

# **“GURJAANI”**

## **WINE OF APPELLATION OF ORIGIN**

### Production micro-zone of wine “GURJAANI”

Geographical location. The micro-zone is located in the middle stream of the river Alazani, on its right side with the coordinates of northern latitude of 41°45′ and eastern longitude of 45°48′. The territory of the micro-zone includes foothills adjacent to the woody slopes of northern-eastern inclination of Tsiv-Gombori Ridge and Alazani Lowland from the populated area north-eastwards. Distance to the river Alazani along a straight line is 10 km. and the distance to the crest area of Tsiv-Gombori Ridge south-westwards is 17 km. The altitude of the extreme points of micro-zones varies within the limits of 250-1000 m above sea level. The micro-zone includes the villages of Inner Kakheti – Bakurtsikhe, Kolagi, Vejini, Dzirkoka, Chandara, village of Gurjaani, district zone of the city of Gurjaani, part of the territories of Kotekhi, Chumlaki, Shashiani and Vachnadziani, beginning from the second terrace of Alazani plain and spreading on the northern-eastern slopes of Tsiv-Gombori mountains.

Climate. The weather in the micro-zone is mainly formed by the atmospheric processes developed in subtropical and moderate latitudes and displaced from east and west. The climate here is moderately humid, with hot summer and moderately cold winter.

The average annual duration of sunshine is 2150-2200 hours, and 1550-1600 hours during the vegetation period. The annual sum of solar radiation in the micro-zone on the horizontal surface is 71 kcal/cm<sup>2</sup>. The dissipated radiation of 49 kcal/cm<sup>2</sup>, with 35 kcal/cm<sup>2</sup> in the vegetation period. The annual indicator of the summary radiation is 120 kcal/cm<sup>2</sup>, and that in the warm period is 90 kcal/cm<sup>2</sup>.

Average annual air temperature is quite high equalling to 12,4°. The warmest months are July and August with the equal average air temperature of 23,6°. The average air temperature of the coldest month (January) is +0,9°.

Average of the annual absolute minimums of air temperature is  $-10^{\circ}\text{C}$ , and the average of the annual absolute maximums of air temperature is  $35^{\circ}\text{C}$ . Extreme temperatures are  $-22$  and  $+38^{\circ}$ .

A stable transition of the air temperature above  $10^{\circ}\text{C}$  in most of the region takes place on the first decade of April (5.IV), and falling of temperature below the mentioned point takes place in the first days of November (3.XI). So, the duration of the vegetation period is 211 days. The sum of active temperature during the given period is up to  $3930^{\circ}$ .

The annual number of clear days (0-2 points) in Gurjaani micro-zone, according to general and lower cloudiness is 51 and 132, respectively. During the vegetation period, this indicator, according to the above-mentioned indicators of cloudiness, equals to 36 and 79 days, respectively.

Annual number of cloudy days (8-10 points) according to general and lower cloudiness is 113 and 59, respectively, and the same during the vegetation period is 54 and 26, respectively.

During 85 days from the beginning of summer, average daily air temperature in the micro-zone is higher than  $20^{\circ}\text{C}$ . During this period, for 34 days (10.VII-13.VIII) the average air temperature is  $23^{\circ}$  and over.

The first autumn night frosts start in the third decade of November (25.XI). Once in every 10 years, early frosts, may take place at the end of October (30.X) what is not dangerous for the vine. The last night frosts on average end on the 24.III. Once in every 10 years the spring frost may last until the middle of April.

Average annual sum of atmospheric precipitations in the micro-zone is 804 mm, with 578 mm in the vegetation period. Maximum annual precipitations (124 mm) fall in May, and the minimum precipitations (32 mm) fall in January. The precipitations fall as snow in the last days of December disappearing before the middle of March. In the given period, a snow cover of 6-7 cm of average decade height is preserved for 25 days.

Average relative humidity of air is 72%. Air imbibition is the greatest in November (80%) and is the least in August (64%).

The annual number of the days with hail is 1,7 on average. May and June are the months with most frequent hails (0,6-0,4 days). In exceptional years, it may hail 6 times a year.

Following the analysis of temperature isopleths of alluvial-calcareous soils, in the layers of 5-50 cm depth a stable transition of average temperature above 10° takes place in the first decade of April, and at greater depths (50-100 cm) it takes place in the middle of April.

Activation of the root system starts in the middle of May when temperature in the soil layer of 10-120 cm depth rises over 15°. From the middle of June until the end of September, or for over three months, the temperature in the soil layers of the depth of 5-70 cm is over 20°.

Winds of southern-western (33%) and western (18%) directions prevail in the micro-zone. They are rarely changed for eastern (12%) winds. Average annual wind speed is 1,7 m/sec. Maximum wind speed (1,9 m/sec) during the year is expected in March and the least wind speed (1,5 m/sec) is expected in December.

For production of European and Kakhetian wines the recommended vine species are "Rkatsiteli", "Kakhuri Mtsvane" and "Saperavi". Buds of these species start open from the middle of April, they start flowering at the end of May, the grape is ripened in the second half of August, the grape is technically ripened (with 19-21% of sugar content and 6,5-7,5 gr/dm<sup>3</sup> titrate acidity) in the last days of September. Gaining of the high-quality raw material for table wines of a European type needs 4000° heat, which in Gurjani micro-zone is accumulated on average (50%) at about 420 m altitude.

The premium-quality bulk wine from the areas located at the height of 450-500 m can be gained four or three times in every ten years and the bulk wine of good quality may be gained seven or five times in every ten years; the best-quality product at the height of 550 m may be gained once in every 4

years (25%), and we can gain good-quality product five times in every 4 years. At the height of 600 m, we can gain premium-quality product once in every 10 years, and the product of good quality – once in every four years.

The necessary amount of heat ( $>4100^\circ$ ) to gain naturally semi-sweet bulk wine (with the sugar content  $> 26\%$ ) is on average (50%) accumulated here at about 360 m height. Grape should be harvested in the first half of October. At the altitude of 400 m, such bulk wine is produced once in every 4 years, and at the height of 500 m, it is gained once in every 10 years.

According to multi-year data, the average of annual absolute minimums of air temperature is

$-10^\circ\text{C}$ . Once in every 10 years, the minimum temperature is expected to fall to  $-15^\circ\text{C}$  causing only slight damage to the vine buds ( $<30\%$ ).

Soils. According to the available studies and on the basis of the study conducted by us, there are 4 types of brown soils, 4 types of brown meadow soils, 5 types of alluvial soils and 2 types of dealluvial soils distinguished in the micro-zone:

- Dark brown clay soil of great thickness;
- Dark brown weak skeletal clay soil of great thickness;
- Rendzina brown, of great thickness, clay;
- Brown, of great thickness, skeletal, loamy;
- Brown meadow, of great thickness, clay;
- Brown meadow, of great thickness, loamy;
- Brown meadow, of great thickness, weakly skeletal, loamy;
- Brown meadow, of great thickness, silt from the depth of 110-120 cm, with ground water standing from the depth of 140-150 cm, heavy clay;
- Alluvial calcareous, of great thickness, clay;
- Alluvial calcareous, of great thickness, loamy;
- Alluvial calcareous, weakly skeletal, loamy;
- Alluvial calcareous, of great thickness, average skeletal and stony loamy;
- Alluvial calcareous, of great thickness, periodically with excess moisture, with the ground water standing from the depth of 120-140 cm, clay;
- Dealluvial calcareous, of great thickness, loamy;

- Dealluvial calcareous, of great thickness, weakly skeletal and stony, loamy.

The first three varieties of the above-mentioned soils are spread in the upper belt of the micro-zone, on the northern-eastern slopes of Tsiv-Gomobori mountains and on slightly inclined slopes. The soils of the fourth and fifth varieties are mostly spread in the middle belt of the mentioned slopes and slightly inclined slopes and plains. The soils of the fifth, sixth, seventh and eighth varieties are spread on foots of the above-mentioned slopes, bordering directly Alazani plain and are also spread on the plain relief. The soils of the mentioned varieties are slightly inclined north-eastwards and south-eastwards. The soils of the ninth and thirteenth varieties are spread in the upper part of Alazani plain, bordering the foot of the northern-eastern slopes of Tsiv-Gombori mountains, along the irrigation channel of lower Alazani. The soils of the fourteenth and fifteenth varieties, which are talus, are mainly spread on foots of the above-mentioned slopes, on slightly inclined aprons.

The first three soils varieties, which are spread on the most upper belt of the micro-zone, are characterized by great thickness of profile of 70-100 cm, with the thickness of the humus-containing active layer of 45-60 cm. By texture, the soils are clay. The soil of the second variety is characterized by skeletal texture. The soils of all three varieties have high content of carbonates in the lower layers. This is particularly true with the soil of the third variety. The mentioned soils are spread on loess clays and calcareous sediments. In the upper humus-containing active layer, it is characterized by dark brown color, with straw-whitish color in the lower layers. The soil of the fourth variety, which is mainly spread in the middle zone of the micro-zone, is characterized by average and weak skeletal texture, with great thickness of profile (80-120 cm). The thickness of the humus-containing active layer is 50-60 cm. The soil is loamy by texture. Its color is brown, with straw color in lower layers. It is calcareous along the whole profile. The soils of the fifth and eighth varieties, spread in the lower belt of the micro-zone, have brown and dark-brown blackish color. They are characterized by great thickness of profile (100-150 cm) and great thickness of humus-containing layer (60-70 cm). By texture, the soils of the 5<sup>th</sup> and 8<sup>th</sup> varieties belong to the group of clay soils, and those of the 6<sup>th</sup> and 7<sup>th</sup> varieties belong to the group of loamy soils. The soil of the 7<sup>th</sup> variety is characterized by weakly skeletal texture, and the soil of the 8<sup>th</sup> variety is distinguished for more excess of moisture being silt from the depth of 100-120 cm, with the ground water standing at the depth of 140 cm. The soils of the 9<sup>th</sup> and 13<sup>th</sup> varieties are mainly spread in the southern-western part of the Alazani plain and along the tributaries of the Alazani. These soils are characterized by great thickness of their profiles (100-150 cm) and with the thickness of the humus-containing active layer of 50-70 cm. They have brown and taupe colour. By mechanical texture, the soils of the 9<sup>th</sup> and 13<sup>th</sup> varieties are clays, and those of the 10<sup>th</sup> and 12<sup>th</sup> varieties are loamy. The soil of the 11<sup>th</sup> variety is characterized by weakly skeletal structure, and that of the 12<sup>th</sup> variety has average skeletal and stony texture.

The soil of the 13<sup>th</sup> variety is characterized by periodically excess of moisture and ground water standing from the depth of 120-140 cm. The soils of the 14<sup>th</sup> and 15<sup>th</sup> varieties, which are mainly spread at foots of northern-eastern slopes of Tshiv-Gomobori mountains, are characterized by a great thickness of profile (70-120 cm). The thickness of humus-containing active layer is 40-50 cm. Their color is brown and according to texture, they belong to loamy soils. They are calcareous along the whole profile. The soil of the 15<sup>th</sup> variety is characterized by skeletal and weak stony texture what creates better conditions to produce high-quality wines. The soils of the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 5<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> and 13<sup>th</sup> varieties belong to clay soils, and the rest of the soils of the 4<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup>, 14<sup>th</sup> and 15<sup>th</sup> varieties belong to the loamy group of soils. The content of humus in the trenching layer of the soil varies mainly within the limits of 1,5-4,5%, and 3,5-5,5% in the soils of the first three varieties, decreasing in lower layers. The soils are mostly poor in soluble phosphorus (1,5-2,5 mg in 100 gr. of soil). In some cases, phosphorus is spread as a trace only. The content of exchange potassium is mainly low and varies within the limits of 3,5-25,0 mg in 100 gr. of soil. The content of calcium carbonates is mainly average. This indicator is quite high with the first three types of soils reaching 40-60%. The reaction of soil area is mainly average or weak alkaline and pH indicator is within the limits of 7,5-8,3.

Following the accomplished studies, the characteristics of the soils spread in the micro-zone are one of the determinants for producing the wines "Gurjaani".

#### Agro-technological regulations

In order to produce "Gurjaani" bulk wine, the following agro-technological regulations should be observed by considering the soil and climatic conditions.

#### Species of "Rkatsiteli"

Growing area: Up to 320-750 m above sea level.

Plot of planting: 2,0 x 1,5 m; 2,5 x 1,5 m; 3,0 x 1,5 m.

Height of stem: 70-100 cm

Form of pruning: Free and Georgian two-sided trellis.

Norm of loading per 1 m<sup>2</sup>: 8-10 buds, with 80-100 thousand buds per hectare.

Harvest: 9-10 tons per hectare.

Species of “Kakhuri Mtsvane”

Plot of planting: 2,0 x 1,5 m; 2,5 x 1,5 m; 3,0 x 1,5 m.

Height of stem: 60-100 cm

Form of pruning: Free and Georgian two-sided trellis.

Norm of loading per 1 m<sup>2</sup>: 8-10 buds, with 80-100 thousand buds per hectare.

Harvest: 6-7 tons per hectare.

Soil cultivation

In the irrigation land – ending the last vegetation irrigation one month before the vintage. Autumn and spring ploughs of soil. Moisture-preservation measures – preservation of soil surface in a loose state (cultivation, milling, mulching).

Fertilization

Application of organic-mineral fertilizers under cartographic agricultural regulations.

Phyto-sanitary regulations

Principal diseases: Mildew, powdery mildew, rot.

Pests: Ticks, western grape worm, mealybug.

Pest and disease control measures: Using proper contact and systematic preparations registered in Georgia.

Economic-technological characterization of the species of “Rkatsiteli” and “Kakhuru Mtsvane”

“Rkatsiteli” – Wine species of white grape. It is distinguished by high economic-technological properties, resistance in various conditions and high dignity of production. The species is of average late or late period. It is characterized with abundant harvest (average weight of a bunch is about 160-250 gr.). Average harvest is 9-10 tons per hectare.

Sugar content of the ripe grape reaches  $240 \text{ gr/dm}^3$ , with the acidity of  $7,8 \text{ gr/dm}^3$ .

“Kakhuri Mtsvane “– Georgian white vine species. The vine is of average grow and of average ripening period.

Its bunches are of average size with the average weight of  $172 \text{ gr}$ . and the average harvest is  $6-7 \text{ tons per hectare}$ . The species accumulates sugar in great quantities ( $220 \text{ gr/dm}^3$ ) preserving normal rate of acidity ( $6,0-7,8 \text{ gr/dm}^3$ ).

Wine “Gurjaani” is controlled high-quality dry white wine of geographical appellation. It is made with the grape of species “Rkatsiteli”.  $15\%$  of the species of “Kakhuri Mtsvane” is acceptable to use.

Wine “Gurjaani” is characterized with light straw color, taste harmonicity, full species-specific aroma, and well-developed race.

Chemical characteristics of the wine “Gurjaani” should correspond to the following indicators:

Volumetric spirit-content, % -  $10,5-12,5$

Mass concentration of sugars of no more than  $3 \text{ gr/dm}^3$

Titrated acidity -  $5,5-7,5 \text{ gr/dm}^3$

Volatile acidity of no more than  $1,0 \text{ gr/dm}^3$

Mass concentration of finished extract of no less than  $16 \text{ gr/dm}^3$

Concentration of total mass of sulphuric acid of no more than  $210 \text{ gr/dm}^3$

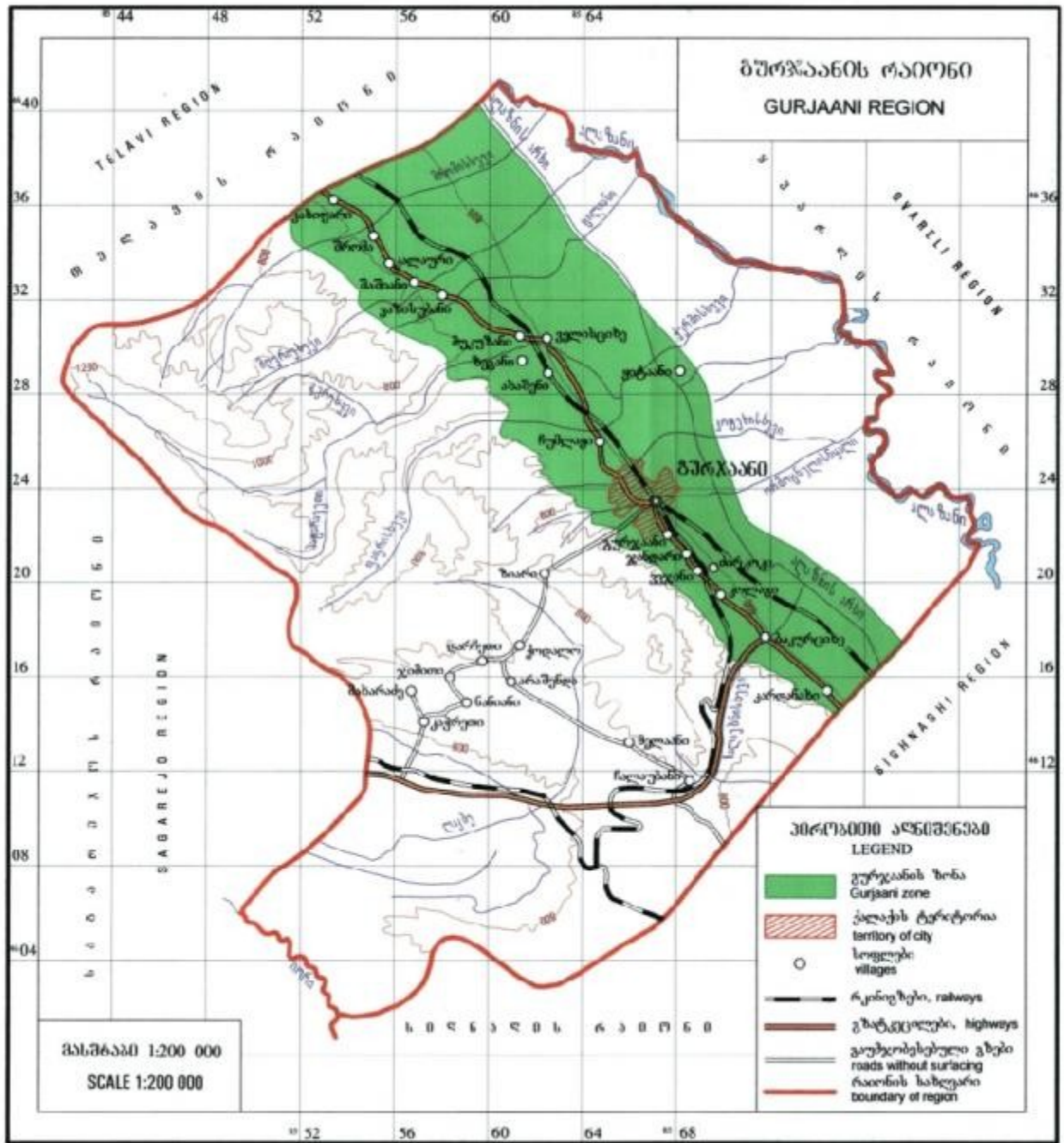
Concentration of free sulphuric acid of no more than  $30 \text{ gr/dm}^3$

The rest norms should correspond to the legislative acts of Georgia and the EU Directive No. 1493/1999 of May 17, 1999.

Available areas for raw materials of wine “Gurjaani”

The area for raw material of the wine "Gurjaani" is 1151,5 ha. 8636 tons of conditional grape harvest is possible to produce in the micro-zone. At the output of 65 decaliters out of 1 ton, 561,000 decaliters of bulk wine may be produced.

The location of "Gurjaani" micro-zone, the microclimate developed on the slope of Tsiv-Gombori Ridge, brown, brown meadow, alluvial and dealluvial soils and originality of the species of "Rkatsiteli" and "Kakhuri Mtsvane" make for the peculiar features of the wine "Gurjaani".



Source :  
National intellectual Property Center of Georgia  
<http://www.sakpatenti.org.ge>