blackberry, blueberry)	2%		
Young plants of vegetable (piece)	2%		

### Table 17. Top 10 Crops Sold by the Beneficiary Farmers in Samtskhe-Javakheti Region

Crops	Cultivated Crops	Harvest - Mean Value / Kg	5% Trimmed Mean
Potato	67%	16288.72	11327.07
Wheat	12%	7770.83	7208.33
Cash crops (soya, barley, oats)	8%	6206.67	5451.85
Forage for animal (hay, straw, stubble)	7%	6184.62	4794.02
Beet	5%	6394.56	4771.38
Maize	4%	357.14	332.94
Dry beans	4%	124.29	123.10
Cabbage	4%	19285.71	18534.68
Tomato	3%	2600.00	2327.78
Carrot	3%	840.80	822.89

![](_page_38_Picture_0.jpeg)

As research results show, a small share of the project beneficiary farmers involved in land cultivation have invested in their farms during the 2017 agricultural season and the results vary significantly by region. Main investments are related to purchasing agricultural equipment (tractors and machines, irrigation equipment, etc.).

![](_page_38_Figure_2.jpeg)

#### Figure 33. Agriculture Investments

#### Animal Husbandry and Livestock Production

As research results demonstrate, the majority of the project beneficiary farmers own animals and are involved in animal husbandry. Farmers involved in animal husbandry are less presented in Racha-Lechkhumi Kvemo Svaneti Region, still making 74% of beneficiary group.

Figure 34. Animal and Poultry Production of Beneficiary Farmers

![](_page_38_Figure_7.jpeg)

![](_page_39_Picture_0.jpeg)

	•	Ownership		Sales		
Animals	Ownership %	Average N / Mean Value	5% Trimmed Mean	Animal Sales %	Average N / Mean Value	5% Trimmed Mean
Cattle	57%	3.42	3.11	13%	1.88	1.76
Poultry	42%	32.34	16.71	1%	8	
Bee (hive)	38%	19.23	14.85			
Pig	30%	4.63	3.87	5%	7.44	7.1
Rabbit	5%	8.44	7.66			
Sheep	2%	6.75	6.5	1%	6.5	
Horse	2%	1				
Goat	1%	1				
Donkey	1%					

#### Table 18. Animal Ownership and Sales in Racha-Lechkhumi and Kvemo Svaneti Region

### Table 19. Animal Ownership and Sales in Samegrelo-Zemo Svaneti Region

		Ownership		Sales		
Animals	Ownership %	Average N / Mean Value	5% Trimmed Mean	Animal Sales %	Average N / Mean Value	5% Trimmed Mean
Poultry	85%	45.74	44.56	3%	15	14.44
Cattle	81%	5.14	4.39	37%	2.41	2.11
Pig	40%	2.73	2.06	5%	18.78	15.14
Bee (hive)	14%	33.33	25.71	1%	27.5	
Horse	9%	1.39	1.32	1%		
Rabbit	1%	30		1%	10	
Sheep	1%	14.5		1%	7	
Goat	1%	2				

### Table 20. Animal Ownership and Sales in Samtskhe-Javakheti Region

Ownership			Sales			
Animals	Ownership %	Average N / Mean Value	5% Trimmed Mean	Animal Sales %	Average N / Mean Value	5% Trimmed Mean
Cattle	72%	17.97	15.27	48%	7.39	5.8
Poultry	43%	23.56	21.29	2%	28.33	
Pig	32%	6.2	4.89	14%	7.36	6.85
Bee (hive)	31%	45.19	40.83	2%	19.5	19.17
Sheep	10%	75.5	64.28	6%	37.64	35.98
Horse	9%	2.33	2.2			
Rabbit	2%	36.67		1%	20	
Goat	1%	17				
Donkey	1%					

![](_page_40_Picture_0.jpeg)

	Production			Sales				
Animals	Ownership %	Average N / Mean Value	5% Trimmed Mean	Animal Sales %	Average N / Mean Value	5% Trimmed Mean		
Primary Production								
Milk	55%	1433.45	1271.62	17%	712.5	702.78		
Egg	40%	346.76	309.76	4%	650			
Poultry meat	32%	26.17	18.77	4%	104			
Honey	31%	283.02	214.92	81%	276.6667	236.7806		
Pork	27%	147.13	129.89	13%	145.8333	137.037		
Beaf	4%	231.25	220.83	6%	450	1.76		
Other meat	1%	20.00						
Secondary Production								
Cheese	55%	250.37	189.91	9%	562.19	345.49		
Matsoni	36%	74.13	60.97	1%				
Bacon	22%	77.80	66.14	4%	167.86	165.67		
Nadugi	22%	32.95	26.98					
Cottage cheese	18%	29.31	27.35					
Sour cream	9%	28.88	28.92	1%				
Butter	9%	20.93	19.70	1%				
Home mage sausages	2%	15.00						
Canned food	2%	30.00						

#### Table 21. Animal Production and Sales In Racha-Lechkhumi Kvemo Svaneti Region

#### Table 22. Animal Production and Sales In Samegrelo-Zemo Svaneti Region

	Production		Sales					
Animals	Ownership %	Average N / Mean Value	5% Trimmed Mean	Animal Sales %	Average N / Mean Value	5% Trimmed Mean		
Primary Production								
Egg	81%	432.67	379.98	28%	317.14	323.49		
Milk	79%	2479.48	2049.90	7%				
Poultry meat	76%	33.86	29.87	3%				
Honey	11%	421.50	357.06	55%	444.38	380.97		
Pork	10%	52.06	47.84		7.00			
Beaf	10%	89.11	85.67	14%	130.00	127.78		
Secondary Production								
Cheese	78%	223.03	197.81	13%	287.75	207.22		
Matsoni	72%	58.08	34.65	1%				
Cottage cheese	61%	40.71	18.36	1%	615.00			
Home mage sausages	6%	9.91	9.68					
Nadugi	4%	15.00	14.72					
Bacon	1%							
Sour cream	1%							
Canned food	1%							

![](_page_41_Picture_0.jpeg)

	Production			Sales					
Animals	Ownership %	Average N / Mean Value	5% Trimmed Mean	Animal Sales %	Average N / Mean Value	5% Trimmed Mean			
Primary Production									
Milk	70%	11648.62	8882.05	53%	7453.81	4814.31			
Egg	38%	940.20	624.63	16%	452.78	389.20			
Poultry meat	26%	14.49	10.07						
Honey	25%	496.96	440.17	38%	484.05	439.81			
Pork	22%	219.42	160.21	5%	565.33	539.26			
Beaf	15%	238.00	184.81	5%	668.33	655.93			
Other meat	4%	121.25	112.22	2%	170.00				
Wool	3%	89.00	90.22	1%					
Secondary Production									
Cheese	62%	1274.41	836.05	42%	1384.40	969.71			
Matsoni	40%	336.73	307.36	1%	125.00				
Butter	18%	47.34	40.42	2%	116.67				
Sour cream	10%	35.26	30.29	1%					
Nadugi	9%	83.53	56.14	2%	333.33				
Cottage cheese	5%	34.44	29.66						
Canned food	2%	18.33							
Bacon	1%								

#### Table 23. Animal Production and Sales In Samtske-Javakheti Region

Only a minority of the project beneficiary farmers involved in animal husbandry made investments in this direction during the 2017 agricultural season. More farmers from Samtskhe-Javakheti invest in animal husbandry, while main expenses are related to cattle purchase, repair / construction of farming buildings and purchase of agricultural equipment.

![](_page_41_Figure_4.jpeg)

#### Figure 35. Investments in Animal Husbandry

![](_page_42_Picture_0.jpeg)

### Demographic Profile of Beneficiary Farmers

According to survey results, the average household size is 3.95 persons. Among the family members of interviewed households, gender distribution is balanced in all regions. As for the age distribution of household members, representation of young generation is higher in Samtskhe-Javakheti compared to two other target regions.

![](_page_42_Figure_3.jpeg)

![](_page_42_Figure_4.jpeg)

![](_page_43_Picture_0.jpeg)

### Socio-Economic Profile of Beneficiary Farmers

A majority of interviewed adult household members have completed at least secondary education (95%); among them 19% of persons have completed vocational education and 42% have achieved higher education (bachelor, master, PhD).

![](_page_43_Figure_3.jpeg)

![](_page_43_Figure_4.jpeg)

Interestingly, almost every fourth of interviewed HH members name "farmer" as their primary occupation – 23%. 27% of HH members report employment in a non-agricultural sector. Among interviewed HH members, 20% state that they are unemployed or full time home-makers.

![](_page_43_Figure_6.jpeg)

Figure 38. Primary Occupation of Household Members

![](_page_44_Picture_0.jpeg)

Almost half of the members of interviewed farming households have no non-agricultural income and they are fully dependent on the farm's production in terms of sustainability, as well as income. Share of those dependent on wages from employment and pensions is somewhat similar with slight differences across regions.

![](_page_44_Figure_2.jpeg)

Figure 39. Non-Agricultural Income Sources of Beneficiary Farmers

Annual total income of farming households varies significantly across the target regions: farmers from Samegrelo-Zemo Svaneti state that their total income, including income from farming as well as non-farming sources is about GEL 7,900; annual income of the farmers from Racha-Lechkhumi Kvemo Svaneti is about GEL 11,600 and the figure is significantly higher for the farmers from Samtskhe-Javakheti – GEL 23,400. As for the income generated from agricultural sales, Samtske-javakheti shows the highest performance with an annual average of GEL 14,900; while total household income was lowest among the farmers residing in Samegrelo-Zemo Svaneti, income generated from agricultural sales is higher compared to Racha-Lechkhumi Kvemo Svaneti – GEL 3,500 and GEL 2,500 respectively.

![](_page_44_Figure_5.jpeg)

Figure 40. Farmers Income (Agricultural + Non-agricultural Income)

![](_page_45_Picture_0.jpeg)

## References

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