

# Official Bulletin of the Industrial Property *Special Edition*

AMENDMENTS ON SPECIFICATIONS  
FOR GEORGIAN PDO WINES PRODUCTION



საქართველოს ინტელექტუალური  
საკუთრების ეროვნული ცენტრი

**საქპატენტი**

**SAKPATENTI**

NATIONAL INTELLECTUAL PROPERTY  
CENTER OF GEORGIA

[www.sakpatenti.gov.ge](http://www.sakpatenti.gov.ge)

Date of Publication  
2019 07 29

## CONTENTS

### AMENDMENTS ON SPECIFICATIONS FOR GEORGIAN PDO WINES PRODUCTION

• MUKUZANI .....	2
• TSINANDALI .....	8
• AKHASHENI .....	14
• GURJAANI .....	20
• KINDZMARAULI .....	26
• MANAVI .....	32
• KAKHETI .....	38
• NAPAREULI .....	44
• TELIANI .....	50
• ATENI .....	55
• SVIRI .....	60
• VAZISUBANI .....	65
• KARDENAXI .....	70
• TIBAANI .....	77
• TVISHI .....	82
• KVARELI .....	87

---

# APPELLATIONS OF ORIGIN OF GOODS

**On Making Amendments to the Production Specifications of Wines of Protected Appellations of Origin: Mukuzani (Reg. №2; Date 30.08.2005); Tsinandali (Reg. №3; Date 30.08.2005); Akhasheni (reg. №4; date 30.08.2005); Gurjaani (reg. №5; date 30.08.2005); Kindzmarauli (reg. №877; date 30.03.2006); Manavi (reg. №888; date 21.08.2006); Kakheti (Kakhuri) (reg. №789; date 10.12.2007); Napareuli (reg. №790; date 10.12.2007); Teliani (reg. №791; date 10.12.2007); Ateni (Atenuri) (reg. №922; date 10.12.2007); Sviri (reg. №793; date 10.12.2007); Vazisubani (reg. №794; date 10.12.2007); Kardenakhi (reg. №795; date 10.12.2007); Tibaani (reg. №796; date 10.12.2007); Tvishi (reg. №977; date 10.12.2007); Kvareli (reg. №798; date 10.12.2007)**

On the basis of Orders №№53259/06, 53267/06, 53251/06, 53252/06, 53256/06, 53258/06, 53257/06, 53260/06, 53254/06, 53250/06, 53261/06, 53253/06, 53255/06, 53263/06, 53262/06 and 53266/06 of the Head of the Department of Trademarks, Geographical Indications and Designs of the LEPL National Intellectual Property Center of Georgia – Sakpatenti of July 24, 2019 the production specifications of wines of appellations of origin registered at the National Intellectual Property Center of Georgia – Sakpatenti: "Mukuzani", "Tsinandali", "Akhasheni", "Gurjaani", "Kindzmarauli", "Manavi", "Kakheti (Kakhuri)", "Napareuli", "Teliani", "Ateni (Atenuri)", "Sviri", "Vazisubani", "Kardenakhi", "Tibaani", "Tvishi" and "Kvareli".

In accordance with the Law of Georgia "On Appellations of Origin and Geographical Indications", the above-mentioned information shall be published in the Official Bulletin of Industrial Property of the LEPL National Intellectual Property Center of Georgia – Sakpatenti, in one central and one local newspaper.

Notes and additional information, submitted to Sakpatenti within 3 months after publication of the materials, shall be sent for study to the Ministry of Environmental Protection and Agriculture of Georgia. If no information is received by Sakpatenti concerning these materials within 3 months, the published data about "Mukuzani", "Tsinandali", "Akhasheni", "Gurjaani", "Kindzmarauli", "Manavi", "Kakheti" (Kakhuri), "Napareuli", "Teliani", "Ateni" (Atenuri), "Sviri", "Vazisubani", "Kardenakhi", "Tibaani", "Tvishi" and "Kvareli" shall be reflected in the State Register of Appellations of Origin and Geographical Indications.

## MUKUZANI

**1. NAME: "MUKUZANI"**

**2. ADDITIONAL SIGNS:**

**3. TYPE, COLOR AND MAIN REQUIREMENTS**

"Mukuzani" is sec (dry) wine, which shall satisfy the following requirements:

- Color – dark (garnet) red;
- Aroma and taste – perfect, full, extracted, velvet, harmonic, having aroma characterizing the location with intensively expressed bouquet of fruit tones developed with aging;
- Volumetric spirit content – no less than 11 %;
- Concentration of finished extract mass – no less than 22 g/l;
- Sugar content – no more than 4 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

**4. SPECIFIC ZONE AVAILABLE AREAS**

The micro-zone "Mukuzani" is located in Kakheti, Gurjaani municipality, on the right bank of longitude gorge of the River Alazani, on the North-Eastern slopes of Tsvi-Gombori Range.

Micro-zone from the South-West to North-East consists of slightly or moderately inclined slopes and trails with slightly wavy surface becoming flat towards the North-East direction and borders the channel of the River Alazani. The micro-zone is closed by Akuriskhevi and Vedzirula gorges, from the North-West and South-East, correspondingly.

The micro-zone includes the villages: Chumlaki, Akhasheni, Zegaani, Mukuzani, Velistsikhe, Vazisubani,

Shashiani, Kalauri, Vachnadziani and Kakhpari, till the channel of the River Alazani

## 5. VINE VARIETIES

Wine "Mukuzani" shall be prepared from the grapes of Saperavi and/or Saperavi-Budeshuri-like, vintage takes place in the micro-zone Mukuzani.

## 6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE:

- The micro-zone "Mukuzani" vineyards are situated on 350-700 m above sea level.
- Distance between the rows in the vineyards – 1-3 m;
- Distance between the vines in the row – 0.8-1.5 m;
- Height of stem – 60-90 cm;
- Shape of pruning – one-sided or Georgian two-sided or free.

Wine cultivation, shape and pruning, pests and diseases control, and soil treatment, fertilization, and other operations, shall be provided according to agro-technical activities selected by wine-makers.

## 7. GRAPE MATURITY, VINTAGE, TRANSPORTATION:

- "Mukuzani" shall be produced only with ripe grapes. Sugar content shall be no less than 19%, at the vintage;
- Grapes transportation is permitted only with wooden or plastic boxes, with bodyworks made of stainless steel or painted with special colour;
- Usage of polyethylene packages and/or bags is not allowed.

The grapes shall be protected from dirtying at the transportation.

## 8. VINTAGE AND WINE PRODUCTION

Vintage on 1 ha vineyard shall be no more than 10 tons.

Wine production shall be no more than:

- 650 liters – from 1 ton grapes;
- 6500 liters – from 1 ha vineyard.

## 9. GRAPE PROCESSING, WINEMAKING AND BOTTLING

Grapes Rkatsiteli and Kakhuri Mtsvane for producing wine "Mukuzani" shall be only from the vineyards of the micro-zone Mukuzani.

Grapes processing and winemaking shall be provided exclusively inside of Kakheti, bottling – outside Kakheti, but only on the territory of Georgia.

At the same time, the grapes shall be got from the micro-zone Mukuzani and the wine shall be withdrawn from Kakheti viticulture zone only under strict accounting and control.

"Mukuzani" is made by complete alcoholic fermentation of must.

In the production of wine "Mukuzani" it is permissible to use only the operations, materials and substances permitted by the legislation of Georgia.

"Mukuzani" shall be represented on consumer market only packed in the consumer vessels.

## 10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA

**CLIMATE** – Climate formation in the micro-zone Mukuzani is defined by atmospheric processes

developed in subtropical and moderate latitudes and moved from the East and West. No less importance have the processes caused by local relief conditions, in particular, cold air masses flowing down from Caucasus high top glaciers. The climate is moderately humid, with hot summer and mild winter. In the slopes intended for vineyards the horizon is essentially extensible from the East to West that creates effective radiation regime for vine cultivated on the slopes inclined towards the North-East. Annual duration of sunlight varies within 2150-2200 hours, and during the vegetation period the sunshine continues 1600 hours. Sum of annual radiation is no more than 130 kcal/cm<sup>2</sup>, and 95-100 kcal/cm<sup>2</sup> in the vegetation period. Sum of direct annual radiation is 75 kcal/cm<sup>2</sup>, and scattered – 54 kcal/cm<sup>2</sup>.

The average annual air temperature is +12,5°C, +23.6°C – of the warmest months (July and August) and +1,1°C – of the coldest month (January).

Sum of active temperatures in the micro-zone is +4120-3440°C.

The annual sum of atmospheric precipitations in specific zone, during the vegetation period, is 645 mm, and annual – 870 mm. The precipitations are less at fruit formation period (June, July, August), and vineyards need to be additionally irrigated. The soil is moderately humid and does not need irrigation at the times of grape maturity.

Relative air humidity is 71%. Less humidity is in July (63%) and August (60%), relatively more – in the end of autumn (78%) and winter (76-75%). Snow cover is created in the last decade of December (25.XII), and melting takes place in mid-March. Snowy days amount is 26. Last frosts are finished in 24 March, and once in 10 years can be continued until mid-April.

Period without frosts is continued more than 230 days. Air temperature average annual absolute minimum is -9, -11°C, and can fall to -15°C once in 10 years.

Annual average value of hailing days is 2,1. May and June are the most hailing months (0,7-0,5).

There are prevailing mostly the Western – (32%) and South-Western (23%) Rumb winds. Days without winds are 21%, averagely. At the night till sunrise the cold air masses flowing down from Caucasus high top glaciers strengthen frosts of winter and spring.

The micro-zone Mukuzani belongs to wind impact III group regions. Average wind speed is 1,4 m/s. In the purpose to protect the area the double-row windshield strips cultivation is recommended.

**SOIL** – In accordance of existed data analyses, there are distinguished brown, alluvial and deluvial varieties of soils, with their sub-varieties.

- 1) Dark brown, moderately thick, slightly leptosol, moderately and slightly clay;
- 2) Rendzino –brown, moderately thick, slightly leptosol, loam and clay;
- 3) Forest brown, very thick, slightly leptosol, stony and heavy loam;
- 4) Deluvial, carbonated, very thick, loam;
- 5) Alluvial, carbonated, , leptosol and loam.

Very and moderately thick brown varieties of soils are presented in the main part of territory; Deluvial carbonated – on the center, creating slightly inclined trails on the North-Eastern foothills of Tshiv-Gombori Range.

Thick profile soils depth varies from 80-100 cm to 110-130 cm, in average thickness soils the depth varies from 60-70 cm to 70-80 cm. Active humus layer in thick soil varies from 50-60 cm to 75-85 cm, and from 3-40 cm to 40-50 cm – in the average soils.

Soil mechanical content is moderately, very or slightly loamy, and in some places is moderately loamy. The structure is changed from grainy-solid (in the upper layers) to solid-pea-like from the topsoil towards the bottom. Soil includes the roots, organic waste, lime dots and pebbles.

Calcium carbonates content increases downwards; it is 24% in low layers, mut more in rendzino-brown soils low layers.

Humus content is very low everywhere. Hydrolyzed nitrogen, soluble phosphorus and exchange potassium

contents are very low. Soil area reaction (pH) is moderately alkaline.

Soil cover represented on inclined trails and developed on the rocks has high content of carbonates. Everything together with exposition, education and climatic conditions give opportunity to produce high quality wine "Mukuzani".

**HUMAN FACTOR** – Viticulture and winemaking exist in Mukuzani micro-zone from ancient times. At the beginning of the 19<sup>th</sup> century, the estate of Aleksandre Chavchavadze became prominent here, being notable for significant capital investments and advanced technologies.

In the second half of the 19<sup>th</sup> century, the abolition of serfdom gave a powerful impetus to the development of this field and economy, in general. Unpaid laborers were replaced with hired workers, the backward and undeveloped area was quickly engaged in the common capitalist relationship, and the process of creation of capitalist-farming households began.

These processes became more tangible for viticulture and winemaking from the 1880s, when the Princes Estates Department massively purchased Kakhetian nobles' estates, including in Mukuzani and Zegaani, and rapidly began to modernize vineyards and cellars.

Said processes were further strengthened from the 1920s, when Georgian scientific centers started functioning in Tbilisi and Telavi. New vineyards were cultivated with grafted saplings, wineries equipped with modern technics were built in Mukuzani and Zegaani, and new technologies were introduced.

Wine "Mukuzani" is produced since 1888 and is considered to be a flagship of Georgian red dry wines. 13 medals, including 8 gold, 4 silver and 1 bronze medals, were awarded to wine "Mukuzani" at various international competitions and exhibitions, until 1990.

Geographical location of micro-zone Mukuzani, characteristic regional climate: mild winter and hot summer, moderate amount of precipitations, diversity of soils, special features of harvested Saperavi and/or Saperavi Budeshuri-like grape varieties, characteristic of this zone and local, centuries-old tradition of viticulture and winemaking provide unique organoleptic features of wine "Mukuzani", characteristic only of this wine.

## 11. SPECIAL LABELING RULES

The name "Mukuzani" and the sign – PDO (Protected Designation of Origin) on the label, package, in the documents accompanying the wine, and advertising materials, used in foreign languages, shall appear as follows:

With Latin font – MUKUZANI  
Protected Designation of Origin and/or PDO  
Cyrillic font – МУКУЗАНИ  
Защищённое наименование места происхождения

## 12. ACCOUNTING AND NOTIFICATION

Accounting and notification of production and storage technological processes of "Mukuzani" is carried out, in accordance with the rules established by the legislation of Georgia.

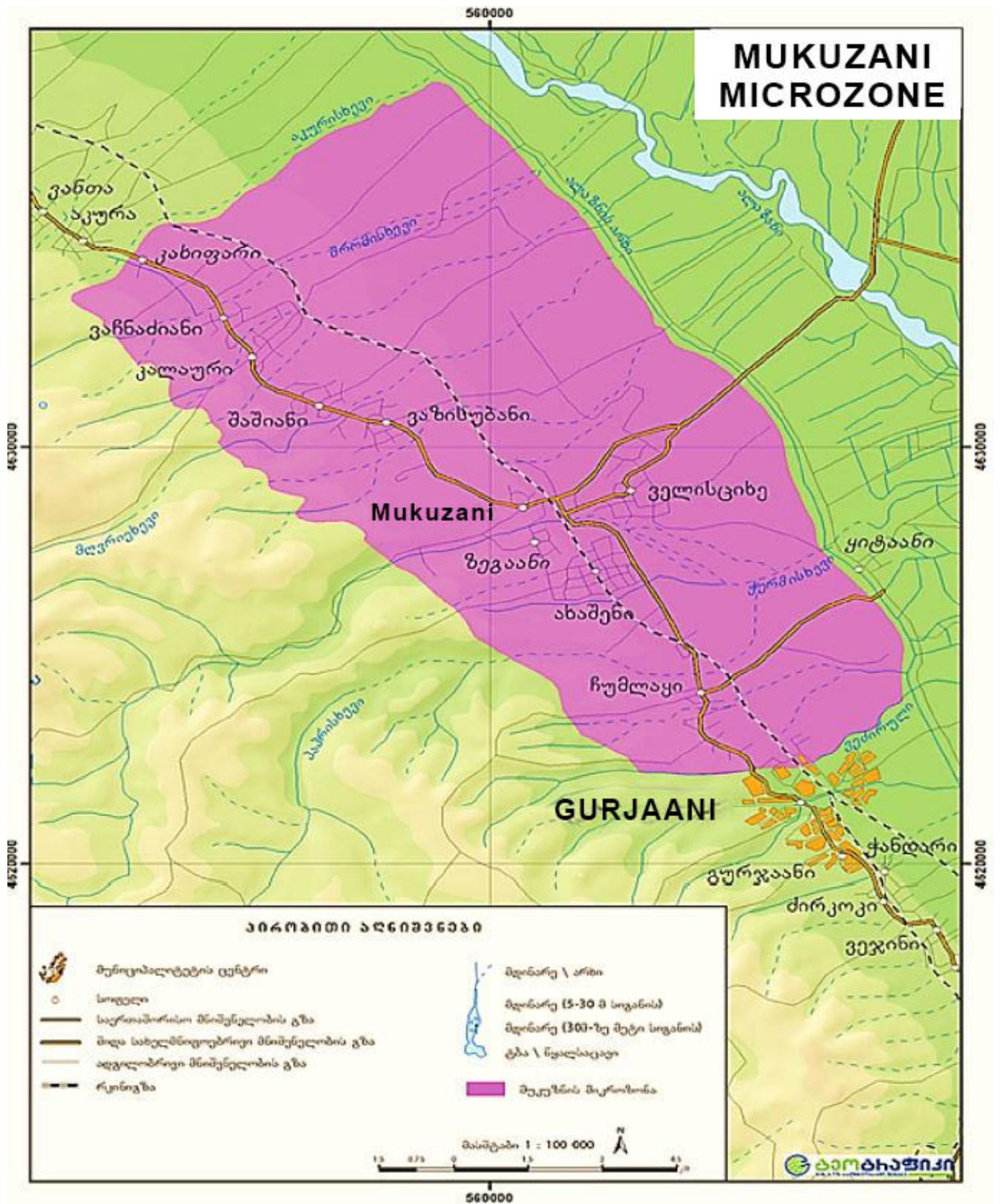
## 13. MAIN CONTROLLABLE POINTS

During control of the PDO wine "Mukuzani" production process the producer shall satisfy the requirements established by LEPL National Wine Agency, and shall comply with the following parameters:

<b>Main Controllable Points</b>	<b>Evaluation Methods</b>
<b>1</b>	<b>2</b>
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
<b>1</b>	<b>2</b>
Vintage and transportation	Vintage journal
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records

**14. CONTROL BODY OF PRODUCTION**

State control for observance of production specification and lawful usage of the appellation of origin PDO shall be carried out by LEPL National Wine Agency, according to the rules established by the legislation of Georgia.



## TSINANDALI

### 1. NAME: "TSINANDALI"

### 2. ADDITIONAL SIGNS:

### 3. TYPE, COLOR AND MAIN REQUIREMENTS:

"Tsinandali" is white sec (dry) wine, which shall satisfy the following requirements:

- Color – light straw;
- Aroma and taste – perfect, delicate, soft, harmonic, cheerful, refined, having aroma characterizing the location, with meadow flowers tones, fruit tones are developed with aging;
- Volumetric spirit content – no less than 11 %;
- Concentration of finished extract mass – no less than 16 g/l;
- Sugar content – no more than 4 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

### 4. SPECIFIC ZONE AVAILABLE AREAS

The micro-zone Tsinandali is located in Telavi Municipality, on the right bank of the River Alazani, and on the coordinates – 41°54' of Northern longitude and 45°35' of Eastern latitude. The micro-zone Tsinandali covers the forests continuing North-Eastern slopes of Tsiv-Gombori Range from one side, and areas nearby mountains and Alazani Gorge from another side. Chumatkhevi borders it from the North-West, and Akuriskhevi – from the South-West.

Tsinandali includes the villages: Akura, Vanta, Busheti, Kvemo Khodasheni, Tsinandali Kisiskhevi, Kondoli, Nasamkhrali, Shalauri, Kurdghelauri, Vardisubani, Ruispiri, Karajala, Gulgula and Ikalto.

### 5. VINE VARIETIES

Wine "Tsinandali" shall be prepared from the grapes of Rkatsiteli, vintage takes place in the micro-zone Tsinandali. It is permitted to use about 15% of Kakhuri Mtsvane, vintage takes place in the same micro-zone.

### 6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE:

- The micro-zone Tsinandali vineyards for wine Tsinandali shall be situated on 300-750 m above sea level.
- Distance between the rows in the vineyards – 1-3 m;
- Distance between the vines in the row – 0.8-1.5 m;
- Height of stem – 60-90 cm;
- Shape of pruning – one-sided or Georgian two-sided or free;

Vine cultivation, shape and pruning, pests and diseases control, and soil treatment, fertilization, and other operations, shall be provided according to agro-technical activities selected by wine-makers.

### 7. GRAPE MATURITY, VINTAGE, TRANSPORTATION:

- Tsinandali shall be produced only with ripe grapes;
- Sugar content shall be no less than 19%, at the vintage;
- Grapes transportation is permitted only with wooden or plastic boxes, with bodyworks made of stainless steel or painted with special color;
- Usage of polyethylene packages and/or bags is not allowed;
- The grapes shall be protected from dirtying at the transportation.

## 8. VINTAGE AND WINE PRODUCTION

Vintage on 1 ha vineyard shall be:

- 10 tons for Rkatsiteli;
- 8 tons for Kakhuri Mtsvane.

Wine production shall be no more than:

- 6500 liters – from 1 ha vineyard for Rkatsiteli;
- 5200 liters – from 1 ha vineyard for Kakhuri Mtsvane.

## 9. GRAPE PROCESSING, WINEMAKING AND BOTTLING

Grapes Rkatsiteli and Kakhuri Mtsvane (15%) for producing wine "Tsinandali" shall be only from the vineyards of the micro-zone Tsinandali.

Grapes processing and winemaking shall be provided exclusively inside of Kakheti, bottling – outside Kakheti, but only on the territory of Georgia.

At the same time, the grapes shall be got from the micro-zone Tsinandali and the wine shall be withdrawn from viticulture zone Kakheti only under strict accounting and control.

"Tsinandali" is made by complete alcoholic fermentation of gravity grape juice.

In the production of wine "Tsinandali" it is permissible to use only the operations, materials and substances permitted by the legislation of Georgia.

"Tsinandali" shall be represented on consumer market only packed in the consumer vessels.

## 10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA

**CLIMATE** – The climate in the micro-zone is moderately humid, with hot summer and mild winter. Annual duration of sunlight in the micro-zone Tsinandali more than 2300 hours. Direct annual radiation on the perpendicular surface is 76 kcal/cm<sup>2</sup>, and varies within – 92-60 kcal/cm<sup>2</sup>. Scattered annual radiation is 54 kcal/cm<sup>2</sup>, and – 40 kcal/cm<sup>2</sup> in the vegetation period. Sum of annual radiation is 130 kcal/cm<sup>2</sup>, and 100 kcal/cm<sup>2</sup> – in the warm period.

The average annual air temperature of the micro-zone is quite high – +12.4°C, in the warmest months – July and August the average temperature is equal to +23.2°C, and that of the coldest month (January) is +0,90°C. Annual absolute minimum is averagely – 10°C, and maximum – +35°C.

Extreme temperatures are change within – 23°C – +38°C. In most parts of the region the temperature above 10°C is in the April I decade (from 8.IV), and below 10°C – in the beginning of November (3.XI).

Vegetation period duration is 208 days, and sum of active temperatures (ct>10°C) is +3930°C, on 550 m level.

In the micro-zone Tsinandali annual number of sunny days (0-2 points) in general, and at lower clouds is equal to 52-82, accordingly. During the vegetation period, this indicator is equal to 36-55 days according to cloudness. Annual quantity of cloudy days (8-10 points) in general and at lower clouds is equal to 122 and 95, accordingly. During the vegetation period, this indicator is equal to 61-45.

The annual sum of atmospheric precipitations is 845 mm, and 644 mm during the vegetation period, in the micro-zone Tsinandali. Maximum of precipitations (157 mm) take place in May, and minimum (28 mm) – in January.

Vine buds opening starts from mid-April, and the grape maturity begins in the second half of August.

Active heat sum ranges within 4100-3500°C, in Tsinandali micro-zone (on the 300-750 m level).

Hailing days are frequent per year (2,3). May and June are the most hailing months (0,7-0,8) of year and can be even 9 times in the most hailing years.

The relative humidity of air is approximately 70%. The air is less humid (60%) in August, and the most (77%) – in November.

The Western – (33%) and Eastern (23%) Rumb winds are dominated, in the micro-zone. The average wind speed is 1,7 m/s; amount of annual windy days is not big (10).

**SOIL** – In June-July of 2005, soil specialists of horticulture, Viticulture and Wine Science Research Institute conducted field and workshops on soils research, in order to study the microscopic soil cover. Analysis of soils was conducted at the same in Agrochemical Laboratory of Institute.

On the basis of existing researches, there are distinguished following varieties of soils:

- 1) Forest brown, very thick, moderately and very leptosol, heavy loam;
- 2) Brown, very thick, slightly leptosol, loam and clay;
- 3) Brown, moderately thick, slightly leptosol, heavy loam;
- 4) Meadow-brown, very thick, heavy loam and clay;
- 5) Meadow-brown, very thick, slightly and averagely leptosol, loam;
- 6) Deluvial proluvial, very thick, light and heavy loam;
- 7) Alluvial proluvial, very thick, slightly leptosol, loam;
- 8) Alluvial, very thick, heavy loam;
- 9) Alluvial, very thick, hard leptosol, loam.

Soils varieties are characterized in accordance of villages.

I – Vanta, Akura (plot nearby ruins), Kisiskhevi (plot above channel).

II – Busheti (plot bellow railway nearby Tetri Khidi, Shalauri (plot bellow the highway), Vachnadziani (plot "Khramitsebi").

III – village Shalauri (plot "Didi Verkhvis Adgilebi").

IV – villages: Tsinandali (plot "Teliani"), Kvemo Khodasheni (plot "Naparekhlebi"), Kurdghelauri (plot "Beghanapshebi").

V – Kvemo Khodasheni (plot "Didi Venakhebi").

VI and VII – on the line extended from said villages to Alazani Gorge.

VIII and IX – directly on the border of Alazani Terrace.

Brown soils presented in the upper part of the micro-zone (with sub-varieties) are characterized with medium and deep profile. Alluvial, alluvial-proluvial and deluvial-proluvial soils are characterized with deeper profile and various kinds of leptosol.

Soil thickness on upper part, wherein the brown soils are presented is 70-100 cm, and active humus layer is 30-50 cm; bellow, wherein alluvial, alluvial-proluvial and deluvial-proluvial soils are presented the soils are deeper – 100-150 cm, and active humus layer is 40-50 cm;

Soils mechanical content is characterized mainly with medium and heavy loamy composition, and soils with light clay – on small parts.

Humus is presented in small amount – within 1,0-2,5%, hydrolyzed nitrogen, soluble phosphorus and exchange potassium content is low, calcium carbonate soils contain them in small and medium amounts – within 2,5-16,0%, soil area reaction (pH) is averagely alkaline.

Soils presented in the micro-zone exclusively (mainly in the North-East and the East) with calcium carbonates content, leptosol and with climatic factors create perfect conditions for high quality wines preparation.

**HUMAN FACTOR** – History of viticulture and winemaking takes place from the depths of millennium in Kakheti and in the micro-zone Tsinandali, as in other parts of Georgia. In the course of time it was developed, grown and had taken experience.

At the beginning of the XIX century in Kakhetian prince's estates the viticulture and winemaking were important. Aleksandre Chavchavadze, who had special place among the nobles, borrowed a million rubles from the bank in 1835 to improve the estates. Large wine cellar with laboratory for winemaking was built in the village Tsinandali. Aleksandre Chavchavadze also built steam distillation factories for vodka.

This was the first attempt to move from the feudal rule to capitalistic, which effectively improved wine quality. Aleksandre Chavchavadze's wines were well known in Russia and appreciated in Europe, too.

From the 1880s, Princes Estates Department of the Russian Empire intensively purchased Georgian estates, about 2000 hectares of land in the village Tsinandali among them and its suburbs from the nobles – Chavchavadze, Andronikashvili, Zurabashvili, Bakhutov, Rotinyants, Aznaurov, etc. and began making massifs therefrom and reformation-reconstruction process.

Two-storeyed 150000 bucket cellar-factory and a palace were built, and was opened barrel workshop, in Tsinandali, in 1886-1887. New modern equipment was installed: grape presses, wine pumps, rubbles, tubs, barrels and various other inventories. Additionally, prince estates were staffed with professionals trained in Europe – Gogol-Janowski, Speshnev, Massono, Staroselskiy, Heine, Markovich, Ovcharenko, Tushmalishvili, Jorjadze, Dickinson and others.

From 1880, quite high quality wines were already produced there – "Rkatsiteli Tsinandali N13", "Green Tsinandali №14", "Saperavi Tsinandali №16" obtained the highest ratings at the International Exhibition of Chicago, in 1892.

Three-year school was opened in Tsinandali, in 1897, where children were taught viticulture, winemaking and gardening, together with other subjects.

Wine TSINANDALI is produced since 1886. It is considered to be a flagship of Georgian wine. It has participated in numerous competitions and exhibitions and won 10 gold and 9 silver medals, until 1990.

The micro-zone Tsinandali geographical location, regional climate: mild winter and hot summer, moderate precipitations, diversity of soils, special features of Rkatsiteli and Saperavi varieties in this zone, and local centuries-old tradition of viticulture and winemaking define the unique organoleptic features of wine Tsinandali, characterstic only of this wine.

**11. SPECIAL LABELING RULES:**

With Latin font – TSINANDALI  
Protected Designation of Origin and/or PDO

Cyrillic font – ЦИНАНДАЛИ  
Защищённое наименование места происхождения

**12. ACCOUNTING AND NOTIFICATION**

Accounting and notification of production and storage technological processes of "Tsinandali" is carried out, in accordance with the rules established by the legislation of Georgia.

**13. MAIN CONTROLLABLE POINTS**

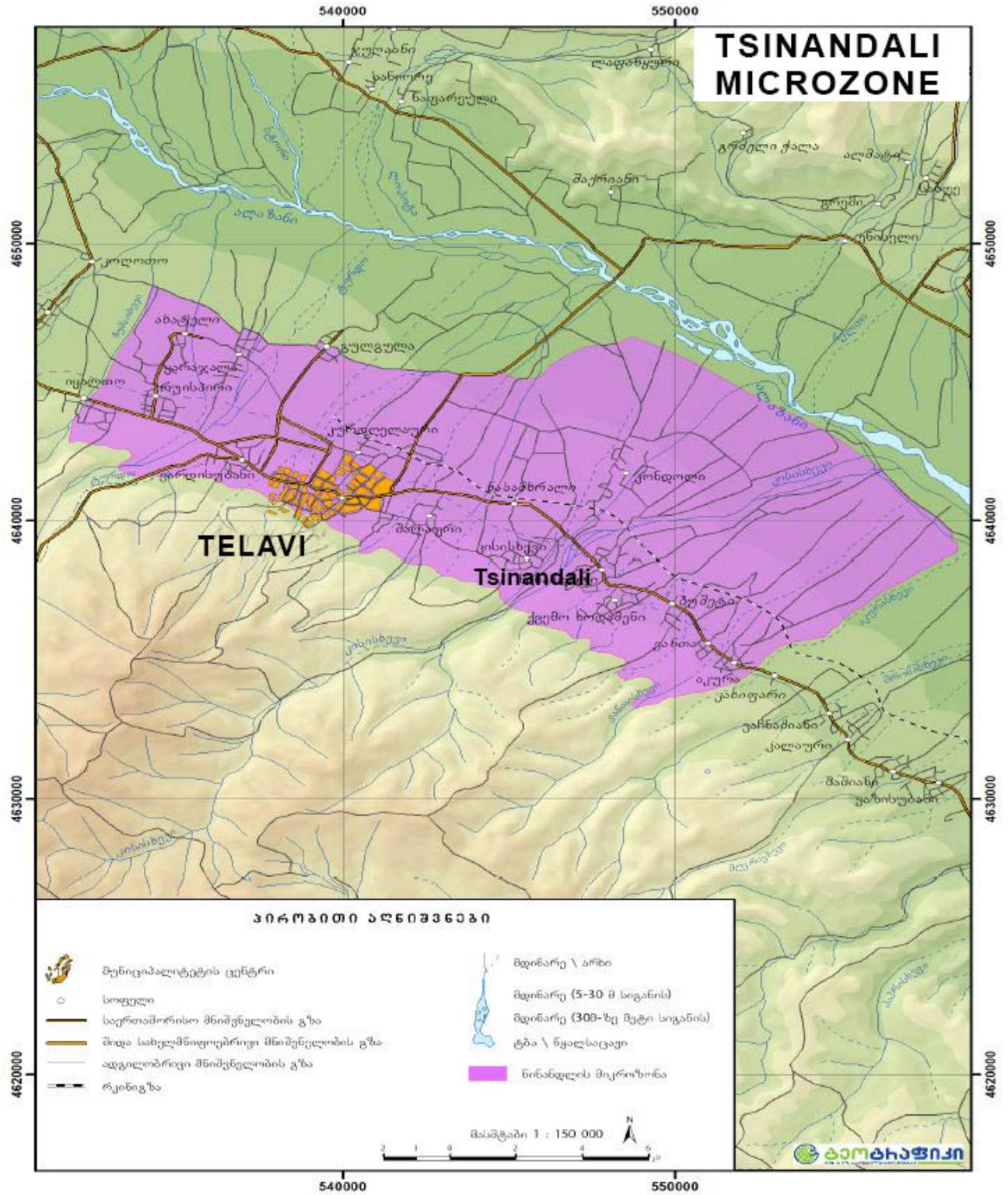
During control of the PDO wine TSINANDALI production process the producer shall satisfy the requirements established by LEPL National Wine Agency, and shall comply with the following parameters:

Main Controllable Points	Evaluation Methods
1	2
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place

1	2
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
Vintage and transportation	Vintage journal
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records

#### **14. CONTROL BODY OF PRODUCTION**

State control for observance of production specification and lawful usage of the appellation of origin PDO shall be carried out by LEPL National Wine Agency, according to the rules established by the legislation of Georgia.



## AKHASHENI

### 1. NAME: "AKHASHENI"

### 2. ADDITIONAL SIGNS:

### 3. TYPE, COLOR AND MAIN REQUIREMENTS:

"Akhasheni" is red, naturally demi-doux (semi-sweet) wine, which shall satisfy the following requirements:

- Color – dark red;
- Aroma and taste – perfect, harmonised, velvet, refined, pleasantly sweet with fruity tones, having taste and aroma of Saperavi grapes;
- Volumetric spirit content – no less than 10.5 %;
- Concentration of finished extract mass – no less than 22 g/l;
- Sugar content – 18-45 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

### 4. SPECIFIC ZONE AVAILABLE AREAS

The micro-zone Akhasheni is located in Inner Kakheti, in the middle stream of the River Alazani, on the coordinates – 41°48' of Northern longitude and 45°44' of Eastern latitude, between Alazani tributaries – Chermiskhevi and Vedzirula having longitudinal direction.

The micro-zone Akhasheni covers the forest slopes of Tsiv-Gombori Range to the Alazani channel. The micro-zone includes the middle and upper parts of the villages: Zegaani, Akhasheni and Chumlaki, including Papari fields.

### 5. VINE VARIETIES

Wine Akhasheni shall be prepared from the grapes of Saperavi and/or Saperavi-Budushuri-like, the vintage takes place in the micro-zone Akhasheni.

### 6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE:

- The micro-zone Akhasheni vineyards for wine Akhasheni is situated on 350-700 m above sea level.
- Distance between the rows in the vineyards – 1-3 m;
- Distance between the vines in the row – 0.8-1.5 m;
- Height of Stem – 60-90 cm;
- Shape of Pruning – one-sided or Georgian two-sided or free.

Vine cultivation, shape and pruning, pests and diseases control, and soil treatment, fertilization, and other operations, shall be provided according to agro-technical activities selected by wine-makers.

### 7. GRAPE MATURITY, VINTAGE, TRANSPORTATION:

- Akhasheni shall be produced only with ripe grapes. Sugar content shall be no less than 22%, at the vintage.
- Grapes transportation is permitted only with wooden or plastic boxes, with bodyworks made of stainless steel or painted with special colour.
- Usage of polyethylene packages and/or bags is not allowed. The grapes shall be protected from dirtying at the transportation.

## 8. VINTAGE AND WINE PRODUCTION

Vintage on 1 ha vineyard shall be no more than 10 tons.

Wine production shall be no more than:

- 650 liters – from 1 ton grapes;
- 6500 liters – from 1 ha vineyard.

## 9. GRAPE PROCESSING, WINEMAKING AND BOTTLING

Grapes for producing wine "Akhasheni" shall be only from the vineyards cultivated in the micro-zone Akhasheni. Furthermore, usage of about 15% Saperavi grapes brought from outside of micro-zone, but within Kakheti region, is allowable.

Grapes processing and winemaking shall be provided exclusively inside of Kakheti, bottling is permitted outside Kakheti, but only on the territory of Georgia.

At the same time, the grapes can be got from the "Akhasheni" micro-zone and the wine can be withdrawn from Kakheti viticulture zone only under strict accounting and control.

"Akhasheni" is made by incomplete alcoholic fermentation of must.

In the production of wine "Akhasheni" it is permissible to use only the operations, materials and substances provided by the legislation of Georgia.

Akhasheni shall be represented on consumer market only packed in the consumer vessels.

## 10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA

**CLIMATE** – The formation of weather in the micro-zone is caused by atmospheric processes developed in subtropical and moderate areas and moved from the East and West longitudes. The climate in the micro-zone is moderately humid, with hot summer and mild winter. The direction of the River Alazani has great importance. Cold air masses move from the North-West to South-East on the foothills of the Northwest slopes of Tsiv-Gombori Range, the gorges, and high tops of Kakheti Caucasus glaciers.

In the micro-zone the formation of grape grains (in the second half of June, July and the first half of August), and clear sky (from the second half of August to the end of September) continues, correspondingly, 16 and 8 days during maturity. The number of days without sun in said periods does not exceed 3 and 1.

Annual duration of sunshine in the micro-zone Akhasheni ranges between 2150-2200 hours. During the vegetation period the sunshine continues 1600 hours. Solar radiation on the right side of the River Alazani, in the micro-zone Akhasheni, is higher than on the left bank of the river, which is due to less cloudiness. Annual radiation in Akhasheni is no more than 130 kcal/cm<sup>2</sup>, but in the vegetation period it varies within 95-100 kcal/cm<sup>2</sup>. Direct radiation on the horizontal surface is 75 kcal/cm<sup>2</sup>, and scattered – 54 kcal/cm<sup>2</sup>.

Depending on the analysis of alluvial carbonate soil temperature, in the depth of 5-50 cm layer, the sustainable transition of temperature above 10°C occurs in the first decade of April. In a relatively deep (50-100 cm) layer, this term will be moved to mid-April.

Activation of root system begins in mid-May, when the soil temperature increases above 15°C in 10-120 cm depth of the layer. From the mid-June to the end of September, over three months the soil temperature is above 20°C, and it reaches 24°C from mid-July to the end of August, in the depth of 70 cm.

The average annual air temperature is 12.5°C, at the warmest months (July, August) is 23.7- 23,5°C, and at the coldest month (January) is +1,1°C. In accordance with multiannual data, air annual absolute minimum temperature is averagely -10,-11°C, and +35°C – for absolute maximum, and extreme temperatures are +23 and + 38°C.

Autumn frosts in the micro-zone start at the end of November (27.XI) and stop from 24.III. In the middle of April the frosts are expected once during 10 years.

In the micro-zone Akhasheni the sum of temperatures is 3950°C on 450 m level, and 3700°C – on 620 m. Sustainable transition of air temperature above 10°C on 450 m-s takes place from 5.IV, and it's falling – from 4.XI.

Annual sum of atmospheric precipitations is 860 mm in the micro-zone Akhasheni and 637 mm – during the vegetation period. During fruit formation the sediment amount is 250 mm, and moisture content in air layer near soil surface is 765 mm (Gurjaani).

Annual relative air humidity is 71%. Air moisture is the lowest at July (63%) and August (60%), and it is much more increased at the end of the autumn (78%) and winter (76-75%).

During warm period hailing days repetition is sharply reduced than in the Northwestern districts of Alazani right bank (Tsinandali, Telavi). Hailing days number is averagely between 1,6-2,1 per year. May (0,7 days) and June (0,5 days) are the the most hailing months during the year.

Saperavi buds opening takes place in the middle of April and flowering – at the end of May, the grape maturity begins in the second half of August. Grape technical ripening takes place at the end of September.

Snow cover is formed in the last decade of December (from 15.XII), melting – in mid-March. Snow cover is unstable – in 74% of years, the number of snowy days in winter is equal to 26.

In the micro-zone the West (32%) and South-West (23%) winds are prevailing. There are approximately 21% windless days, per year. Average annual wind speed is 1,4 m/s. Wind speed is almost equal during all months, and the number of very windy days is only 4.

**SOIL** – The main part of the territory is consisted with slopes and trails slightly and moderately inclined towards the Southwest, North-East and East, it is passing to slightly wavy surface, and then – to flat land towards the North-East direction and borders the first terrace of Alazani, longwise Chermiskhevi and Paprsikhevi.

In the micro-zone there are two types of rendzino-brown soils, two types of alluvial soils and one of deluvial soils:

- Rendzino-brown, very thick, clay;
- Rendzino-brown, moderately thick, somewhere slightly leptosol with clay and heavy loam;
- Alluvial carbonated, very thick, loam;
- Alluvial carbonated, very thick, leptosol, loam;
- Deluvial carbonated, very thick, clay.

Soils of the first two types are found in the extreme Southwestern part of the micro-zone on the North-Eastern slopes of Tsiv-Gombori Range, namely, in the area of Akhasheni on Papari fields and in the South-Western part of the Chumlaki area. The 3<sup>rd</sup> and 4<sup>th</sup> varieties of soils are presented in the central and North-Eastern parts of said villages, on the river Alazani second terrace, along the rivers Chermiskhevi and Papriskhevi, on inclined and flat relief. The 5<sup>th</sup> variety of soil is mainly presented in the central part of the micro-zone, on the ends of the Southern slopes of Tsiv-Gombori Range and it creates slightly inclined trails.

First type soil profile thickness is 70-90 cm, and active humus layer is 50-60 cm. Second type – 60-90 cm, and the active humus layer is 40-50 cm; it is characterized with slightly loamy structure. Both soil types are developed on very carbonated clay-lime layers. The 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> types of soils are characterized with deep thickness of profiles – 1,5 m, and active humus layer is 50-60 cm. They consist of alluvial clay-lime and clay-sand layers. First two types of soils are dark brown to black in the active humus layer. In transitional layer it is light brown to beige, and chandes to light beige to white, to the bottom. The 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> soils are light brown and less differentiated. The 4<sup>th</sup> soil has loamy structure, contrary from others.

According to laboratory analysis data, the first two types of soils are characterized with clay and heavy clay mechanical content and the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> types of soils are clay. Humus content of first and second soil varieties is characterized with moderate index in the active layer – 3,5%, usually, and less – bellow in

the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> types of soils relatively low and varies within 1,5-3,0% in active layer. It is poor with hydrolyzed nitrogen, soluble phosphorus and exchange potassium. The first and second varieties of soils contain carbonates in average amount, in upper layers, very high amount – more than 40-50%, below, and average amount in the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> types of soils. Soil area reaction (pH) is characterized with moderate index and mainly varies within 7,5-8,6.

On the basis of conducted studies, agronomic properties of micro-zone soils provide the opportunity to produce high quality material for wine "Akhasheni".

**HUMAN FACTOR** – It is known that Georgian wine companies had neither technological nor technical capabilities to make stable demi-doux wines until the 1940s.

On September 3, 1942, a meeting was held in Tbilisi with the participation of wineries, scientific institutions as well as scientists being in evacuation in Georgia (Professors – M.A. Gerasimov, A. A. Egorov, N.F. Saenko, and others) and winemakers representatives, they were entrusted with elaborating activities to provide and introduce modern wine-making technologies for demi-doux, and not only demi-doux wines.

Implementation of the activities planned at the meeting was entrusted to the Department of Agriculture of the Academy of Sciences, which fulfilled the task excellently – new factories equipped with modern technologies and techniques were built in various micro-zones, including village Zegaani.

Naturally demi-doux wine Akhasheni, created by leading specialists of "Samtresti", has been produced since 1958.

At various international competitions and exhibitions held before 1990, Akhasheni was awarded 11 medals, including 6 gold and 5 silver medals.

Geographical location of Akhasheni micro-zone, the climate characteristic for the region: moderately warm winter and hot summer, moderate amount of atmospheric sediments, diversity of soils, specific features of Saperavi and/or Saperavi Budeshuri-like grape varieties and the centuries-old local tradition of viticulture and winemaking produce the unique organoleptic features of wine Akhasheni, characteristic only of this wine.

#### 11. SPECIAL LABELING RULES:

With Latin font – AKHASHENI  
Protected Designation of Origin and/or PDO

Cyrillic font – АХАШЕНИ  
Защищённое наименование места происхождения

#### 12. ACCOUNTING AND NOTIFICATION

Accounting and notification of production and storage technological processes of "Akhasheni" is carried out, in accordance with the rules established by the legislation of Georgia.

#### 13. MAIN CONTROLLABLE POINTS

During control of the PDO wine "Akhasheni" production process the producer shall satisfy the requirements established by LEPL National Wine Agency, and shall comply with the following parameters:

Main Controllable Points	Evaluation Methods
1	2
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place

1	2
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
Vintage and transportation	Vintage journal
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records

#### 14. CONTROL BODY OF PRODUCTION

State control for observance of production specification and lawful usage of the appellation of origin PDO shall be carried out by LEPL National Wine Agency, according to the rules established by the legislation of Georgia.



## GURJAANI

**1. NAME: "GURJAANI"**

**2. ADDITIONAL SIGNS:**

**3. TYPE, COLOR AND MAIN REQUIREMENTS:**

"Gurjaani" is white sec (dry) wine, which shall satisfy the following requirements:

- Color – light straw;
- Aroma and taste – perfect, delicate, soft, harmonic, cheerful, refined, pleasantly sweet with meadow flowers tones, having aroma characterizing the location, fruit tones are developed with aging;
- Volumetric spirit content – no less than 11 %;
- Concentration of finished extract mass – no less than 16 g/l;
- Sugar content – no more than 4 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

**4. SPECIFIC ZONE AVAILABLE AREAS**

The micro-zone "Gurjaani" is located in the middle stream and right bank of the River Alazani, on the coordinates – 41°45' of Northern longitude and 45°48' of Eastern latitude.

The micro-zone covers forest slopes of the Tsiv-Gombori Range until Alazani channel. The North-Eastern part of the micro-zone is expanded till Akuriskhevi, and the South-Western – till Sighnaghi municipality administrative border.

"Gurjaani" includes the villages: Kardenakhi, Bakurtsikhe, Kolagi, Vejini, Dzirkoki, Chandari, village Gurjaani, and city Gurjaani suburban zone, Kotekhi, Chumlaki, Akhasheni, Zegaani, Velistsikhe, Mukuzani, Vazisubani, Shashiani, Kalauri, Vachnadziani and Kakhpari.

**5. VINE VARIETIES**

Wine "Gurjaani" shall be prepared from the grapes of Rkatsiteli, the vintage takes place in the micro-zone Gurjaani. It is permitted to use about 15% of Kakhuri Mtsvane.

**6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE:**

- The micro-zone Gurjaani vineyards for wine Gurjaani is situated on 350-700 m above sea level.
- Distance between the rows in the vineyards – 1-3 m;
- Distance between the vines in the row – 0.8-1.5 m;
- Height of stem – 60-90 cm;
- Shape of pruning – one-sided or Georgian two-sided or free;

Vine cultivation, shape and pruning, pests and diseases control, and soil treatment, fertilization, and other operations, shall be provided according to agro-technical activities selected by wine-makers.

**7. GRAPE MATURITY, VINTAGE, TRANSPORTATION:**

- "Gurjaani" shall be produced only with ripe grapes. Sugar content shall be no less than 19%, at the vintage;
- Grapes transportation is permitted only with wooden or plastic boxes, with bodyworks made of stainless steel or painted with special colour;
- Usage of polyethylene packages and/or bags is not allowed;
- The grapes shall be protected from dirtying at the transportation.

## 8. VINTAGE AND WINE PRODUCTION:

Vintage on 1 ha vineyard shall be:

- 10 tons for Rkatsiteli;
- 8 tons for Kakhuri Mtsvane.

Wine production shall be no more than:

- 650 liters – from 1 ton grapes;
- 6500 liters – from 1 ha vineyard for Rkatsiteli;
- 5200 liters – from 1 ha vineyard for Kakhuri Mtsvane.

## 9. GRAPE PROCESSING, WINEMAKING AND BOTTLING

Grapes Rkatsiteli and Kakhuri Mtsvane for producing wine Gurjaani shall be only from the vineyards cultivated in the micro-zone Gurjaani.

Grapes processing and winemaking shall be provided exclusively inside of Kakheti, bottling is permitted outside Kakheti, but only on the territory of Georgia.

At the same time, the grapes can be got from the Gurjaani micro-zone and the wine can be withdrawn from Kakheti viticulture zone only under strict accounting and control.

Gurjaani is made by complete alcoholic fermentation of gravity grape juice.

In the production of wine Gurjaani it is permissible to use only the operations, materials and substances provided by the legislation of Georgia.

Gurjaani shall be represented on consumer market only packed in the consumer vessels.

## 10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA

**CLIMATE** – The formation of weather in the micro-zone is caused by atmospheric processes developed in subtropical and moderate areas and moved from the East and West longitudes. The climate in the micro-zone is moderately humid, with hot summer and mild winter. Annual duration of sunshine ranges within 2150-2200 hours. Sunshine continues 1550-1600 hours during the vegetation period.

Direct annual radiation on the horizontal surface is 71 kcal/cm<sup>2</sup>, and scattered – 49 kcal/cm<sup>2</sup>, but in the vegetation period – 35 kcal/cm<sup>2</sup>. Sum of annual radiation is 120 kcal/cm<sup>2</sup>, and – 90 kcal/cm<sup>2</sup> in the warm period.

The average annual air temperature of the micro-zone is quite high – +12.5°C, the warmest months are July and August, average temperature is equal to +23.60°C, and of the coldest month (January) is +0,90°C.

Sustainable transition of air temperature above +10°C takes place from 5.IV, and it's falling – from 3.XI. Vegetation period duration is 211 days, and sum of active temperatures is +3930°C.

In the micro-zone Gurjaani annual number of sunny days (0-2 points) is 51– of general, and 132 – of low cloudy days. During the vegetation period, cloudy days index correspondingly is equal to 36 and 79.

Annual quantity of general- (8-10 points), and lower cloudy days is correspondingly equal to 113 and 59. During the vegetation period, this indicator is equal to 54 and 26.

First frosts in the micro-zone begin in the third decade of November (25.XI), and stop in average from 24.III.

Annual sum of atmospheric precipitations is 804 mm, and 578 mm during the vegetation period, in the micro-zone Gurjaani. Maximum of precipitations (124 mm) take place in May, and minimum (32 mm) – In January.

Snowing takes place in the end of December, and melting – in mid-March. During this period, snow-cover of 6-7 cm exists during 25 days.

Relative air humidity is approximately 72%. The most humid (80%) month is November, and less (64%) – August.

Annual average value of hailing days is 1,7. May and June are the most hailing months (0,6-0,4) of year.

Depending on the analysis of the alluvial-carbonated soil temperatures, in the 5-50 cm depth of layer, the average temperature above 10°C is in first decade of April, and the same bellow (50-100 cm) is in mid-April.

Activation of root system starts from mid-May, when the temperature is above 15°C, in the 10-120 cm layer of soil. From mid-June to the end of September, over three months, the temperature is above 20°C, in 5 to 70 cm depth layer.

In the micro-zone, the South-Western – (33%) and Western (18%) winds are prevailing. Rarely, they are replaced by Eastern winds (12%). Average wind speed is 1,7 m/s, with the highest rate of wind (1,9 m/s) in March, and the lowest (1.5 m/s) – in December.

Rkatsiteli buds opening begins from mid-April, and blossoming – in the end of May, grapes ripening – in the second half of August. Grape tech ripening – in the end of September.

**SOIL** – On the basis of the existing research, there are distinguished 4 types of brown, 4 – meadow-brown, 5 alluvial and 2 deluvial soils:

- 1) Dark brown, very thick, clay;
- 2) Dark brown, very thick, leptosol, clay;
- 3) Rrendzino-brown, very thick, clay;
- 4) Bown, very thick, leptosol, loam;
- 5) Meadow-brown, very thick, clay;
- 6) Meadow-brown, very thick, loam;
- 7) Meadow-brown, very thick, slightly leptosol, loam;
- 8) Meadow-brown, very thick - 110-120 cm, underground water 140-150 cm, heavy clay;
- 9) Aalluvial carbonated, very thick, clay soil;
- 10) Alluvial carbonated, very thick, loam;
- 11) Alluvial carbonated, slightly leptosol, loam;
- 12) Alluvial carbonated, very thick, moderate leptosol, stony loam;
- 13) Alluvial carbonated, very thick, periodically wetland, underground water in 140-150 cm, clay;
- 14) Deluvial carbonated, very thick, loam;
- 15) Deluvial carbonated, very thick, slightly leptosol, loam, stony loam.

Soils of the first three varieties are found in upper zone in the North-Eastern slopes of Tsiv-Gombori Range and on slopes, the 4<sup>th</sup> variety of soil – in middle zone on slightly inclined slopes and flat land areas.

The 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> – on mentioned above foothills bordering Alazani Gorge and are disposed on flat land. Said soils are slightly inclined towards North-Eastern and South-Western directions.

The 9<sup>th</sup> and 13<sup>th</sup> varieties of soils are represented in upper part of Alazani Gorge bordering Tsiv-Gombori Range North-Eastern foothills along Alazani irrigation channel.

The 14<sup>th</sup> and 15<sup>th</sup> varieties of soils, deluvial, mostly are disposed on the foothills on slightly inclined trails.

First three varieties of soils disposed on the highest zone are characterized with deep thickness of profile – 70-100 cm, and active humus layer – 45-60 cm is clay, wherefrom second variety is leptosol.

All three varieties of soils contain carbonates bellow, especially 3<sup>rd</sup> one. Mentioned soils are developed on licious-like clay and limy layers. They are dark brown on upper – humus layer, and changed from beige to white – downwards.

The 4<sup>th</sup> variety of soil disposed on middle zone is characterized with moderate and slight leptosol, deep thickness of profile (80-120 cm). Active humus layer varies within 50-60 cm. Soil mechanical content is clay, color is brown in active layer, light brown – deeply, and passes to beige downwards, soil is

carbonated in whole profile.

The 5<sup>th</sup> and 8<sup>th</sup> – disposed on low zone, have brown and dark brown to black color, deep thickness of profile (100-150 cm), and deep humus layer (60-70 cm); it is clay with mechanical content.

The 6<sup>th</sup> and 7<sup>th</sup> – loamy, the 7<sup>th</sup> is characterized with slight leptosol, the 8<sup>th</sup> – with more humidity passing to wetland from 100-120 cm depth, and in 140-150 cm exists underground water.

The 9<sup>th</sup> and 13<sup>th</sup> – are mostly disposed on the South-Western part of Alazani Gorge along river tributaries. Mentioned soils are characterized with deep thickness of profile (100-150 cm), and active humus layer (50-70 cm); characterized with brown and grey-brown color; with mechanical content it is clay, the 10<sup>th</sup> and 12<sup>th</sup> varieties are loamy, 11<sup>th</sup> is slight leptosol, and 12<sup>th</sup> is stony leptosol. The 13<sup>th</sup> is characterized with high content of humidity below, in 120-140 cm depth, exists underground water.

The 14<sup>th</sup> and 15<sup>th</sup> – disposed on the North-Eastern foothills, are characterized with deep thickness of profile (70-120 cm), and active humus layer varies within 40-50 cm; have brown color; with mechanical content are loamy, carbonated in the whole profile. Contrary, the 15<sup>th</sup> is leptosol and slightly stony, providing high quality wines.

The first, second, 3<sup>rd</sup>, 5<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> and 13<sup>th</sup> are clay; the others: 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> are loamy. Humus content in soil flatbed layer varies within 1,5-4,5 %, of first three – 3,5-5,5 %, and decreases downwards.

Soils are poor with soluble phosphorus content – 1,5-2,5 mg in 100 g soil. Sometimes it is represented as a trace.

Poor with exchange potassium content – 3,5-25,0 mg in 100 g soil, as well.

Potassium carbonates content is in moderate amount, and in high content it is in the first three soil varieties, and reaches 40-60%.

Soil area reaction is mainly moderately and slightly alkaline, pH indicator varies within 7,5-8,3.

On the basis of the conducted studies, agronomic properties of soils of the micro-zone provide the opportunity to produce wine Gurjaani.

**HUMAN FACTOR** – In Kakheti, in particular, Gurjaani, making of high quality wines started from the ancient times. The excellent quality of this production was pointed out by famous travelers, such as: Chardin, Reclus and Gamba. Alexandre Dumas also praised Georgian wine.

The development of the field was facilitated by beginning of scientific-research work in the 1920s. Powerful scientific centers were established in Georgia in this period, including the village Gurjaani, where viticulture-winemaking testing station for Kakheti region was created in 1922. In 1931 the All-Union Scientific-research Institute of Viticulture and Winemaking was set up, which in 1932 was moved to Telavi, Kakheti.

The development, implementation, and perfection of modern methods of winemaking are greatly indebted to the works of L. Jorjadze and V. Petriashvili, as well as P. Melikishvili, V. Tairova, V. Burjanadze, and others.

A little later, this plea of scholars were joined by famous scientists, such as: K. Modebadze, P. Averkin, A. Egorov, G. Gogol-Janowski, M. Gerasimov, I. Tarkhnishvili, and so on.

A more or less full description of Kakheti wines from the zonal viewpoint is found in the works of Professor K. Modebadze, L. Jorjadze, I. Peikrishvili, D. Kasaburi, D. Natsvlishvili, G. Beridze, and others.

Wine "Gurjaani" has been produced since 1887, and it has participated in many competitions and exhibitions, where it was rewarded with 11 medals, till 1990.

Geographical location of the micro-zone "Gurjaani", characteristic regional climate: mild winter and hot summer, moderate amount of atmospheric precipitations, diversity of soils, special features of the varieties: Rkatsiteli and Kakhuri Mtsvane in this area, local, centuries-old tradition of viticulture and winemaking provide the unique organoleptic features of wine "Gurjaani", characteristic only of this wine.

## 11. SPECIAL LABELING RULES

With Latin font – GURJAANI  
Protected Designation of Origin and/or PDO

Cyrillic font – ГУРДЖААНИ  
Защищённое наименование места происхождения

## 12. ACCOUNTING AND NOTIFICATION

Accounting and notification of production and storage technological processes of "Gurjaani" is carried out, in accordance with the rules established by the legislation of Georgia.

## 13. MAIN CONTROLLABLE POINTS

During control of the PDO wine "Gurjaani" production process the producer shall satisfy the requirements established by LEPL National Wine Agency, and shall comply with the following parameters:

Main Controllable Points	Evaluation Methods
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
Vintage and transportation	Vintage journal
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records

## 14. CONTROL BODY OF PRODUCTION

State control for observance of production specification and lawful usage of the appellation of origin PDO shall be carried out by LEPL National Wine Agency, according to the rules established by the legislation of Georgia.



## KINDZMARAULI

### 1. NAME: "KINDZMARAULI"

### 2. ADDITIONAL SIGNS:

### 3. TYPE, COLOR AND MAIN REQUIREMENTS:

"Kindzmarauli" is red, naturally demi-doux (semi-sweet) wine, which shall satisfy the following requirements:

- Color – dark red;
- Aroma and taste – perfect, harmonised, velvet, refined, pleasantly sweet, with fruity tones, having taste and aroma of Saperavi grapes;
- Volumetric spirit content – no less than 10.5 %;
- Concentration of finished extract mass – no less than 22 g/l;
- Sugar content – 18-45 g/l;
- Titrated/Volatile acidity – no less than 5 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia

### 4. SPECIFIC ZONE AVAILABLE AREAS

The micro-zone Kindzmarauli is located between Kvareli municipality administrative borders, on the South slopes of one branch of Caucasus Mountains, on the coordinates – 41°30' of Northern longitude and 45°50' of Eastern latitude.

### 5. VINE VARIETIES

Wine "Kindzmarauli" shall be prepared from the grapes of Saperavi and/or Saperavi-Budeshuri-like, vintage takes place in the micro-zone Kindzmarauli.

### 6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE:

- The micro-zone "Kindzmarauli" vineyards for wine Kindzmarauli is situated on 250-550 m above sea level;
- Distance between the rows in the vineyards – 1 - 3 m;
- Distance between the vines in the row – 0.8 -1.5 m;
- Height of stem – 60 – 90 cm;
- Shape of pruning – one-sided or Georgian two-sided or free.

Vine cultivation, shape and pruning, pests and diseases control, and soil treatment, fertilization, and other operations, shall be provided according to agro-technical activities selected by wine-makers.

### 7. GRAPE MATURITY, VINTAGE, TRANSPORTATION:

- "Kindzmarauli" shall be produced only with ripe grapes. Sugar content shall be no less than 22%, at the vintage;
- Grapes transportation is permitted only with wooden or plastic boxes, with bodyworks made of stainless steel or painted with special colour;
- Usage of polyethylene packages and/or bags is not allowed;
- The grapes shall be protected from dirtying at the transportation.

## 8. VINTAGE AND WINE PRODUCTION

Vintage on 1 ha vineyard shall be 10 tons.

Wine production shall be no more than:

- 650 liters – from 1 ton grapes;
- 6500 liters – from 1 ha vineyard.

## 9. GRAPE PROCESSING, WINEMAKING AND BOTTLING

Grapes for producing wine "Kindzmarauli" shall be only from the vineyards cultivated in the micro-zone "Kindzmarauli", usage of about 15% Saperavi grapes brought from outside of micro-zone, but within Kakheti region, is allowable.

Grapes processing and winemaking shall be provided exclusively inside of Kakheti, bottling is permitted outside Kakheti, but only on the territory of Georgia.

At the same time, the grapes can be got from the micro-zone Kindzmarauli and the wine can be withdrawn from Kakheti viticulture zone only under strict accounting and control.

"Kindzmarauli" shall be prepared by uncomplete fermentation of must. In the production of wine "Kindzmarauli" it is permissible to use only the operations, materials and substances provided by the legislation of Georgia.

"Kindzmarauli" shall be represented on consumer market only packed in the consumer vessels.

## 10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA

The Western part of the micro-zone Kindzmarauli, from the right side of the River Duruji, is relatively inclined towards the South-West, with slightly waved surface and the rest of area is flat land directed from the East to the South.

**CLIMATE** – Weather formation in the micro-zone "Kindzmarauli" is caused by atmospheric processes developed in subtropical and moderate areas and moved from the East and West longitudes. Mostly there are prevailing the North-Western and South-Eastern winds, because of open gorge from the South-East and close from the South. Winds speed is not great because of close gorge. The climate in the micro-zone is moderately humid, with warm long-term summer and mild winter.

Vineyards are located mainly on 2-3° inclined Southern slopes. Position of sun varies within 60-70° and 40-50° at grape maturity. Sunshine duration is 2050 hours.

The total number of cloudy days is 20-18 with 8-10 points at grape maturity, and of clear days (0-2 points) it reaches 15-16, per year.

In addition, disposed on the Southern inclined foothills the atitudinal gorge main agro-climatic factors such as: sun radiation, heat rate, moderate summer temperature, enough humidity of the location create favorable conditions for high quality production with Saperavi grapes.

Daily temperature on the surfaces of black stony plates brought by the River Duruji is high and on 3-5°C that is more than temperature of alluvial, free from carbonates soils of bordering forest.

Black soil has less opportunity (15%) to reflect sun energy fallen on its surface. As a result of more energy absorption, soil temperature is increased.

Average annual air temperature of the micro-zone "Kindzmarauli" is 12.5°C, the average temperature of warm months (VII-VIII) is 23,6°C, and in the coldest month is + 1,0°C. Based on the annual data, Average annual air absolute minimum temperature varies within -10, -11°C, average absolute maximum is 35°C, and extreme temperatures are - 23 and + 38°C. In the spring, the average air temperature is above 10°C at 5.IV. Falling below the 10°C takes place in the autumn, at 4.XI. i. e. the warm period duration is 212 days.

Saperavi buds opening begins in mid-April (from 15.IV), flowering – in late May, grape maturity – in the second half of August (from 20.VIII), and grapes tech maturity – at the end of September.

In the micro-zone "Kindzmarauli" the first frosts start from 21.XI, and once in 10 years may begin in the last days of October. The last spring frosts are stopped averagely in 26.III, and may be continued till mid-April once in 10 years. Duration of non-freezing period in the zone is 239 days.

In the micro-zone, active temperature varies within 4100-3700°C on 350-550 m above sea level.

Annual sum of atmospheric precipitations is 1070 mm in the micro-zone Kindzmarauli, and 800 mm in the vegetation period.

Annual air relative humidity is 72%. It is less (66-64%) in summer months (June, July, August), and more at the end of autumn (80%) and early winter.

Snow cover is formed in the last decade of December (25.XII), and melting – in mid-March. Snowy days are not more than 21° in winter.

Snow cover is unsustainable in the micro zone, 87%.

Number of hailing days is averagely 2,1 per year. May is the most hailing month of the year (0,9 days); In April, June and July, separately, hail does not exceed 0.3 days.

In the micro-zone, the Western (23%) and South-Eastern (17%) winds are prevailing. In average, windless days are 31%, per year. Wind speed is enhanced by mountain-gorge winds formed here. The micro-zone of Alazani Gorge belongs to III Group of wind impact.

**SOIL** – On the basis of researches and materials conducted in 2005, there are distinguished two varieties of alluvial soils, with nine sub-varieties, and two varieties of deluvial soils, with nine sub-varieties, particularly:

1. Alluvial, free from carbonates, very thick, loam;
2. Alluvial, free from carbonates, very thick, slightly leptosol, loam;
3. Alluvial, free from carbonates, very thick, moderately leptosol, moderately loam and slightly clay;
4. Alluvial, free from carbonates, very thick, hard leptosol, loam;
5. Alluvial, slightly carbonated, very thick, loam;
6. Alluvial, slightly carbonated, very thick, slightly leptosol, loam;
7. Alluvial, slightly carbonated, very thick, moderately leptosol, loam;
8. Alluvial, free from carbonates, very thick, very moisture soil and bog, clay and loam;
9. Alluvial, slightly carbonated, very moisture soil and bog, clay and loam;
10. Deluvial, free from carbonates, very thick, loam;
11. Deluvial, free from carbonates, very thick, slightly leptosol, loam;
12. Deluvial, slightly carbonated, very thick, clay;
13. Deluvial, slightly carbonated, very thick, slightly leptosol, loam, clay;
14. Deluvial, slightly carbonated, very thick, very moisture soil, clay.

First ten varieties of said alluvial soils are disposed on second terrace of the River Alazani, and are characterized mainly with flat relief, while the 11<sup>th</sup>, 12<sup>th</sup>, 13<sup>th</sup> and 14<sup>th</sup> varieties of deluvial soils are presented on the Southern foothills of Caucasus directly bordering the slopes, on 400-500 m above sea level, these areas are creating slightly inclined trails towards the Southern and South-Western directions.

First ten varieties of alluvial soils are characterized with deep profiles, and are different from each other with range of leptosol and mechanical content, carbonate content, moisture and bog. First seven therefrom have deep profiles of 1-1,5 m thickness, and active humus layer is 50-70 cm., mechanical content mostly is loamy, can be slightly clay or slightly loamy and sandy in some genesis horizon. Furthermore, said soils are different with range of leptosol and stone content, prevailing on new terraces and banks of rivers. The 8<sup>th</sup> and 9<sup>th</sup> varieties of soils are very moisture or bogy on small areas, on lowlands, along flowing waters, and loamy and clay with their mechanical content.

Soil-producing rocks in first nine varieties of soils are consist basically with alluvial, loamy-stony and sandy-stony layers having destructed materials originated from the slopes of the Southern slopes of Caucasus, and which are black stone plates originated from sea, and have great capability to absorb heat and have great influence on temperature regime that is favorable to increase grape sugar content and

product quality.

The 10<sup>th</sup>–14<sup>th</sup> varieties of soils are deluvial and developed on loamy and loamy-sandy layers of deluvial-proluvial origin, characterized with very deep profile of 80-150 cm thickness, active humus layer is 50-60 cm, and different from each other with range of mechanical content, leptosol, carbonate content and moisture. The 10<sup>th</sup> – 11<sup>th</sup> varieties of soils are free from carbonates and loamy, as well, 11<sup>th</sup> is slightly leptosol, also. The 12<sup>th</sup>, 13<sup>th</sup> and 14<sup>th</sup> – slightly carbonated, clay, and loamy, the 13<sup>th</sup> is slightly leptosol and 14<sup>th</sup> is very moisture. In accordance of data from analysis, said soils are mostly loamy, and slightly clay as exceptions. Humus content is average and 5,5-2,5% in 50-70 cm depth and decreases below to 2,5-0,5%. Hydrolyzed nitrogen content is small or average – 9,36-2,24 mg in 100 g soil. Mostly, it is poor with soluble phosphorus and represented as a trace. Changeable potassium content is low, as well – 17,0-2,0 mg in 100 g soil. The first, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 8<sup>th</sup>, 10<sup>th</sup> and 11<sup>th</sup> varieties of soils don't contain calcium carbonates, and in 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup>, 12<sup>th</sup>, 13<sup>th</sup>, and 14<sup>th</sup>-s, it is in small amount – varies within 0,2-5,0%.

Soil area reaction is neutral and slightly alkaline – pH is 5, 8-7,6.

**HUMAN FACTOR** – In Kvareli viticulture and winemaking fields developed in a different way as compared with Tsinandali, Napareuli and Mukuzani. Here the vineyards were not included in the Princes Estates, and therefore, they had not the positive influence playing a major role in the growth of the quantity and quality of these fields in the said estates.

Until 1942 there was not a perfect technology "Kindzmarauli" production, ensuring wine stabilization and keeping its sweetness for a long time. Therefore, the wine was made by the farmer method, during which the alcoholic fermentation stopped because of autumn-winter coldness and continued with spring warming. Consequently, "Kindzmarauli" production was not stable.

From 1942 implementation of the special resolutions of the Government began, which envisaged elaboration of new technologies, technical re-equipment of the enterprises and use of cooling method for semi-sweet wine production.

Wine "Kindzmarauli" is produced since 1942.

Among export wines, "Kindzmarauli" is one of the most demanded. In 2014, 9,3 million bottles of "Kindzmarauli" were sold at international markets, which is 15.8% of total exports and 49% – of the sold PDO Wines.

"Kindzmarauli" has participated in numerous competitions and exhibitions and until 1990 received eight medals.

Geographical location of micro-zone Kindzmarauli – the microclimate formed under the influence of foothills bordering on the high Caucasus Mountains from the South, leptosol soils developed on black stone plates brought by rivers, favorable heat regime created in the vineyard and the unique features of Saperavi and/or Saperavi Budeshuri-like vine varieties, ecological plasticity and local, centuries-old traditions of viticulture and winemaking determine the specific taste features of high-quality, naturally semi-sweet wine "Kindzmarauli".

## 11. SPECIAL LABELING RULES

With Latin font – KINDZMARAU LI  
Protected Designation of Origin and/or PDO

Cyrillic font – КИНДЗМАРАУЛИ  
Защищённое наименование места происхождения

## 12. ACCOUNTING AND NOTIFICATION

Accounting and notification of production and storage technological processes of "Kindzmarauli" is carried out, in accordance with the rules established by the legislation of Georgia.

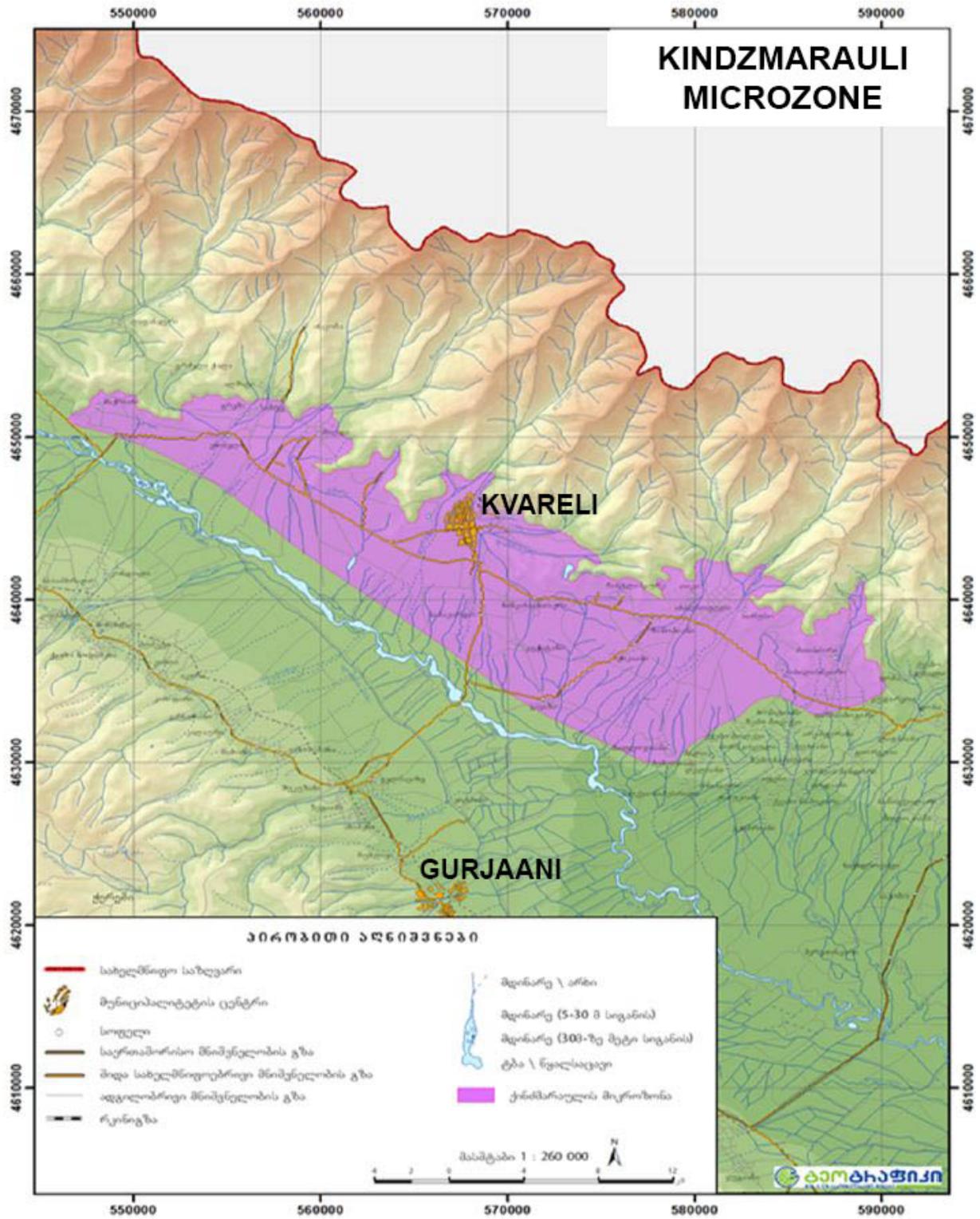
### 13. MAIN CONTROLLABLE POINTS

During control of the PDO wine "Kindzmarauli" production process the producer shall satisfy the requirements established by LEPL National Wine Agency, and shall comply with the following parameters:

Main Controllable Points	Evaluation Methods
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
Vintage and transportation	Vintage journal
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records

### 14. CONTROL BODY OF PRODUCTION

State control for observance of production specification and lawful usage of the appellation of origin PDO shall be carried out by LEPL National Wine Agency, according to the rules established by the legislation of Georgia.



## MANAVI

### 1. NAME: "MANAVI"

### 2. ADDITIONAL SIGNS:

### 3. TYPE, COLOR AND MAIN REQUIREMENTS:

"Manavi" is white sec (dry) wine, which shall satisfy the following requirements:

- Color – light greenish straw;
- Aroma and taste – perfect, delicate, soft, harmonic, cheerful, refined, having aroma characterizing the location, with meadow flowers tones, fruit tones are developed with aging;
- Volumetric spirit content – no less than 11 %;
- Concentration of finished extract mass – no less than 16 g/l;
- Sugar content – no more than 4 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

### 4. SPECIFIC ZONE AVAILABLE AREAS

The micro-zone "Manavi" is located in Outer Kakheti, in administrative district of Sagarejo, on the foothills of Tsiv-Gombori Range Southern slopes and nearby thereof, until railway, and on the coordinates – 41°44' of Northern longitude and 45°27' of Eastern latitude.

The micro-zone "Manavi" includes the following villages: Tokhliauri, Manavi, Burdiani, Giorgitsminda, Antoki, Mariamjvari, Didi Chailuri, Patara Chailuri, Kakabeti and Verkhviani.

### 5. VINE VARIETIES

Wine "Manavi" shall be prepared from the grapes of Kakhuri Mtsvane, usage of other varieties is prohibited.

### 6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE:

- The micro-zone Manavi vineyards for wine MANAVI are situated on 450-800 m above sea level.
- Distance between the rows in the vineyards – 1-3 m;
- Distance between the vines in the row – 0.8-1.5 m;
- Height of stem – 60-90 cm;
- Shape of pruning – one-sided or Georgian two-sided or free.

Vine cultivation, shape and pruning, pests and diseases control, and soil treatment, fertilization, and other operations, shall be provided according to agro-technical activities selected by wine-makers.

### 7. GRAPE MATURITY, VINTAGE, TRANSPORTATION:

- "Manavi" shall be produced only with ripe grapes. Sugar content shall be no less than 19%, at the vintage;
- Grapes transportation is permitted only with wooden or plastic boxes, with bodyworks made of stainless steel or painted with special color;
- Usage of polyethylene packages and/or bags is not allowed;
- The grapes shall be protected from dirtying at the transportation.

## 8. VINTAGE AND WINE PRODUCTION

Vintage on 1 ha vineyard shall be no more than 10 tons.

Wine production shall be no more than:

- 650 liters – from 1 ton of grapes;
- 5200 liters – from 1 ha vineyard.

## 9. GRAPE PROCESSING, WINEMAKING AND BOTTLING

Grapes for producing wine "Manavi" shall be only from the vineyards cultivated in the micro-zone Manavi.

Grapes processing and winemaking shall be provided exclusively inside of Kakheti, bottling is permitted outside Kakheti, but only on the territory of Georgia.

At the same time, the grapes can be got from the micro-zone Manavi and the wine can be withdrawn from Kakheti viticulture zone only under strict accounting and control.

"Manavi" is made by complete alcoholic fermentation of gravity grape juice.

In the production of wine "Manavi" it is permissible to use only the operations, materials and substances provided by the legislation of Georgia.

"Manavi" shall be represented on consumer market only packed in the consumer vessels.

## 10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA:

Physical-geographical individuality of this part of the Iori Plain is determined by its joint of plateau, waved and slightly segmented relief, and gradation from the continental- into the sea climate.

**CLIMATE** – The climate in the micro-zone is moderately humid, with mild winter and warm long-term summer. Annual duration of sunlight in the micro-zone Manavi within 2100-2200 hours, and 1650 hours in vegetation period. Sum of annual radiation is 120-130 kcal/cm<sup>2</sup>, and balance – 50-52 kcal/cm<sup>2</sup>.

Average annual air temperature of the micro-zone varies within – +9-12°C. The coldest month is January, when the temperature varies within 0-2°C depending on the level. The average temperature of the warmest months – July and August varies within +23.5-22°C, and 23°C – on 650 m.

Air temperature average annual absolute minimum is within -12, -14°C and -17, -19°C, once in 10 years. Extreme temperatures are -25 – and +39°C.

Sustainable transition to the average daily temperature of 10°C takes place in the I decade of April, and falling down – in the end of October. Vegetation period duration is within 190-200 days. Sum of active temperatures is within +3800 - +3400°C, on 450-800 m levels.

General cloudiness is 55-60% that is more in the winter and spring (60-70%), and less in the summer (34-40%).

Maximum of precipitations (90-130 mm) take place in May, and minimum (25 mm) – in December. Kakhuri Mtsvane and Rkatsiteli buds opening begin from the second half of April (22.IV), flowering – from the first decade of June, and grape maturity – in the second half of August. Kakhuri Mtsvane flowering begins 3 days earlier than Rkatsiteli. In Manavi, Kakhuri Mtsvane gives the best quality wine-material in the end of September, when the active warmth is 3300°C and more, such years are 50%, and in other years there is produced table wine of good quality.

Annual relative air humidity approximately is 69-70%. The air is less humid (60%) in the summer (July, August), and more (76-79%) – in the late autumn and beginning of winter.

Hailing days are 0,9-2,6 per year, depending on the level above the sea. May is the most hailing month – 0,6-1,1 days.

On the Southern foothills of Tshiv-Gombori Range and the valley near the River Iori, the Western – (25%), Eastern and South-Eastern (16-17%) winds are prevailing. The average annual wind speed is 2,2-2,6 m/s, and even 2,8-3,3 m/s in the spring. Amount of strong windy days is no more than 19. Strong wind speed is maximum 40 m/s, and takes place once in 20 years, and can reach 36 m/s, once in 10 years. The micro-zone belongs to wind impact I group, this is a reason to cultivate windshields in 200-250 m distance from each other.

**SOIL** – Field morphological and laboratory examination of soils have been executed to study the soil profile from the surface to the mud, as in accordance morphological marks, as laboratory – with physical-chemical characteristics. The cuts were done accordingly relief shapes, soil varieties and sub-varieties in various areas of micro-zone.

On the basis of research, in the micro-zone are distinguished brown soils with sub-varieties and alluvial-proluvials classified as following:

#### **I. Brown Soils**

1. Dark brown (black-like) carbonated, very thick, small amount of humus, clay and heavy loam developed on loess-like clays;
2. Dark brown (black-like) carbonated, very thick, deep humus, somewhere slightly leptosol with stone, clay and heavy loam developed on loess-like clays and loamy conglomerates;
3. Dark brown (black-like) carbonated, moderately thick, small amount of humus, clay and heavy loam, slightly leptosol with stone developed on loess-like clays and loamy conglomerates;
4. Brown ordinary, carbonated, very thick, moderate and small amount of humus, clay and heavy loam, somewhere slightly leptosol with stone developed on loess-like clays and loamy conglomerates.

#### **II. Meadow-brown Soils**

1. Meadow-brown (old alluvial-deluvial), carbonated, very thick, moderate and small amount of humus, heavy loam and slightly clay developed on alluvial-proluvial sediments;
2. Meadow-brown (old alluvial), carbonated, very thick, small amount of humus, clay and heavy loam developed on alluvial sediments.

#### **III. Alluvial-proluvial Soils**

1. Alluvial-proluvial, carbonated, very thick, moderate amount of humus, very leptosol with stone, loam developed on alluvial-proluvial sediments.

Dark brown (black-like) soils with thick profile (sub-varieties 1 and 2) are extended mostly on upper part of Chailuri, Kakabeti, Verkhviani, Kandauro, Badiuro and Shibliani, among the villages and Tbilisi-Kakheti railway. Profile thickness varies within 0,8-1,2 m, active humus layer is 35-50 cm. Moderate thickness of soil (sub-variety 13) is presented on the territory of Manavi (Plot Zeiani) and Badiuro (Plot Permebtan), profile thickness is 50-70 cm, and 35-40 cm – of active humus layer. First 3 sub-varieties are dark brown to black on upper accumulative (A) layer, on transitional (B) layer it is brown to beige, and below – straw to white because of high content of carbonates or particolorated with lime dots.

Carbonates accumulation in this layer can be as light micelles. Structure in A-layer is solid-pea-like, slim solid or pea-like in B-layer, and below – instructive. Some places (sub-varieties 2<sup>nd</sup> and 3<sup>rd</sup>) are characterized somewhere with leptosol and stony content, above is powdered and lower – slightly and very dense and developed on loess-like clays and loamy conglomerates.

Meadow-brown (old alluvial-deluvial) soils (15) are presented on the territory of village Manavi, Plots Zvrebi and Mtsvane. Profile thickness reaches 1,5-2,0 m. Active humus layer is 45-50 cm. Characterized with brown color in (A) accumulation layer, below is beige to straw. Genesis horizons are less developed. Structure in upper layers is solid-pea-like, which is less developed below or instructive. Fossil layer is disposed in 80-100 cm depth and is darker. Upper layers are powdered, below – dense, with heavy mechanical content.

Meadow-brown (old alluvial), carbonated, very thick, heavy loamy and clay (sub-variety II-6) is extended mostly next to village Manavi along railway, below. Profile thickness is more than 1,5-2,0 m. Active humus layer is 50-60 cm. Soil is characterized with brown color as in accumulation layer, as below, with

rust spots in 80-100 cm depth, pea-like to topsoil – in 0-80 cm depth, bellow – instructive or structure is slightly developed. It is dense and powdered. Mechanical content is clay and heavy loamy and moisture.

Alluvial-proluvial soils (sub-variety III-7) are presented in the Northern part of Manavi, Tokhliauri, Chailuri and Sagarejo-Giorgitsminda territories, on convex cones of gorges: Chailuri, Matiantkhevi and Giorgitsminda, characterized with very thick profile and 40-50 cm humus layer, with slim-grainy-solid structure above, and instructive – bellow, powdered, very loamy and stony. It is developed on convex cones stony-rocky and sandy sediments.

In accordance to laboratory researches, it has found that brown and meadow-brown (old alluvial and alluvial) soils (type 5 and 6) are characterized with low humus content, and their number in active layer is mostly within 3,5-1,5%. It is sharply reduced bellow. Exceptional is the second type of soil (plot "Khodabunebi" and "Samkali Mitsa" village Kakabeti), wherein the humus content in the deep layers (100-120 cm) is closer to upper active layer content, and is 2,9-1,6%. General nitrogen content is almost corresponds to humus content, and in active layer (A) it is mainly 0.238-0.070%.

Exceptional is a cut II-6 (village Kakabeti, plot "Samkali Mitsa"), wherein humus amount is high – 0,980%, in the 0-20 cm layer. Also, the exceptions are ordinary brown soils (sub-variety I-4), wherein the general nitrogen content is higher than bellow and it reaches 0,980-0,602%, in 50-100 cm depth, which is irregular.

Hydrolyzed nitrogen content is 11,70-5,60 mg in 100 g soil, in the upper layer – 0-60 cm depth, which is an average indicator. It decreases regularly bellow.

**HUMAN FACTOR** – Wine "Manavi" is created by leading specialists of "Samtresti" and has been produced since 1938.

Geographical location of micro-zone, regional climate, which is transient from dry subtropical to moderately humid subtropical, dark brown (black-like) carbonated soils and distinctive properties revealed by Kakhuri Mtsvane vine variety in this micro-zone determines the special quality of wine "Manavi".

## 11. SPECIAL LABELING RULES

With Latin font – MANAVI  
Protected Designation of Origin and/or PDO

Cyrillic font – МАНАВИ  
Защищённое наименование места происхождения

## 12. ACCOUNTING AND NOTIFICATION

Accounting and notification of production and storage technological processes of "Manavi" is carried out, in accordance with the rules established by the legislation of Georgia.

## 13. MAIN CONTROLLABLE POINTS

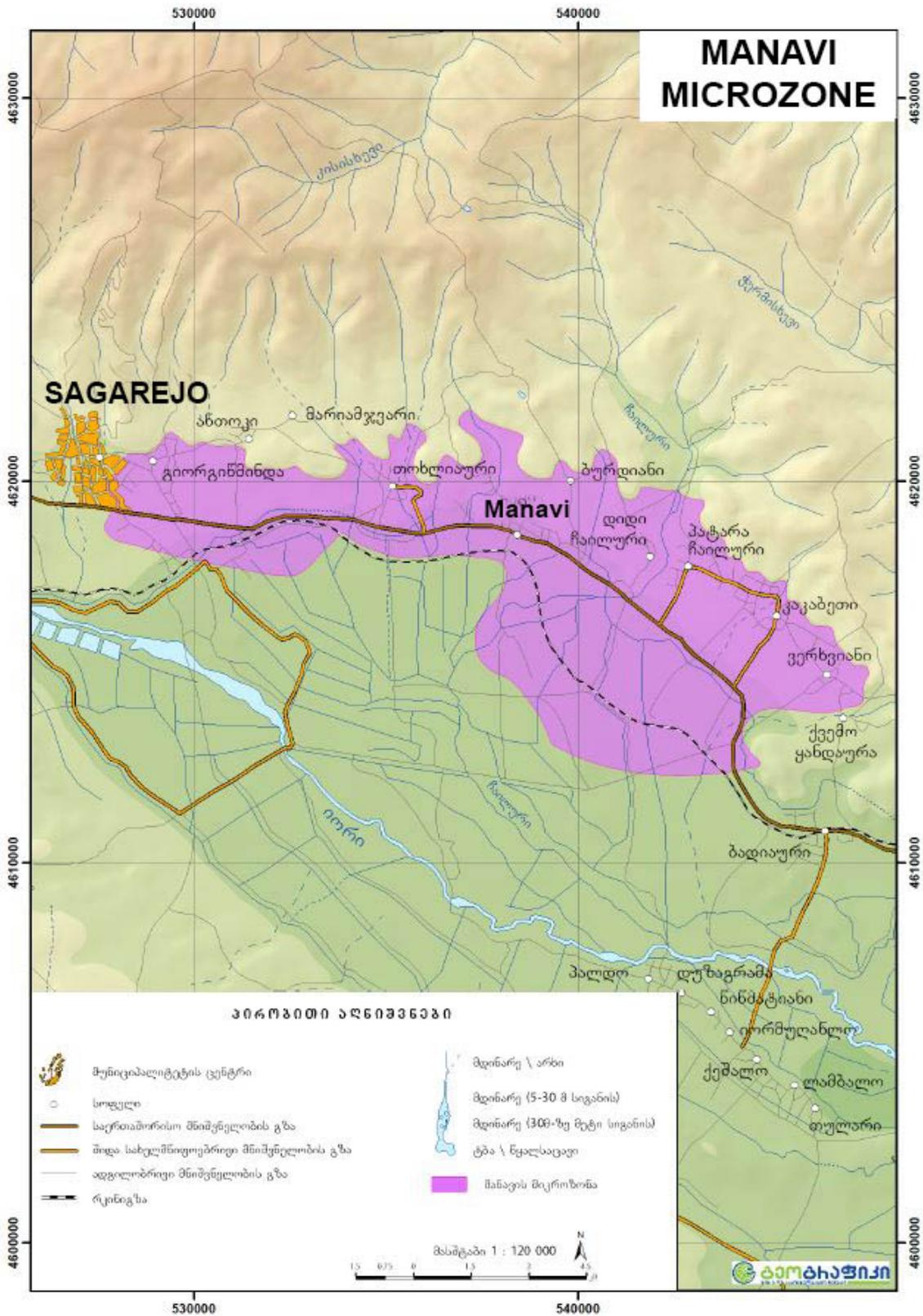
During control of the PDO wine "Manavi" production process the producer shall satisfy the requirements established by LEPL National Wine Agency, and shall comply with the following parameters:

Main Controllable Points	Evaluation Methods
1	2
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
Vintage and transportation	Vintage journal

1	2
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records

#### **14. CONTROL BODY OF PRODUCTION**

State control for observance of production specification and lawful usage of the appellation of origin PDO shall be carried out by LEPL National Wine Agency, according to the rules established by the legislation of Georgia.



## KAKHETI

**1. NAME:** "KAKHETI"

**2. ADDITIONAL SIGNS:** "Kakhuri"

### 3. TYPE, COLOR AND MAIN REQUIREMENTS

Wine "Kakheti" color can be white, red, rose and amber, and with sugar content – sec (dry), demi-sec (semi-dry), and naturally – doux (sweet) and demi-doux (semi-sweet), which shall satisfy the following requirements:

Organoleptic and physico-chemical characteristics of wine "Kakheti" must meet the following requirements:

- White sec (dry) wines – light straw, perfect, delicate, soft, harmonic, cheerful, refined, having aroma characterizing the location with meadow flowers tones, fruit tones are developed with aging;
- Red sec (dry) wines – dark red, perfect, full, extracted, velvet, harmonic, having aroma characterizing the location, fruit tones are developed with aging;
- White demi-sec (semi-dry), demi-doux (semi-sweet) and doux (sweet) wines – light straw, perfect, delicate, soft, harmonic, cheerful, refined, having aroma characterizing the location;
- Red demi-sec (semi-dry), demi-doux (semi-sweet) and doux (sweet) wines – dark red, perfect, full, extracted, velvet, harmonic, having aroma characterizing the location and intensive fruit tones;
- Rose wines – from light to dark rose, perfect, delicate, soft, harmonic, cheerful, refined, having aroma characterizing the location;
- Amber wines – from dark amber to tea color, have body, energetic, extracted, velvet, having aroma characterizing the location, at the maceration on “chacha” (must) becoming moderately and softly piquant that creates their uniqueness, purchasing intensive fruit tones with aging;
- Volumetric spirit content
- for sec (dry) wines – no less than 11 %;
- for amber – no less than 12 %;
- for demi-sec (semi-dry), demi-doux (semi-sweet) and doux (sweet) wines – no less than 10,5 %;
- Concentration of finished extract mass
- for white and rose wines – no less than 16 g/l;
- for red and amber – no less than 22 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l.

Other characteristics shall meet requirements provided by the legislation of Georgia.

### 4. SPECIFIC ZONE AVAILABLE AREAS:

The viticulture zone Kakheti is located in the South-Eastern part of Georgia, and on the coordinates – 41°-42°15' of Northern longitude and 45°-46°30' of Eastern latitude. The viticulture zone Kakheti is bordered with main range of Caucasian Mountains from the North-East, Kartli Range – from the West, Gareji Plateau and Shiraki Plain – from the South, and Nukhi Gorge of Republic of Azerbaijan – from the East.

Viticulture zone Kakheti includes administrative borders of: Akhmeta, Telavi, Gurjaani, Signaghi, Dedoplistskaro, Kvareli, Lagodekhi and Sagarejo municipalities.

### 5. VINE VARIETIES

Wine "Kakheti" shall be prepared from the grapes of viticulture zone Kakheti.

Wine "Kakheti" white and amber shall be prepared from white grape varieties: Rkatsiteli, Kakhuri Mtsvane, Kisi, Khikhvi, Mtsvivani Kakhuri and Chitistvala.

Wine "Kakheti" red shall be prepared from red grape varieties: Saperavi, Saperavi-Budeshuri-like and Cabernet Sauvignon.

Wine "Kakheti" rose shall be prepared from red grape varieties: Saperavi, Saperavi-Budeshuri-like, Rkatsiteli Rose and Cabernet Sauvignon.

Usage of other varieties is prohibited.

#### **6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE:**

- The viticulture zone Kakheti vineyards for wine "Kakheti" is situated on 200-750 m above sea level.
- Distance between the rows in the vineyards – 1 - 3 m;
- Distance between the vines in the row – 0.8 -1.5 m;
- Height of stem – 60- 90 cm;
- Shape of pruning – one-sided or Georgian two-sided or free.

Vine cultivation, shape and pruning, pests and diseases control, and soil treatment, fertilization, and other operations, shall be provided according to agro-technical activities selected by winemakers.

#### **7. GRAPE MATURITY, VINTAGE, TRANSPORTATION:**

- "Kakheti" shall be produced only with ripe grapes. Sugar content shall be no less than 20% – for sec (dry) and demi-sec (semi-dry) wines, 22% – for demi-doux (semi-sweet) wines, and 24% – for doux (sweet) wines, at the vintage.
- Grapes transportation is permitted only with wooden or plastic boxes, with bodyworks made of stainless steel or painted with special color.
- Usage of polyethylene packages and/or bags is not allowed.
- The grapes shall be protected from dirtying at the transportation.

#### **8. VINTAGE AND WINE PRODUCTION:**

Vintage on 1 ha vineyard shall be no more than:

- 12 tons for Rkatsiteli;
- 8 tons for Kakhuri Mtsvane;
- 8 tons for Kisi;
- 6 tons for Khikhvi;
- 8 tons for Mtsvivani Kakhuri;
- 8 tons for Chitistvala;
- 10 tons for Saperavi;
- 10 tons for Saperavi-Budeshuri-like;
- 10 tons for Cabernet Sauvignon;
- 10 tons for Rkatsiteli Rose.

Grape harvest on 1 hectare vineyard should not exceed:

The wine solution for "Kakheti" should not exceed 65 decals per ton of grapes.

#### **9. GRAPE PROCESSING, WINEMAKING AND BOTTLING**

Grapes for producing wine "Kakheti" shall be only from the vineyards cultivated in viticulture zone Kakheti.

Grapes processing and winemaking shall be provided exclusively inside of Kakheti, bottling is permitted outside Kakheti, but only on the territory of Georgia.

At the same time, the grapes can be got from the viticulture zone Kakheti and the wine can be withdrawn therefrom only under strict accounting and control.

"Kakheti" is made by complete or incomplete alcoholic fermentation of grape juice or must.

In the production of wine "Kakheti" it is permissible to use only the operations, materials and substances provided by the legislation of Georgia.

"Kakheti" shall be represented on consumer market only packed in the consumer vessels.

## 10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA

**CLIMATE** – There are three kinds of agro-climatic zones: subtropical, warm and moderately warm. The side is separated in 15 subzones, in accordance of climate sharpening indicator.

Climate conditions of Kakheti are favorable for quality winemaking. Annual common amount of precipitations is 400-800 mm. Duration of vegetation period is 210 days, average temperature of this period is 18,5°C. Sum of active temperatures is 3500-4000°C. Sunshine duration is 2100-2300 h-s. Hail damaging of some regions is available in the spring and autumn. Second half of summer is characterized with long-term droughts. Winter is mild, cloudy, and a little snowy. Vine damaging long-term frosts (18-20°C) are occurred rarely.

**SOIL** – Outer Kakheti viticulture is presented on the zone situated between the South-Western foothills of Tsiv-Gombori Range and on the left and partly right terraces of the River Iori, on 450-700 m above sea level, and includes the regions of Sagarejo, Gurjaani and Gardabani.

There are mostly presented black (humus) and humus-like soils with their varieties. The big area is represented with brown and meadow-brown soil varieties, and approximately small area – with alluvial-proluvial and deluvial soil varieties.

Said soils are distinguished to each other with morphological and physico-chemical characteristics. Black (humus), humus-like, brown, meadow-brown soils profile thickness varies between 50-120 cm; active humus layer – 30-60 cm, and is characterized with clay and heavy loamy mechanical content. Humus content in active layer varies within 2,5-25%, and even more in some areas. Soil area reaction is slightly alkaline, pH varies within 7,3-8,2.

Alluvial-proluvial and deluvial soils are presented in a small area, mostly along trees and on the slopes bellow. Said soils thickness is more than 1 m, and active humus layer is within 30-50 cm, mostly are characterized with loamy and heavy loamy, leptosol and stony mechanical content in some places, it is carbonated and moderately alkaline, pH is 7,5-8,3, humus content mostly is 1,5-2,55.

Inner Kakheti zone includes the territories of Gurjaani, Akhmeta, Kvareli, partly Sighnaghi, Tsiteltskaro and Lagodekhi, disposed on left and right banks of the River Alazani and ending its second terrace and the North-Eastern and North-Western slopes of Tsiv-Gombori Range. The zone is situated between the Southern foothills of Caucasus Mountains and the North-Western and North-eastern slopes of Tsiv-Gombori Range, on 350-750 m above the sea level.

Brown, meadow-brown, humus, humus-like, alluvial-proluvial and deluvial soils with their varieties are presented in Inner Kakheti zone.

Thickness of profile of brown, meadow-brown, humus and humus-like soils varies within 60-120 cm, active humus layer – 30-60 cm; they are loamy and clay – with mechanical content, leptosol and stony on some places, moderate and slightly carbonated. Soil area reaction is moderately and slightly alkaline, and pH varies mostly within 7,2-8,2. Humus content is active layer mostly is 2,0-4,0%, and gradually decreases bellow.

Alluvial-proluvial and deluvial soils are presented on both sides of the River Alazani, their profile thickness is more than 1-1,5 m, active humus layer varies within 40-60 cm; they are characterized mostly with loamy and heavy loamy mechanical content. The soil in some places is slightly loamy and sandy, humus content in their active layer is 1,5-2,5%, and gradually decreases bellow. Carbonates are in small

amount (4,5-25,0%) in alluvial-proluvial and deluvial soils presented on right bank, it is doesn't exist in left bank, but can be in a small amount (0,5-2%) as exception. Soil area reaction pH varies within 7,3-8,2 in the soils on right bank, and – 6,2-7,0, on left bank.

**HUMAN FACTOR** – On the basis of historical-ethnographical and archeological research it is identified that viticulture and winemaking branch has 8000-year-old history in Georgia.

The first significant materials of research and description in this field belong to Vakhushti Bagrationi (XVIII).

From the beginning of the 19<sup>th</sup> century, after the occupation of Georgia, the Central Authority of Russia started development of viticulture and winemaking. To increase the efficiency of this field, Hungarian researcher Martin (1807), then adviser of Caucasus region – Stephens (1811) and others were instructed to study the existing situation. In the same period about 90 vineyards were moved into the Treasury possession.

In the 18<sup>th</sup>-19<sup>th</sup> centuries in Georgia there functioned big and famous viticulture and winemaking households, such as the estates of Princes A. Chavchavadze, A. Jambakur-Orbeliani, S. Leonidze, General Mirskiy, Z. Jorjadze, the Orbelianis, Chijavadze, S. Vorontsov, Mukhran-Batoni, D. Chavchavadze and others. By the end of the century these estates almost wholly moved into the possession of the Princes Estates Department, where the vineyard agriculture as well as winemaking technology was significantly better.

Especially fast development of the field began from the 1920s, after carrying out several effective reforms in agriculture. In the same period, the serious problems caused by Phylloxera were overcome, and planting of new vineyards with grafted vines began:

In 1890 "American Vine Nursery" in Sakara was created;

In 1922 Kakheti viticulture-winemaking trial station was set up in village Uriatubani, Gurjaani district;

In 1920 the Chair of Viticulture and

in 1925 the Chair of Winemaking was opened at Tbilisi State University;

In 1930 the Agricultural Institute was created;

In 1931 the All-Union Scientific-research Institute of Viticulture and Winemaking was set up, which in 1932 was moved to Telavi, Kakheti:

From the 1920s scientific activity began.

Development of the field is greatly indebted to Georgian scientists: Solomon Choloqashvili, Konstantine Modebadze, Valerian Kantaria, Maksime Ramishvili, Revaz Ramishvili, Valeria Ghvaladze, Andro Lashkhi and others.

The field of viticulture and winemaking was gradually staffed with scientists educated at these scientific centres by these famous scientists, who developed the field, implementing new technologies and installing modern equipment, creating new brands of wines, such as "Tsinandali", "Gurjaani", "Napareuli", "Teliani", "Vazisubani" etc.

Geographical location of viticulture zone of Kakheti, regional climate: mild winter and hot summer, normal amount of precipitations, soil diversity, special features of grape varieties and local centuries-old tradition of viticulture and winemaking define the high reputation and organoleptic features of wine "Kakheti" wines.

## 11. SPECIAL LABELING RULES

With Latin font – KAKHETI

Protected Designation of Origin and/or PDO

Cyrillic font – КАХЕТИ

Защищённое наименование места происхождения

## 12. ACCOUNTING AND NOTIFICATION

Accounting and notification of production and storage technological processes of "Kakheti" is carried out, in accordance with the rules established by the legislation of Georgia.

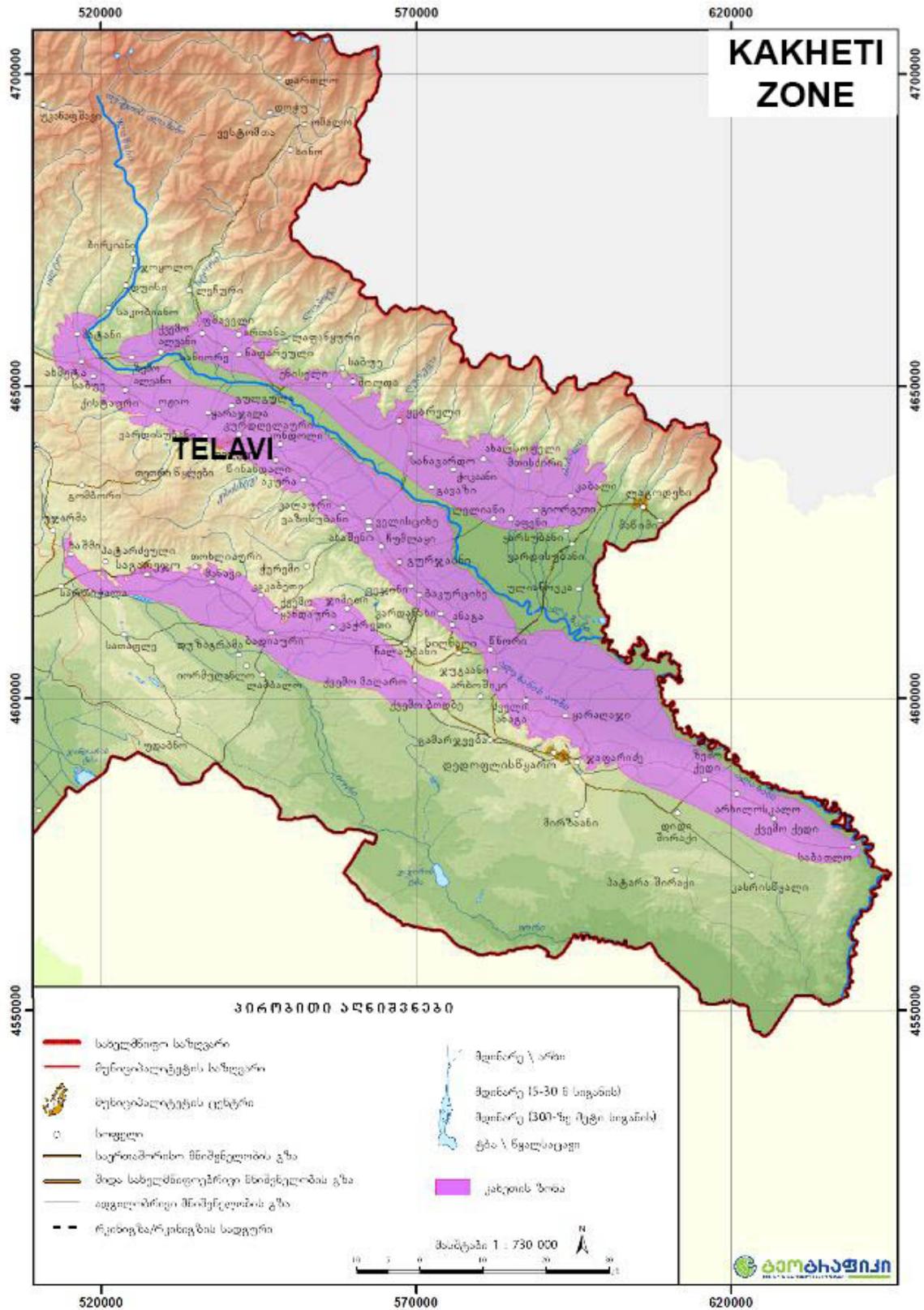
## 13. MAIN CONTROLLABLE POINTS

During control of the PDO wine "Kakheti" production process the producer shall satisfy the requirements established by LEPL National Wine Agency, and shall comply with the following parameters:

Main Controllable Points	Evaluation Methods
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
Vintage and transportation	Vintage journal
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records

## 14. CONTROL BODY OF PRODUCTION

State control for observance of production specification and lawful usage of the appellation of origin PDO shall be carried out by LEPL National Wine Agency, according to the rules established by the legislation of Georgia.



## NAPAREULI

### 1. NAME: "NAPAREULI"

### 2. ADDITIONAL SIGNS:

### 3. TYPE, COLOR AND MAIN REQUIREMENTS:

"Napareuli" is sec (dry) wine, color can be white or red,

"Napareuli" white shall satisfy the following requirements:

- Color – light straw;
- Aroma and Taste – perfect, delicate, soft, harmonic, cheerful, having aroma characterizing the location, with flower tones, and fruit tones are developed with aging;
- Volumetric spirit content – no less than 11 %;
- Concentration of finished extract mass – no less than 16 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

"Napareuli" red shall satisfy the following requirements:

- Color – light straw;
- Aroma and Taste – perfect, full, masculine, extracted, harmonic, having aroma characterizing the location, fruit tones are developed with aging;
- Volumetric spirit content – no less than 11 %;
- Concentration of finished extract mass – no less than 22 g/l;
- Sugar content – no more than 4 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l.

Other characteristics shall meet requirements provided by the legislation of Georgia.

### 4. SPECIFIC ZONE AVAILABLE AREAS

The micro-zone "Napareuli" is located in Telavi municipality, on left bank of the River Alazani. The vineyards are disposed on Alazani left tributaries, lower stream of Stori and Didkhev-Lopota running from the Southern tributaries of Caucasus Mountains, on the coordinates of 42°3' of Northern longitude and 45°31' of Eastern latitude, on 400-500 m above sea level.

The micro-zone zone "Napareuli" includes the following villages: Napareuli, Saniore, Jughaani, Artana, Pshaveli and Laliskuri.

### 5. VINE VARIETIES

Wine "Napareuli" red shall be prepared from Saperavi and/or Saperavi-Budeshuri-like grapes of micro-zone Napareuli, usage of other vine varieties are prohibited.

Wine "Napareuli" white shall be prepared from Rkatsiteli grapes of micro-zone Napareuli, and can be added 15% Kakhuri Mtsvane from the same zone.

### 6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE:

- The micro-zone Napareuli vineyards for wine "Napareuli" shall be situated on 450-750 m above sea level.
- Distance between the rows in the vineyards – 1 - 3 m;
- Distance between the vines in the row – 0.8 -1.5 m;
- Height of stem – 60- 90 cm;

- Shape of pruning – one-sided or Georgian two-sided or free.

Vine cultivation, shape and pruning, pests and diseases control, and soil treatment, fertilization, and other operations, shall be provided according to agro-technical activities selected by wine-makers.

#### **7. GRAPE MATURITY, VINTAGE, TRANSPORTATION:**

- "Napareuli" shall be produced only with ripe grapes. Sugar content shall be no less than 19%;
- Usage of polyethylene packages and/or bags is not allowed.
- The grapes shall be protected from dirtying at the transportation.

#### **8. VINTAGE AND WINE PRODUCTION:**

Vintage on 1 ha vineyard shall be no more than:

- 10 tons for Rkatsiteli;
- 10 tons for Saperavi;
- 10 tons for Saperavi Budeshuri-like;
- 8 tons for Kakhuri Mtsvane.

Wine production shall be no more than 650 liters – on 1 tone grapes.

Wine production shall be no more than from 1 ha vineyard:

- 6500 liters for Rkatsiteli;
- 6500 liters for Saperavi and Saperavi Budeshuri-like;
- 5200 liters for Kakhuri Mtsvane.

#### **9. GRAPE PROCESSING, WINEMAKING AND BOTTLING**

Grapes processing and winemaking shall be provided exclusively inside of Napareuli, bottling is permitted outside Napareuli, but only on the territory of Georgia, under strong control.

In addition, grapes extraction from the micro-zone Napareuli for processing and wine withdrawal from Kakheti Viticulture Zone is permissible only under strong accounting and control conditions.

"Napareuli"red is made by complete alcoholic fermentation of must, and "Napareuli"white – by complete alcoholic fermentation of gravity juice.

"Napareuli"shall be represented on consumer market only packed in the consumer vessels.

In the production of the wine it is permissible to use only the operations, materials and substances provided by the legislation of Georgia.

#### **10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA:**

**CLIMATE** – The micro-zone Napareuli is characterized with moderately humid climate, mild winter and hot summer. Local climate is mostly stipulated with relief conditions and circulation processes stipulated thereby.

Annual duration of sunlight on left bank is less than on right bank and equal to 2050 hours, because of more cloudness. In the vegetation period this indicator no more than 1500 hours. Sunlight amount ratio with its possible amount is 63%, in the summer and September; location warmth balance creating main component – sun direct radiation on perpendicular surface is 120-130 kkal/cm<sup>2</sup>, and on horizontal – 70-75 kkal/cm<sup>2</sup>. Annual radiation balance – 52-54 kkal/cm<sup>2</sup>.

Annual air temperature is 12,4 °C. average temperature of the coldest month (January) is +0,5°C, and of the warmest months (July-August) is +23,7-23,4°C. The average of annual absolute minimum is 13°C, absolute minimum – 24°C. The average of annual absolute maximum is 36 °C, absolute maximum – 39°C.

Air temperature sustainable transmission above 10 °C at 5.IV, and below – at 2.XI.

Average sum of active temperatures is 39-20°C.

Average sum of atmospheric precipitations is 845 mm, at the vegetation period – 630 mm. The biggest amount of sediments is in May (132 mm) and June (112 mm), at grape maturity (VIII-IX) average amount of precipitations is 145 mm. Hydrothermal coefficient at August-September is 1,0 -1,3. According to this, grape maturity period is provided with humidity, except some exclusion. In some years, August has deficit of humidity.

Big amount of precipitations take place at the spring (34%) and summer (32%), small – at the autumn (22%) and winter (12%).

Air annual average humidity is 74%, at the vegetation period – 71%; that is close to established convenient norm (70%) for vine biological phases, it reaches its maximum in the end of autumn and beginning of winter (82%), and minimum – in second half of summer (66-67%).

First frosts are started averagely from 11 November, once in 10 years, can be even in 16 October.

Spring last frosts are stop averagely in last days of March, once in 10 years, can be continued even till mid-April.

Hailing days annual amount in average is 1,6. Hailing period continues from March to the end of October, most frequently it can be June (0,5 day) and May (0,3 day). In the most hailing years it can be even 5 days.

In the most years snow cover (77%) is unstable. It is created in the 3<sup>rd</sup> decade of December, and continued until first days of March. Snowy days amount is 26, averagely.

Western (23%), Eastern and South-Eastern (16-17%) winds are prevail on Alazani Gorge directed from the North-West and South-East. Time by time they are changed with North winds (17%).

Wind average speed is 1,9 m/s. Annually wind speed is the greatest (2,1-2,4 m/s) in the spring and beginning of summer and the smallest (1,3 m/s) – in December. The strongest windy days ( $\geq 15$  m/s) amount is 9, and continues maximum 39 days.

In accordance with said data the micro-zone belongs to wind impact III group regions.

**SOIL** – The micro-zone Napareuli is bordered with end of Caucasus Southern slopes from the North side and Alazani left first terrace – from the South. Relief of main part is slightly inclined flat lands and trails from the South and South-West. Vineyards and arable areas are presented on left second terrace of the River Alazani and its tributaries Lopota and Stori right and left terraces.

Geographically said territory is constructed with fourth and next age deposit rocks consisting of stony-loamy and stony-sandy layers brought by the River Alazani and its tributaries Lopota and Stori.

Mainly there are presented alluvial and deluvial varieties of soils:

- Alluvial carbonated, very thick, heavy loam;
- Alluvial not carbonated, very thick, light clay and heavy loam;
- Alluvial not carbonated, very thick, light and heavy loam;
- Alluvial not carbonated, very thick, slightly leptosol, sandy;
- Alluvial not carbonated, very thick, strong leptosol, sandy;
- Deluvial carbonated, very thick, heavy loam and clay;
- Deluvial not carbonated, moderately and very thick, leptosol, heavy loam;
- Deluvial not carbonated, very thick – 100 cm, leptosol, light clay and heavy loam.

In accordance to morphological signs the alluvial soils have brownish-grey color in upper layers, and below are more grey; has solid-bean and solid-seed structure, deeply it is slightly expressed, especially in 4<sup>th</sup> and 5<sup>th</sup> varieties of soils.

In accordance to mechanical content first and second varieties are heavy loamy and light clay; 3<sup>rd</sup> – moderate and slightly loamy; 4<sup>th</sup> and 5<sup>th</sup> – sandy.

Structurally first and second are slightly dense and dense; 3<sup>rd</sup> – light quicksand; 4<sup>th</sup> and 5<sup>th</sup> – quicksand and leptosol.

Contrary, the first variety of soil is carbonated; from second to 5<sup>th</sup> – not carbonated.

Deluvial soils (6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup>) are brownish with solid-bean structure, in arable layer it is quicksand and solid bellow.

In accordance to mechanical content the 6<sup>th</sup> and 7<sup>th</sup> varieties are clay and heavy loamy, the 8<sup>th</sup> – light clay and heavy loamy.

Contrary, the 6<sup>th</sup> is carbonated, and 7<sup>th</sup> and 8<sup>th</sup> – not carbonated.

Humus content is mostly 3,0-0,5%, in the active layer – 3,0-1,0%. Hydrolyzed nitrogen exists in moderate or small amount – 6,5-2,5 mg in 100 g soil. Soluble phosphorus content is low – 8,5-1,5 mg in 100 g soil, as well, and in some cases is presented as a trace.

Changeable calcium is in low content too – 16,0-2,0 mg in 100 g soil, mostly in alluvial soils.

Exceptionally its content is high (in deluvial soils) – 32,0-59,0 mg in 100 g soil.

First and 6<sup>th</sup> varieties of soils contain small amount of carbonates – 12,8-0,8%, and the others – have not it.

Soil area reaction (pH) in carbonated soils is slightly or moderately alkaline – pH=7,3-8,2; the others are neutral or slightly alkaline – pH=6,4-7,2.

**HUMAN FACTOR** – In Kakheti and in Napareuli micro-zone, as in other regions of Georgia, the history of viticulture and winemaking started millenniums ago. Over this period, this field has developed, grown and taken experience.

In 1797, King Erekle granted to Garsevan Chavchavadze, well-known statesman, estates in Kakheti and also in the village Napareuli.. After his death, his son Aleksandre Chavchavadze took care of these estates. He turned out to be quite good to manage the vineyards. Aleksandre carried out several reforms that were helpful to improve the quality of the vineyards as well as wines.

In 1886, the Princes Estates Department wholly purchased Aleksandre Chavchavadze's estates in Tsinandali, Napareuli, Mukuzani, Zegaani and Mughanlo – in total 15089 dessiatinas ( 16447 ha) remaining at that time. The Napareuli estate was the largest among them – 11395 dessiatinas.

Vineyards in Napareuli occupied 129 dessiatinas (140 ha), wherein 71,4 buckets of wine were produced per ha. There were three stone cellars with 164 qvevris (wine jars) and 6 presses.

There too, as in Tsinandali, the Princes Estates Department immediately started modernization of the field (new technologies, modern European equipment, professionals), which soon yielded a desirable result.

In accordance with European experience and technologies, exactly at this period (the 1880s) well-known wine brands No.66 "Napareuli" white and No.47 "Napareuli" red were created.

The high-class professional winemakers of the Princes Estates Department – Masano, Gogol-Janowski, F. Jofrio, Aleksandr Egorov, Mark Popich, Tripon Baakashvili, and others made a great contribution to the development of local winemaking.

Wine "Napareuli" is produced from 1890. It has took part in numerous competitions and exhibitions and until the 1990s "Napareuli" white received 1 gold, 6 silver and 1 bronze medals, and "Napareuli" red – 6 gold and 2 silver medals.

Geographical location of the micro-zone Napareuli, regional climate: mild winter and hot summer, moderate amount of precipitations, diversity of soils, special features of Rkatsiteli and/or Saperavi Budushuri like grape varieties characteristic for that zone and local centuries-old tradition of viticulture and winemaking produce the unique organoleptic features of wine "Napareuli" , characteristic only of this wine.

## 11. SPECIAL LABELING RULES

With Latin font – NAPAREULI

Protected Designation of Origin and/or PDO

Cyrillic font – НАПАРЕУЛИ М

Защищённое наименование места происхождения

## 12. ACCOUNTING AND NOTIFICATION

Accounting and notification of production and storage technological processes of "Napareuli" is carried out, in accordance with the rules established by the legislation of Georgia.

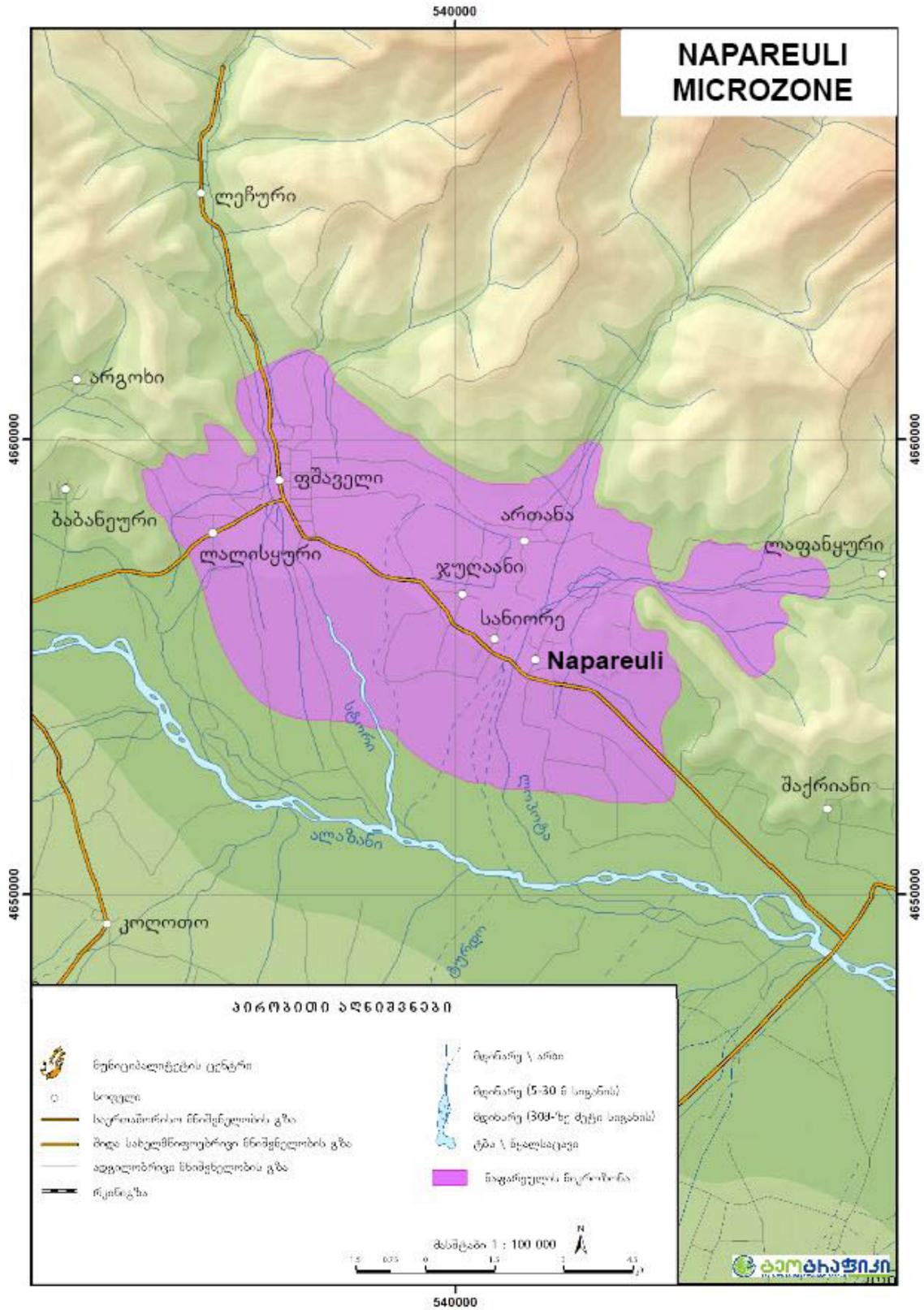
## 13. MAIN CONTROLLABLE POINTS

During control of the PDO wine "Napareuli" production process the producer shall satisfy the requirements established by LEPL National Wine Agency, and shall comply with the following parameters:

<b>Main Controllable Points</b>	<b>Evaluation Methods</b>
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
Vintage and transportation	Vintage journal
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records

## 14. CONTROL BODY OF PRODUCTION

State control for observance of production specification and lawful usage of the appellation of origin PDO shall be carried out by LEPL National Wine Agency, according to the rules established by the legislation of Georgia.



## TELIANI

### 1. NAME: "TELIANI"

### 2. ADDITIONAL SIGNS:

### 3. TYPE, COLOR AND MAIN REQUIREMENTS:

"Teliani" is sec (dry) wine, which shall satisfy the following requirements:

- Color – dark ruby;
- Aroma and taste – perfect, full, extracted, velvet, harmonised, having aroma characterizing the location, and fruit tones are developed with aging;
- Volumetric spirit content – no less than 11 %;
- Concentration of finished extract mass – no less than 22 g/l;
- Sugar content – 4 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l.
- Other characteristics shall meet requirements provided by the legislation of Georgia.

### 4. SPECIFIC ZONE AVAILABLE AREAS

The micro-zone Teliani is located in the middle stream of the river Alazani, on the coordinates – 41°54' of Northern longitude and 45°35' of Eastern latitude, on the North-Eastern slopes of Tsiv-Gombori Range, and between Alazani right tributaries – Kisiskhevi and Vantiskhevi, from the railway to the River Alazani.

### 5. VINE VARIETIES

Wine "Teliani" shall be prepared from the grapes of Cabernet Sauvignon, vintage takes place in Teliani micro-zone, other varieties are prohibited.

### 6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE:

- The micro-zone Teliani vineyards for wine "Teliani" shall be situated on 500-600 m above sea level.
- Distance between the rows in the vineyards – 1-3 m;
- Distance between the vines in the row – 0.8 -1.5 m;
- Height of Stem – 60-90 cm;
- Shape of Pruning – one-sided or Georgian two-sided or free.

Vine cultivation, shape and pruning, pests and diseases control, and soil treatment, fertilization, and other operations, shall be provided according to agro-technical activities selected by wine-makers.

### 7. GRAPE MATURITY, VINTAGE, TRANSPORTATION:

- "Teliani" shall be produced only with ripe grapes. Sugar content shall be no less than 19%, at the vintage.
- Grapes transportation is permitted only with wooden or plastic boxes, with bodyworks made of stainless steel or painted with special colour.
- Usage of polyethylene packages and/or bags is not allowed.
- The grapes shall be protected from dirtying at the transportation.

### 8. VINTAGE AND WINE PRODUCTION

Vintage on 1 ha vineyard shall be no more than 10 tons;

Wine production shall be no more than:

- 650 liters – from 1 ton grapes;
- 6500 liters – from 1 ha vineyard.

## 9. GRAPE PROCESSING, WINEMAKING AND BOTTLING

Grapes for producing wine "Teliani" shall be only from the vineyards cultivated in micro-zone Teliani. Grapes processing and winemaking shall be provided exclusively inside of Kakheti, bottling is permitted outside Kakheti, but only on the territory of Georgia.

At the same time, the grapes can be got from the Teliani micro-zone and the wine can be withdrawn from Kakheti viticulture zone only under strict accounting and control.

"Teliani" is made by incomplete alcoholic fermentation of must.

"Teliani" shall be represented on consumer market only packed in the consumer vessels.

In the production of wine "Teliani" it is permissible to use only the operations, materials and substances that are permitted by the legislation of Georgia.

## 10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA:

**CLIMATE** – Micro-zone climate is characterized with moderately humid, hot summer and mild winter. Sunlight annual duration is more than 2300 hours, and reaches 1660 hours – at vegetation period. Direct solar radiation on horizontal surface is 75 kkal/cm<sup>2</sup>, scattered – 54,2 kkal/cm<sup>2</sup>, sum – 130 kkal/cm<sup>2</sup>, annually.

Real sunlight amount ratio to its possible amount in the summer and September is averagely 66%. Clear days are 17-19 at grape maturity.

The average annual air temperature is 12.1°C, that of the coldest month (January) is +0,9°C, and of the warmest months (July, August) is similar – 23.2 22,9°C, and that. Air annual absolute minimum temperature averagely is -11°C, absolute minimum – -23°C. Absolute maximum temperature averagely is 35°C, absolute maximum – + 38°C.

Air daily amplitude is high (8-9,5°C) in summer, and low – in winter (4,8-5,5°C).

Heat general amount varies depending of years. In the last century in Tsinandali above 10°C it varied within 3300-4250°C, heat sum amplitude reaches 950°C.

In Teliani heat sum 95% is more than 3500°C, per each year.

Autumn first frosts start at 26.XI. In the end of October the frosts are expected once during 10 years, so vine is not damaged because of this.

The annual sum of atmospheric precipitations is 845 mm, and 644 mm during the vegetation period. The precipitations in the greatest amount occur in May (157 mm) and June (111mm). Sum of precipitations in ripening period (VIII-IX) is averagely 144 mm, the most part of this comes in spring (34%) and summer (31%), less in autumn (23%) and winter (12%).

Air annual average relative humidity is 70%.

Hailing days amount is great and averagely is 2,3 per year; it is more frequent in the May and June (0,7-0,8 days).

Mostly there prevailing the Western (30%) and Eastern (24%) winds, and less – the South-Western (14%), North-Western (11%) and South-Eastern (10%) winds.

Wind annual average speed is 1,7 m/s. Wind speed relatively is increased in the spring and summer (1,7-2,1 m/s) and decreased in the winter (1,3-1,5 m/s). Very windy days amount ( $\geq 15$  m/s) is not great and equal to 10, and – 33, in snowy days.

**SOIL** – There are presented meadow-brown (old alluvial) and alluvial soil varieties different from each other with leptosol quality and mechanical content. Meadow-brown (old alluvial) soils are presented on

the North-Eastern ends of slopes of Tsiv-Gombori Range, and alluvials – on the right second terrace of the River Alazani.

There are distinguished the following soil varieties: 2 – Meadow-brown (old alluvial) and 2 – alluvial.

1. Meadow-brown (old alluvial) very thick, loam;
2. Meadow-brown (old alluvial) very thick, leptosol, clay;
3. Alluvial carbonated, very thick, loam;
4. Alluvial carbonated, very thick, leptosol, loam

Said first two varieties of soils are presented on upper zone of micro-zone on the North-Eastern slope ends of Tsiv-Gombori Range, slightly inclined trails and flat lands, 3<sup>rd</sup> and 4<sup>rd</sup> – on right second terrace of the River Alazani bordered with the North-Eastern slopes of Tsiv-Gombori Range, and it is slightly inclined flat land towards the South-Eastern, with slightly waved surface.

Profile thickness of all 4 varieties of soils is more than 1-1,5 m, and active humus layer varies between 50-60 cm.

Soil mechanical content is loam 25-50%, and passages onto light loam and sand in depth in some areas.

Humus content in active layer is less than average and mostly varies between 1,5-3%, and decreased bellow, contains average amount of calcium carbonates – 5-15%. Soil area reaction (pH) is mostly alkaline – 7,4-8. Content of soluble phosphorus in active layer is 2,5-3 in 100 g soil, in low layers it is in small amount. Soil is poor with changeable potassium – 12,0 mg in 100 g soil.

**HUMAN FACTOR** – Cabernet Sauvignon is a French vine variety. It was brought to Georgia at the end of the 19<sup>th</sup> century. This vine variety has shown its unique features and high quality on the 3<sup>rd</sup> period rocky sediment in Teliani, Georgia. This is quite fair when it is said that Georgia is the second homeland of Cabernet Sauvignon.

Bringing and cultivation of Cabernet Sauvignon in Teliani was wholly implemented by the heads of Princes Estates Department of that time – Gogol-Janowski, Speshnev, Masano, Staroselskiy, Haine, Markovich, Ovcharenko, Tushmelashvili, Jorjadze, Deckenson, and the others.

A great contribution to the development of Georgian winemaking was made by A. Egorov, the chief winemaker of Princes Estates Department in those times (1899-1925), to whom belong the words: "Kakheti is a country of red wines".

Wine "Teliani" has been produced since 1897 and it has been awarded with 4 gold and 6 silver medals.

Geographical location of micro-zone Teliani, its regional climate: mild winter and hot summer, moderate amount of precipitations, diversity of soils, special features of grape variety Cabernet Sauvignon manifested in this area and the centennial experience of its cultivation on this land lead to the unique organoleptic features of wine "Teliani".

## 11. SPECIAL LABELING RULES

With Latin font – TELIANI

Protected Designation of Origin and/or PDO

Cyrillic font – ТЕЛИАНИ

Защищённое наименование места происхождения

## 12. ACCOUNTING AND NOTIFICATION

Accounting and notification of production and storage technological processes of "Teliani" is carried out, in accordance with the rules established by the legislation of Georgia.

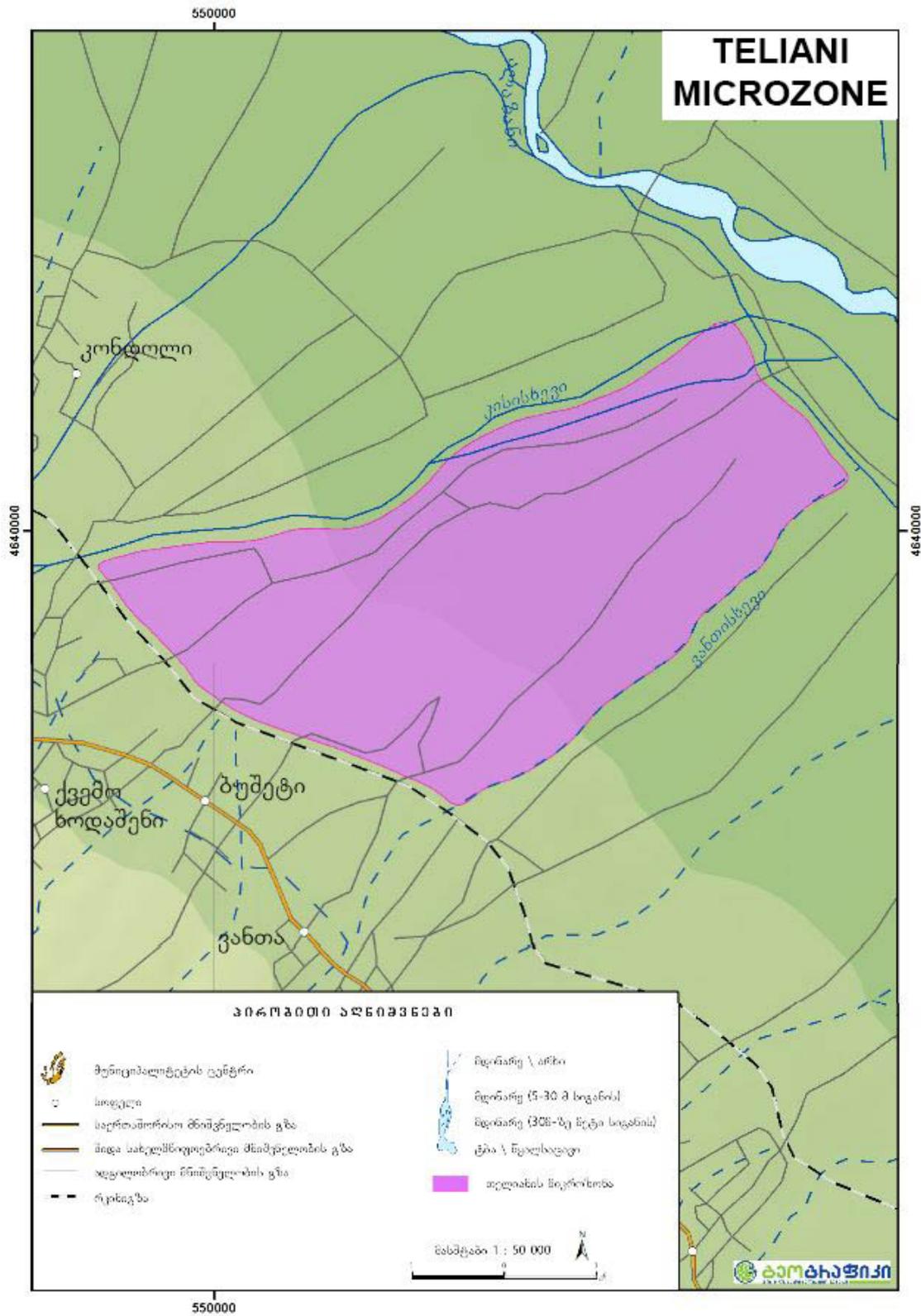
## 13. MAIN CONTROLLABLE POINTS

During control of the PDO wine "Teliani" production process the producer shall satisfy the requirements established by LEPL National Wine Agency, and shall comply with the following parameters:

<b>Main Controllable Points</b>	<b>Evaluation Methods</b>
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
Vintage and transportation	Vintage journal
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records

#### **14. CONTROL BODY OF PRODUCTION**

State control for observance of production specification and lawful usage of the appellation of origin PDO shall be carried out by LEPL National Wine Agency, according to the rules established by the legislation of Georgia.



## ATENI

**1. NAME:** "ATENI"

**2. ADDITIONAL SIGNS:** "ATENURI"

**3. TYPE, COLOR AND MAIN REQUIREMENTS:**

"Atenuri" can be white sec (dry) sparkling and slightly sparkling wine.

"Atenuri" white sec (dry) shall satisfy the following requirements:

- Color – from light straw to straw;
- Aroma and taste – harmonized, pleasant and cheerful, perfect, having aroma characterizing the location with meadow flowers tones, and fruit tones are developed with aging;
- Volumetric spirit content – no less than 11 %;
- Concentration of finished extract mass – no less than 16 g/l;
- Sugar content – 4 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

"Atenuri" sparkling and slightly sparkling shall satisfy the following requirements:

- Color – light straw;
- Aroma and taste – developed aroma, delicate as characterized sparkling wines, full, harmonized;
- Volumetric spirit content – no less than 10,5 %;
- Concentration of finished extract mass – no less than 16 g/l;
- Sugar content shall meet requirements provided by the legislation of Georgia;
- Titrated/ Volatile acidity – no less than 5 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

**4. SPECIFIC ZONE AVAILABLE AREAS**

The micro-zone Ateni is located in the central part of the viticulture zone Inner Kartli, in the South side from the city Gori, on right bank of the River Mtkvari (Kura). The micro-zone is located on Trialeti Range Northern slopes foothills, in Tana Gorge.

The micro-zone Ateni includes: Jebiri, Gardateni, Patara Ateni, Degeula, Chechelaantubani, Didi Ateni and Pukhaantubani.

**5. VINE VARIETIES**

Wine "Atenuri" shall be prepared from the grape varieties of Chinuri and/or Goruli Mtsvane and/or Aligote, vintage takes place in the micro-zone Ateni, other varieties are prohibited.

**6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE:**

- The micro-zone Ateni vineyards for wine "Atenuri" is situated on 580-750 m above sea level;
- Distance between the rows in the vineyards – 1-2,5 m;
- Distance between the vines in the row – 0.8 -1.5 m;
- Height of Stem – 60-90 cm;
- Shape of Pruning – one-sided or Georgian two-sided or free.

Vine cultivation, shape and pruning, pests and diseases control, and soil treatment, fertilization, and other operations, shall be provided according to agro-technical activities selected by wine-makers.

## **7. GRAPE MATURITY, VINTAGE, TRANSPORTATION:**

- Sugar content shall be no less than 18%, at the vintage.
- Grapes transportation is permitted only with wooden or plastic boxes, or tarps with capacity no more than 80 kg.
- Usage of polyethylene packages and/or bags is not allowed.

The grapes shall be protected from dirtying at the transportation.

## **8. VINTAGE AND WINE PRODUCTION**

Vintage on 1 ha vineyard shall be no more than 10 tons;

Wine production shall be no more than:

- 650 liters – from 1 ton grapes;
- 5200 liters – from 1 ha vineyard.

## **9. GRAPE PROCESSING, WINEMAKING AND BOTTLING**

Grapes for producing wine "Atenuri" shall be only from the vineyards cultivated in micro-zone Ateni.

Grapes processing, winemaking and bottling shall be provided exclusively inside of micro-zone Ateni.

"Atenuri White" sac (dry) is made by complete alcoholic fermentation of gravity (not pressed) grape juice.

"Atenuri" sparkling and slightly sparkling are made with bottle- and reservoir methods.

In the production of wine "Atenuri" it is permissible to use only the operations, materials and substances provided by the legislation of Georgia.

"Atenuri" sparkling and slightly sparkling realization is permitted: after 9 months from second fermentation, if it is made with bottle method; and after 6 months from second fermentation, if it is made with reservoir method.

ATENURI shall be represented on consumer market only packed in the consumer vessels.

## **10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA:**

**CLIMATE** – The micro-zone belongs to moderately humid subtropical climate region, with a climate transferred from mild steppe to mild humid, characterizing with hot summer and cold winter.

Sunshine annual duration is 2200-2300 hours, and more than 1500-1700 hours at the vegetation period. The average annual air temperature is 10.7°C.

The temperature of the warmest month – August is averagely 22°C, and of the coldest – January is -1,5°C. Sustainable transition of air daily average temperature is above 10°C in mid-April (16.IV), and below – from end of October (25.IX), during 192 days. Sum of active temperatures is close to 3450°C.

The annual sum of atmospheric precipitations is decreased with height of location to the South direction from Gori, in Tana Gorge and in Ateni, on 680 m above sea level it is 560 mm. Precipitations monthly average amount is the biggest (73 mm) in May, the smallest in August (32 mm). In the warm period of year the amount is no more than 344 mm, hydrothermal coefficient from mid-July to first days of October (during 112 days) is less than 1. July and August are especially drought and the vineyards need to be irrigated, in other periods of year the precipitations are more than can be evaporated from the vines and soil.

Hailing days amount averagely is 2 per year; it is more frequent in the May (0,8 days).

Prevailing in Gori region, Mtkvari Gorge the North-Western (44%) and perpendicular South-Eastern (41%) winds are not strong in Tana Gorge. Trialeti Range branches: Satskhenisi and Tsereti Ranges protect Tana Gorge from said air masses. The winds mostly have direction towards the Gorge and are

decreased in its depth.

**SOIL** – There are presented two kinds of soils – brown and alluvial. Deluvial and proluvial soils are presented as small spots.

Soil profile thickness varies between 0,7-1,5 m, and active humus layer varies between 30-60 cm.

Soil mechanical content is heavy loam and slightly clay, wherein physical clay content is 40-70%, clay amount is increased by means of sediment (<0,081 mm) fraction, because the soils belong to sediment-slime group. They are slightly carbonated – 0,2-14,0%.

Soil area reaction (pH) is slightly or moderately alkaline – 7,2-8,2.

Humus content in active layer is in small or average amount and mostly varies between 3,25-0,5%. Soil is poor with hydrolyzed nitrogen – no more than 0,6 mg in 100 g soil, in exclusive cases it is in average amount – 7-10 mg in 100 g soil.

Content of soluble (absorbable) phosphorus is in small or average amount 6,0-1,2 mg in 100 g soil, and in some cases it is represented as a trace.

Changeable potassium is in moderate or small amount – 46,0-9,2 mg in 100 g soil, in trenching layer.

Sum of absorbed bases (Ca+Mg) is characterized with high index – 20,0-54,3 milliequivalent in 100 g soil. Much more percent from sum comes in absorbed Ca, and Mg is in much small amount.

**HUMAN FACTOR** –Viticulture and winemaking in the Ateni Gorge originated from ancient times, this area was famous for its wines during its history. "... Ateni wine is better than all other Kartlian wines and is the best among Georgian wines" (Vakhushti). Well-known French orientalist and Kartvelologist Marie Brosset also pointed out the high quality of this wine: "I don't know any nectar similar to wine Ojaleshi except Atenuri".

Famous Georgian researcher and ethnographer Levan Pruidze (Friend of the Monument, 1976, № 42), scientists Tamaz Kobaidze and Maia Mirvelashvili ("Old Georgian Technologies for Wine-making", Moambe, XV Volume, p. 43), outstanding Russian winemaker A. Egorov ("Winemaking Issues" Пищепромиздат, 1955) describe the traditional method for ATENURI winemaking in the following way: Grapes immediately after picking were pressed in stone presses arranged in the vineyards (situated at 3-4 kilometers distance or farther from the village), sweet juice was rested during a few hours until it was cleaned up, then were poured into unsmoked vessels and moved in ox-carts to the cellar named "Satsivi Marani" (cooling cellar) (situated in the present-day Didi Ateni, referred to as the small city by Vakhushti, where "there is a large and tall fortress on the top of a rock, and to the South of the fortress rock there is the Satsivi as a glacier where excellent wine is made").

There, per "koka" (ceramic bottle) one handful of "Chacha" was added into a "qvevri (wine jar). Sweet juice was slowly passing fermentation in the "qvevri", under the influence of the natural coolness of the earth. The "qvevri" was covered with a stone lid, plastered with clay and covered on the top with powdered rock.

After slowing of fermentation the "qvevri" was wholly filled with the same wine, the lid was again hermetically plastered with clay covered with earth.

Slow fermentation in "qvevri" allowed keeping carbon dioxide in wine and naturally sparkling wine resulted, known as ATENURI.

The Special attitude of the Georgian people to this wine is expressed in folk song "Wine Atenuri" as well as in humorous lines by David Guramishvili:

"The first one joked: I will bathe in Tiflis baths,  
The second - I will eat plenty of fillets of smoked sturgeon and Lake Sevan trouts,  
The third - I will get drunk with Atenuri wine.  
The fourth – So they will have to tie us up with a spun rope!"

Thus, wine Atenuri – a pleasant beverage found its place in literature too and received its well-deserved glory from ancient times. "Samepo Zvari" (Royal Vineyard) was known in Ateni from the 11<sup>th</sup> century, where nectar suitable for kings was produced (L. Pruidze, Friend of the Monument, 1976, №42).

The long-standing tradition of making naturally sparkling wines laid the foundation for building a modern winery in the village Ateni in the 1950s, producing 900 tons wine per year. The work of the winery stopped at the beginning of the 1990s, because of the known circumstances.

The crisis in the field of winemaking in the Atreni Gorge continued during 10-15 years.

Since the 2010, new stage of flourishing of viticulture and winemaking is began in the micro-zone Ateni.

Thus, geographical location of the micro-zone Ateni, regional climate, diversity of soils, special features of grape varieties Chinuri and Goruli Mtsvane local centuries-old tradition of viticulture and winemaking and devotion of the winemakers define the unique organoleptic features of wine "Atenuri", characteristic only of this wine.

## 11. SPECIAL LABELING RULES

With Latin font – ATENURI  
Protected Designation of Origin and/or PDO

Cyrillic font – АТЕНУРИ  
Защищённое наименование места происхождения

## 12. ACCOUNTING AND NOTIFICATION

Accounting and notification of production and storage technological processes of "Atenuri" is carried out, in accordance with the rules established by the legislation of Georgia.

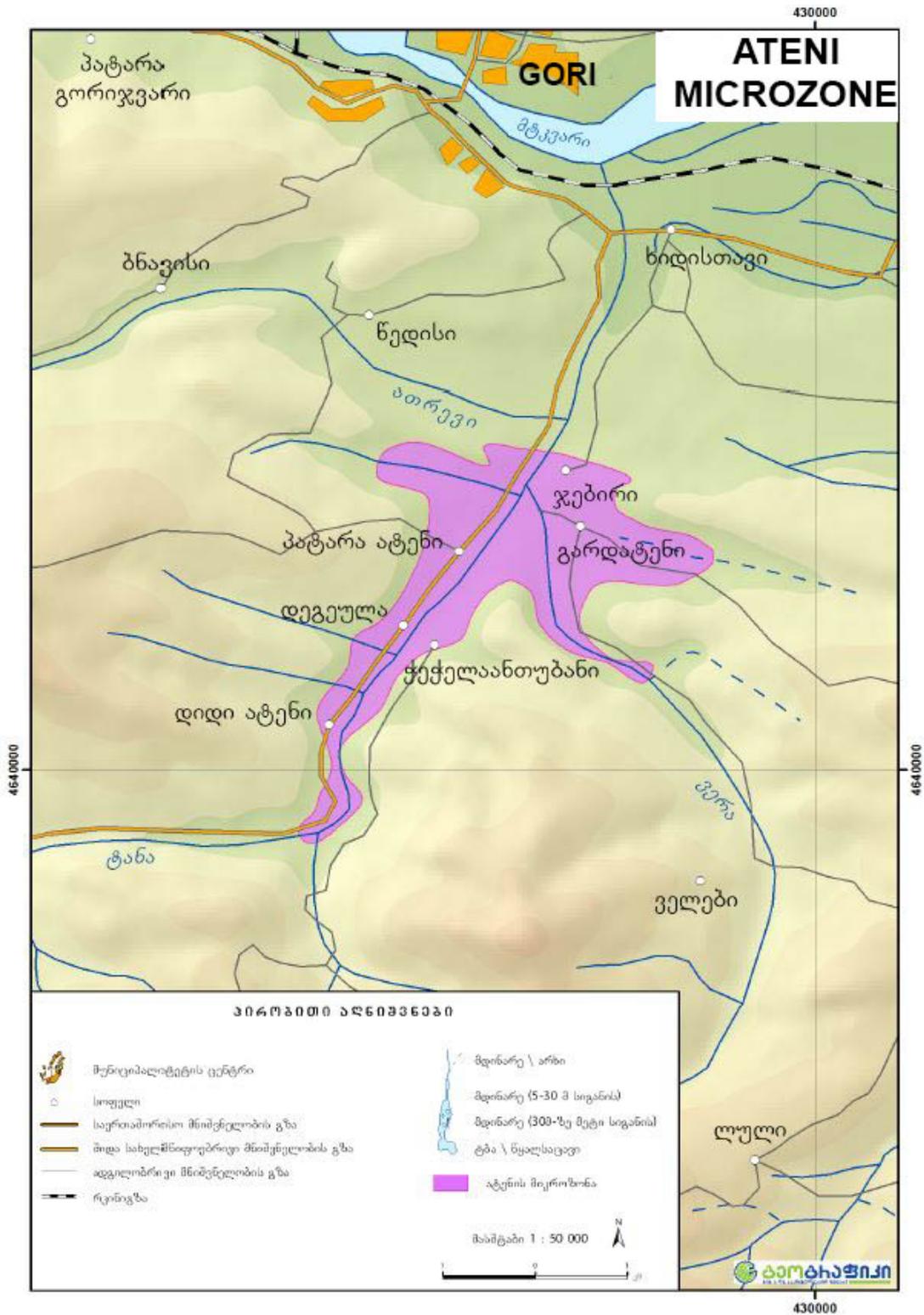
## 13. MAIN CONTROLLABLE POINTS

During control of the PDO wine "Atenuri" production process the producer shall satisfy the requirements established by LEPL National Wine Agency, and shall comply with the following parameters:

Main Controllable Points	Evaluation Methods
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
Vintage and transportation	Vintage journal
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records

## 14. CONTROL BODY OF PRODUCTION

State control for observance of production specification and lawful usage of the appellation of origin PDO shall be carried out by LEPL National Wine Agency, according to the rules established by the legislation of Georgia.



## SVIRI

### 1. NAME: "SVIRI"

### 2. ADDITIONAL SIGNS:

### 3. TYPE, COLOR AND MAIN REQUIREMENTS:

"Sviri" is white sec (dry) wine, which shall satisfy the following requirements:

- Color – from straw to dark straw-yellowish;
- Aroma and taste – perfect, microbiologically healthful, harmonic, pleasant, cheerful, refined, having aroma characterizing location, with bouquet of fruit tones developed with aging;
- Volumetric spirit content – no less than 11 %;
- Concentration of finished extract mass – no less than 19 g/l;
- Sugar content – no more than 4 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

### 4. SPECIFIC ZONE AVAILABLE AREAS

The micro-zone "Sviri" is located in the left bank of the river Kvirila, on the coordinates – 42°07' of Northern longitude and 42°55' of Eastern latitude, on the Northern slopes of the Southern foothills of Outer Imereti. Sviri includes the villages of Shua Imereti: Pirveli Sviri, Meore Sviri, and administrative borders of Rodinauli. It is situated averagely on 220 m above sea level.

### 5. VINE VARIETIES

Wine "Sviri" shall be produced from the grapes of Tsolikouri, Tsitska and/or Krakhuna, and vintage takes place in the micro-zone Sviri.

### 6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE:

- The micro-zone Sviri vineyards for wine SVIRI shall be situated on 220 m above sea level.
- Distance between the rows in the vineyards – 1-3 m;
- Distance between the vines in the row – 0.8-1.5 m;
- Height of stem – 60-90 cm;
- Shape of pruning – one-sided or Georgian two-sided or free.

### 7. GRAPE MATURITY, VINTAGE, TRANSPORTATION:

- "Sviri" shall be produced only with ripe grapes.
- Sugar content shall be no less than 19%, at the vintage.
- Grapes transportation is permitted only with wooden or plastic boxes, with bodyworks made of stainless steel or painted with special colour.
- Usage of polyethylene packages and/or bags is not allowed.
- The grapes shall be protected from dirtying at the transportation.

### 8. VINTAGE AND WINE PRODUCTION:

Vintage on 1 ha vineyard shall be no more than 10 tons.

Wine production shall be no more than:

- 650 liters – from 1 ton grapes;
- 6500 liters – from 1 ha vineyard.

## 9. GRAPE PROCESSING, WINEMAKING AND BOTTLING

Grapes for producing wine SVIRI shall be only from the vineyards cultivated in the micro-zone Sviri.

Grapes processing and winemaking shall be provided exclusively inside of Kakheti, bottling is permitted outside Kakheti, but only on the territory of Georgia.

At the same time, the grapes can be got from the micro-zone Sviri and the wine can be withdrawn from Kakheti viticulture zone only under strict accounting and control.

"Sviri" is made by complete alcoholic fermentation of gravity grape juice in qvevri with adding 4-6% fermented "chacha" therein.

"Sviri" shall be represented on consumer market only packed in the consumer vessels.

In the production of wine "Sviri" it is permissible to use only the operations, materials and substances that are permitted by the legislation Georgia.

## 10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA

**CLIMATE** – The climate in the micro-zone is moderately humid, with hot summer and mild winter, with double annual sedimentation. Annual duration of sunlight is more than 2180 hours, and during the vegetation period the sunshine continues 1610 hours. Direct annual radiation on the horizontal surface 70-75 kcal/cm<sup>2</sup>, and scattered – 50-54 kcal/cm<sup>2</sup>, Sum of annual radiation is 120-130 kcal/cm<sup>2</sup>, amount ratio of whole sunshine with its amount in summer months and September and is more than average – 68%.

Clear days in the period of grape maturity (August-September) is 17-18 averagely in accordance of general and lower clouds.

The average annual air temperature of the micro-zone is quite high – +11,9°C, the coldest month is January – +0,5°C, of the warmest months – July and August are closer to each other and is +23.1-22,9°C. Air temperature average annual absolute minimum is -10°C, absolute minimum is -23°C. Air temperature average annual absolute maximum is +34°C, absolute maximum is +38°C.

Daytime amplitude of air temperature is the highest in the summer months (June, July, and August) is in average 9°C and reaches more. This indicator is the lowest (4,8-5,5°C) in winter.

Sustainable transition to the average daily temperature of 10°C (the start of active vine vegetation period) takes place 8.IV and it's falling down – in the autumn (30.X). The period of average daily temperature above 10°C continues 204 days. The sum of active temperatures is 3730°C during this period.

First autumn frosts are started in average 15.XI, and can take place in 20 October once in 10 years, although the vintage is finished.

Spring last frosts are finished 1.IV, and once in 10 years can be continued until 17 April.

The annual sum of atmospheric precipitations is 884 mm, and 662 mm during the vegetation period. Maximum of precipitations can be in May (150 mm) and June (130). The precipitations are more than enough – 75 mm at grape maturity, especially in September.

The relative humidity of air is approximately 71%. At the vegetation period this indicator is no more than 68%.

The annual average value of hail days is 2,2. May (0,7) and June (0,5) are the most hail months of year. In anomaly hail years, such days can be 5.

Soil surface annual temperature is 14°C. Average soil temperature of the warmest months (July, August) is 28°C, and of the coldest month (January) is -1°C.

Mostly the Western – (33%) and South-Western (23%) winds are dominated. The average annual wind speed is 1,4 m/s.

In according said data analysis the specific zone belongs to III group of wind damaged regions.

**SOIL** – Area for "Sviri" production is located in the West Georgia, particularly in the extreme Eastern part of Kolkheti lowland and directly borders the Northern and Southern Caucasus foothills. The main part of the territory is characterized with flat relief, and the South-Eastern part represented on the foothills mountain zone creating flat land consisting of slightly inclined slopes and a small terrace directed to the North-West and West.

Alluvial and deluvial soil varieties with their sub-varieties are presented in lower zone, scanty soils varieties with their sub-varieties are presented in the center. Said soils are different from each other with profile thickness and humus thickness, and mechanical content and leptosol, as well.

Alluvial soils are presented on the first and second terraces of the River Kvirila. Thickness of those soils is more than 1 m, humus layer is 30-40 cm., with mechanical content II terrace soils are mostly heavy loam and clay, relatively new alluvial – moderately and slightly loam, with leptosol in some places.

Deluvial soils are presented in small parts of foothills mountain zone lower part ends. Their profile thickness is more than 1 m, as well, active humus layer – 40-50 cm., characterized with clay content. Humus content is 2,5-1,5% in upper zone of both varieties of soils, and decreases gradually bellow.

Hydrolyzed nitrogen content is small – 2,5 mg in 100 g soil. Phosphorus content is low, as well and no more than 8,0 mg in 100 g soil. Changeable potassium varies in wide range – 5,0-4,0 mg in 100 g soil. Soil are reaction is mainly neutral and slightly alkaline, and even slightly acid in some places, pH indicator varies within 5,8-7,6. Carbonates are in small amount in some areas.

Scanty soils are presented in central part of the zone, profile thickness is 70-100 cm, active humus layer – 25-35 cm., characterized with heavy loamy and clay content, with slightly acid reaction. Humus content in active layer is 2,5- 1,5 % and decreases bellow gradually, high-efficient complex fertilizer (NPK) content is small, in most cases.

Humus-carbonated and grey soils presented in upper part of the micro-zone, on mountain relief, profile thickness is 60-100 cm, active humus layer – 30-40 cm, characterized with heavy loam and clay content, humus content in active layer is 2-3%, and decreases bellow gradually, high-efficient complex fertilizer (NPK) content is small, mostly, but in some cases it is moderate.

Soil area reaction is neutral or slightly acid, pH – 5,6-7,0, in scanty soils, moderately and slightly alkaline – in humus carbonated soils and pH varies within 7,8-8,0, carbonates content is mostly 2,5-16,0%, and even more.

**HUMAN FACTOR** – Viticulture and winemaking exist in Imereti from ancient times, being the main agricultural field for the local population. Cicereius treated Ulysses and his travelling companions with wine, and ancient writers glorified high-quality wines of Colchis. Dubois de Montpéreux and Chardin who traveled to Caucasus confirmed that viticulture and winemaking had great importance in the life of the local population” (Ermile Nakashidze).

Viticulture development in Imereti, regardless a number of obstacles, acquired relatively wide range of perspectives from the second half of the 19<sup>th</sup> century. In 1873, vineyards area in Imereti was 19 737 hectares and was gradually growing. The area in 1875 reached 21 370 ha, and by 1895 – 23 585 ha.

As early as from 1890, M. Kostava’s firm "Kostava & Brothers" produced and sold in Kutaisi Imeretian wine "Sviri".

V. Kalatozishvili produced and sold wine named "Sviri’s Wine № 1 Iveria" since 1894.

At the same time, wine cooperative – Sviri and Kvaliti put on the market wine "Sviri" from the wine cellars of I. Arshibaia and I. Kvenetadze.

In 1886, in Imereti, Mildew (form of fungus) appeared and started to spread rapidly, and Phylloxera – since 1889. The massive spread of fungal diseases and Phylloxera lead to the damage and then destruction of large part of vineyards. This is reason why since 1908, the area of vineyards in Imereti was almost halved and was reduced to 12857 hectares.

As a result of usage of effective methods for combating Mildew and Phylloxera the area of vineyards in

Imereti began to increase gradually, reaching 21 690 hectares in 1940, and 23 125 hectares in 1968. In 1935, the winery was built in Pirveli Sviri, and one year later – in Meore Sviri.

In 1950, under direct guidance of head of Zestaponi industrial union – Petre Chachiashvili wine "Sviri" was restored, which was produced from the grapes of Tsolikouri, Tsitska and Krakhuna varieties. The winemakers: Petre Demetradze, Mikheil Asatiani, Gizo Robakidze, Jondo Zhorzholadze, and others worked for the perfection of this wine technology at different times.

Geographical location of micro-zone Sviri, region climate, diversity of soils, special features of grape varieties Tsolikouri, Tsitska and Krakhuna and local, centuries-old tradition of viticulture winemaking define the unique organoleptic features of wine SVIRI, characteristic only of this wine.

## 11. SPECIAL LABELING RULES

With Latin font – SVIRI  
Protected Designation of Origin and/or PDO

Cyrillic font – СВИРИ  
Защищённое наименование места происхождения

## 12. ACCOUNTING AND NOTIFICATION

Accounting and notification of production and storage technological processes of "Sviri" is carried out, in accordance with the rules established by the legislation of Georgia.

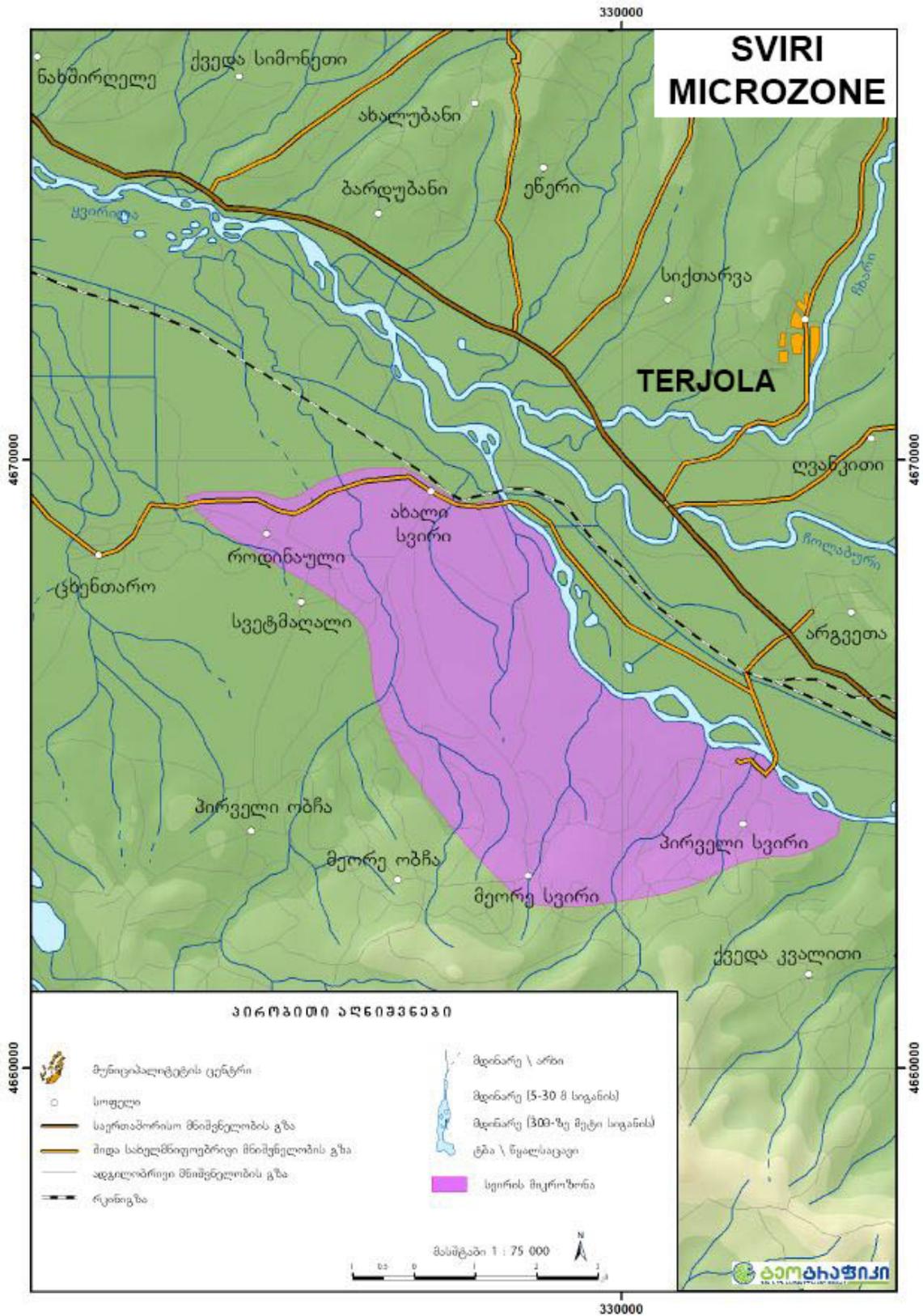
## 13. MAIN CONTROLLABLE POINTS

During control of the PDO wine "Sviri" production process the producer shall satisfy the requirements established by LEPL National Wine Agency, and shall comply with the following parameters:

Main Controllable Points	Evaluation Methods
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
Vintage and transportation	Vintage journal
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records

## 14. CONTROL BODY OF PRODUCTION

State control for observance of production specification and lawful usage of the appellation of origin PDO shall be carried out by LEPL National Wine Agency, according to the rules established by the legislation of Georgia.



## VAZISUBANI

**1. NAME: "VAZISUBANI"**

**2. ADDITIONAL SIGNS:**

**3. TYPE, COLOR AND MAIN REQUIREMENTS:**

"Vazisubani" is white sec (dry) wine, which shall satisfy the following requirements:

- Color – light straw;
- Aroma and taste – perfect, delicate, soft, harmonic, cheerful, refined, having aroma characterizing the location, with meadow flowers tones, and bouquet of fruit tones are developed with aging;
- Volumetric spirit content – no less than 11 %;
- Concentration of finished extract mass – no less than 16 g/l;
- Sugar content – no more than 4 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

**4. SPECIFIC ZONE AVAILABLE AREAS**

The micro-zone "Vazisubani" is located in the middle stream of the river Alazani, on the coordinates – 41°49' of Northern longitude and 45°27' of Eastern latitude. On a vineyard area located on one of Tsiv-Gombori Range trails inclined on 5-6° towards the North-East.

From the South-West it is bordered with Tsiv-Gombori Range, from the North-West – Alazani channel, and located between Shroma and Tsiliani gorges – from the North-West and South-East, correspondingly.

"Vazisubani" includes the villages: Vazisubani, Kalauri, Shashiani, and Vachnadziani.

**5. VINE VARIETIES:**

Wine "Vazisubani" shall be prepared from the grapes of Rkatsiteli, vintage takes place in the micro-zone Vazisubani. It is permitted to use about 15% of Kakhuri Mtsvane, vintage takes place in the same micro-zone.

**6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE:**

- The micro-zone Vazisubani vineyards for wine "Vazisubani" is situated on 500-600 m above sea level.
- Distance between the rows in the vineyards – 1-3 m;
- Distance between the vines in the row – 0.8-1.5 m;
- Height of stem – 60-90 cm;
- Shape of pruning – one-sided or Georgian two-sided or free.

Vine cultivation, shape and pruning, pests and diseases control, and soil treatment, fertilization, and other operations, shall be provided according to agro-technical activities selected by wine-makers.

**7. GRAPE MATURITY, VINTAGE, TRANSPORTATION:**

- "Vazisubani" shall be produced only with ripe grapes.
- Sugar content shall be no less than 19%, at the vintage.
- Grapes transportation is permitted only with wooden or plastic boxes, with bodyworks made of stainless steel or painted with special colour.
- Usage of polyethylene packages and/or bags is not allowed.
- The grapes shall be protected from dirtying at the transportation.

## 8. VINTAGE AND WINE PRODUCTION:

Vintage on 1 ha vineyard shall be:

- 10 tons for Rkatsiteli;
- 8 tons for Kakhuri Mtsvane.

Wine production shall be no more than:

- 650 liters – from 1 ton grapes;
- 6500 liters – from 1 ha vineyard for Rkatsiteli;
- 5200 liters – from 1 ha vineyard for Kakhuri Mtsvane.

## 9. GRAPE PROCESSING, WINEMAKING AND BOTTLING

Grapes for producing wine "Vazisubani" shall be only from the vineyards cultivated in micro-zone Vazisubani.

Grapes processing and winemaking shall be provided exclusively inside of Kakheti, bottling is permitted outside Kakheti, but only on the territory of Georgia.

At the same time, the grapes can be got from the micro-zone Vazisubani and the wine can be withdrawn from Kakheti viticulture zone only under strict accounting and control.

"Vazisubani" is made by complete alcoholic fermentation of gravity grape juice.

In the production of wine "Vazisubani" it is permissible to use only the operations, materials and substances that are permitted by the legislation of Georgia.

## 10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA:

**CLIMATE** – The climate in the micro-zone is moderately humid, with hot summer and mild winter, with double annual precipitation. Annual duration of sunlight is more than 2180 hours, and during the vegetation period the sunshine continues 1610 hours. Direct annual radiation on the horizontal surface is 70-75 kcal/cm<sup>2</sup>, and scattered – 50-54 kcal/cm<sup>2</sup>, Sum of annual radiation is 120-130 kcal/cm<sup>2</sup>, amount ratio of whole sunshine with its amount in summer months and September and is more than average – 68%.

Clear days amount in the period of grape maturity (August-September) is 17-18, accordingly general and lower clouds.

The average annual air temperature of the micro-zone is quite high – +11,9°C, the coldest month is January – +0,5°C, of the warmest months – July and August are closer to each other and is +23.1-22,9°C. Air temperature average annual absolute minimum is -10°C, absolute minimum is -23°C. Air temperature average annual absolute maximum is +34°C, absolute maximum is +38°C.

Daytime amplitude of air temperature is the highest in the summer months (June, July, August) is in average 9°C and reaches more. This indicator is the lowest (4,8-5,5°C) in winter.

Sustainable transition to the average daily temperature of 10°C (the start of active vine vegetation period) began since 8.IV and falling down – in the autumn (30.X). The period of average daily temperature above 10°C continues 204 days. The sum of active temperatures is 3730°C during this period.

Sustainable transition of air temperature above +10°C takes place from 5.IV, and it's falling – from 3.XI.

Vegetation period duration is 211 days, and sum of active temperature +3930°C.

First autumn frosts are started in average 15.XI, and can take place in 20 October once in 10 years, although the vintage is finished.

Spring last frosts are finished 1.IV, and once in 10 years can be continued until 17 April.

The annual sum of atmospheric precipitations is 884 mm, and 662 mm during the vegetation period. Maximum of precipitations can be in May (150 mm) and June (130). The precipitations are more than enough – 75 mm at grape maturity, especially in September.

The relative humidity of air is approximately 71%. At the vegetation period this indicator is no more than 68%.

The annual average value of hailing days is 2,2. May and June are the most hailing months (0,7-0,5) of year. In abnormal hailing years, such days can be 5.

Soil surface annual temperature is 14°C. Average soil temperature of the warmest months (July, August) is 28°C, and of the coldest month (January) is -1°C.

Mostly the Western – (33%) and South-Western (23%) winds are prevailing. The average annual wind speed is 1,4 m/s.

In according said data analysis the specific zone belongs to III group of wind impact regions.

**SOIL** – There are distinguished forest brown, meadow-brown and alluvial varieties of soils, different from each other with profile thickness, loam quality, and mechanical content.

Forest brown soils are represented in upper zone of Tsiv-Gombori Range North-Eastern slopes; Meadow-brown – in lower zone bordering II terrace of the river Alazani along its lower irrigating canal; and alluvial – on the II terrace below the river Alazani lower irrigating canal, till I terrace.

In the specific zone there are distinguished 3 forest brown, 2 meadow-brown (old alluvial) and 4 alluvial-proluvial varieties of soils:

1. Forest brown, very thick, slightly leptosol, moderate and heavy loam;
2. Forest brown, moderate thick, moderately leptosol, moderate and heavy loam;
3. Forest brown, moderate thick, slightly humus, moderately leptosol, slightly stony, heavy loam;
4. Meadow-brown (old alluvial), very thick, clay;
5. Meadow-brown (old alluvial), very thick, slightly leptosol, clay;
6. Alluvial, carbonated, very thick, heavy loam, clay;
7. Alluvial, carbonated, very thick, slightly leptosol, loam;
8. Alluvial-proluvial, carbonated, very thick, slightly leptosol, clay and heavy loam;
9. Alluvial-proluvial, carbonated, very thick, leptosol, loam, slightly loam and sand.

Soils of the first three varieties are found in upper zone in the North-Eastern slopes of Tsiv-Gombori Range and on slight inclinations, the 4<sup>th</sup> and 5<sup>th</sup> varieties of soils – in middle zone on slight slopes and flat land areas, on the river Alazani II terrace border.

The 6<sup>th</sup> and 9<sup>th</sup> – on II terrace of the river Alazani, bordering Tsiv-Gombori Range towards the North-Eastern and South-Western.

First three types of soils represented in the upper zone are characterized with medium and deep thickness profile – 70-100 cm, and the active humus layer varies within 30-60 cm. It is characterized with heavy loamy mechanical content. First variety of soil is slightly leptosol, while the second and 3<sup>rd</sup> – are averagely. First three types are characterized with dark brown and brown color in upper layers, and beige to white – to the bottom. The 4<sup>th</sup> and 5<sup>th</sup> varieties of soils disposed on lower zone are characterized with deep thickness profile (100-150 cm), and deep humus layer (50-60 cm); with mechanical content it is loamy and clay. The 9<sup>th</sup> is slightly loamy and sandy; contrary, the 7<sup>th</sup> and 8<sup>th</sup> are slightly leptosol, and the 9<sup>th</sup> – moderately leptosol.

Humus content is low – 0,5-3,0% in all these soils. Hydrolyzed nitrogen content is low – 5mg in 100 g soil, as well. It is poor with soluble phosphorus and exchange potassium content, except of some. – 1,5-2,5 mg in 100 g soil. Sometimes it is represented as a trace. It is poor with exchange potassium content – 3,5-25,0 mg in 100 g soil, as well. Potassium carbonates content is moderate amount – 8-20%, exceptional is 3<sup>rd</sup> variety of soil, wherein the content is high and reaches 42-44%. Soil area reaction (pH) is characterized by average indicator, it is alkaline, and varies within 7.5-8.0. Sum of absorbed substrates (Ca+Mg) is characterized with average indicator, and mainly varies within 15-30 milliequivalents in 100 g soil, the exceptions are first and second varieties of soils, wherein the indicator is high – 33-47 milliequivalents, in 100 g soil.

**HUMAN FACTOR** – Wine "Vazisubani" does not have a very long history, it has been produced since 1978 and was created by specialists of "Samtresti" of that period.

Geographical location of the micro-zone Vazisubani, regional climate: mild winter and hot summer, moderate amount of precipitations, diversity of soils, special features of grape varieties Rkatsiteli and Kakhuri Mtsvane and local, centuries-old tradition of viticulture and winemaking stipulates the unique organoleptic features of wine "Vazisubani".

## 11. SPECIAL LABELING RULES

With Latin font – VAZISUBANI  
Protected Designation of Origin and/or PDO

Cyrillic font – ВАЗИСУБАНИ  
Защищённое наименование места происхождения

## 12. ACCOUNTING AND NOTIFICATION

Accounting and notification of production and storage technological processes of "Vazisubani" is carried out, in accordance with the rules established by the legislation of Georgia.

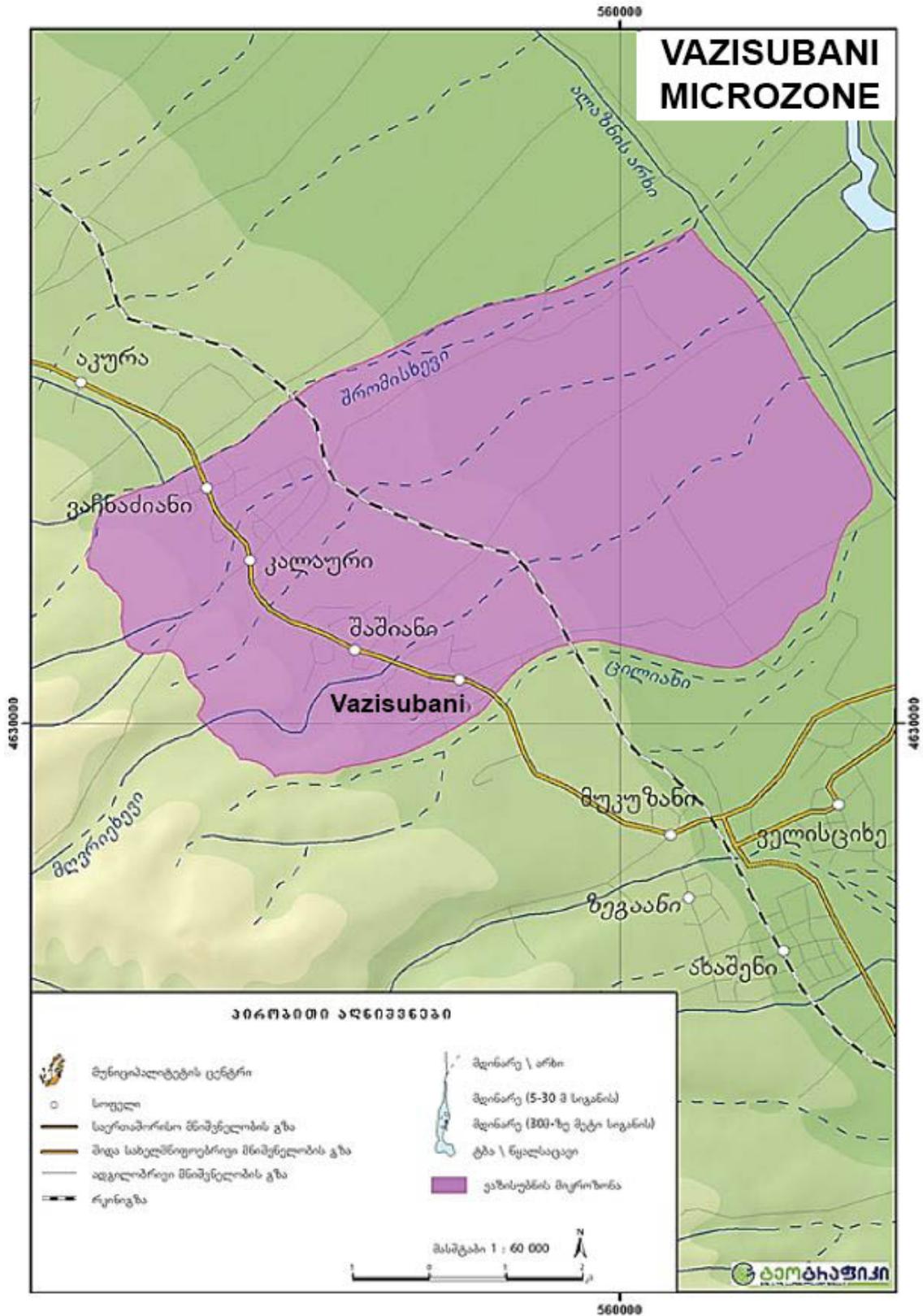
## 13. MAIN CONTROLLABLE POINTS

During control of the PDO wine "Vazisubani" production process the producer shall satisfy the requirements established by LEPL National Wine Agency, and shall comply with the following parameters:

Main Controllable Points	Evaluation Methods
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
Vintage and transportation	Vintage journal
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records

## 14. CONTROL BODY OF PRODUCTION

State control for observance of production specification and lawful usage of the appellation of origin PDO shall be carried out by LEPL National Wine Agency, according to the rules established by the legislation of Georgia.



## KARDENAKHI

### 1. NAME: "KARDENAKHI"

### 2. ADDITIONAL SIGNS:

### 3. TYPE, COLOR AND MAIN REQUIREMENTS:

Wine "Kardenakhi" can be amber sec (dry) or white fortified wine.

"Kardenakhi" amber sec (dry) shall satisfy the following requirements:

- Color – dark amber to straw;
- Aroma and taste – with body, energetic, extracted, velvet, having aroma characterizing the location, moderately and softly spicy making it typical, fruit tones are developed with aging;
- Volumetric spirit content – no less than 12 %;
- Concentration of finished extract mass – no less than 22 g/l;
- Sugar content – no more than 4 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

"Kardenakhi" white fortified shall satisfy the following requirements:

- Color – light golden to dark amber;
- Aroma and taste – full, harmonic, having aroma characterizing the location, taste of honey;
- Volumetric spirit content – no less than 18 ( $\pm 0,5$ ) %;
- Concentration of finished extract mass – no less than 18 g/l;
- Sugar content – no more than 10 ( $\pm 0,5$ ) g/l;
- Titrated/ Volatile acidity – no less than 4 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

### 4. SPECIFIC ZONE AVAILABLE AREAS

The micro-zone Kardenakhi is located in Gurjaani region, on administrative territory of the village Kardenakhi, inclined on the 3-4° lower exposition of Tsiv-Gombori Range North-Eastern slopes, on the right bank of the River Alazani, on the coordinates – 41° 48' of Northern longitude and 45° 44' of Eastern latitude, at 350-750 m above sea level. The plots are placed between the Alazani channel and the highway, between the administrative borders of villages: Bakurtsikhe and Anagi.

### 5. VINE VARIETIES

Wine "Kardenakhi" shall be prepared from the grapes of Rkatsiteli, the vintage takes place in the micro-zone Kardenakhi. It is permitted to use about 15% of Kakhuri Mtsvane and Khikhvi, vintage takes place in the same micro-zone.

### 6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE

The micro-zone Kardenakhi vineyards for wine "Kardenakhi" shall be situated on 350-750 m above sea level.

- Distance between the rows in the vineyards – 1-3 m;
- Distance between the vines in the row – 0.8-1.5 m;
- Height of stem – 60-90 cm;
- Shape of pruning – one-sided or Georgian two-sided or free.

Vine cultivation, shape and pruning, pests and diseases control, and soil treatment, fertilization, and other operations, shall be provided according to agro-technical activities selected by wine-makers.

**7. GRAPE MATURITY, VINTAGE, TRANSPORTATION:**

- "Kardenakhi" shall be produced only with ripe grapes.
- Sugar content shall be no less than 20%, at the vintage.
- Grapes transportation is permitted only with wooden or plastic boxes, with bodyworks made of stainless steel or painted with special colour.
- Usage of polyethylene packages and/or bags is not allowed.
- The grapes shall be protected from dirtying at the transportation.

**8. VINTAGE AND WINE PRODUCTION**

Vintage on 1 ha vineyard shall be:

- 10 tons for Rkatsiteli;
- 8 tons for Kakhuri Mtsvane.

Wine production shall be no more than:

- 650 liters – from 1 ton grapes;
- 6500 liters – from 1 ha vineyard for Rkatsiteli;
- 5200 liters – from 1 ha vineyard for Kakhuri Mtsvane.

**9. GRAPE PROCESSING, WINEMAKING AND BOTTLING**

Grapes Rkatsiteli and Kakhuri Mtsvane for producing wine "Kardenakhi" shall be only from the vineyards cultivated in the micro-zone Kardenakhi.

Grapes processing and winemaking shall be provided exclusively inside of Kakheti, bottling is permitted outside Kakheti, but only on the territory of Georgia.

At the same time, the grapes can be got from the micro-zone Kardenakhi and the wine can be withdrawn from Kakheti viticulture zone only under strict accounting and control.

"Kardenakhi" amber is made by alcoholic fermentation of must ("chacha" with whole quantity of vine stoves), exceptionally in the qvevri (wine jar). After fermentation the qvevri is filled with the same wine and stayed on the must until 1 February of the next year.

"Kardenakhi" white fortified is made by adding of grape spirit on fermenting must or grape juice. At the production or blending it is permissible to add therein grape spirit, dry wine, grape juice with 16% spirit, grape juice, or its concentrate.

Grape alcohol, dry wine, grape juice preserved in alcohol, grape juice or concentrate thereof usage is permissible at fortified "Kardenakhi" production and blending.

"Kardenakhi" shall be represented on consumer market only packed in the consumer vessels.

**10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA**

**CLIMATE** – The formation of weather in the micro-zone is caused by atmospheric processes developed in subtropical and moderate areas and moved from the East and West longitudes. The climate in the micro-zone is moderately humid, with hot summer and mild winter. The direction of Alazani Gorge has great importance. Cold air masses move from the North-West to South-East on the foothills of the Northwest slopes of Tsvi-Gombori Range and the gorges, from high tops of Kakheti Caucasus glaciers.

Annual duration of sunshine in the micro-zone Kardenakhi is 2154 hours. During the vegetation period the sunshine duration is 1589 hours.

The average annual air temperature of the micro-zone is  $- +12,5^{\circ}\text{C}$ , the coldest month is January  $- +1,0^{\circ}\text{C}$ , of the warmest months - July and August are closer to each other and is  $+23,6^{\circ}\text{C}$ .

Air temperature average annual absolute minimum is  $-10^{\circ}\text{C}$ , and once in 10 years can fall to  $-15^{\circ}\text{C}$ .

Air temperature average annual absolute maximum is +35°C, absolute maximum is +38°C.

Sustainable transition to the average daily temperature of 10°C (the start of active vine vegetation period) began from 5.IV and falling down – in the autumn (3.XI). The period of average daily temperature above 10°C continues 211 days. The sum of active temperatures is 3920°C during this period.

The annual sum of atmospheric precipitations is 770 mm, and 585 mm – 76% of annual amount during the vegetation period. Maximum of precipitations can be in May (132 mm) and minimum in January (31). The precipitations distribution in accordance of seasons is following: the most of them (32-32%) occurs in the spring and summer, relatively less – in the autumn (23%) and winter (13%).

Annual relative air humidity is 72%, and 70% in the vegetation period. Relative humidity reaches its maximum in the end of autumn (80%) and first half of winter (78-76%), relatively less – in the summer (July and August).

The snow cover is created in the mid-December, melting – in the first decade of March. The number of snowy days is 24 in average, per year, in most years snow cover is unsustainable.

First frosts are begun from 25 November. Once in 10 years it may take place at the end of October, which doesn't damage green organs of vine. The last frosts of spring are stopped in the last decade of March, and may be continued till 15 April once in 10 years.

The micro-zone is located in high intensity hailing zone. The number of hailing days is equal to 2.9, per year. Hail during the year is more frequent in May-June (2,1 days). In some years it is possible to be 5-6 hailing days.

There is mostly prevailing the South-Western (33%) and Western (18%) winds. Other direction winds have less repetition.

The average annual wind speed is 1,7 m/s, in the specific zone, and doesn't exceed this index as in warm period of year, as in cold.

Strong windy days amount in specific zone is small. According to the strength of winds, this part of Alazani Gorge belongs to the III group.

According to the average multi-year data, the average annual air temperature is 10°C. Once in 10 years, falling of temperature below 15°C is expected only in short duration.

On the soil surface, which is humus-carbonated, the average annual temperature is 15 ° C. In the July-August the average surface temperature is the highest and reaches 30°C. In the coldest month – January it is no less than 0°C. The average maximum temperature in August is 52°C and in July – 53°C, the average minimum temperature in winter months is between -3 – - 5°C.

The total number of cloudy days (8-10 points) per year is approximately 110-120. Annual number of cloudy days in the cold period (XI-III) during five months is 59, and in the warm period (IV-X) – i.e. per seven months is 61. During the year cloudy days are less (5-6 days) in the July-August, and more (10-12 days) in March-April. The total number of clear days (0-2 points) according to common cloudy days is 45. Clear days are mostly from July to September.

**SOIL** – Soil producing rocks are consisted with deluvial-proluvial carbonated loamy-clay and stony layers. The area is about 345 hectares. There are 11 types of brown and 1 of deluvial soils.

First variety of soil is brown, very thick, clay in the North part of the plot "Guli Tsarapi". Profile thickness is 90-100 cm and of humus layer is 75-75 cm.

Second variety of soil is brown, very thick, somewhere leptosol and stony, light clay is presented on the most Western part of the plot "Guli Tsarapi" and as small contours – in the plot "Akhoebi". Profile thickness is 95-105 cm and of humus layer is 70-80 cm.

The 3<sup>rd</sup> variety of soil is brown, very thick, superficially slightly leptosol and light clay is represented as several contours of the plot "Guli Tsarapi". Profile thickness is 90-100 cm and of humus layer is 65-75 cm.

The 4<sup>th</sup> variety of soil is brown, very thick, superficially slightly leptosol and stony, heavy loamy and light

clay are presented as several contours of the plot "Guli Tsarapi" and in the middle of plot "Akhoebi", in its large area. Profile thickness is 85-95 cm, and of humus layer is 70-80 cm.

The 5<sup>th</sup> variety of soil is brown, very thick, slightly leptosol, stony, and light clay are presented in all plots as small contours. Profile thickness is 80-90 cm, and of humus layer is 60-70 cm. Stone content is 3%.

The 6<sup>th</sup> variety of soil is brown, very thick, slightly leptosol and slightly stony, heavy loamy and light clay are presented in the middle line of plot "Akhoebi". Profile thickness is 85-95 cm, and of humus layer is 60-70 cm.

The 7<sup>th</sup> variety of soil is brown, very thick, moderately leptosol and stony, heavy loamy and light clay are presented in the small part of the plot "Guli Tsarapi". Profile thickness is 90-100 cm, and of humus layer is 50-60 cm, 5-20 cm diameters stone content is 20%.

The 8<sup>th</sup> variety of soil is brown, moderately and very thick, somewhere slightly leptosol, heavy loamy and light clay are presented in the West and East parts of plot "Akhoebi". Profile thickness is 60-80 cm, and of humus layer is 50-60 cm.

The 9<sup>th</sup> variety of soil is brown, moderately and very thick, slightly leptosol and stony, heavy loamy and light clay are presented in the middle part of plot "Akhoebi". Profile thickness is 60-90 cm, and of humus layer is 50-60 cm.

The 10<sup>th</sup> variety of soil is brown, moderately thick, moderately leptosol and slightly stony, heavy loamy are presented in the North and South parts of the plot "Akhoebi". Profile thickness is 60-80 cm, and of humus layer is 50-60 cm. Stone content is 4%.

The 11<sup>th</sup> variety of soil is brown, moderately thick, moderately leptosol and stony, heavy loamy and light clay are presented in the South part of the plot "Guli Tsarapi". Profile thickness is 60-70 cm, and of humus layer is 50-60 cm.

The 12<sup>th</sup> variety of soil is deluvial, very thick, moderate leptosol and slightly stony, heavy loamy are presented in the South part of the plot "Guli Tsarapi". Profile thickness is 110-120 cm, and of humus layer is 80-90 cm.

Soil mechanical content is mostly loamy and light clay, wherein physical clay (<0.01) fraction varies in wide range and is between 20,0-69,4%. Humus content in the 4<sup>th</sup> and 5<sup>th</sup> varieties of soils in trenching layers (0-60 cm) is moderate or small (2,04-4,91%) and of other varieties of soils is small – no more than 2,95%. Common nitrogen is in small content – 0,067-0,128%, hydrolyzed nitrogen content is high in the 4<sup>th</sup> and 6<sup>th</sup> varieties soils all analyzed cuts plough layers (0-25cm) – 10,56-13,89 mg in 100 g soil. In other varieties trenching layers its content is low to 5,00 mg in 100 g soil. Content of soluble phosphorus in all varieties of soils is 3,0-29,0 mg in 100 g soil, and represented as a trace bellow. Changeable potassium content is high – 28, 0-90,4 mg in 100 g soil everywhere in plough layers, and is decreased bellow. Calcium carbonate content in soil profiles varies in wide range, and is increased bellow – 2,0-44,0%. Soil area reaction (pH) is slightly and moderately alkaline – 7,2-8, 2.

**HUMAN FACTOR** – Winemaking by the Kakhetian technology in qvevri (wine jar) began in Georgia 8 thousand years ago and this tradition is still continuous. The Georgian man has elaborated and improved winemaking methods during this long period. Thus, the main creators of Kakhetian technology winemaking are the Georgian people who not only have created this unique rule, but, figuratively speaking, rather carried it in their bosom and saved it from the vicissitudes of life that befell this little country in the course of time.

Special attention was paid to the Kakhetian method of winemaking in the Soviet period. . In parallel with planting new vineyards and building new wineries, in these wineries powerful qvevri households were created in Shroma, Gurjaani, Kardenakhi, Tsnori, Tibaani, Khashmi, Maiakovski, Zestaponi, etc. In the 1970s the total capacity of qvevri households exceeded 1 680 000 dl.

Thorough research of vine and wine phenolic compounds was conducted by Georgian scientists – Academician S. Durmishidze and Professors M. Bokuchava and G. Beridze. Prof. G. Beridze, Bikenti

Siradze, Esmā Sesiashvili and other winemaker-scientists made a great contribution to the development and improvement of traditional Kakhetian technology.

Establishing of households based on market economy has changed many things in our country. New vineyards were cultivated with the excellent Georgian varieties, being oppressed in the Soviet times, new technics and technologies have been introduced and our wine production has been represented on totally new markets.

The Georgian traditional method of winemaking in qvevri was granted with the intangible cultural heritage status by the UNESCO in 2013, which indicates the uniqueness of this method and is a message to the whole world that wine is a part of the ancient Georgian culture. It was the crown of recognition of the traditional Georgian winemaking method in qvevri, which gave new stimulus to implement this winemaking method in this country and laid foundation for its introducing onto different European countries.

As regards fortified "Kardenakhi", production of fortified wines never was traditional in Georgia. Their production actually was implemented and developed in the Soviet period (1926). The share of fortified wines in the 1980s was 90% of the total volume of wine production in the USSR, and in Georgia – more than 65%.

It should be mentioned that fortified and dessert wines in Georgia have always been characterized with high quality. Fortified wine "Kardenakhi", which has been produced since 1926, is one of the best among Georgian portweine-type wines; it won 8 gold medals at international competitions, where it was a worthy rival of the famous Portuguese high quality wines.

Geographical location of the micro-zone Kardenakhi, its regional climate: mild winter and hot summer, moderate amount of precipitations, diversity of soils, grape variety special features and local centuries-old tradition of viticulture and winemaking define the high reputation and organoleptic features of wine "Kardenakhi".

## 11. SPECIAL LABELING RULES

With Latin font – KARDENAKHI  
Protected Designation of Origin and/or PDO

Cyrillic font – КАРДЕНАХИ  
Защищённое наименование места происхождения

## 12. ACCOUNTING AND NOTIFICATION

Accounting and notification of production and storage technological processes of "Kardenakhi" is carried out, in accordance with the rules established by the legislation of Georgia.

## 13. MAIN CONTROLLABLE POINTS

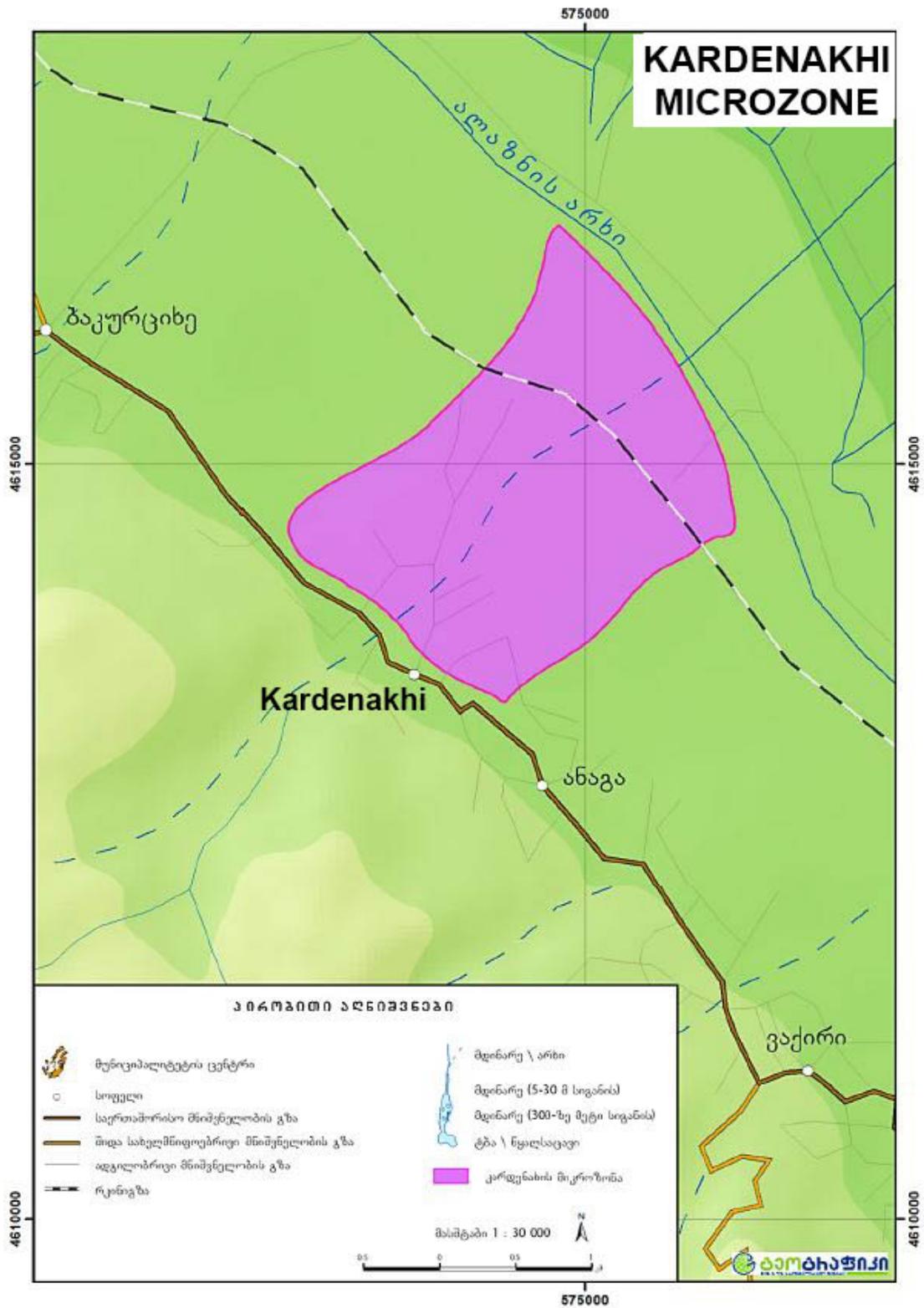
During control of the PDO wine "Kardenakhi" production process the producer shall satisfy the requirements established by LEPL National Wine Agency, and shall comply with the following parameters:

Main Controllable Points	Evaluation Methods
1	2
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
Vintage and transportation	Vintage journal
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal

1	2
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records

**14. CONTROL BODY OF PRODUCTION**

State control for observance of production specification and lawful usage of the appellation of origin PDO shall be carried out by LEPL National Wine Agency, according to the rules established by the legislation of Georgia.



## TIBAANI

### 1. NAME: "TIBAANI"

### 2. ADDITIONAL SIGNS:

### 3. TYPE, COLOR AND MAIN REQUIREMENTS:

"Tibaani" is amber sec (dry) it shall satisfy the following requirements:

- Color – dark amber to straw;
- Aroma and taste – with body, energetic, extracted, velvet, having aroma characterizing the location, moderately and softly spicy, making it typical, fruit tones are developed with aging;
- Volumetric spirit content – no less than 12 %;
- Concentration of finished extract mass – no less than 22 g/l;
- Sugar content – no more than 4 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

### 4. SPECIFIC ZONE AVAILABLE AREAS

The micro-zone Tibaani is located in Inner Kakheti, on the Eastern part of right side of Alazani Gorge, on the South-Eastern lowland of Tsiv-Gombori Range, on the coordinates – 41°35' of Northern longitude and 46°00' of Eastern latitude, at 350-550 m above sea level.

The micro-zone includes the following villages: Tibaani, Kvemo Machkhaani, Jugaani and Dzveli Anagi.

### 5. VINE VARIETIES

Wine "Tibaani" shall be prepared from the grapes of Rkatsiteli, vintage takes place in Tibaani micro-zone. It is permitted to use about 15% of Kakhuri Mtsvane and Khikhvi, vintage takes place in the same micro-zone.

### 6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE:

- The micro-zone Tibaani vineyards for wine "Tibaani" shall be situated on 350-550 m above sea level.
- Distance between the rows in the vineyards – 1-3 m;
- Distance between the vines in the row – 0.8-1.5 m;
- Height of stem – 60-90 cm;
- Shape of pruning – one-sided or Georgian two-sided or free

Vine cultivation, shape and pruning, pests and diseases control, and soil treatment, fertilization, and other operations, shall be provided according to agro-technical activities selected by wine-makers.

### 7. GRAPE MATURITY, VINTAGE, TRANSPORTATION:

- "Tibaani" shall be produced only with ripe grapes.
- Sugar content shall be no less than 19%, at the vintage.
- Grapes transportation is permitted only with wooden or plastic boxes, with bodyworks made of stainless steel or painted with special colour.
- Usage of polyethylene packages and/or bags is not allowed.
- The grapes shall be protected from dirtying at the transportation.

## 8. VINTAGE AND WINE PRODUCTION:

Vintage on 1 ha vineyard shall be:

- 10 tons for Rkatsiteli;
- 8 tons for Kakhuri Mtsvane.

Wine production shall be no more than:

- 650 liters – from 1 ton grapes;
- 6500 liters – from 1 ha vineyard for Rkatsiteli;
- 5200 liters – from 1 ha vineyard for Kakhuri Mtsvane.

## 9. GRAPE PROCESSING, WINEMAKING AND BOTTLING

Grapes for producing wine "Tibaani" shall be only from the vineyards cultivated in the micro-zone Tibaani.

Grapes processing and winemaking shall be provided exclusively inside of Kakheti, bottling is permitted outside Kakheti, but only on the territory of Georgia.

At the same time, the grapes can be got from the Tibaani micro-zone and the wine can be withdrawn from Kakheti viticulture zone only under strict accounting and control.

"Tibaani" is made by alcoholic fermentation of must ("chacha" with whole quantity of vine stoves), only in the qvevri (wine jar). After fermentation the qvevri is filled with the same wine and stayed on the must until 1<sup>st</sup> February of the next year.

"Tibaani" shall be represented on consumer market only packed in the consumer vessels.

In the production of wine "Tibaani" it is permissible to use only the operations, materials and substances that are permitted by the legislation of Georgia.

## 10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA

**CLIMATE** - The climate in the micro-zone is moderately subtropical, with hot summer and mild winter, with double minimum of precipitations per year.

The average annual air temperature of the viticulture zone is quite high – +12,4°C, the warmest month average temperature is 24,2°C, and of the coldest month is close to +1,0°C.

Sustainable transition to the average daily temperature of 10°C takes place in first decade of April (5.IV) and falling down in the beginning of November (3.XI). The period of average daily temperature above 10°C continues 212 days. The sum of active temperatures is 4100°C during this period.

Annual duration of sunlight in the Tibaani micro-zone varies between 2200-2300 hours. During the vegetation period the sunshine ranges between 1500-1700 hours.

Amount of precipitations is averagely less than in Gare Kakheti situated in the West relatively to this region. The annual sum of atmospheric precipitations is 636 mm. Maximum of precipitations can be in May (105 mm) and minimum in December and January (25-26 mm), and at the vegetation period their quantity is 464mm.

The number of hailing days at the vegetation period (IV-X) is equal to 1,6. Hail during other months of year is rarely occurred. It is relatively frequent in May (0,7 days).

The sum of precipitation that comes during the warm periods of the year (IV, V, VI and X) prevails their evaporation. Therefore, in these months the vineyard does not require watering.

In July and August hydrothermal coefficient is less than 1 i.e. the number of precipitations is less than its evaporation and the drought has taken place. The duration of the drought period is approximately 72 days. The drought begins in the first pentalogy of July and ends in mid-September.

In Inner Kakheti, the winds are blowing along the Alazani Gorge, mainly there prevailing the North-Western (29%), Western (19%), Eastern (17%) and North-Eastern (10%) winds.

The average annual wind speed in the specific zone is no more than 1,0 m/s, because it belongs to windy zone. In accordance of this reason, 4 row windstorm forest strips shall be planted contrary to the North-Western and Eastern winds.

The last frosts of spring stop in the last days of March (31.III), and first autumn frosts start from second decade of November. Duration of days without frosts is equal to 225.

Air temperature average annual absolute minimum is -11, -12°C, and once in 10 years can fall to -16°C, and even less than -17°C. Air temperature absolute minimum rarely can be -24, -25°C.

**SOIL** – Viticulture zone is located in on the ends of the North-Eastern slopes of the South-Eastern part of Tsiv-Gombori Range and borders the Southern part of Alazani Gorge creating trails and slopes slightly inclined towards the North-Eastern direction on the right terrace of the River Alazani.

In the extreme Southern part there are presented black soil, and in the Northern and Western parts – the alluvial and deluvial-proluvial soil varieties that different from each other as with profile thickness as mechanical content and leptosol grade.

Said soils profile thickness mostly varies between 0,8-1,5 m, and of active humus layer varies between 40-60 cm.

Soil mechanical content is mostly heavy loam and light clay, in some places (mainly proluvial) it is moderately and slightly loam. Physical clay (<0.01) fraction varies between mostly in black, alluvial and deluvial soil, and 20-45% – in proluvial. Calcium carbonate content is small and varies between 2-20%, and more in some areas. Soil area reaction (pH) is moderately alkaline – 7,4-8, 2.

Humus content in the black soil profile varies within 4,5-0,5%, and 2,5-0,3% – in alluvial, deluvial and proluvial soils, and 3,0% as exception.

Hydrolytic nitrogen content is mainly in small amount and varies within 6,0-2,5 mg in 100 g of soil. In some cases it reaches 7-10 mg. Soluble phosphorus content is in medium and small amount – 5.0-1.5 mg. In some places it is represented as a trace.

Sum of absorbed bases (Ca+Mg) is characterized with average or high amount – 20,0-54,0 milliequivalent and even more in some cases in 100 g soil, in active layer. Much more percent from sum comes onto absorbed calcium, magnesium is in much less content, but exists in quite essential amount.

**HUMAN FACTOR** – Winemaking by the Kakhetian technology in qvevri (wine jar) began in Georgia 8000 years ago and this tradition is still continuous. The Georgian man has elaborated and improved winemaking methods during this long period. Thus, the main creators of Kakhetian technology winemaking are the Georgian people who not only have created this unique rule, but, figuratively speaking, rather carried it in their bosom and saved it from the vicissitudes of life that befell this little country in the course of time.

Thorough research of vine and wine phenolic compounds was conducted by Georgian scientists – Academician S. Durmishidze and Professors M. Bokuchava and G. Beridze. Prof. G. Beridze, Bikenti Siradze, Esmā Sesiashvili and other winemaker-scientists made a great contribution to the development and improvement of traditional Kakhetian technology.

Special attention was paid to the Kakhetian method of winemaking in the Soviet period. In parallel with planting new vineyards and building new wineries, in these wineries powerful qvevri households were created – in Vachnadziani, Gurjaani, Kardenakhi, Tsnori, Tibaani, Khashmi, Bagdati, Zestaponi, etc. In the 1970s the total capacity of qvevri households exceeded 1 680 000 dl.

Establishing of households based on market economy has changed many things in our country. New vineyards were cultivated with the excellent Georgia varieties, being oppressed in the Soviet times, new technics and technologies have been introduced and our wine production has been represented on totally new markets.

The Georgian traditional method of winemaking in qvevri was granted with the intangible cultural heritage status by the UNESCO in 2013, which indicates the uniqueness of this method and is a message to the

whole world that wine is a part of the ancient Georgian culture. It was the crown of recognition of the traditional Georgian winemaking method in qvevri, which gave new stimulus to implement this winemaking method in this country and laid foundation for its introducing into different European countries.

In the words of famous Italian winemaker and scientist J. Dalmaso, "The winemaking method, which is called the Kakhetian method and is essentially different from the European technology, has once more convinced us that this country had been known from the past for its high quality wines and will remain in the future as the creator of this progressive direction",

Geographical location of micro-zone Tibaani, its characteristic regional climate: mild winter and hot summer, moderate amount of precipitations, diversity of soils, special features of grape variety local, centuries-old tradition of viticulture and winemaking define the high reputation and organoleptic features of wine "Tibaani".

## 11. SPECIAL LABELING RULES

With Latin font – TIBAANI  
Protected Designation of Origin and/or PDO

Cyrillic font – ТИБААНИ  
Защищённое наименование места происхождения

## 12. ACCOUNTING AND NOTIFICATION

Accounting and notification of production and storage technological processes of "Tibaani" is carried out, in accordance with the rules established by the legislation of Georgia.

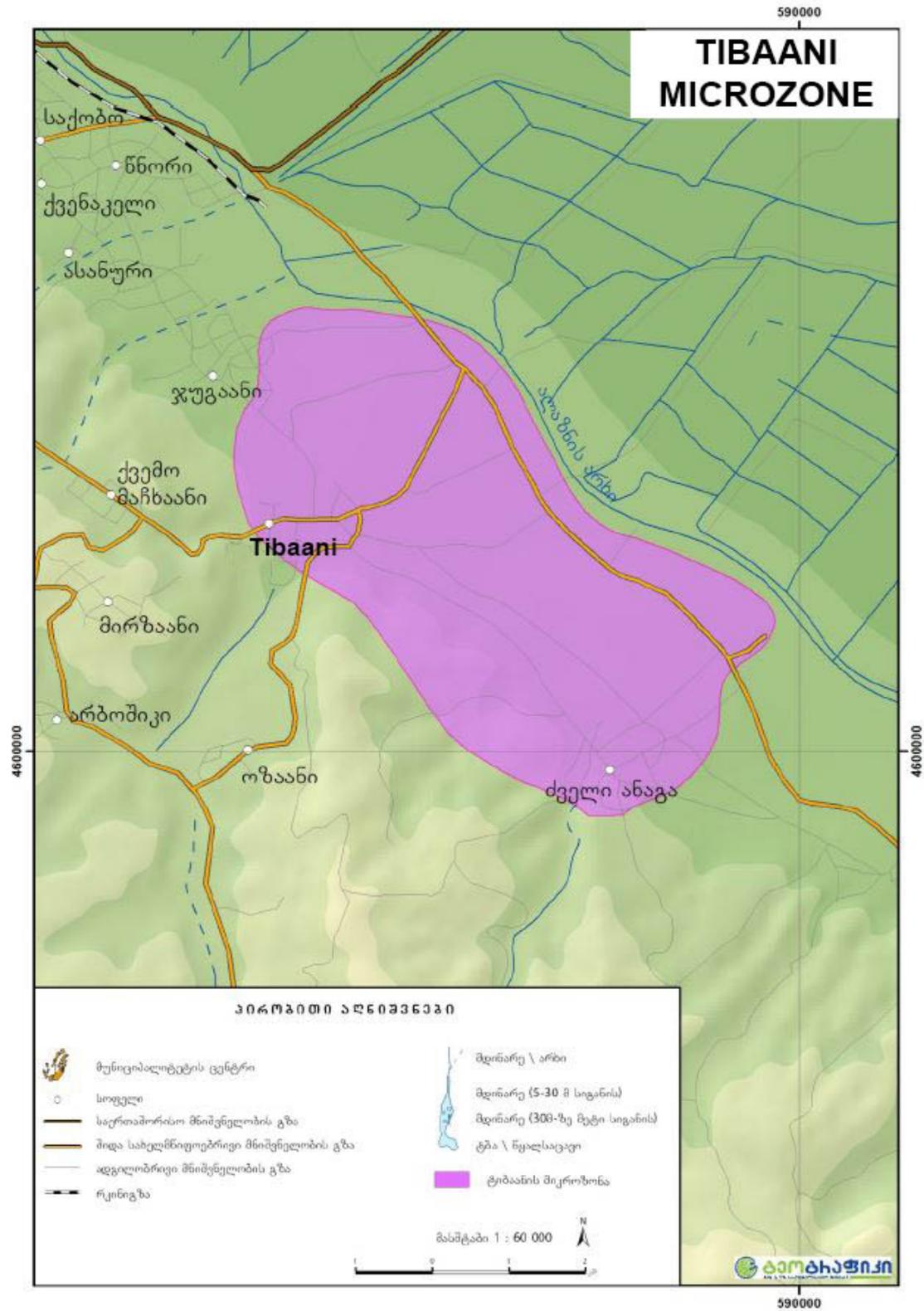
## 13. MAIN CONTROLLABLE POINTS

During control of the PDO wine "Tibaani" production process the producer shall satisfy the requirements established by LEPL National Wine Agency, and shall comply with the following parameters:

<b>Main Controllable Points</b>	<b>Evaluation Methods</b>
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
Vintage and transportation	Vintage journal
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records

## 14. CONTROL BODY OF PRODUCTION

State control for observance of production specification and lawful usage of the appellation of origin PDO shall be carried out by LEPL National Wine Agency, according to the rules established by the legislation of Georgia.



## TVISHI

### 1. NAME: "TVISHI"

### 2. ADDITIONAL SIGNS:

### 3. TYPE, COLOR AND MAIN REQUIREMENTS:

"Tvishi" is white demi-doux (hemi-sweet) wine.

- "Tvishi" amber sec (dry) shall satisfy the following requirements:
- Color – light straw to straw;
- Aroma and taste – perfect, delicate, harmonic, having fruit tones and pleasant sweetness characterizing the location;
- Volumetric spirit content – no less than 10,5 %;
- Concentration of finished extract mass – no less than 16 g/l;
- Sugar content – no more than 18-45 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

"Tvishi" white fortified shall satisfy the following requirements:

- Color – light golden to dark amber;
- Aroma and taste – full, harmonic, having aroma characterizing the location, honey;
- Volumetric spirit content – no less than 18 ( $\pm 0,5$ ) %;
- Concentration of finished extract mass – no less than 18 g/l;
- Sugar content – no more than 10 ( $\pm 0,5$ ) g/l;
- Titrated/ Volatile acidity – no less than 4 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

### 4. SPECIFIC ZONE AVAILABLE AREAS

The micro-zone Tvishi is located in Lechkhumi, on administrative region Tsageri, on the right bank of the River Rioni, on the coordinates – 42°31' of Northern longitude and 42°54' of Eastern latitude.

The micro-zone includes the villages: Tvishi and Alpana.

### 5. VINE VARIETIES

Wine "Tvishi" shall be prepared from the grapes of Tsoolikouri, vintage takes place in Tvishi micro-zone. Usage of other varieties is prohibited.

### 6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE:

- The micro-zone Tvishi vineyards for wine "Tvishi" shall be situated on 400-600 m above sea level.
- Distance between the rows in the vineyards – 1-2,5 m;
- Distance between the vines in the row – 0.8-2.5 m;
- Height of stem – 60-90 cm;
- Shape of pruning – one-sided or Georgian two-sided or free.

Vine cultivation, shape and pruning, pests and diseases control, and soil treatment, fertilization, and other operations, shall be provided according to agro-technical activities selected by wine-makers.

### 7. GRAPE MATURITY, VINTAGE, TRANSPORTATION:

- "Tvishi" shall be produced only with ripe grapes;

- Sugar content shall be no less than 22%, at the vintage;
- Grapes transportation is permitted only with wooden or plastic boxes, with bodyworks made of stainless steel or painted with special colour;
- Usage of polyethylene packages and/or bags is not allowed;
- The grapes shall be protected from dirtying at the transportation.

## 8. VINTAGE AND WINE PRODUCTION

Vintage on 1 ha vineyard shall be no more than 10 tons.

Wine production shall be no more than:

- 650 liters – from 1 ton grapes;
- 6500 liters – from 1 ha vineyard.

## 9. GRAPE PROCESSING, WINEMAKING AND BOTTLING

Grapes for producing wine "Tvishi" shall be only from the vineyards cultivated in micro-zone Tvishi.

Grapes processing, winemaking and bottling is permitted outside the micro-zone, but only on the territory of Georgia.

At the same time, the grapes and/or wine can be got from the Tvishi micro-zone and the wine can be withdrawn from Kakheti viticulture zone only under strict accounting and control.

"Tvishi" is made by alcoholic fermentation of gravity grape juice.

In the production of wine "Tvishi" it is permissible to use only the operations, materials and substances that are permitted by the Georgian legislation.

"Tvishi" shall be represented on consumer market only packed in the consumer vessels.

## 10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA:

**CLIMATE** - The climate in the micro-zone is humid, with cold winter and long-term warm summer. Annual duration of sunlight in the Tvishi micro-zone varies between 1900-2000 hours. During the vegetation period the sunshine continues within 1400-1500 hours. The average annual air temperature of the micro-zone is +14,2°C, the warmest month – August average temperature is 22,2, and of the coldest month – January – no less than +0,5°C. Sustainable transition to the average daily temperature of 10°C takes place in first decade of April (7.IV), and falling down in first decade of November (2.XI). Thus, duration of vegetation period continues 209 days.

The sum of active temperatures averagely is 3700°C, even more than 3800°C once in 4 years.

The annual sum of atmospheric precipitations is 1095 mm, the precipitations that comes during August is approximately equal of their evaporation. Therefore, in these years the vineyard requires watering in summer time.

During the vegetation period the hailing days number is 0,8 (Tsageri). May and June (0,3-0,3 days) are the months with the most hailing time during the year.

The winds are blow along the Gorge. There is prevailing the South-Western (22%) and Southern (17%) and North-Eastern (12%) winds and perpendicular therefrom – the Northern (14%) and North-Eastern (12%) winds. Other directional winds have less repetition. The average annual wind speed in the specific zone is 1,0 m/s. such zones are belong to weak wind III group regions.

**SOIL** – "Tvishi" production micro-zone is represented in the Western Georgia, in particular – Racha-Lechkumi mountain area located on the right side of the River Rioni. Relief of these places is relatively slightly and moderately inclined slopes of various exposures with small flat terraces. In general, inclination is mainly directed towards the South-East and East.

There are mainly represented humus-carbonated soils with various varieties different from each other as with profile and the humus layer thickness as with mechanical content, leptosol and stone intensity. Deluvial and grey soils with their varieties are represented in small area.

Humus-carbonated soils mainly presented in mountain area are characterized with profile thickness, leptosol-stone intensity and mechanical composition diversity. Profile thickness is mainly varies within 50-80 cm, and active humus layer is 20-40 cm. In some areas wherein the relief is characterized with great inclination and erosion processes the soils have small thickness – less than 40-50 cm, and active humus layer does not exceed 15-20 cm.

They are developed mainly on lime clays and failed limestone material. Soil mechanical content is mostly heavy loam and clay, wherein physical clay (<0.01mm) fraction varies between 45-75%, and rarely loam with 35-45% clay. Humus content is small 2,5-1,5% in soil active layer and gradually decreases bellow. High-efficient complex fertilizer (NPK) content is small, as well. Hydrolyzed nitrogen content is no more than 6,0 mg in 100 g soil. The soil is poor with soluble phosphorus content and it is represented as a trace.

Changeable potassium content is small too – no more than 10 mg. Calcium carbonate content is in average or small amount, and mostly varies within 2-20%. Soil area reaction (pH) is slightly and moderately alkaline and varies within 7,3-8, 2.

Small area is represented with deluvial soils mainly represented as spots on the lower part of the slopes. These soils are characterized with relatively deep thickness (70-100 cm), and small content of carbonates, and some sections are generally free from carbonates and they are exist in small amount bellow. In accordance with other characteristics, humus and high-efficient complex fertilizer (NPK) contents are small as humus-carbonated soils.

Relatively small area is also represented with grey soils characterized mostly with medium and small thickness. Soil thickness is mainly varies within 40-80 cm, and the active humus layer is within 20-30 cm, with the mechanical composition it is heavy loam and clay, and the content of physical clay varies mostly within 50-70%. Humus content is small 2,5-1,5% in soil active layer and gradually decreases bellow. Soils are free from carbonates, and area reaction (pH) is neytral and varies within 6,2-7,16,2-7,1. High-efficient complex fertilizer (NPK) content is small as in other varieties of soils.

**HUMAN FACTOR** – "Tvishi" has been produced since 1952, after building of Tvishi winery. Building of winery in Tvishi and the production of this wonderful semi-sweet wine became possible after the famous events of 1942, and development and implementation of naturally semi-sweet wines production technology.

Geographical location favorable for winemaking, microclimate created on the right bank of the River Rioni, diversity of soils, aroma and taste of grape variety Tsoolikouri manifested in this area and rule of its making define special features of wine "Tvishi".

## 11. SPECIAL LABELING RULES:

With Latin font – TVISHI  
Protected Designation of Origin and/or PDO

Cyrillic font – ТВИШИ  
Защищённое наименование места происхождения

## 12. ACCOUNTING AND NOTIFICATION

Accounting and notification of production and storage technological processes of "Tvishi" is carried out, in accordance with the rules established by the legislation of Georgia.

## 13. MAIN CONTROLLABLE POINTS

During control of the PDO wine "Tvishi" production process the producer shall satisfy the requirements established by LEPL National Wine Agency, and shall comply with the following parameters:

<b>Main Controllable Points</b>	<b>Evaluation Methods</b>
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
Vintage and transportation	Vintage journal
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records

#### **14. CONTROL BODY OF PRODUCTION**

State control for observance of production specification and lawful usage of the appellation of origin PDO shall be carried out by LEPL National Wine Agency, according to the rules established by the legislation of Georgia.



## KVARELI

### 1. NAME: "KVARELI"

### 2. ADDITIONAL SIGNS:

### 3. TYPE, COLOR AND MAIN REQUIREMENTS:

Wine "Kvareli" is red, sec (dry) wine, which shall satisfy the following requirements:

- Color – dark red;
- Aroma and taste – perfect, full, extracted, velvet, harmonised, with fruity tones developed with aging;
- Volumetric spirit content – no less than 11 %;
- Concentration of finished extract mass – no less than 22 g/l;
- Sugar content – 4 g/l;
- Titrated/ Volatile acidity – no less than 5 g/l;
- Other characteristics shall meet requirements provided by the legislation of Georgia.

### 4. SPECIFIC ZONE AVAILABLE AREAS

The micro-zone Kvareli is located in administrative territory of the village Kvareli, on the Southern slope of Caucasus branch, on the coordinates – 41° 30' of Northern longitude and 45° 50' of Eastern latitude, on left terrace of the River Alazani and bordering Southern foothills of Caucasus Mountain from the North side.

The micro-zone from city Kvareli Western direction includes the following villages: Shildi, Eniseli, Gremi and Shakriani middle and upper parts, situated on second terrace of the River Alazani, and from the Eastern – Patmasuri, Sanavardo, Kuchatani, Seri, Chantlis Kuri, ZInobiani, Akhalsopeli, Tkhilis Tskaro, Mtis Dziri, and mostly the part of territories of Gavazi and Balghojiani of the village Chikaani, till first terrace of the River Alazani.

### 5. VINE VARIETIES:

Wine "Kvareli" shall be prepared from the grapes of Saperavi, vintage takes place in the micro-zone Kvareli. Usage of other grape varieties is prohibited

### 6. VINEYARD CULTIVATION, SHAPE OF PRUNING AND CARE:

The micro-zone Kvareli vineyards for wine "Kvareli" shall be situated on 250-550 m above sea level.

- Distance between the rows in the vineyards – 1-3 m;
- Distance between the vines in the row – 0.8-1.5 m;
- Height of stem – 60-90 cm;
- Shape of pruning – one-sided or Georgian two-sided or free.

Vine cultivation, shape and puring, pests and diseases control, and soil treatment, fertilization, and other operations, shall be provided according to agro-technical activities selected by wine-makers.

### 7. GRAPE MATURITY, VINTAGE, TRANSPORTATION

"Kvareli" shall be produced only with ripe grapes:

- Sugar content shall be no less than 19%, at the vintage;
- Grapes transportation is permitted only with wooden or plastic boxes, with bodyworks made of stainless steel or painted with special colour;
- Usage of polyethylene packages and/or bags is not allowed;
- The grapes shall be protected from dirtying at the transportation.

## 8. VINTAGE AND WINE PRODUCTION:

Vintage on 1 ha vineyard shall be 10 tons.

Wine production shall be no more than:

- 650 liters – from 1 ton grapes;
- 6500 liters – from 1 ha vineyard.

## 9. GRAPE PROCESSING, WINEMAKING AND BOTTLING

Grapes for producing wine "Kvareli" shall be only from the vineyards cultivated in the micro-zone Kvareli. At that, adding 15% of Saperavi brought from outside of Kvareli borders, but situated in Kakheti is permitted.

Grapes processing and winemaking shall be provided exclusively inside of Kakheti, bottling is permitted outside Kakheti, but only on the territory of Georgia.

At the same time, the grapes can be got from the micro-zone Kvareli and the wine can be withdrawn from Kakheti viticulture zone only under strict accounting and control.

"Kvareli" is made by whole alcoholic fermentation of must.

"Kvareli" shall be represented on consumer market only packed in the consumer vessels.

In the production of wine "Kvareli" it is permissible to use only the operations, materials and substances provided by the legislation of Georgia.

## 10. LINK BETWEEN EXCLUSIVE QUALITY, REPUTATION AND GEOGRAPHICAL AREA:

**CLIMATE** – In the micro-zone Kvareli weather formation mainly is affected with air masses flow from the West and East, caused by the influence of high-mountain systems developed in subtropical and moderate areas. Wind speed is not great as a result of peculiarity of the gorge. The climate is moderately humid, with mild winter and warm long-term summer.

Main agro-climatic factors, such as sun radiation, the heat, the moderate summer temperature, humidity of the location, complexly create favorable conditions to receive Saperavi high quality product.

Air average annual temperature is 12.5°C, the average temperature of the warmest months VII-VIII is 23.6°C, and the coldest month – + 1,0°C. Depending on the multiyear data, annual absolute minimum temperature is -10, -11°C, and the absolute maximum is – 35°C. Extreme temperatures are – 23 and + 38°C.

In the spring the average day-night temperature has been increased above 10°C since 5 April. In the autumn it has been fallen below 10°C from 4 November, i. e. warm period is continued 212 days. Saperavi bud opening is begun in mid-April, flowering – in the end of May, grape maturity – in second half of August. Grapes technical maturation takes place at the end of September.

In the micro-zone Kvareli the sum of active temperatures (> 10°C) ranges within 4100-37000°C on 350-550 m above sea level.

In the micro-zone Kvareli the annual sum of atmospheric precipitations is 1070 mm, and 800 mm – in the vegetation period.

Annual air relative humidity is 72%. It is less (66-64%) in the summer months (June, July, August), and relatively more at the end of autumn (80%) and early winter.

Snow cover is created in the last decade of December, and continued till mid-March. Hailing days amount is in average 2,1 per year. May is the mostly hailing time of the year (0,9 days); In April, June and July, in each separately, the hail does not exceed 0.3 days.

**SOIL** – On the basis of existing materials and researches conducted by us in 2005, in the micro-zone is distinguished two varieties of alluvial, with nine sub-varieties and two types of deluvial, with five sub-varieties of soils.

1. Alluvial, free from carbonates, very thick, loam;
2. Alluvial, free from carbonates, very thick, slightly leptsol, loam;
3. Alluvial, free from carbonates, very thick, moderately leptsol, moderately and slightly loam;
4. Alluvial, free from carbonates, very thick, hard leptsol, loam;
5. Alluvial, slightly carbonated, very thick, loam;
6. Alluvial, slightly carbonated, very thick, slightly leptsol, loam;
7. Alluvial, slightly carbonated, very thick, moderately leptsol, loam;
8. Alluvial, free from carbonates, very thick, very moisture and boggy, clay and loam;
9. Alluvial, slightly carbonated, very moisture and boggy, loam and clay;
10. Deluvial, free from carbonates, very thick, loam;
11. Deluvial, free from carbonates, very thick, slightly leptsol, loam;
12. Deluvial, slightly carbonated, very thick, clay;
13. Deluvial, slightly carbonated, very thick, slightly leptsol, loam;
14. Deluvial, slightly carbonated, very thick, very moisture, clay.

First ten varieties of above-mentioned soils are alluvial soils created in Alazani second terrace, and are mainly characterized with flat relief, while 11<sup>th</sup>, 12<sup>th</sup>, 13<sup>th</sup> and 14<sup>th</sup> varieties are deluvial and presented on the Southern foothills bordering the Southern slopes, on 400-500 m above sea level, relief of the area creates trails slightly inclined from the South and South-West.

First ten varieties of alluvial soils are characterized with deep thickness and different to each other with the range of mechanical content, carbonate content, moisture and boggy. First seven varieties of soils therefrom are characterized with deep thickness of profile, which is mostly varies within 1-1.5 m, and active humus layer is 50-70 cm. They are characterized mostly with loamy mechanical content, in exceptional cases in some genealogical horizons are changed to slightly clay or moderately loamy and sandy. Furthermore, above-mentioned soils are different from each other with grade of leptosol and stone content. Leptosol and stony soil is mostly occurred on the new terraces and nearby banks of rivers. The 8<sup>th</sup> and 9<sup>th</sup> varieties of soils are characterized with great moisture and bog, which are mainly represented in small areas, in lowlands and along flowing waters. With mechanical content, these soils are mostly clay and loamy.

Soil producing rocks in first nine varieties of soils are mainly of alluvial origin with stony-loamy and stony-sandy layers, consisting with destructed materials mostly brought from the Southern slopes of Caucasus, presented as black stone plates of sea-origin, with a high capacity of heat absorption and having some influence on soil temperature regime. This also provides the growth of grape sugar content and product quality.

The 10<sup>th</sup>-14<sup>th</sup> soils are deluvial that are presented on deluvial-proluvial originated loamy-sandy-rocky layers. These soils are characterized with deep thickness, as well – 80-150 cm, and active humus layer is 50-60 cm. Said soil varieties are different from each other with mechanical content, range of leptosol, content of carbonates and moisture. The 10<sup>th</sup>-11<sup>th</sup> soils are free from carbonates and have loamy mechanical content, exceptionally the 11<sup>th</sup> is slightly leptosol. The 12<sup>th</sup>, 13<sup>th</sup> and 14<sup>th</sup> are slightly carbonated, having loamy and clay content. Exceptionally the 13<sup>th</sup> is slightly leptosol and 14<sup>th</sup> is very moisture.

Based on the analyses data, said soils mechanical content is mainly loamy. In exceptional cases, they are characterized with slightly clay content. According to humus content, they are characterized with average index and in soil active layer, in 50-70 cm depth, it ranges within 5,5-2,5%, and below it is gradually decreased to 2,5-0,5%. Hydrolyzed nitrogen is mainly presented in small and medium amounts, and it is within 9,36-2,24 mg in 100 g soil. In most cases the soil is very poor with soluble phosphorous represented as a trace. The exchange potassium content is also low and it is within the range of 17,0-2,0 mg in 100 g. First, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 8<sup>th</sup>, 10<sup>th</sup> and 11<sup>th</sup> soil varieties do not contain calcium carbonates at all, and in the 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup>, 12<sup>th</sup>, 13<sup>th</sup> and 14<sup>th</sup> it is in small amount, and mostly within 0,2-5,0%. Soil area reaction (pH) is neutral and weak alkaline.

**HUMAN FACTOR** – In Kvareli viticulture and -winemaking fields developed in a different way as compared with Tsinandali, Napareuli and Mukuzani. Here the vineyards were not included in the Princes

Estates Department, and therefore, they were not affected by the positive influence playing a major role in the growth of the quantity and quality of these fields in the said estates. Despite the fact that viticulture and winemaking originated from ancient times, the field was still backward and mainly based on farming.

Industrial development of the field began in the 1920s following the foundation and development sectoral scientific centers in parallel to the development and strengthening of Soviet viticulture farms. At the end of the 1920s and early 1930s, the modern and well-equipped wineries were built in Kvareli ("Tsiteli Marani" (red cellar), Shilda and Akhalsopeli. The new wave of the field development was observable at the end of 1950s, as a result of which of the area of vineyards in Kvareli micro-zone increased in 3,5, times and at the end of the 1960s it reached 8700 hectares. New, productive, well-equipped wineries were built in Kvareli, Eniseli, Shilda and Chikaani, where the existing technologies were improved and new technologies were introduced systematically.

"Kvareli" has been produced since 1966 and received 3 gold and 2 silver medals.

Geographical location of micro-zone Kvareli, regional climate: mild winter and hot summer, moderate amount of precipitations, diversity of soils, special features of Saperavi grape variety characteristic only for that microzone and local centuries-old tradition of viticulture and winemaking define the unique organoleptic features of wine KVARELI, characteristic only of this wine.

## 11. SPECIAL LABELING RULES

With Latin font – KVARELI  
Protected Designation of Origin and/or PDO

Cyrillic font – КВАРЕЛИ  
Защищённое наименование места происхождения

## 12. ACCOUNTING AND NOTIFICATION

Accounting and notification of production and storage technological processes of "Kvareli" is carried out, in accordance with the rules established by the legislation of Georgia.

## 13. MAIN CONTROLLABLE POINTS

During control of the PDO wine "Kvareli" production process the producer shall satisfy the requirements established by LEPL National Wine Agency and shall comply with the following parameters.

Main Controllable Points	Evaluation Methods
Vineyard location	Cadaster map, control on the place
Area	Vineyard accounting magazine, cadaster
Vine variety	Vineyard accounting journal, control on the place
Cultivation methods	Journal of registration of Agrotechnical Measures, treating journal, control on the place
Vintage and transportation	Vintage journal
Grape harvest per ha	Vintage journal
Grape harvest in total	Vintage journal
Grape processing and winemaking	Grape receiving journal, grape processing journal, product turnover calculation journal, laboratory analysis journals, notifications, control on the place
Wine bottling, packaging and storage place and conditions	Bottling journal, journal for motion of ready product in the storehouse, laboratory analysis journals
Physico-chemical characteristics of the wine at winemaking, before and after bottling	Laboratory analysis journals
Organoleptic characteristics of the wine	Tasting commission protocols
Traceability	Technological and laboratory records



**OFFICIAL BULLETIN OF THE INDUSTRIAL PROPERTY**  
**SPECIAL EDITION**

**AMENDMENTS ON SPECIFICATIONS FOR**  
**GEORGIAN PDO WINES PRODUCTION**

RESPONSIBLE EDITION: S. Ebralidze  
EDITOR-IN-CHIEF: N. Bebrishvili  
EDITOR-TRANSLATOR: E. Gabunia  
COMPUTER LAYOUT: M. Ordenidze

---

მისამართი: ანტიოქიის ქ. №5, მცხეთა, 3300, საქართველო  
Address: Antiokia Str. №5, Mtskheta, 3300, GEORGIA  
ტელ.: (+995 32) 225 25 33  
Tel.:

[www.sakpatenti.org.ge](http://www.sakpatenti.org.ge)  
[info@sakpatenti.org.ge](mailto:info@sakpatenti.org.ge)