FAO-EBRD Project - “Support to Sustainable Value Chains through the Development of Geographical Indications in the Dairy Sector”

Study on Sulguni and Tushetian guda

Specific characteristics linked to origin and rationale for GI registration
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Background

Objectives of the FAO-EBRD project

In 2017 FAO and the European Bank for Reconstruction and Development (EBRD) launched a three-year project on "Supporting sustainable value chains through the development of Geographical Indications in the dairy sector". The main objective of the project is to help improve and further implement the existing national institutional framework for Geographical Indications (GIs), as well as explore the potential benefits offered by a well-developed GI system in the country. More specifically, the project aims at improving GI certification systems in Georgia and supporting sustainable dairy GIs through a better characterization of quality specificities, improved capacities of producers’ organizations, better marketing and quality upgrading. Key project activities include: i) work with Georgia’s national authorities to improve the GI institutional framework, including the way GIs are evaluated, registered and protected through an efficient certification and control system; ii) support the development of sustainable GI value chains through the improved specifications of two pilots (Sulguni and Tushetian guda cheeses); iii) improve backward linkages between selected agribusiness and dairy farmers in order to ensure an efficient level of coordination for quality (fresh milk), reliability of supplies and fair practices; and iv) raise awareness amongst public and private stakeholders on the advantages and methods of GI schemes.

The main beneficiaries of the project are groups of producers, EBRD existing clients in the dairy sector and the public authorities and private sector involved in the GI institutional system in the country. In particular, the project is being implemented in close collaboration with the former Georgian Ministry of Agriculture (MoA) subsequently called Ministry of Environmental Protection and Agriculture (MEPA), the National Intellectual Property Center- Sakpatenti, and the local NGO Elkana. In addition, a number of international institutions are involved in technical assistance activities as for instance Slow Food International and REDD.

As a key result in the project, both Sulguni and Tushetian guda specifications were updated, reflecting producers and value chain stakeholders’ commonly agreed visions and practices to any maximum extent. In addition, producers from both pilot cheeses (and their organizations) have benefited from extensive training in food quality and safety, and marketing and certification. This is expected to continue over the course of the project. The role of Producers’ Associations has also been discussed and formalized. Dedicated control plans were also drafted for the two pilots and are being finalized in collaboration with local stakeholders that are actively involved in project activities as for instance CaucasCert and the National Food Agency (NFA).

Purpose and aims of the Study

In the context of activity ii) above on “support the development of sustainable GI value chains through the improved specification of two pilots”, the project Team has produced the present study on the specific characteristics linked to origin of Sulguni and Tushetian guda as well as the rationale for their registration as GIs. More specifically, this study provides and overview of the main issues underlying the selection of Sulguni and Tushetian guda as pilot products for further development as GIs, including their importance to the national context/economy as well as key constraints related to their protection and promotion as origin-linked products in the country. It also provides details on the rationale for their registration as GIs also based on the existing law requirements, describing their key characteristics and the factors (historical, social, and geographical) linked to their production. Moreover, it provides information on the key steps in the process, which led to upgrading their respective specifications in
view of a possible certification. In addition, it explores the role and potential of producers’ associations in their further development and growth.

Methodological approach

The starting point and rationale for the revision of Sulguni and Tushetian guda specifications is (mostly) that the original specifications had been drafted without proper involvement of producers and following an old regulation. More specifically, two (wine) experts had been involved by the former MoA in drafting the specifications. Therefore, the applicant for the registration of the specifications was the MoA. The decision to have the MoA as an applicant was mostly made to provide an immediate and secured protection for GI products on international markets. Also, the wine experts had contacted few practitioners and researchers to provide support with drafting the specifications but, due to time shortages, an in-depth discussion of the details had not taken place.

As a consequence, the project team found that the original specifications had eluded a number of aspects that are normally included in similar documents produced in countries with solid experience in GIs regulation. These include for instance the link to the territory, the proof of origin and the control procedure including control points. In addition, some figures in the specifications did not correspond to general current producers’ practices. In particular, the former specifications did not include (realistic) fat and salt contents, as well as did not contemplate the use of raw milk and wooden tools and utensils. Also, the use of cow and mixed (sheep) milk as well as goat milk (up to 10%) was not foreseen for Tushetian guda production. Moreover, the possibility to produce Sulguni in different shapes and forms was not included.

In addition, in the specific case of Tushetian guda, it was found that the product had been registered as Protected Geographical Indication (PGI), while the specific quality and the link to the territory are strong enough to register it as Appellation of Origin (AO).

The methodological approach which was followed to work on the development of the pilot GIs and in particular the revision of (both) cheeses’ specifications, has consisted in:

- regular consultations and meetings with key stakeholders including national authorities and concerned producers aiming to discuss and understand the process of production and the properties/characteristics of the two pilot cheeses;
- technical workshops and trainings on GI concepts, food safety issues, specifications and others; and
- cheese tasting and cheese laboratory analysis providing some solid scientific evidence on cheese characteristics such as taste, smell, appearance, fat and salt contents etc. to be included in the specifications.

The NGO Elkana has also benefited from extended training on GI concepts and was instrumental in assuring stakeholders’ involvement and engagement at field level.

More specifically, as part of the methodology, the following activities were undertaken by the project team between March 2017 and July 2018:

i. Preliminary field mission (2-14 July 2017) including:
   o field visits in Tusheti to explore Tushetian guda cheese production practices and understand the functioning of the value chain
o field visits in Kakheti, Kvemo Kartli and Samtskhe-Javakheti to explore Sulguni and Tenili\textsuperscript{1} Cheese production practices

ii. Second field mission (21-25 August 2017) including:
o visits to Tushetian guda making places to explore food safety and hygiene levels and produce relevant recommendations
o training on food safety practices for officials from the National Food Agency
o visits to a Tenili cheese Association and producers

iii. National producers’ workshop (2 and 6 November 2017) including:
o training of producers on GI concepts and standards
o discussions on the elements of the specifications of Sulguni and Tushetian guda in light of producers’ practices (including link to the origin, reputation and historical evidence on production, transhumance issues, delimitation of the production area and others)

iv. Technical field mission (15-28 February 2018) including:
o coaching on the role of the respective producers’ associations
o cheese tasting and sensory analysis workshop to evaluate selected organoleptic (and sensory) properties of Sulguni and Tushetian guda for which consensus had not yet been reached amongst producers in the specifications, i.e. fat contents and aspect of layers in Sulguni, and salt levels in Tushetian guda
o cheese laboratory analysis to compare the results with the findings from the cheese tasting and sensory analysis in order to come up with an accurate set of proposed changes to the specifications

v. Producers’ workshop and training (23-25 May 2018) including:
o revision of the specifications based on the results of the above-mentioned sensory and laboratory analysis
o discussion on control plan

vi. Producers’ workshop and training (17-26 July 2018) including:
o simulation exercise on the GI certification process for both pilots
o finalization of the specifications

\textsuperscript{1} Tenili cheese is a very traditional cheese from southern Georgia, still produced by very few. The current FAO/EBRD project supports this product in collaboration with Slow Food, with a perspective for the cheese to become a Slow Food \textit{presidium}. 

Setting the scene
Food: a primary marker of cultural heritage in Georgia

Extensive desk and field research undertaken by the Project Team has revealed that Georgia has plenty of traditional agrifood products with quality features and unique characteristics that can be clearly linked to their geographical origin. In this connection, it was found that the country has an important potential for the development of GIs. This is particularly true in the country’s wine and dairy sectors, where most of the currently registered GIs are present. Indeed, Georgia is one of the oldest wine-producing regions in the world. According to several sources, the fertile valleys and protective slopes of the Transcaucasia were home to grapevine cultivation and Neolithic wine production (Georgian: ღვინო, ghvino) for at least 8000 years. The country has also more than 500 endemic grapes species of which are used in commercial wine production- the most special and unique Georgian wines being Saperavi, Rkatsiteli, Kindzmarauli, Tsitska-Tsolikauri, Khvanchkara, Tvisi, Usakhelauri and Qjaleshi. Notable examples of origin-linked Georgian wines bearing the same name as the towns and villages from which they originate, are for instance Khvanchkara and Mukuzani (red wine), and Tsinindali (white wine). According to Rayfield, D. (2012), “grain cultivation, cattle raising, wine making and metalworking began as early in Transcaucasia as anywhere on earth”. Related to the traditional knowledge of wine making, Georgia has also pursued another form of protection for Intangible Cultural Heritage from UNESCO for the ancient style of making wine in Qvevri clay pots. This is a traditional Georgian wine production method characterizing distinctive wines such as rkatsiteli and saperavi. Archaeological evidence of the use of Qvevri dates back 8,000 years.

Picture: clay pots for wine making

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2 Since 2005, 46 AOs and GIs were registered, namely: 19 Wines and 1 Spirit; 13 Cheeses and Dairy Products; 8 Mineral Waters; and 5 Agricultural Products and Foodstuffs.
4 For more information please see https://www.winesandvines.com/features/article/161458/Growing-Grapes-in-Georgia
5 Rayfield, D., Edge of Empires: A history of Georgia, Reaktion Books, 2012
6 At present ქვევრი is transliterated as Qvevri (with capital letter due to marketing purposes – it is said that Q resembles the form of ქვევრი).
Besides wine, it is worth mentioning *churchkhela* - a typical national sweet made from grapes and walnuts\(^9\) that was developed as a Geographical Indication in recent years in the Georgian intellectual property protection system\(^10\); and *Borjomi* mineral water, which already enjoys a degree of protection in the context of the International Economic Law under the Lisbon Agreement for the Protection of Appellations of Origin and their International Registration.

![Picture: slices of churchkhela, nuts and fruits](image)

The Georgian tradition encompasses not only unique agricultural products, but also developing industries associated with traditional knowledge and traditional cultural expressions. Unique traditions include *teka*, a traditional technique for making artistic wool products and *minankari*, an intricate art design of micro-mosaic jewelry. The country also has a vibrant folk culture characterized by the famous Georgian dance and polyphonic singing. Moreover, Georgia possesses unique genetic resources in the form of a longstanding folk medicine tradition that is centered on herbal treatments based on traditional knowledge. The collection of herbs and medicinal plants from mountainous regions is indeed a common practice in the country. Georgia is in fact home to more 380 endemic vascular plant species with most being renowned for their medicinal properties\(^11\).

**A long-standing cheese making tradition**

Cheese production in Georgia dates back over 80 centuries. Despite being a relatively small country, Georgia has been listed among top 10 "cheese" countries and produces about 250 different cheeses\(^12\), which are all characterized by a wide range of flavors and diverse textures. As shown in Figure 1 below, historical-ethnical regions of Georgia have developed their own types of cheese and cheese cultures.

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\(^9\) According to the present specifications: “Walnuts, hazelnuts, almonds, cleaned pumpkin seeds or pieces thereof and/or various dried fruit stringed on a thread and lowered down into condensed grape or mulberry juice for several times”


[https://www.researchgate.net/publication/325066759_Rare_and_Endangered_Medicinal_Plants_of_Georgia](https://www.researchgate.net/publication/325066759_Rare_and_Endangered_Medicinal_Plants_of_Georgia)

\(^12\) Please see for instance [https://www.georgianjournal.ge/georgian-cuisine/32138-georgia-among-top-10-countries-on-the-world-cheese-map.html](https://www.georgianjournal.ge/georgian-cuisine/32138-georgia-among-top-10-countries-on-the-world-cheese-map.html) and [http://feelcity.ge/?lang=en&read_review=146](http://feelcity.ge/?lang=en&read_review=146)
According to Topchishvili (2014): “there are different types of high-quality cheese in Georgia: Tushetian Gouda, Imeruli, Samtskhuri - Chechili (put in the clay pot with cream) and Tenili, Suluguni” 13.

Figure 1: Georgian cheese map

Source: Sakpatenti
According to local sources,\textsuperscript{14} the country produces 80 thousand tons of cheese per year. \textit{Sulguni} and Imeretian cheese account for the 80% of total cheese production. Also, 13 kinds of Georgian cheese were already registered as GIs, while many others are yet to be protected.

Below is a list and description of most popular Georgian cheeses, including \textit{Sulguni} and \textit{Tushetian guda}:

**IMERETIAN:**
(with or without holes, "Chkinti kveli" or "Imeruli")

\textbf{Location:} Western Georgia, Imereti

A young lightly salted cheese prepared from raw cow milk. It refers to "non-processed" type of cheese.

**SULGUNI:**

\textbf{Location:} Samegrelo-Zemo Svaneti

A pickled, young plastic cheese with a layered structure, made from cow's or buffalo's milk or a mix thereof. It is prepared by mixing the young Imeretian cheese in the whey. This cheese has also a smoked variety. According to World Cheese Map, in 2016 \textit{Sulguni} occupied the 10\textsuperscript{th} place out of 12 on the global cheese map\textsuperscript{15}. The word "\textit{Sulguni}" consists of two words - "Suli" and "Guli", which is translated from Georgian as - heart and soul.

**Tushetian GUDA:**

\textbf{Location:} Tusheti mountainous region

Sheep, cow and/or mixed milk cheese (may contain also goat milk), stored in a sheep's skin (guda) during 20 days. Sometimes buried in the ground, obtaining specific flavor.

**DAMBALKHACHO:**

(blue cheese)

\textbf{Location:} mountainous regions in Pshavi and Mtieleti

One of the most expensive Georgian cheeses. It differs from the European cheese "Camembert" by the presence of penicillin and the production method involving natural molding. The balls of curd cheese are dried and lightly smoked. They are subsequently put in a clay pot, where they are covered with a dark mould crisp.

\textsuperscript{14} According to Geostat, national cheese production was at about 6.8 thousand tons in 2017. These figures may underestimate actual total cheese production in the country, which largely happens at individual farmer/artisanal level without being reflected in official statistics. For this reason, data from Feelcity were used in this context.

\textsuperscript{15} \url{https://world-cheese-map.com/}
CHOGI:
**Location:** Tusheti mountainous region
Fatty cheese made from sheep's milk during summer months. The young cheese is kept for several days in wooden barrels. Then the ripened cheese is kneaded again, salted and put into a sheep's skin for 2 months.

CHECHILI:
**Location:** Adjara and Samtskhe-Javakheti region
Chechili (Chlechili) is produced during summer using skimmed cow's milk. The cheese is compressed and stored in special boxes, in a cool place, for about 2 months. Most frequently, Chechili is served as cheese strips, sometimes woven together, or shredded into thin strings. This cheese has also a smoked variety.

TENILI:
**Location:** Samtskhe-Javakheti
One of the oldest Georgian types of cheese made from cow's milk with a unique and complex manufacturing technology. Traditionally, Tenili is normally prepared for the winter."Dvrita" or "kveti" starters, made from parts of brined and dried calf's stomach, are used for the milk clotting. During the cooking process, the cheese is stuffed and pressed into a clay pot - "Tenili" (meaning "stuffed, pressed" in Georgian language) for ripening. There, cheese matures for about 2 months. Tenili is in the list of intangible cultural heritage of UNESCO. Usually the pot with Tenili was opened only in official occasions, demonstrating the material prosperity of a family.

KALTI:
**Location:** Tusheti mountainous regions
Kalti is prepared from Nadugi - a creamy quark cheese derived from whey clot. Shepherds used to take hardened Kalti with them on the road. It is thought to possess antiseptic qualities.

KOBI:
**Location:** Kazbegi mountainous regions
Cheese made from skimmed or partially skimmed cow's milk with added sheep's milk.
CHEESE IN HONEY / CHACHA / WINE / CHOCOLATE / HERBS AND SPICES

The manufacturing and origin of these types of cheese are associated with historical food safety practices. Due to the absence of refrigeration methods, cheese was kept in honey, *chacha* or wine to prevent spoiling. Cheese with spices, herbs, paprika and other additives have only appeared quite recently.

The following chapters provide a thorough overview of the scope for the protection of the Sulguni and Tushetian guda GI in the framework of the ongoing FAO-EBRD project.
Chapter I- Sulguni

Raising the profile of the Sulguni GI

Why a Sulguni GI?

_Sulguni_ is one of the most famous Georgian cheese varieties. It is a soft, moderately salty fresh _pasta filata_ cheese (or stretched curd), made from cow and buffalo milk.

As other quality food products in Georgia, _Sulguni_ has suffered from counterfeiting and misuse of its name both in the domestic and export markets.

Products bearing the same name as _Sulguni_ or Sulguni but not manufactured in adherence to its technical specifications were found to be produced in several instances. It is enough to say that this cheese is a popular ingredient in local cuisine habits in Russia and Ukraine. In 2015, internet sales of counterfeit _Sulguni_ cheese were discovered in Italy and Bulgaria. In the same year, batches of Russian-made cheese branded under the name of _Sulguni_ were found on Georgian markets. Sakpatenti has already succeeded in a few court cases against Russia and Armenia exporting cheese to EU countries with this name.

Topchischvili (2014) also reports that by the end of 2013 the Armenians have started officially claiming that “Sulguni” is their product, stating that “Sulguni is not the Georgian origin cheese as it was produced in the ex-USSR. There, standards (resp.: GOST) were used for producing any products that were common for the whole country”. They also argue that due to the lack of separate GOST for Georgia, Sulguni should not be considered as a part of the Georgian ethnic culture. However, the same author states that there is no evidence of any “Sulguni” or “Sulguni” cheese originating from Armenia.

It is very important to protect the know-how constituting a key element of the ethnic culture originating from Georgia. The area of production of the GI _Sulguni_ being the whole territory of Georgia, the unity of this GI must be guaranteed by a unique production process and common specific characteristics of the final product.

Mobilization of producers- the importance of commonly agreed specifications and producers’ associations managing the Sulguni GI

A number of _Sulguni_ producers from different regions of Georgia were involved and engaged in project activities – both small-scale producers and larger players as for instance “Sante”, through the Georgian Dairy Association “Sakrdze” gathering 21 dairies. This allowed for a high diversification of the producers’ group composition, reflecting the real-life context in which _Sulguni_ production eventually happens.

A first set of visits to local _Sulguni_ production sites was organized by the project team in July 2017, namely in Kakheti region. The objective was to assess producers’ production practices and get an initial understanding of the potential for GI development of their (cheese) products. Overall, both single producers and companies met by the mission, showed a strong interest in the GI initiative, seeing that as an opportunity to position their product on the market and/or to gain a sign of prestige that would enhance the image of their business. The _Sulguni_ value chain is in fact characterized by diverse actors.

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The field visits carried out in July 2017 made it possible to visit and assess the production practices of a number of Sulguni producers, whose key features are detailed in Table 1 below.

Table 1: key features of selected Sulguni producers

<table>
<thead>
<tr>
<th></th>
<th>Shiraki ltd.</th>
<th>NRG</th>
<th>Disveli cooperative</th>
<th>Santa</th>
<th>Sante</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal form/type of company</td>
<td>Ltd company</td>
<td>Family business</td>
<td>Cooperative</td>
<td>Family business</td>
<td>Ltd company</td>
</tr>
<tr>
<td>Primary production</td>
<td>Intensive dairy farms (Holstein in barn), also has a grazing area and produces own feed; is under conversion to organic</td>
<td>Small dairy farms</td>
<td>Small dairy farms belonging to the members</td>
<td>Semi-intensive dairy farm 200 cows (150 in lactation)</td>
<td>Intensive dairy farms</td>
</tr>
<tr>
<td>Own production of milk</td>
<td>2-3 tons of milk daily produced</td>
<td>700 kg of milk produced daily</td>
<td>1 ton</td>
<td>2.3 tons of milk daily produced</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>4 tons of milk processed per day 1.2 million of milk processed in 2016</td>
<td>2 – 3 tons of milk processed daily (10 farms supply 80% of the milk)</td>
<td>About 1.5 ton of milk 150 – 200 kg Sulguni daily</td>
<td>2.3 tons of milk processed per day</td>
<td>n.a.</td>
</tr>
<tr>
<td></td>
<td>8 – 9 litres of milk &gt; 1 kg cheese</td>
<td>200 kg Imeruli cheese 150 kg Sulguni cheese</td>
<td>8 kg milk &gt; 1 kg Sulguni 150 – 200 kg Sulguni per day</td>
<td>8 – 9 kg milk &gt; 1 kg cheese Diversified production: Imeruli, Fabric cheese, Dutch gouda, Swiss cheese.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Prices to dairy producers</td>
<td>Milk summer price: 0.55 GEL</td>
<td>Milk summer price: 0.60 GEL</td>
<td>Milk summer price: 0.55 GEL/kg. Winter: 1.3 GEL/kg</td>
<td>Use their own milk only</td>
<td>0.70 – 1.2 GEL</td>
</tr>
<tr>
<td>Price of the cheese</td>
<td>7 GEL/kg for sulguni</td>
<td>Sulguni summer price: 8 GEL/kg</td>
<td>Winter price: 12 GEL/kg</td>
<td>No current production of Sulguni: good demand for other cheeses market flooded with Sulguni and prices dropped</td>
<td>Retail price: 20.43 GEL / cheese of 1 kg</td>
</tr>
<tr>
<td>Resources</td>
<td>28 employees</td>
<td>5 employees</td>
<td>5 members</td>
<td>Fully automated production process</td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors’ compilation

Except for Santa, all other processors use to complement the milk produced by their own cows by neighbors’ production. All producers are registered. NRG and Disveli are in the process of receiving final authorization from the NFA.
The visits to different middle-scale and small-scale Sulguni producers allowed for the following key findings:

- slight differences in the production process; and
- diverging characteristics of the final products due to differences in production process, packaging and natural environment.

Moreover, critical issues and main differences in the production process were found by the project team to be as follows:

- some producers make an Imeruli cheese before producing Sulguni, while others take out the curd and leave it in one block until the whey is released;
- some producers melt the Imeruli cheese cut in slices or the curd mass obtained in water, while others melt it in milk. Others melt it in milk only when the milk is not fat enough;
- some producers put the cheese in brine for a couple of hours, while others at least one night, i.e. 18 – 24 hours; and
- some producers use vacuum packing, but there is consensus that the physical pressure put on cheese tends to damage it, and in particular the interlayers spaces hosting the liquid that should then be released when the cheese is consumed.

Overall, it was also found that issues as the seasonality of milk production and pricing have a major impact on the viability of producers’ businesses. In this connection, it must be highlighted that increased reputation and quality resulting from GI protection, would potentially enable producers to capture a price premium.

This and other points (as for instance the hand-kneading technique applied by small producers) were discussed on several occasions, including the first two Sulguni producers’ workshops organized in November and December 2017 in Tbilisi. Those workshops mostly aimed at reviewing the specifications point by point as well as discussing the functions of the producers’ associations managing the GI. At a subsequent workshop with producers (February 2018), it was decided to rely on the Georgian Dairy Association “Sakrdze” as most of Sulguni producers are members of this association and small producers can easily get the membership. The main roles of the association are market monitoring and lobby for policy matters. In that context, the dairy association could play a key role in making members aware of what the Sulguni GI entails and in promoting the product and the GI concept. The Association would also play a key role in building the internal control system. Being this a system built between the producers, the Association would ensure sharing of knowledge and advice between them. A structured internal control system would also simplify external control procedures and smoothen the entire process. To this purpose, the Association will receive further capacity building assistance from the project.

Indeed, the engagement and constructive dialogue between different producers at different levels (i.e. small-scale producers and large producers as Sante), including the dairy association, is a key result and sign of overall success in the project.
Characteristics of the GI
Specificity of the product

Sulguni can be found either fresh, dry, aged, smoked or mixed with other traditional ingredients (e.g. spices, grapes must and others). It has similarities to mozzarella both in its aspect and texture. After stirring and kneading Sulguni gets its distinctive layered structure. In fact, the Sulguni unique properties are its layers and the tiny stream of waters sipping out the cheese when cut, the sound that can be barely heard when crunch, and the balance between fattiness and a sense of unctuous smoothness in the mouth. In addition, the various shapes of Sulguni, resulting from the creativity of cheese makers have made the product easily recognizable by consumers.

Sulguni has been renowned in Georgia for decades. It was traditionally produced in Samegrelo and Svaneti (Western) regions but for the last 40 years it has been produced throughout the whole country. In the mid-60’s, Sulguni (eventually called also Suluguni at the times) started being produced in other ex-USSR countries.

According to Gudkov\textsuperscript{18}, it was the third most popular pickled cheese of the ex-USSR\textsuperscript{19} with about 17 percent production share in 1987, after Bryndza and Ossetian cheese. In 1999, the same author reported that its output represented about 27% of total cheese production in Georgia.

According to Geostat, there were just 58 registered companies producing Sulguni in 2017 (+ 26 percent compared to 2016). However, local experts argue that Sulguni producers are many more in the country.


\textsuperscript{19} Union of Soviet Socialist Republics
Registration

The cheese was registered by Sakpatenti as GI in 2012, following a request from the Ministry of Agriculture. It is registered as “GI Sulguni” in English and Georgian, and “Сулгуни” in Cyrillic. There are 3 separate registrations that seem to differ mostly in cheese-shape and region of production:

1. “Sulguni”, which is produced on the whole territory of Georgia.

2. “Megrelian Sulguni” cheese, produced on the territory of Samegrelo – Abasha, Chkhorotsku, Khobi, Martvili, Senaki, Tsalenjikha and Zugdidi municipalities and city of Poti, as well as in two municipalities of Abkhazia – Gali and Ochamchire.

3. “Svanetian Sulguni” cheese, produced in Svaneti region, Lentekhi and Mestia municipalities.

The project focus being on country-wide Sulguni production, project activities and results would indirectly benefit also Mengrelian and Svanetian Sulguni. In particular, since February 2018, the FAO project team together with Sakpatenti and The World Intellectual Property Organization (WIPO) have been working on the preparation of the new Georgian law on GIs, with the ultimate objective of providing a good legal model of pragmatic GI system for wines, spirits, dairy products, foodstuffs and handicraft products. The new law will make it possible to thoroughly revise the specifications of Mengrelian and Svanetian Sulguni as well.

The cheese is already protected in EU as GI from Georgia. As is the case for Tushetian guda, Sulguni is protected through mutual recognition of the GI list exchanged by the Government of Georgia and the EU. However, it is not registered through the third country procedure. This translates into the fact that “Sulguni” cannot be used by non-Georgian producers, but in parallel it cannot bear the official sign of the EU. Even though Georgia cannot yet export dairy products to the EU, this helps prevent that former ex-USSR countries trade the cheese that they name “Sulguni” on the EU market.

Definition of the geographical area

The area of production of Sulguni PGI (Protected Geographical Indication) is the whole territory of Georgia and the name Sulguni is clearly associated to Georgia on all the markets where the cheese bearing the geographical indication is present.

Indeed, Sulguni is one of the most popular cheeses in Georgia, having a wide range of customers in this and other ex-USSR countries. In fact, during the ‘80s of the 20th century, an industrial production of Sulguni took place in almost all regions of Georgia and Sulguni and its reputation as a Georgian product was known through ex-USSR countries. Based on this reputation, the area of production of Sulguni PGI is the whole territory of Georgia.

Moreover, due to the popularity of this type of cheese in Russia, since 2011 the Russian Federation has introduced a special standard “Gost P 53437-2009”, producing a similar type of cheese called “Suluguni and Sloistiy (layered)”. Though the production of imitation of Sulguni takes place in several ex-USSR, consumers in those countries associate the name Sulguni with Georgia.

The earliest written prove that a cheese named “Suluguni” or “Suldguni” was produced in Georgia – namely Samegrelo and Svaneti, is in an Explanatory Dictionary of the Georgian Language from XVII

21 This is how the name in Latin is written. In Georgian and Russian it is called “Megruli Sulguni”
22 This is how the name in Latin is written. In Georgian and Russian it is called “Svanuri Sulguni”
23 Please see http://www.ecta.org/IMG/pdf/c_14220130522en00080011.pdf
century by Sulkhan-Saba Orbeliani. Evidence is also found in another Explanatory Dictionary of the Georgian Language by David Chubinishvili (XIX century). There, Sulguni is described as a stretch-curd kneaded flat cheese.

According to an article from the Ivane Javakhishvili Institute of History and Ethnography Sulguni is represented in various rituals known in Svaneti and Samegrelo, which proves that this type of cheese was traditional to this area, because usually in rituals only traditional elements are present. The word may have a Turkic origin. According to the encyclopedia of Brockhaus and Ephron, "Sulug" (tatar language) is a type of cheese in Transcaucasia prepared from foremilk.

Causal link between the geographical area and the specific quality, the reputation or other characteristic of the product

The Protection of Sulguni as a GI is mostly based on its reputation of product of Georgian origin.

A number of testimonies and texts attest of the use of the name Sulguni over time. As reported by Topchishvili (2014):

“In 1890s, due to high nutritional quality, Suluguni was imported overseas from the Poti Sea Port [Gugushvili, 1950; 94]. According to ethnographic data, it was made in historical-ethnic parts of the West of Georgia – Samegrelo, Svaneti, Imereti, Lechkhumi and Racha. In Samegrelo Sulguni was called “Seleqini”, “Selequni”, “Siogini”, and in Zemo (Upper) Imereti, Racha and Lechkhumi it was called “Gvajilla” or “Gvajili” [Topuria 1964:46, 51; Ghloni, 1974; 52]. In Guria region Sulguni is called “double-kneaded” (“Gadazelili”) [Topuria]...According to the same author, Sulguni is an ordinary “Imeruli cheese” which is kneaded and overcooked. The experience shows that cooking twice is critical. If it is not cooked twice, then melted butter will cover Suluguni and prevent absorption of salt. After cheese is taken out it is shaped by hand on the tray called “churukhi”; with both hands sour cream is separated from cheese [Topuria, 1964: 49-50]. “In order to store Suluguni for long, it was holed on one side and several such cheeses were banded in a way that they did not touch each other. Then banded rolls were hanged on the ceiling near fireplace or in the sun. Smoked and dried Suluguni could be stored for long” [Topuria, 1964:50]...

Human factors and production methods

The specific quality of Georgian Sulguni is mainly due to the know-how of producers who have fine-tuned the process over centuries. As mentioned above, the culture of Sulguni production originates from Western Georgia – namely Samegrelo and Svaneti that are located in the northern part of the Colchis (Kolkheti) region. The existing natural-geographic environment has had an influence on the production techniques of this cheese. In fact, the Colchis lowlands were known for their extremely humid climate, preventing the storage of animal products. Settled/stable populations mostly depending on agriculture rather than livestock breeding, were living in those regions. Because of the limited number of cattle and the physiological lactation decrease from late autumn until early spring, people were short of milk and dairy products. To overcome this deficit, local populations were urged to developing (peculiar) storage techniques also for cheese. As reported by Topschvili (2014), Georgian farmers living in the Colchis lowland made special ceramic pots for storing Suluguni in households, the so-called “Suluguni pot”. The same author states that “neither Abkhaz nor Ossetians faced problems concerning storage of dairy products, and their living environment in terms of geography and climate did not necessitate developing storage techniques”. In addition, while “Ossetian or Kobian cheese was made exclusively from goat’s milk, Suluguni was made from cow’s or buffalo’s milk”.

19
The *Sulguni* production technology know-how is based on the processing of fresh cheese, that is needed to preserve it. Fresh *Sulguni* can be kept in brine up to one month, while smoked or dried *Sulguni* can be stored for several months.

The human factor plays an important role in the technological process. Traditional *Sulguni* is in fact a “hand-made” cheese: the stretched-curd is removed from the lactoserum and put on a wooden board or table for kneading. Kneading is done with both hands to form the typical layer texture of the cheese and a flat cylindrical form.

*Sulguni* is indeed an achievement made by Georgian farmers after extensive observation and creative thinking process. Traditional know-how has been transmitted from generation to generation and has spread to other regions of the country. As an ethnographer from Tbilisi - A. Kalantari notes, *Sulguni* seems to have been introduced in Guria, Abkhazia, Imereti, Kobuleti and other places by Megrelian24 herders and cattle breeders. Also Topchischvili (2014) reports that “…culture of producing Suluguni allegedly was spread among Mengrelians through old Persians who have settled in Colchi (Kolkheti) and later constituted Georgian population”.

**Key steps in the revision of the specifications**

As a key activity in the project, a cheese tasting and sensory analysis workshop and cheese laboratory analyses of selected *Sulguni* samples were implemented in Georgia during the mission in February 2018. The specific objectives of the cheese tasting and the sensory analysis workshop were to: a) help set up the sensory/organoleptic profile of *Tushetian guda* and *Sulguni* for the GI specifications; and b) identify the cheeses complying with the (eventually agreed) characteristics and analyze specific elements to be included in the specifications/exclude products that would not meet the required criteria. The specific objectives of the cheese laboratory analysis were to: a) gather scientific evidence on the compliance between the cheese(s) properties and the related values established in the draft specifications; and b) cross-check the results of with the ones of the cheese tasting and sensory analysis in order to validate the latter and identify key issues to be reflected in the specifications.

Such activities were organized to ultimately overcome pending issues with the revision of the specifications and come to an agreement among producers on the following (key) specific *Sulguni* characteristics: fat content and aspect of the layers.

The approach of the Project Team towards the revision of the *Sulguni* specifications has taken into consideration both the specific nature of such product as well co-existing variants with highly heterogeneous fat and moisture levels; the need to benefit and include a multitude of different producers in the GI; as well as evident changes that have occurred in the production methods (e.g. the gradual abandonment of the exclusive use of local breeds which were responsible for higher fat contents in milk and cheese).

Subsequent workshop consultations (May 2018) as well as inputs gathered through field interviews brought to: a) the inclusion of different variants of the cheese which are traditionally considered as *Sulguni* (different shapes and variants with additional ingredients); b) the distinction between fresh and aged *Sulguni*; c) the revision of minimum milk fat content; d) the use of rennet for curding, and inclusion

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24 The Megrelians or Mingrelians are an ethnic subgroup of Georgians that mostly live in Samegrelo region. They are also found in Abkhazia and Tbilisi.
of a transitional period to allow shifting from eventual pepsin to rennet use; and d) indication of time range for curd fermentation.
Chapter II- *Tushetian guda*

Raising the profile of the *Tushetian guda* GI
Why a *Tushetian guda* GI?

*Tushetian guda* is a traditional Georgian cheese made of sheep or cow milk, or a mix of the two. Addition of goat milk is allowed to certain limits. It is normally produced in rural/mountain areas in Tusheti and it is traditionally ripened in animal skin bag providing a distinctive flavor and taste.

Evidence gathered during field missions and discussions with producers has revealed that since the collapse of the ex-USSR and Georgia’s independence, producers have started progressively adopting **cellophane bags** in the cheese ripening process. The latter are easier to handle and cheaper compared to the animal skin bag or guda. This change has negatively influenced product quality. During the ripening process in cellophane bags, the fat migrates out of the cheese. This influences its texture and taste once ripened, with the cheese becoming drier and less intense in taste.

Another issue with the protection of *Tushetian guda* is linked to (lower) **pastures degradation**. As mentioned, the current specifications define Tusheti (Historical region of Tusheti) as the area of production of the GI. Until the USSR was in place, the *binas* were located on the higher pastureland (>2,500 m.a.s.l.), with sheep pasturing above 3,500 m.a.s.l. Nowadays, shepherds establish their *binas* in the gorges, nearby existing roads and villages (1,800 – 2,300 m.a.s.l.), sending their sheep to pasture in areas that used to be dedicated to annual crops and meadows farming. In less than a generation time, the area of production of *Tushetian guda* has therefore shifted from the highest pastureland to the lowest part of Tusheti. During the transhumance, some cheese is produced for self-consumption. Shepherds would spend the winter in the Shiraki Valley (Southeast Georgia), where they settle every year until April. Shepherds and herds start then to return to the summer pasture they reach usually during May. The production and ripening of the *Tushetian guda* take place in Tusheti. In principle only when the cheese has been ripened 45 days shepherds transport it to Alvani, in the valley, to be stored, vacuum packed in some cases. However, some producers extending the production until August would finish to ripen the cheese in the valley.

According to local experts, though the number of sheep animals during the 80’s of the 20th century (and before) was three times higher than current levels, the pressure on natural resources was much lower. This is because sheep used to graze only in high alpine pastures, which are nowadays only used by some shepherds for lambs and very rarely for milking ewes. Compared to lower parts of the valleys, areas of pastureland above 2,200 m.a.s.l. are much larger. In addition, the terrain of the pastures located in the gorges currently used by sheep is much steeper. This results in overgrazing and erosion of lower pastures that could cause a drastic decrease in yields and more dramatic in landslides threatening roads and people’s life over time.

There is urgent need to protect the cultural heritage and distinct biodiversity of the area and, therefore, promote the sustainable development of the rural economy of Tusheti through the *Tushetian guda* GI.

Key elements related to the protection of this GI are: i) production in a disadvantaged geographical area using endangered native breeds; ii) persistence of shepherds in the territory with limited or no access to
services often despite a very young age, playing a demonstrative role for other young farmers in the region; and iii) respect of (peculiar) traditional production methods.

Mobilization of producers- the importance of commonly agreed specifications and producers’ associations managing the *Tushetian guda* GI

A number of *Tushetian guda* producers were invited and included in project activities. They are mostly small-scale producers, reflecting the real-world context in which *Tushetian guda* production eventually happens.

A first set of visits to local production sites was organized by the project team in July 2017, namely in Kakheti region. The objective was to discuss with producers and get an initial understanding of the potential for the development of *Tushetian guda* as GI. Overall, producers showed a strong interest in the GI initiative. Moreover, they agreed that the specific quality and the link to the territory were strong enough to register their product initially as Protected Designation of Origin (PDO) and finally as Appellation of Origin (AO). Restricting the use of the name *Tushetian guda* to cheeses produced in guda and not in cellophane would create rarity and improve quality, i.e. reputation and prices increase on the longer term. Along these lines, concerned producers have agreed on the need to develop more stringently defined rules, being their cheese a candidate for AO and thus subject to stricter specifications.

In terms of products’ characteristics, it was found that diverging characteristics of the final product are mostly due to differences at primary production stages and in particular the balance between the (raw) ingredients used. The *Tushetian guda* has in fact been traditionally characterized by a very salty taste and high salt contents. While several producers have started limiting salt contents with a view to meet modern consumer taste and preferences, others tend to keep faithful to original (older) production practices where salt was widely used as preservative against food spoilage. This and other points (e.g. the delimitation of the geographical area and the issue of the animal skin bag) were discussed on several occasions, including the first two *Tushetian guda* producers’ workshops organized in November and December 2017 in Tbilisi. Those workshops mostly aimed at reviewing the specifications point by point as well as discussing the functions of the producers’ associations managing the GI. On this specific point, after considering relying on the existing association of Tusheti breeders, the producers have privileged the option of creating a new association.

The roles, functions and plan of action of the new Association were defined in detail at a subsequent workshop with producers (February 2018). The Association would play a key role in building the control system. The Association, in accordance with its marketing strategy, should also monitor the main markets where the cheese is sold and take action in case any infringements are found. In addition, the Association is meant to play a key role in ensuring food safety and the implementation of a proper certification process in collaboration with NFA.

To this purpose, the Association has received and will receive capacity building assistance from the project.
Characteristics of the *Tushetian guda* GI

Specificity of the product

The main specificity of the product is explicit in the cheese name, where the term *guda* (a sack made from sheep or veal skin) refers to the cheese ripening technique in an animal skin bag. Key organoleptic properties of *Tushetian guda* include:

- the shape, which varies depending on the (random) position of the cheese in the skin bag;
- the size that is rather important in comparison with other cheeses from the Caucasus region;
- a dense but slightly elastic texture;
- the piquant smell that is typical of all three type of cheeses, with aromas of the milks that have been used to make it; and
- a salty, piquant and umami taste.

*Picture: Tushetian guda ripened in animal skin bag and cut in slices*

The originality of this cheese is conferred primarily by the quality of the milk yielded from the Georgian breeds of sheep and cow grazing in alpine grasslands – Tushetian sheep and Tushetian cow. It is worth pointing out that the Tushetian cow is a sub-breed of the Georgian mountain cow. It is called locally as *Tushuri jilagis dçrokha* (cow of Tushetian “family”).

*See Annex 1 and Annex 2, which support the characterization of the specific quality of Tushetian guda.*

Registration

The cheese was registered by Sakpatenti as GI in 2012, following a request from the Ministry of Agriculture. It is registered as GI *Tushuri Guda* in Georgian language, *Tushetian Guda* in English and Тушури Гуда in Cyrillic.

The cheese is already protected in the EU as GI from Georgia. As is the case for *Sulguni, Tushetian guda* is protected through mutual recognition of the GI list exchanged by the Government of Georgia and the EU. However, it is not registered through the third country procedure. This translates into the fact that

25 It is worth pointing out that the Tushetian cow is a sub-breed of the Georgian mountain cow. It is called locally as *Tushuri jilagis dçrokha* (cow of Tushetian “family”).
27 Please see http://www.ecta.org/IMG/pdf/c_14220130522en00080011.pdf
“Tushuri guda” or “Tushetian guda” cannot be used by non-Georgian producers, but in parallel it cannot bear the official sign of the EU. Even though Georgia cannot yet export dairy products to the EU, this helps prevent that other countries eventually trade their *Tushetian guda* on the EU market.

**Definition of the geographical area**

The originality and quality of *Tushetian guda* cheese do not result exclusively from the traditional cheese-making technology and the quality of the raw materials used. A special place in this process is occupied by the environmental conditions and the geographic area in which the production of this cheese happens. Tusheti is the place where the guda cheese-making has a centuries-old history and has become an integral part of the local culture and one of the main activities of the local population.

In fact, *Tushetian guda* is produced only in the Tusheti region. Milking and cheese production take place in Tusheti during the lactation period between May and September. In autumn, shepherds and sheep migrate lowlands to Kakhetian plains in Alvani, Shiraki and Samukhi for overwintering. During this period of the year, sheep do not produce milk. Therefore, cheese production does not take place.

The geographic area of *Tushetian guda* production coincides with the Tusheti historical region. This is located in the Northern part of Eastern Georgia, over the major watershed of the Greater Caucasus, at an altitude of 1650-4493 m.a.s.l. To the north, Tusheti is bordered with the system of high mountains of the Greater Caucasus. The position of the latter greatly influences the microclimate of the Tusheti depression, which is averagely warm alpine and with moderate precipitation. The Tushetian climate determines the diversity, wealth and fertility of the territory’s flora and herbage. Tusheti is limited by the border with Dagestan to the East, and the border between Kakheti and Mskheta Mtianeti to the West. The southern border coincides with the boundaries of the Tusheti National Park. The whole area belongs to the territory of the Kakheti region.

Tushetians have been shepherds traditionally. Even at present, sheep and cattle breeding is a main economic activity in the Tusheti highlands.

Before the eventual displacement of Tushetian people in the plains during the 80’s of the 20th century, agriculture was conducted on plots around villages and hamlets, to primarily satisfy household needs. Potato, cereal and vegetables were often cropped on terraces. In addition, cows were kept nearby settlements for daily milking and production of other dairy products. The production was sufficient to cover the family food needs in summer months, and potato, cereals, vegetable preserves and ripen cheese were food items characterizing winter consumption.

In the late fifties, agricultural activities were almost completely stopped (virtually all cereals were imported) and animal breeding became the only economic activity. Nowadays sheep breeding takes place on the lower pasture areas and in the former traditional area for pasturing as well.

Tushetian sheep breed is very well adapted to the local mountainous conditions. It emerged out of selection in Georgia around the 13th or 14th centuries as a year-round grazing animal. Nomadic farms contributed to the formations of this breed. The Tushetian sheep is relatively small. Sheep milk used for *Tushetian guda* comes exclusively from the Tushetian sheep breed.

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28 Meters above sea level
The breed is distributed in East Georgia and is characterized by a sturdy constitution and easy endurance of extreme migratory conditions on long distances (up to 500 km). It normally gives limited quantities of milk with high fat content. In late July, the animals are prepared for their annual shearing, and are moved to winter pastures in the valley where they give birth to a single lamb (rarely, two lambs). In May, the sheep herd is moved again to the summer pastures of the Tusheti Mountains. Binas are summer camps where shepherds settle and produce the cheese. The shelters are rudimentary, made of wooden structures and covered with plastic sheeting.

Sub-alpine (Festuca ovina, Poa alpina, Zerna variegata, Dactylis glomerata, Lotus) and alpine (Festuca ovina, Poa alpina, Carex tristis and Campanula tridentata) summer pastures characterize this geographical area. Traditionally, land at altitudes of 1,600 - 1,900 m.a.s.l. was used for agriculture and cattle breeding purposes, while the sheep herd was normally kept in pastures at altitudes of 2,000 – 3,400 m.a.s.l.

Causal link between the geographical area and the specific quality, the reputation or other characteristic of the product

The geographical isolation of the Tusheti region and the harsh winters obliged the populations in this region to develop strategies to secure their food. Besides crop production that was conducted around settlements, Tushetians took advantage of the extensive grass resources and focused naturally on sheep economy. This provided them with meat, wool and milk, not only for household needs but also for marketing purposes.

The highly seasonal character of this production led local people to find ways to store products, either for selling purposes (to distant markets) or self-consumption during wintertime.

The geography of Tusheti including its terrain, the distance from other human settlements, the climate and flora were decisive for the different specific characteristics of the Tushetian guda.

Natural factors and production methods

The above-mentioned geographical isolation of the Tusheti region also favored the emergence of the local Tushetian sheep breed. The milk from this sheep is distinguished by high fat content, which in turn is reflected in the fattiness of the cheese.

During the period of cheese production, sheep are fed only with grass of alpine pastures with high nutritional characteristics and in particular high protein content. The quality of the grass of sub-alpine and alpine summer pastures contributes to the production of high-quality milk by conferring microbiological flora, and organoleptic richness and complexity to it. The ripening process in animal skin, whose surface is waterproof but not airproof, prevents the fat from migrating out of the cheese (as it happens for instance with cheeses ripened in cellophane bags). The use of animal skin also allows for ripening the cheese while preserving it in a protected environment. This helps against external contamination and favors the natural micro-biological activity.

Only locally-produced rennet of calf or lamb is used for cheese making. No ferment is added besides the ones naturally existing in the milk and the environment of the premises were the cheese is made.

The ripening method and the use of natural rennet also involves lipolysis of fats. This, among other factors, confers to the cheese its specific taste and aromas (Z. Kh. Dilaniani).

See Annex 3 for historical evidences of the Tushetian guda production and production methods.

Key steps in the revision of the specifications

As a key activity in the project, a cheese tasting and sensory analysis workshop and cheese laboratory analyses of selected Tushetian guda samples were implemented in Georgia during the mission in February 2018. The specific objectives of the cheese tasting and sensory analysis workshop were to: a) help set up the sensory/organoleptic profile of Tushetian guda for the GI specifications; and b) identify the cheeses complying with the (eventually agreed) characteristics and analyze specific elements to be included in the specifications/exclude products that would not meet the required criteria. The specific objectives of the cheese laboratory analysis were to: a) gather scientific evidence on the compliance between the cheese(s) properties and the related values established in the draft specifications; and b) cross-check the results of with the ones of the cheese tasting and sensory analysis in order to validate the latter and identify key issues to be reflected in the specifications.

Such activities were also organized to help finally overcome the controversial issue of salt levels in Tushetian guda.

The approach of the Project Team towards the revision of the Tushetian guda specifications has taken into consideration both the specific nature of such product as well as the particular production conditions in Tusheti mountains. The need to benefit and include different producers in the GI-using dissimilar options for cheese storage in mountains during hot periods was also perceived a stringent.

In May 2018, a workshop discussion with producers in Tusheti touched upon several aspects of the specifications. These included: a) the revision of the maximum salt content and related allowance of a transitional period to enable adjustments in salt levels; b) the revision of minimum fat content; c) the use of goat milk in addition to sheep milk, as usually done by several producers according to their available resources and inputs; and d) enlargement of the AO delimitation area for inclusion of lowland villages where final cheese refinement and preparation take place.

An additional key issue is related to the ripening and storage temperature. At current conditions the ripening and storage temperature in producers’ shelters is subject to oscillations and the respect of the maximum fixed temperature of 22°C cannot be guaranteed during the warmest summer period. This would entail the provision of some simple storage infrastructure that allows for temperature stabilization.

All modifications to the specifications were incorporated by the project experts in the updated draft, based on the latest inputs from the simulations and discussions with producers (Annex xxx).
## ANNEXES

Annex 1 - Tushetian Guda Sensory Analyses Tables

### Salt content in *Tushetian guda* and relevance to GI

<table>
<thead>
<tr>
<th>Sample</th>
<th>Very much too salty</th>
<th>Too salty</th>
<th>Slightly too salty</th>
<th>Just about right</th>
<th>Slightly not salty enough</th>
<th>Not at all salty enough</th>
<th>GI Yes=1 No=0</th>
<th>If no GI, WHY precisely</th>
<th>Other flavors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Produced from Sheep Milk</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T 22</td>
<td>2</td>
<td></td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td>6</td>
<td>3. Has no tastes, only salt; 5. Taste is salty, that suppresses other tastes.</td>
<td>1. Low aroma of milk; 2. Flavour of Guda cheese; 3. Bitterness; 4. Flavour of Guda cheese; 5. No other flavours are felt, although less expressed and typical for Guda; 6. A bit more salty; 7. A pleasant aroma of grasses (milk origin).</td>
</tr>
<tr>
<td>T 23</td>
<td>1</td>
<td></td>
<td>7</td>
<td>1</td>
<td></td>
<td></td>
<td>6</td>
<td>1. Too much salty; 5. I do not like taste properties. Has a bitter taste.</td>
<td>1. Flavour of Guda cheese; 2. Characteristic aromas, without other flavors; 3. A pleasant milk aroma; 4. Less fatty; 5. Slightly bitter taste; 6. Other flavors are not felt; 7. Flavour of Guda cheese; 8. Spicy, specific, piquant.</td>
</tr>
<tr>
<td>T 24</td>
<td>1</td>
<td></td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td>6</td>
<td>2. Taste - not characteristic for Guda cheese, colour - brownish, very salty, specific unpleasant aroma is felt</td>
<td>1. Does not have other flavors; 2. Not common for Guda cheese; 3. Specific, piquant spicy aroma of grasses; 4. Comparatively soft; 5. Well balanced cheese; 6. Characteristic flavors, firstly - stronger, and later - less expressed (taste is good, though the inner part is too soft, like daubing); 7. Very sharp taste.</td>
</tr>
<tr>
<td><strong>Produced from Mixed Milk (Sheep and Cow)</strong></td>
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<td>TM 31</td>
<td>3</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>2. Taste and flavour unpleasant, slightly excess salt; 3. When tasting, only salt is felt.</td>
<td>1. Slightly rancid taste; 2. Unpleasant taste and aroma; 3. No other flavours are felt; 4. Salty; 5. Piquant, salty, slightly &quot;sour&quot;.</td>
</tr>
</tbody>
</table>
Inside and outside colors of *Tushetian guda* produced from sheep milk

<table>
<thead>
<tr>
<th>Sample</th>
<th>Yellowish</th>
<th>Creamy</th>
<th>Yellow</th>
<th>Green</th>
<th>Homogeneous</th>
<th>Greyish-yellowish</th>
<th>Greyish</th>
<th>Brownish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inside color</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>T 21</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>T 22</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
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<td>T 23</td>
<td>7</td>
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<td></td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
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<tr>
<td>T 24</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
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<td>1</td>
<td></td>
</tr>
</tbody>
</table>

| Outside color |           |        |        |       |             |                   |         |          |
| Sample        | Yellowish | Creamy | Yellow | Green | Homogeneous | Greyish-greyish | Greyish |
| T 21          | 1         | 1      |        |       |             |                   | 4       | 1        |
| T 22          | 1         | 1      |        |       |             |                   | 2       | 2        |
| T 23          | 3         |        |        |       | 1           |                   | 4       | 1        |
| T 24          |           |        |        |       | 1           |                   | 2       | 3        |
Inside and outside colours of *Tushetian guda* produced from mixed milk (cow and sheep)

<table>
<thead>
<tr>
<th>Sample</th>
<th>Yellowish</th>
<th>Creamy</th>
<th>Yellow</th>
<th>Green</th>
<th>White</th>
<th>White-yellowish</th>
<th>White-greyish</th>
<th>Golden</th>
<th>Whitish-golden</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inside colour</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TM 31</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sample</th>
<th>Yellowish</th>
<th>Creamy</th>
<th>Yellow</th>
<th>Green</th>
<th>White</th>
<th>White-yellowish</th>
<th>White-greyish</th>
<th>Whitish-golden</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outside colour</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TM 31</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
### Annex 2 - Results of laboratory analyses of *Tushetian guda*

<table>
<thead>
<tr>
<th>Cheese code</th>
<th>Cheese variety</th>
<th>Production date</th>
<th>Protein %</th>
<th>Fat %</th>
<th>Acidity - T</th>
<th>Pasteurization temperature and time</th>
<th>Fat separation</th>
<th>Moisture %</th>
<th>Fat %</th>
<th>Protein %</th>
<th>Salt %</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM31</td>
<td>Tushetian Guda (Sheep and Cow Mix)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>44.8</td>
<td>33.1</td>
<td>48.8</td>
<td>8.3</td>
</tr>
<tr>
<td>T21</td>
<td>Tushetian Guda (Sheep)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>39.8</td>
<td>48.6</td>
<td>38.7</td>
<td>7.8</td>
</tr>
<tr>
<td>T22</td>
<td>Tushetian Guda (Sheep)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>41.2</td>
<td>47.2</td>
<td>36.9</td>
<td>10.2</td>
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<tr>
<td>7T23</td>
<td>Tushetian Guda (Sheep)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>42.2</td>
<td>48</td>
<td>37.4</td>
<td>8.5</td>
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<tr>
<td>T24</td>
<td>Tushetian Guda (Sheep)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>46.3</td>
<td>47.7</td>
<td>38.3</td>
<td>8.6</td>
</tr>
</tbody>
</table>
Annex 3- Historical evidence of *Tushetian guda* production methods

Salt content in Tushetian cheese according to laboratory analysis in 1922.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Water %</th>
<th>Salt %</th>
<th>Total %</th>
<th>Salt %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample 1</td>
<td>24.64</td>
<td>0.64</td>
<td>25.28</td>
<td>0.70</td>
</tr>
<tr>
<td>Sample 2</td>
<td>24.03</td>
<td>0.63</td>
<td>24.66</td>
<td>0.66</td>
</tr>
<tr>
<td>Sample 3</td>
<td>23.89</td>
<td>0.62</td>
<td>24.51</td>
<td>0.68</td>
</tr>
<tr>
<td>Sample 4</td>
<td>23.56</td>
<td>0.61</td>
<td>24.17</td>
<td>0.67</td>
</tr>
<tr>
<td>Sample 5</td>
<td>23.23</td>
<td>0.60</td>
<td>23.83</td>
<td>0.64</td>
</tr>
</tbody>
</table>

Note: The table above shows the salt content in Tushetian cheese according to laboratory analysis in 1922.
Equipment for cheese making (Photos from “The Messenger of the Tbilisi University”, 1922-1923)

Petre Melikishvili. p. 135 chapter - Georgian type cheese, describes the process of the *Tushetian guda* cheese making.

Cheese strainer made from stone
Tushetian household (drawings by Giorgi Bochoridze)