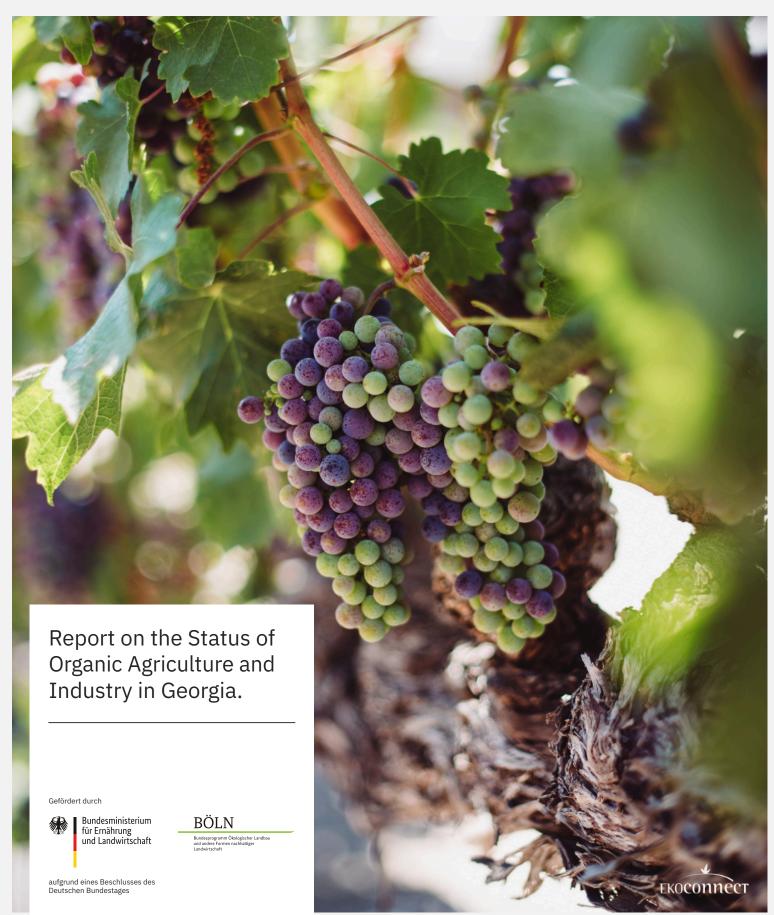
Country Report Organic

2021

GEORGIA



Imprint

Editor

Joachim Lenz, Claudia Neumannn



EkoConnect e.V. Schützengasse 16 01067 Dresden www.ekoconnect.org

Author

Heinz Gengenbach (https://www.agriservices.de/)

Proofreading

EkoConnect e.V.

Translation from German

Galina Khant

Layout & typesetting

www.whateverworks.biz

Gefördert durch





aufgrund eines Beschlusses des Deutschen Bundestages

Disclaimer

This report was funded by the German Ministry of Food and Agriculture within the framework of the project **28210E001**.

This report has been prepared to the best of our knowledge and belief. We cannot however accept any guarantee for the accuracy, correctness or completeness of the information and data provided.

Content

A	Georgia: Figures, Data and Facts	3
В	The Organic Sector in Georgia	8
	History	
	National Organic Legislation	
	Promotion Instruments	
	Associations and Marketing Organisations	
	Organic Certification Research and Consulting	
	Education and Training	
	Donor Projects	
С	Organic Agriculture and Horticulture	14
	Certified Farms	
	Farms without Certification	
	Export of Organic Raw Materials	
	Import of Permitted Inputs	
D	Organic Products Processing, Production and Trade	18
	Organic Certified Companies	
	Import of Organic Products	
Ε	The Organic Market in Georgia	21
	Organic Products Range	
	Market Size and Trends	
	Sales Channels and Stakeholders	
	Online Stores	
F	Chances and Risks	24
	Opportunities for Trade	
	Investment Climate	
	Strengths and Weaknesses	
_		

Georgia: Figures, Data and Facts

Map



Figure 1: Georgia consists of different regions and the capital Tbilisi. Abkhazia and Ajaria are autonomous republics.

Georgia is located east of the Black Sea and south of the Great Caucasus on the border between Asia and Europe. The country borders the Russian Federation to the north, Turkey and Armenia to the south and Azerbaijan to the east. The former Soviet republic has been an independent state since 1991.

Country

69,700 km²

Land area

38 years¹

Average age of the population of Georgia

Lari (GEL)²

Currency

3.7 Mio.

Population (2020)

1 Cf. https://countrymeters.info/de/Georgia.

The average age of Georgia's population is estimated by Countrymeters and is based on the latest data from the United Nations.

2 1 GEL = 100 Tetri, 1 \in = 3.5938 GEL 1 GEL = 0.2783 \in (23.9.2021) Ø 1 \in = 02,997 GEL (2018)

Economic Situation

14,377 GEL

GDP per capita (2021, nominally)3

18.5%

Unemployment rate (2020)4

3.8%

Inflation rate (2021)5

63.9 %

Public debt (% of GDP, gross, 2021)

1,278.5 GEL

gross, GEL/month, annual average (2019)

Trade Relations

WTO membership: since June 14, 2000

Free Trade Agreement:

- Deep and Comprehensive Free Trade Area (DCFTA) with the EU (in force since July 1, 2016);
- EFTA (in force with Iceland and Norway since Septmber 1, 2017, with Liechtenstein and Switzer land since May 1, 2018);
- on bilateral agreements, see www.wto.org (↳).⁶

EU's relationship with Georgia (million euros)

	2018	%	2019	%	2020	%
EU import	633.7	-2.9	655.1	3.4	767.6	17.2
EU export	2,045.4	7.3	2,008.0	-1.8	1,587.2	-21.0
Balance	1,411.6		1,353.0		819.6	

Figure 2: EU27 foreign trade (deviations due to rounding)

German import goods according to SITC (2020*/%)

Food	35.1
Textiles / Clothes	22.2
Motor vehicles and parts	21.7
Beverages / Tobacco	3.1
Other vehicles	2.5
Raw materials (except fuel)	2.4
Gold	2.4
Chemical products	2.0
Rubber products	1.5
Iron and steel	1.1
Others	6.0

Figure 4: German import goods by SITC (% of total imports)

Germany's relationship with Georgia (million euros)

	2018	%	2019	%	2020	%
German import	72.6	-3.3	59.7	-17.8	93.1	56.0
German export	359.1	4.5	403.4	12.3	316.2	-21.6
Balance	286.5		343.7		223.1	

Figure 3: Foreign trade (deviations due to rounding)

³ GEL 13.208 (2020)

⁴ official numbers: 17.6 % (2019) unofficial figures: 35.0–40 % (independend experts)

^{5 5.2 % (2020)}

⁶ Trade Topics, Regional Trade Agreements, RTA Database, By country / territory

Main suppliers

(2019**/%)

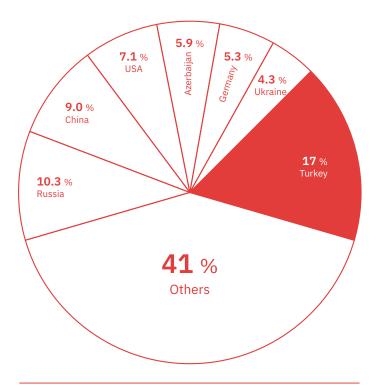


Figure 5: Germany Trade & Invest, 2021

Main consumer countries

(2019**/%)

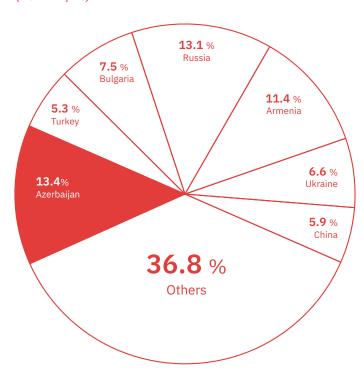


Figure 6: Germany Trade & Invest, 2021

Climate

Due to its location and landscape, Georgia can be divided into two climatic regions, namely West Georgia and East Georgia. West Georgia is characterized by a humid subtropical climate with mild winters and moderately hot summers. Average temperatures vary from 5 °C in January to 22 °C in July and average rainfall ranges from 1,100 to 1,700 mm / year. The drainage of excess water is one of the main problems for agriculture in this part of the country. East Georgia has a dry, subtropical climate

with cold winters and dry, hot summers. Average temperatures vary between -1 °C in January and 22 °C in July, while average rainfall varies between 500 and 1,100 mm / year. About 80 % of the precipitation falls from March to October, hail falls mostly in spring and autumn. The longest dry season is about 50–60 days, and drought years are not uncommon in this part of the country. In areas with rainfall of less than 800 mm / year, irrigation is required.

^{*} preliminary figure, estimate or forecast

^{**} Data for 2020 via UN Comtrade not yet available at the time of publication

Land Use

The total area of Georgia is 69,700 km². This is roughly equivalent to the area of Ireland or the Free State of Bavaria; approximately 12,500 km² or 18 per cent of the territory is the conflict areas of Abkhazia and South Ossetia.

Approximately 40 % of Georgia's territory is covered with forests. 43.4 % of the country's total area (30,300 km²) is used for agriculture (2005). Annual crops grow on 209.9 thousand hectares (Geostat, 2020), perennial crops are grown on 109.6 thousand hectares of land (Agricultural Census of Georgia 2014).

It is estimated that 40.5 % of the population lives in rural areas and 47 % of the total labour force is engaged in agriculture (Geostat, 2014). It is predominantly subsistence agriculture throughout the country, with low inputs and outputs and small farms and limited plot sizes. The main economic activities in rural areas are the cultivation of maize, grapes, citrus fruits, stone fruits and hazelnuts, and livestock.

Turnover agriculture (current prices / Mio GEL)

	2015	2016	2017	2018	2019	2020***
Agriculture total	3 884.3	3 882.7	3 724.5	4 552.8	4 834.6	5 471.7
Crop production	1 642.5	1 590.4	1 456.8	2 067.7	2 159.5	2 471.3
Animal husbandry	1 981.3	2 002.2	2 015.5	2 197.9	2 411.1	2 618.7
Agricultural services	260.5	290.1	252.2	287.1	263.9	381.7

Figure 7: Geostat, 2020 *** preliminary figure, estimate or forecast



Figure 8: Field bean cultivation in Kakheti



Figure 9: The Gallic rose thrives magnificently in Kakheti

Cultivated areas of agricultural crops (thousand hectares)

	2020	Average yield (100 kg / ha)
Total cultivated area	209.9	n/a
Total seeds and pulses	159.6	
Wheat	47.4	23.3
Barley	25.3	20.7
Maize	82.4	27.8
Runner beans	4.5	7.8
Total potatoes, vegetables and melons	31.5	
Potatoes	15.9	117.9
Vegetables	12.7	100.4
Melons	2.9	251.0
Other cultures	18.5	n/a
Annual grasses for hay	2.4	45.6
Perennial grasses for hay	10.3	37.8
Other annual crops	6.1	n/a

Figure 10: Geostat, 2020

Permanent crops (2017 / thousand hectares)

Fruit growing	47.8
Soft fruit	1.0
Winegrowing areas	36.1
Citrus fruits	8.9

Figure 11: Geostat, 2020



Figure 12: A Georgian breakfast table



Figure 13: The pomegranate is a popular fruit in Georgia

The Organic Sector in Georgia

History

In the early 1990s, after the declaration of independence of the former Soviet Republic of Georgia, there was already contact of organisations such as Bread for the World and the Heinrich Böll Foundation in the Caucasus. A group of growers joined together in 1994 to form the Association for Organic Agriculture, ELKANA. ELKANA's proactive work has led to two important results:

- the adoption of the Georgian law on organic agricultural production;
- the establishment of CAUCASCERT Ltd, the first commercial certification body in Georgia as an independent company.

National Organic Legislation

The Ministry of Environmental Protection and Agriculture and the subordinate Scientific Research Centre for Agriculture (LEPL) are in charge of organic agriculture in Georgia. This institution cooperates with non-governmental organizations, the private sector and international organizations. (4)

The standards and rules for certification for organic farming introduced by ELKANA in 1998 have been revised several times and today largely correspond to European norms. The German organizations Evangelischer Entwicklungsdienst (EED), Brot für die Welt (Bread for the World), Diakonisches Werk and Misereor provided considerable support to ELKANA in setting up the organization and acquiring expertise.

Based on the relevant EU legislation and international organic production standards (**IFOAM**), the Georgian government adopted guidelines for organic production in 2002. In 2006, the Law of Georgia on Organic Agricultural Production was adopted and in 2007, the National Standard of Georgia – Basic Requirements for Organic Production and Production Rules SST 86:2007 and the Regulation of the Minister of Agriculture of Georgia on the List of Substances Allowed in Organic Production entered into force.

In 2013, the Georgian government published the Regulation on Organic Production, which entered into force on January 1, 2014. This regulation is based on the EU organic legislation:

 Regulation of the Government of Georgia on Bio Production, No. 198, July 30, 2013 (4)

Promotion Instruments

State support measures specifically for organic agriculture and horticulture, as in the European Union, are few only. Currently, the Georgian government has launched a five-year program (USD 0.5 million) to promote the production and certification of organic products as part of the Georgian Prime Minister's Green Economy Initiative. It provides co-financing and tax incentives for

producers and / or processors, as well as support for certification and technical training (see section "Organic Certification").

The majority of the support measures are provided by foreign donors such as the **European Union**, the **FAO** or **UNDP**, as well as development programs of individual states and non-governmental organizations (see section "Donor Projects").

Associations and Marketing Organisations

Cultivation association ELKANA



The non-governmental organization (NGO) Elkana, founded in August 1994, is committed to the development of organic cultivation and marketing in Georgia. Elkana has also been active in the field of internationally recognized organic certification. The NGO finances itself from international donations and membership fees and has been a member of the International Federation of Organic Agriculture Movements (IFOAM) since 1996.

As the umbrella association of Georgian organic farmers, it comprises of about 649 individual members and 68 organizations with more than 2,500 farmers, including 519 individual memberships, at the beginning of 2021.

A total of 50 employees work in the head office in Tbilisi, a regional office in Akhaltsikhe (South Georgia) and in regional offices in Samegrelo (Zugdidi), Shida Kartli (Gori), Kakheti (Dedoplistskaro) and Mkheta-Mtianeti (Tianeti). Elkana cooperates with two nature conservation companies, a seed farm in Tsnisi (Samtskhe-Javakheti) and an animal farm in Zemo Khodasheni (Kakheti).

ELKANA staff are active in agricultural consulting in arable farming, animal husbandry, fruit & berries, grapes & wine, beekeeping and rural tourism, and also support producer groups in introducing internal control systems. On-farm topics such as worm compost, improving soil fertility, pest control, etc. can be dealt with on various demonstration plots. The production of information material on organic farming and eco-tourism is one of the core tasks.

Elkana supports farmers in marketing their products and tries to connect farmers directly with potential consumers. The population is to be made aware of organic products e.g. through food tastings and participation in local exhibitions. Several times, Elkana member farms have been able to present their offers at BIOFACH (the world's largest trade fair for organic products) in Nuremberg.

Cultivation association SEMA (Georgian Ecological Agricultural Association)



SEMA was founded in 2006 and has been a member of IFOAM since 2008. Of the approx. 104 member farms (2021), none is certified by Caucascert. The contact person is Dr. Besik Kalandadze. He provides consulting to organic farmers and those interested in converting to organic and organizes trainings and further education. Funding is provided through projects.

E-mail: ecosema@gmail.comTel: +995 593 305 032

Biodynamic Farmers Association of Georgia

A group primarily of winegrowers who have or are seeking Demeter recognition. Cooperation with Demeter International and the KIWA inspection body.



Figure 14: Mamuka Bliadze. View into the Arteni Valley

- Contact person: Mamuka Bliadze, Demeter winegrower
- E-mail: m.bliadze@yahoo.com

https://www.facebook.com/biofarmgeo/

https://www.facebook.com/elkana.org.ge/

Business Development

German Business Association (DWV) in Georgia



DWV was founded in Georgia in 2007 and has over 180 members from various sectors of the economy in 2021. DWV's goal is to promote trade and economic relations between Germany and Georgia and to represent the interests of German business locally. DWV is a membership organization of companies and partners active in bilateral German-Georgian economic relations. It also represents with Messe Frankfurt the world's third-largest trade fair company, and the Senior Expert Service (SES), which provides Georgian companies and institutions with know-how at favourable conditions. (\(\frac{1}{2}\))

https://dwv.ge/

https://www.facebook.com/dwv.ge

Germany Trade & Invest (GTAI)



With over 50 locations worldwide, Germany Trade & Invest (GTAI) supports German companies on their way abroad, promotes Germany as a business location and assists foreign companies in establishing themselves in Germany.

GTAI also reports on economic development in the South Caucasus (Georgia, Armenia, Azerbaijan). The GTAI country page on Georgia (4) provides up-to-date information on the economic environment, industry development, legal and customs issues, tenders and development projects.

https://www.gtai.de

Tip: Katrin Kossorz: "Biolandbau in Georgien auf dem Vormarsch"

https://www.gtai.de/gtai-de/trade/branchen/branchenbericht/georgien/biolandbau-in-georgien-auf-dem-vormarsch-678086

Organic Certification

There are several inspection bodies operating in Georgia: Caucascert LTD and KIWA BCS.

The organic certification company **CAUCASCERT Ltd** has been in existence since 2005 and its main purpose is the control and certification of organic products. CAUCASCERT Ltd and its Armenian counterpart **ECO-GLOBE LLC** manage the dominant local organic brand **Green Caucasus**. The first organic certifications according to the Green Caucasus Standard took place in 2010. Products certified by ECOGLOBE and CAUCASCERT may be sold as "organic", "ecological" and "bio".

Organic products can be certified in four control areas.

- Unprocessed plant products including collected wild plants
- Live animals or unprocessed animal products including honey
- Processed agricultural products (food) including wine
- Vegetative propagation material and seeds for cultivation.

According to the Caucascert inspection body (April 09, 2021), as of 2020, a total of 2,158 ha of agricultural land has been certified, of which 484 ha are in conversion. The number of certified clients is 72.

There are also two certified groups involved in the internal control system:

23 beekeepers, Jara Beekeeping Association (JBA) (↳)

- 195 hazelnut farmers, CaucasNut Association ()

In conversion:

13 individual farmers and an additional 346 hazelnut farmers who are also certified as group.

Green Caucasus has been accredited by the German Accreditation Body – DakkS (formerly DAP) since January 2008 and the certificates issued by ECOGLOBE and CAUCASCERT are legally recognized by the competent authorities in the European market and Switzerland for organic production. At the end of 2020, CAUCASCERT was successfully re-accredited according to the German ISO-17065, allowing the company to continue issuing organic certificates initially until the end of 2022.

CAUCASCERT Ltd is authorized by the European Commission to validate its clients and issue electronic import control certificates in TRACES (Trade Control and Expert System).

Info

CAUCASCERT Ltd



http://caucascert.ge/en/home

KIWA BCS Öko-Garantie GmbH



https://www.kiwa.com/de/de/uber-kiwa/tochterfirmen/ansprech partner-kiwa-bcs-oko-garantie-gmbh/scheme-manager-bcs/ An updated list of Georgian companies certified by CAUCASCERT or in the process of converting to organic agriculture, with their cultivated products and region, is available on the Internet (4).

In addition to CAUCASCERT, organic products from Georgia are also certified by the certification company **KIWA BCS**, based in Nuremberg. KIWA's head office is in the Netherlands.

This company, which operates in 35 countries, is one of the 20 leading global providers of testing, inspection and certification. In Georgia, KIWA certifies the export-oriented **Georgia's Natural group**, among others.

In eastern Georgia (Kakheti region), the group cultivates a 300 ha area with 15 different fruit, berry, vegetable and walnut varieties. ()

For Bio Suisse International, Naturland and Demeter, Kiwa BCS only carries out the inspections according to the association standards; the certification is carried out by the associations themselves. (4)

Research and Consulting

In order to restore scientific research activities in the agricultural sector, the Georgian government established the LEPL Scientific-Research Center of Agriculture (SRCA) in 2014. One of its central tasks is to "support organic agricultural production" and "promote ecologically safe food and alignment with international standards".

The research centre also oversees various demonstration plots for wine, fruit and forestry crops. (4)

At present, there is no university in Georgia with a specialized course in organic agriculture. Due to limited financial resources and access to technical information, organic production tends to be treated in theoretical and general science contexts.

The Association for the Promotion of Sustainable Food and Landscape Culture at the University of Kassel has been active in Georgia since 2006 and has announced the first professorship for organic agriculture and nature conservation in Georgia at the Agricultural University / Tbilisi and financed it with further 3 posts over 5 years and set up a laboratory for soil and food analyses.

Since 2011, **Prof. Dr. Teo Urushadze** has been Dean of the Faculty of Agricultural and Natural Sciences, Agricultural University of Georgia.

In 2017, the Agricultural University / Tbilisi published a "Handbook on Organic Agriculture" in cooperation with Elkana.



Figure 15: Organic experimental plots of the Georgian Scientific-Research Center of Agriculture

Other universities in Georgia engaged in activities related to organic production:

- The International School of Economics (ISET) at Tbilisi State University recently conducted research in the framework of the Organic Hazelnut Project (see section "Organic Certification"), which focused on the needs of individual stakeholders in the organic hazelnut production value chain.
- Research activities at the Georgian Academy of Agricultural Sciences (GAAS), a series of lectures at the
 University of Batumi and a program providing in-depth training abroad (Germany, Poland) for university
 students are also worth mentioning.

Info

LEPL Scientific-Research Center of Agriculture (SRCA)



https://srca.gov.ge/en/about

Agricultural University of Georgia



http://www.agruni.edu.ge

The Department of Ecological Agricultural Sciences at the University of Kassel and the School of Agricultural and Natural Sciences at the Agricultural University of Georgia have launched the Sustainable Agricultural and Food Systems (SAFS) Structured Doctoral Program as a long-term structured doctoral program. The Volkswagen Foundation in Germany and the Rustaveli Foundation in Georgia are funding SAFS for 4 years until January 2022.

ternships and seminars for students from the states of the former USSR and carries out projects with federal support.

There are contractual arrangements with various universities in Georgia for students to work as interns in Germany and thus expand their knowledge.

Education and Training

In Georgia, sustainable or organic farming methods have not yet found much acceptance either in vocational schools (colleges) or in universities. There are some attempts, e.g. to establish the dual system, as it has been successfully practiced in Germany for a long time (e.g. in viticulture), also in Georgia. Organic production was included in the state education standards in 2019 – with an extensive number of course modules - and in the vocational specialization catalogue. Students who complete these courses can earn a five-step vocational certificate in organic agriculture, organic crop production, or livestock production (USAID, 2020). In order to transfer know-how from Europe to Georgia, Brot für die Welt offers various placement opportunities for volunteers. Minimum age: 18 years (4). For example, in the Caucasus Environmental NGO Network (nature and environmental protection) CENN volunteer service is also possible for one year with the organic farming association ELKANA.

With the support of the Swiss Protestant Church Aid organization (HEKS), the **Sartikhala vocational school in Kakheti** has been supported to the point where it can be run independently from 2022. The Sartikhala training centre offers two years of theoretical and practical training. The students also attend further training courses, for example in the areas of organic farming, business management and marketing, as well as disaster prevention. In addition to the theoretical part, practical training also plays an important role. The teachers advise the students on the practical implementation of what they have learned on their farms and support them in market-oriented production.

Since 1995, **LOGO e.V.** (Agriculture and Ecological Balance with Eastern Europe) has been committed to vocational training, organic farming and international understanding. The non-profit association organizes in-

Info

Prof. Dr. Teo Urushadze

https://t.urushadze@agruni.edu.ge

Sustainable Agricultural and Food Systems (SAFS) Structured Doctoral Program





http://www.safs-edu.org/

Volunteer program



 Caucasus Enviromental NGO Network (nature and environmental protection) CENN

http://www.cenn.org/

 1 year voluntary service with the organic growers' association ELKANA

https://www.ein-jahr-freiwillig.de/stellen/biolandwirtschaftsverband-elkana-georgien/57498

Sartikhala Agricultural School, Kakheti

https://www.heks.ch/was-wir-tun/georgien/projekt-918043

LOGO e.V.



 Internships for students from the green sector on organic farms in Germany

https://www.logoev.de/de/

Donor Projects Ongoing organic agriculture projects in Georgia (selection)⁷

Promotion of organic farming, rural development and the protection of agricultural biodiversity in Georgia

- Project period: January 2021 to June 2024
- Donor: Brot für die Welt, Germany

https://www.brot-fuer-die-welt.de/

Promotion of organic farming and agrarian tourism in the Mtskheta-Mtianeti region, poverty reduction through sustainable local economic development.

- Project period: 2019 to 2023
- Donor: Austrian Development Agency (ADA), Österreich

https://www.entwicklung.at/laender/suedkaukasus/georgien

Cross-border networking for the development of a regional organic brand for agricultural products in the Black Sea basin, strengthening internet connectivity, information exchange and training in green agriculture.

- Project period: 2020 to 2022
- Donor: Europäische Union

https://agreen-project.eu/

Development of local organic farming initiatives in Svanetia, Rakha-Lechkhumi and Upper Imereti.

- Project period: August 2019 to April 2023
- Donor: Austrian Development Agency (ADA), Austria

https://drive.google.com/file/d/1jD8ts38UhMG80ZkdaBdmq0jeEOa EVauc/view

Development of value chains in organic hazelnut cultivation, poverty reduction and sustainable economic development in West Georgia: Imereti, Samegrelo-Zemosvaneti and Guria.

- Project period: 2018 to 2023
- Donors: Pakka Foundation, Switzerland, the Swiss Protestant Church Aid organization (HEKS / EPER), Danish Development Agency (DANIDA), Denmark

https://pakkafoundation.org/projekt-georgien-2/

Programme for a 50/50 cost-sharing for an assisted acquisition of organic certificates

- Project period: since 2019
- Donor: USAID-Landwirtschaftsprogramm, USA

https://ge.usembassy.gov/tag/usaid-agriculture-program/

⁷ Selection based on research by Germany Trade & Invest (GTAI)

Organic Agriculture and Horticulture

Certified Farms

The story of **Gotsa Family Wines** begins at the beginning of the 20th century, when Konstantin, Beka Gotsadze's grandfather, started making traditional wines in western Georgia. Today, not far from the capital Tbilisi, Beka and his family continue to run the winery in the village of Kiketi. Currently, Beka Gotsadze cultivates 14 different grape varieties in the 4 ha vineyard, which is idyllically situated at an altitude of 1300 metres in the immediate vicinity of the Algeti National Park.

Gotsa's wines are free of any additives, they are fermented spontaneously in clay vessels (Kvevri's). As of 2018, Gotsa Wines has organic certification by the inspection body **Kiwa BSC**. The vineyard and winery are run according to the **DEMETER** biodynamic standard and are DEMETER certified from the 2020 harvest.⁸



Figure 16: Beka Gotsadze in his vineyard

Exemplary Certified Farms (selection)

Bio Farm Pona Ltd was founded in 2014 to build a diverse farm that produces according to the principles of biodynamic agriculture. Since autumn 2019, Bio Farm Pona's plant products have been certified by Caucascert.

Seven people from the region plus volunteers work at Bio Farm Pona.

Info

Gotsa Family Wines

GOTSA WINES

- E-mail: bgotsa@gmail.com

http://www.gotsawines.com/en/ https://www.facebook.com/profile.php?id=100009699964428

Bio Farm Pona - ბიო მეურნეობა ფონა

- Plant products, agriculture
- Contact person: Barbara Gimelli Sulashvili
 Tel.: +995 599 33 44 32, E-mail: info@pona.bio
- Videos about Bio Farm Pona:
 https://soplidan.ge/biomeurneoba-fona/
 https://chaikhana.media/en/stories/991/reviving-the-wheat-fields

https://pona.bio/



Figure 17: Vegetable production at Bio Farm Pona



Figure 18: Georgian wheat variety "Tsiteli Doli".

- Crops (approx. 29 hectares): lucerne, oats, peas, rye, maize, field beans, buckwheat and the traditional Georgian wheat varieties "Tsiteli Doli", "Tetri Tavtuchi" and "Tschelta Sanduri".
- Vegetables (approx. 2 ha including potatoes): approx.
 30 different crops grow in the open field and in greenhouses.
- Fruit growing (2 ha): pome (apples, pears, persimmons and pomegranates, various types of plums)
- Beekeeping: The Bio Farm Pona maintains its fertility not least thanks to several bee colonies that "produce" delicious honey.

Processing:

- Gentle drying of fruits and herbs with Swiss technology
- Feed mill for the production of organic concentrated feed
- Mill for the production of organic whole grain and other flours
- Bakery for the production of organic whole grain bread and other specialty products.

Marketing:

- Directly to shops and online shops such as soplidan.ge (4)
- Via distributors to hotels and a hypermarket

Founded in 1935, the **Anaseuli tea factory** is one of the oldest tea production facilities in Georgia. Georgia is one of the northernmost tea growing countries in the world. The humid and subtropical Black Sea climate creates ideal conditions for tea cultivation in five regions of western Georgia: Adjara, Guria, Samegrelo, Imereti and Abkhazia.

Shortly after Georgia's independence from the Soviet Union, the tea sector collapsed due to the civil war and the loss of markets. Year after year, tea production has declined, so that today only 1,800 tons are produced. Of the total tea plantations in Georgia (10,760 hectares), only about 1,700 hectares are productive, of which 84 % are privately owned. The rest are considered wild or overgrown plantations, of which about 60 % are state-owned.



Figure 19: Anaseuli tea garden in Gurien

Info

Online Shop soplidan.ge



- Facebook: https://www.facebook.com/soplidan

https://soplidan.ge/

Anaseuli Tea Factory Ltd, Guria – Anaseuli



- Organic certification since 2013
- Tel.: +995599573073, e-mail: anaseuli.tea@gmail.com

http://tradewithgeorgia.com/companies/anaseuli-experimental-tea-fact-1

The **Georgian Tea** program was launched in November 2015 by the Georgian Ministry of Agriculture and Economy and aims to gradually rehabilitate 7,000 ha of tea plantations in Georgia. The Anaseuli Tea Factory has bought a 62 ha tea plantation and is managing it organically.

In 2014, Felix Herold and Reinhard Büchner, both Rose Office, founded Kakheti Bio together with Elisabed "Lisi" Khmiadashvili and her husband Alexander "Aliko" Kurtanidze - with financial support from Wolfgang Paulsen. Lisi studied organic agriculture at the University of Kassel / Witzenhausen in the 1990s. Together with Aliko, she is one of the pioneers of organic farming in Georgia. In the beginning, they grew lettuce, which was marketed in the capital Tbilisi.

The land is located in Kakheti in eastern Georgia. Currently, they cultivate a total of 30 ha. Of these, 16 ha are cultivated for roses and 9 ha for herbs, spearmint, tarragon and marigold for export.

The main focus is on the cultivation of the Gallica rose. In the future, ecologically produced rose oil is to be extracted from it, which is highly sought after by some wellknown cosmetics manufacturers, especially in Germany.



Abbildung 20: Ernte der Gallica Rose bei Kakheti Bio

This will continue an old tradition of Georgian rose oil production — in the times of the tsars there are said to have been a thousand or more hectares of roses. For some time now, there has been a cooperation with Giorgi Velijanashvili, who grows eco-certified roses on about 3 hectares near Kvareli and markets his harvest through Rose Office.

"If you want to export your products abroad, you can't do without an organic certificate," Lisi Khmiadashvili says. Since 2017, Kakheti Bio's products have been allowed to be labelled as "eco", "biological" or "organic". Organic certification is carried out annually by the Georgian inspection body Caucascert.

Farms without Certification

For many smaller producers, organic certification is too expensive and too time-consuming.

It is therefore not possible to give an exact figure for all the areas and farms in Georgia.

The 104 members of the SEMA growers' association cultivate a total of 231 ha according to organic principles (2021): 85 ha of cereals, 43 ha of vegetables, 55 ha of fruit (apples, peaches, nectarines, soft fruit: blueberries and cranberries), 55 ha of wine.

Export of Organic Raw Materials

The majority of Georgian organic product exports are for Germany. A prerequisite is certification according to the EU organic standard. The most important certified and exported organic products include wine, hazelnuts, honey, organic tea and wild plants. Fresh and processed fruits, berries and vegetables are on the rise both locally and internationally due to the increased popularity of organic products. Contrary to Georgia's long tradition in wine growing, organic wine from Georgia is still a niche product. The good prospects for Georgian organic agriculture are favoured by trade relations between Georgia and the EU created by the EU – Georgia Deep and Comprehensive Free Trade Area (DCFTA) agreement.

Info

Kakheti Bio



- 4216, Kakheti Region, Sighnaghi, Tsnori
- Tel.: +995 599 976662, e-mail: kakheti.bio@gmail.com

https://www.rose-office.com/georgien

ROSE OFFICE GmbH



- Founder and sales partner
- Heyestraße 194, D-40625 Düsseldorf
- Tel.: +49 (0)211 249 512 97, e-mail: info@rose-office.com

https://www.rose-office.com/

Exports from Caucascert customers (Organic and wild plants) (2019)

Product	Export volume in kg	value in Euro	Impor country
Blackberry leaves	79,662	208,472	D
Blackberries, whole	1,550	19,344	D
Blueberries, whole	4,225	87,140	D
Dandelion, whole	6,250	24,875	D
Herbs	2,542	15,240	D
Rose hip peels	37,425	24,727	D
Rose hip peels	20,100	69,632	D
Sea buckthorn	7,615	58,123	D
Wild apple	79,870	149,353	D
Wine	4,068	39,513	D
Liquorice	10,040	30,720	D/Pl
Liquorice	325,000	754,464	D/F
Tea	584	11,526	CZE
Laurel	590	1,786	Ukr
Abies Nordmanniana Seeds	2,727	117,282	DK

Figure 21: Exports from Caucascert contract partners (D = Germany, Pl = Poland, F = France, CZE = Czech Republic, Ukr = Ukraine, Dk = Denmark)

Import of Permitted Inputs

There are several suppliers of imported organic fertilizers in Georgia.

- Koppert Biological Systems, a leading Dutch organic products company, opened a branch in 2018.
- Bioservice LLC imports bio-inputs from Latvia, including peat and sea silt-based organic plant fertilizers, and sells them in Tbilisi (4).
- ABC Delivery is local with its online sales platform for organic pesticides and organic fertilizers (↳).

There are other local companies that import and / or resell organic fertilizers. These also trade in conventional fertilizers, pesticides and other agricultural inputs.

Some of these companies are:

- Gori-based Agrobest LLC sells several organic fertilizers and organic pesticides, including one that controls the marbled tree bug.
- Cartlis Agro LLC Systems distributes a bio-fertilizer and a bio-insecticide through its service centres with locations throughout Georgia.
- Agro-distribution company Noblex LLC sells several bio-fertilizers through its Agrosphere retail locations in the city of Tbilisi and the Kakheti region.
- Tbilisi-based LLC BestService offers imported products, including two bio-fertilizers, a bio-acaricide, and a bio-immunostimulant.
- Born Agrochemistry LLC distributes four brands of bio-pesticides and one bio-fertilizer through its shops in Tbilisi, Kakheti and Kvemo Kartli regions.
- Agrovita LLC, the official partner of BASF (a German chemical company) in Georgia, sells bio-fertilizers, bio-fungicides and bio-insecticides through its network of local shops.

Info

Agrobest LLC

http://www.agrobest.ge

Cartlis Agro LLC Systems

https://bit.ly/2XSBDYa

Agrovita LLC

http://www.agrovitafsc.com/organic-farming

Organic Products Processing, Production and Trade

Georgians see their country as the Garden of Eden that produces high-quality food. In the meantime, more and more producers and processors of delicious products of organic quality are also finding their way.

Organic Certified Companies

The majority of processors and traders of certified organic products in Georgia rely on exports, especially to the countries of the European Union. In this context, the companies receive support from European programs and from international development organizations, e.g. from Germany, Switzerland and Austria (see section "Donor Projects").

The Georgian government has recognized these export opportunities, not only for organic products, and launched the successful **Produce in Georgia** support program in 2014. The business development agency **Enterprise Georgia** has been managing its sectoral and cross-sectoral initiatives since 2017.

Under this program, the National Agency for State Property (LEPL) is responsible for the free transfer of state-owned land to an entrepreneur under certain investment obligations. () / ()



Figure 22: Georgian organic juices at ANUGA, 2020 in Cologne.

Info

Enterprise Georgia



 The Enterprise Georgia website also features a number of organic processors and retailers: http://tradewithgeorgia.com/

www.enterprise.gov.ge

Outstanding Organic Producers (selection)

Organic hazelnuts: Caucasnut



The **Caucasnut** association was founded in January 2020 and brings together eight cooperatives and an informal group from the Samegrelo and Imereti regions. The association works with 700 farmers in West Georgia who manage hazelnut plantations organically.

Caucasnut received UTZ / Rainforest Alliance certification for 612 farmers and EU-recognized organic group certificates for 195 farmers. The production capacity is about 1300 tons of nuts and about 500 tons are expected to be bio-certified.

The Caucasnut association uses the group certification system of the **ELKANA** organic growers' association and ensures traceability of the products produced at all levels of the production chain.

The hazelnuts are sold in Georgia as well as exported to Germany, Greece and Italy.



Figure 23: Fresh organic hazelnuts from Georgia

http://tradewithgeorgia.com/companies/association-caucasnut

Geoflower Ltd



LTD Geoflower was founded in 2007 and is based in West Georgia. The company specializes in the processing and drying of fruits and medicinal herbs such as wild apples, wild pears and sea buckthorn and wild mint. Geoflower Ltd operates three processing plants.

With the aim of further improving product quality and increasing exports, the company invested in the procurement and installation of a belt dryer (with gas burner) for fruits and leaves, a drum washing machine, a nettle cutting machine, a bubble washing machine and a leaf pressing machine in 2021.

As an export-oriented company, Geoflower Ltd currently supplies 98 % of its products to EU markets. Geoflower Ltd has been biocertified by Caucascert since 2013.

http://tradewithgeorgia.com/companies/geoflower-ltd-1

AGROSTORE GEORGIA (TM SIAMO)



Agrostore agricultural cooperative was founded by people from different backgrounds with the common idea to run ORGANIC FARM.

AGROSTORE Georgia is an agricultural cooperative in the eastern part of Georgia, Kakheti.

Organic raspberries (Tula Magic variety), strawberries (Cabrilo variety) and persimmons (Hachiya variety) are grown. Agrostore is still in the process of conversion and is controlled by Caucascert.

Export countries: Georgia, Kuwait, Qatar, United Arab Emirates



Figure 24: Organic raspberries

https://www.siamo.ge/

facebook

GEORGIA'S NATURAL / AROMAPRODUCT



This group of companies is a leader in the cultivation, processing and distribution of organic products. The following organic products are certified by KIWA BCS for export to 40 countries worldwide:

 Vegetables (frozen), herbs, apples, pears, barberries, pomegranates (2,000 ha), rose hips (10,000 ha), blueberries and blackberries. These are processed into vinegar, fruit puree and iuices.



Figure 25: Wild collection; blueberry puree; stand at BIOFACH 2020

https://georgiasnatural.com/en/home

BioAgro LLC

The Centre for Biological Plant Protection produces **Organica**, a unique bacterial liquid fertilizer, the only bio-certified fertilizer in Georgia. It is an ecologically safe product that is available both locally and in the EU.

Organica is also used as a means of improving and regenerating soil properties. BioAgro LLC produces 3 bioinsecticides and 3 biofungicides. $(\) \ / \ (\)$

http://bioagro.ge/organika



Figure 26: Bio Agro LLC: An award-winning Georgian manufacturer of biological crop protection products

Import of Organic Products

There are some importers of organic food in Georgia. These mainly import products of the dry assortment, predominantly from the EU. Unfortunately, no exact data on sales figures etc. can be determined at

present. The large supermarket chains that offer an organic range have their own purchasing and logistics.

The company **Baby Food LTD** is a member of the German Economic Association in Georgia and sells HIPP products, which are produced in Germany, in supermarkets and pharmacies: Baby Milk and Baby Food. (4)

The Organic Market in Georgia

The customers for organic products live and work mostly in the three largest cities: Tbilisi, Batumi on the Black Sea and Kutaisi in the Colchis Plain. There, some supermarkets (hypermarkets) offer an organic range of products.

Organic Products Range

The majority of domestic food produced according to the principles of organic agriculture and horticulture is marketed directly and is not certified according to EU organic standards. This also applies to the member farms at the two farming associations ELKANA and SEMA (see Chapter B section "Associations and Marketing Organisations"). The customers for these **organic products** live mainly in the capital Tbilisi and in Batumi. Many of them are employees of European companies or political representatives or NGOs. For this clientele, including sensitized Georgians, direct contact with the producers counts, in the confidence that these foods are grown without mineral fertilizers and chemical pesticides and are therefore **healthy**. Organic labelling does not seem to play an important role in their purchasing decisions.

Advertising and sales via print media are only sporadic, as there are only a few magazines or journals. Communication is mainly via social media, internet, radio and regional TV stations.

Info

"HORTICULTURAL BIOMARKET"

 This free online document is the result of a systemic study on bioproduction in Georgia.
 It was commissioned in 2019 by the USAID Agriculture Programme and carried out by the ELKANA Organic Farming Association.



https://storage.googleapis.com/crop2shop_news_images/(1598878268481)--HORTICULTURALBIOMARKETSURVEY.pdf

Market Size and Trends

So far, the state organization Geostat does not collect separate data regarding the import / export of organic products, so that the market volume cannot be precisely quantified (cf. Bregadze 2021). Sales figures for exports of organic raw materials are only available via the inspection body Caucascert or partly via ELKANA, as these have to be certified (see section "Export of Organic Raw Materials"). However, the current exports of Georgian certified organic products are manageable, both in terms of volume and variety.

According to the GTAI's assessment, the marketing of **green** food from Georgia still has many hurdles to overcome. In addition to the lack of supply chains, sufficient delivery quantities and a broad product range are not always ensured. Moreover, Georgian organic producers are not sufficiently informed about markets at home and abroad. Local marketing strategies and supply chains are lacking (cf. Kossorz 2021).

Sales Channels and Stakeholders

Pure natural food shops, such as those in Germany with defined criteria regarding the range of products on offer, do not yet exist in Georgia. In Tbilisi, Jean-Jaques Jacob's market stall with freshly baked whole meal bread, Swiss-style cheese and fresh vegetables as well as juices etc. was a popular meeting place for buyers of natural products for several years.

In supermarkets, called "hypermarkets" in Georgia, mainly imported organic products can be found, e.g. in SPAR markets there is a range with the own brand **Edeka Bio**. The **Goodwill** supermarket chain was one of the first in Georgia. Shelves with imported organic products, mainly from Europe, are placed there and also in the **Carrefour** markets (since 2012). The first **Agrohub** supermarket opened in Tbilisi in 2016. There, consumers can buy "fresh, organic and healthy agricultural food of local production".

Info

Goodwill supermarket chain

https://www.goodwill.ge/

Carrefour

https://www.carrefourgeorgia.com/

Retail

Shop and cafe Au Ble'd'or

- Owner: Jean-Jaques Jacob together with his Georgian wife Khatuna
- Assortment: home-baked wheat and rye breads, cheese made from cow's milk according to a Swiss recipe, and seasonal vegetables and fruit. Most of the produce comes from Kakheti, from the farm of the Momavlis Mitsa association.

https://www.facebook.com/jeanjacques.jacob.549

Sunflower Health Food Store

 Operator: Vegetable and herb grower Jochen Jäger with the brand Jammy Green offers a colourful assortment of own and bought-in food.

https://www.facebook.com/Sunflower-Health-Food-Store-430521267080040/?ref=page_internal

Showroom of the internet provider Soplidan.ge

In September 2021, the online mail-order company Soplidan.ge opened a small face-to-face shop in Tbilisi. The share of organic products is currently still limited to fresh vegetables and dried fruit and herbs from the bio-certified organic farm Pona (Kakheti). (4)



Figure 27: Soplidan vegetable shop in Tbilisi

https://soplidan.ge/

Online Stores

E-commerce: A widespread and popular marketing channel is via social media.

soplidan.ge Straight From Local Farmers



Soplidan.ge is an online mail order company founded in October 2015 with the aim of connecting city and village. This up-and-coming company employs about 15 people. More than 7,000 customers can order online and get their goods delivered the next day at the latest. More than 650 suppliers, of which only two are organic producers, have a good sales channel through this company. A small showroom of 25 square meters is intended to enable customers to come into direct contact with the regional products (see above).

Videos of the suppliers can be viewed on their own YouTube channel, e.g. about the **organic farm Pona** (Kakheti).

https://soplidan.ge/biomeurneoba-fona/

Ecomart.ge



The **ELKANA** growers' association has been operating its own internet shop since 2020 with the support of **Pro Credit Bank**.

Around 30 farmers offer their goods there, such as honey and honey products, soft fruits, cereals and legumes, tea, grapes and wine with the Elkana logo. They are allowed to carry the ELKANA logo if they meet internal guidelines based on IFOAM and Codex Alimentarius standards. These are checked by Elkana.9 ()

www.ecomart.ge

- 8 Natia Ninkelashvili, Soplidan Managing Director: telephonic communication, 20.09.2021
- 9 Mariam Jorjadze, Director of ELKANA: Message received by e-mail on 20.09.2021

F

Chances and Risks

Georgia is an attractive investment location in the South Caucasus. Through the Free Trade Area (DCFTA), it is also possible for Georgian producers and traders to export organic products to the European market. In the country itself, the purchasing power is too low. Sales opportunities are more likely to be found in Russia and Central Asia.

Opportunities for Trade

Exporting German food to Georgia involves little effort and moderate costs. Since 2016, there has been an association agreement between the EU and Georgia that facilitates access for Georgian products to EU markets and for the flow of goods to Georgia. However, the provinces of Abkhazia and South Ossetia are excluded from DCFTA. Due to DCFTA in force, tariffs, quotas and full alignment of trade-related laws and regulations with EU standards are another way for Georgia to integrate into the EU market. Georgia profits from the Most Favoured Nation trade and tariff benefits under the Generalized System of Preferences - GSP for developing countries (valid until 31.12.2023). This status allows duty-free imports from the republic to the EU (and Turkey) for almost 7,200 products. So far, however, Georgia has made only marginal use of these sales opportunities (cf. DWV market information).

Investment Climate

According to GTAI, Georgia is dependent on foreign investment to implement its economic policy goals. The liberal environment and free trade with many countries make Georgia an attractive investment location in the South Caucasus.

The net inflow of foreign direct investment to Georgia averaged 1.6 billion US dollars per year from 2015 to 2019. According to information from GTAI (Uwe Strohbach, 2021), approximately 200 million euros were invested directly each year from 2017 to 2019.

Everyday corruption is extremely rare in Georgia today. However, advantage-taking and bribery at the higher level (business and politics) are not uncommon and have increased recently, according to market observers.



Figure 28: Organic honey from Georgia

Weaknesses and Strengths

Georgia's economy achieved annual real growth of around 5 per cent in each of 2017 to 2019. After a weak year due to the Corona crisis, there are good prospects for a quick turnaround in 2021 and future annual growth of 5 per cent or more.

Agriculture employed about two-fifths of all employed people in 2020, but contributed only 8 per cent to total economic output. The high employment rate indicates a low efficiency of agricultural production.

In his analysis of strengths and weaknesses, Dr. Strohbach notes a "considerable potential for organic farming". In order to be able to exploit this, trained specialists are needed who have not only theoretical but also practical knowledge and experience. (Strohbach 04.05.2021, in: GTAI)

Russia is a huge sales market for organic products from Georgia.

At an online meeting with Thomas Kimmeswenger, German Business Association in Georgia (DWV) and Katrin Kossorz as well as Dr. Uwe Strohbach, both German Trade & Invest (GTAI), Russia, Central Asia and the Arab states were rather mentioned as sales areas for organic products. Georgia is a "trading country" that imports more than 70 % of its food, but currently has too little purchasing power for organic products.

The Market for Organic Food in Georgia

Strengths

- Food from Georgia has a good reputation
- Linking organic products and tourism
- Variety of products on offer: fruit, vegetables, tea, herbs, etc.
- Opening of shops or founding of companies

Opportunities

- Large sales market in Russia and Central Asia
- Supermarkets have their own natural food shelves
- E-commerce: online shops for organic products
- Presentation of organic food at trade fairs: e.g. BIOFACH

Weaknesses

- Low purchasing power
- No sufficient infrastructure (roads, water, etc.)
- Delivery quantities too low for export
- Training and further education of skilled workers in organic farming
- So far no organic certification of trading companies

Risks

- High-tech agricultural technology requires know-how and service in the country
- Sustainability of projects financed by foreign donors
- Europe has high quality standards that are difficult to achieve

Figure 29: Own compilation, Gengenbach 2021

Figures and References

Figures

1	Georgia consists of different regions and the capital Tbilisi. Abkhazia and Ajaria are autonomous republics.	3
2	EU27 foreign trade	4
3	Foreign trade	4
4	German import goods by SITC	4
5	Main supplier countries (2019), from: "Wirtschaftsdaten kompakt - Georgien"; "Landesinformationen" DWV	5
6	Main purchasing countries (2019), from: "Wirtschaftsdaten kompakt - Georgien"; "Landesinformationen" DWV	5
7	Turnover agriculture, Geostat 2020	6
8	Field bean cultivation in Kakheti, photo: Heinz Gengenbach	6
9	The Gallic rose thrives magnificently in Kakheti, photo: Heinz Gengenbach	6
10	Acreage of agricultural crops, Geostat 2020	7
11	Permanent crops (2017), from: Geostat 2020	7
12	A Georgian breakfast table, photo: Heinz Gengenbach	7
13	The pomegranate is a popular fruit in Georgia, photo: Heinz Gengenbach	7
14	Mamuka Bliadze. View into the Arteni Valley, photo: Klaus Merckens, merckens development support gmbh	9
15	Organic experimental plots of the Georgian Scientific-Research Center of Agriculture, photo © SCRA	11
16	Beka Gotsadze in his vineyard, photo © Klaus Merckens, merckens development support gmbh	14
17	Vegetable production at Bio Farm Pona, photo © Heinz Gengenbach	15
18	Georgian wheat variety "Tsiteli Doli", photo © Heinz Gengenbach	15
19	Anaseuli tea garden in Gurien, photo: Anaseuli Tea Factory	15
20	Harvest of Gallica Rose at Kakheti Bio, photo © Kakheti Bio	17
21	Exports from Caucascert contract partners, source: Caucascert 2021	17
22	Georgian organic juices at ANUGA, 2020 in Cologne, photo: Georgia`s Natural. Organic	18
23	Fresh organic hazelnuts from Georgia, photo © caucasnut	19
24	Organic raspberries, photo: Agrostore, TM SIAMO	19
25	Wild collection; blueberry puree; stand at BIOFACH 2020, source: Georgis`s Natural / Aromaproduct	19
26	Bio Agro LLC: An award-winning Georgian manufacturer of biological crop protection products, photo: BioAgro LLC	20
27	Soplidan vegetable shop in Tbilisi, source: Soplidan.ge	23
28	Organic honey from Georgia, photo: Eto Jincharadaze	24
29	Own compilation, data from: Gengenbach 2021, Agriservices	25

References

Agricultural Census of Georgia 2014

Caucascert, 2021

German Business Association in Georgia (DWV): "Country information",

https://dwv.ge/marktinformation/landesinformationen/ (retrieved on: 24.09.2021).

Dr. Uwe Strohbach: "Kleiner Markt mit vielen handfesten Vorzügen", in: GTAI (16.07.2021).

"Export to Georgia", in: German Business Association in Georgia (DWV), https://dwv.ge/marktinformation/export-nach-georgien/ (retrieved on 6.04.2021).

Georgien Bevölkerungsuhr, https://countrymeters.info/de/Georgia (retrieved on 1.11.2021).

Geostat 2014

Geostat 2020

GTAI: "Economic Data Compact - Georgia" (May 2021)

https://www.gtai.de/gtai-de/trade/wirtschaftsumfeld/wirtschaftsdaten-kompakt/georgien/wirtschaftsdaten-kompakt-georgien-156712 (received on 20.09.2021).

"Regulation of the Government of Georgia on Bioproduction", #198 (July 30, 2013), http://gov.ge/files/276_37826_866935_198300713.pdf.

Katrin Kossorz: "Organic farming on the rise in Georgia", in: GTAI (2021).

Maria Bregadze, DWV: News 16.09.2021.

Strohbach, Uwe: "Georgian agriculture offers diverse business opportunities", in: GTAI (04.05.2021).