

## RESEARCH ARTICLE

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## Recent achievements on exploration and characterization of old local grapevine varieties in our country.

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### Abstract

The local varieties have an important value due to their high adaptability to local environmental conditions, diversity of productivity and quality potential. In the frame of the project TCP/ALB/3401 financed by FAO were surveyed 11 zones such as Dibër, Burrel, Shkodër, Malësi e madhe, Pukë, Pogradec, Korçë, Leskovik, Gjirokastër, Përmet, Tepelenë and there were discovered 45 old local varieties. Passport data and the ampelographical descriptions were performed according the OIV Descriptor List. Based on the primary survey 41 different cultivars were found and were registered in the database of the Albanian Gene Bank. They represent a significant part from the total number. 12 of them are rare varieties. Three of them present the biological resistance against pathogens. Analyses of the ampelographic features showed that old local studied varieties are characterized by polymorphism of the bunches, berries, as well as by some technological characteristics. These genotypes differ from each other by eco-geographic origin, their usages, resistance to abiotic factors and pathogens. The diversity of characters represents an important source for the future genetic improvement, the attractiveness of local products and the creation of the sustainable viticulture in our country.

**Key words:** grapevine, cultivar, genetic resources

### 1. Introduction

Albania has a long tradition in viticulture. Historical sources confirm that grapevines were spread and cultivated since a long time [9]. The long cultivation of grapevine, high diversity of relief and climate conditions have led that Albania to possess a great diversity of grape cultivars [3], [4]. This diversity consists of productive and qualitative potential, high adaptability to local soil, climatic factors and resistance to pest and diseases. Important initiatives to investigate and to preserve native genetic grape diversity have been carried out in our country with the support of native and foreign research projects [3]. As a result, some main regions of viticulture are explored, there are collected 106 accessions and it is established the National Collection [4]. However many rich localities and regions of Albania with the old local grapevine varieties have not been explored yet. In this context it is undertaken, in the frame of the project TCP/ALB/3401 financed by FAO the exploration of eleven zones in order to find and to collect the old local grapevines and characterization of the valuable findings genotypes. The characterization of native grapevine cultivars is the first step in their identification and an important contribution for the future improvements in grape breeding and genetic researches [1].

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## 2. Material and Methods

Based upon existing literature and previous experiences of scientific institutions dealing with viticulture, organization expeditions were realized with the aim of finding, marking and sampling all remain indigenous cultivars in main cultivation vine pools of Dibër, Burrel, Shkodër, Malësi e madhe, Pukë, Pogradec, Korçë, Leskovik, Gjirokastër, Përmet, Tepelenë. The cultivars explored are marked and fulfilled with passport dates. They are described in the field and there are obtained the samples for measurement and analyses [6],[7]. All the collected data together with photos were documented in an electronic register. Using the data there are identified the endangered cultivars. The characterization was carried out according Descriptors for Grapevine (*Vitis*.spp) and protocol proposed in the project COST FA 1003[7],[8]. Evaluation concerning the tolerance of pathogens were based by visual observation.

## 3. Results and Discussion (in two columns)

The interest for conservation of the old local grapevine in Albania is increased and the study contributes on the increasing of the localities explored on this aspect. During the exploration of eleven zones (table1) there were found 45 old local cultivars, which according to the grape usage classified 21 accessions for wine making, 20 accessions present specific features for table grape and 4 present mixed features both for winemaking and fresh consumption. These old local cultivars found often are named by the size, shape or colour of the berries (‘Mellan’, ‘Laraman’, ‘Rrushi blu’, ‘Kokerr vogli I Iballes’ ect), as well as name of locality or person (‘Korrith i Luzatit’, ‘Qelibar i Dragotit’, ‘I bardhi i Beçishtit’, ‘Naraç’, ‘Babahasan’, ‘I kuq i Ismailateve’, ‘I kuq i Zekajve’ ect).

**Table1. The old local varieties and biotypes explored and classified by grape usage**

Area	Total number of old local varieties and biotypes explored			Total	Rare varieties
	Fresh consumption	Winemaking	Mixed		
Burrel	3	2	1	6	
Dibër	1			1	
Shkodër		1	2	3	
Pukë	4	2	1	7	2
Malësi e madhe	2			2	
Pogradec	1	3		4	
Korçë		2		2	2
Leskovik	3	5		8	3
Tepelenë	4	1		5	3
Përmet	2			2	
Gjirokastër	1	4		5	2

It is updated the national inventory of grapevine and based on the primary survey were registered 41 accessions in the database of the Albanian Gene Bank. The survey of material explored shows that 12 of them are rare varieties (table1). Therefore, these resources are under the threat of extinction.

The grapevine cultivars can be characterized by several methods but ampelographic characterization according the Descriptor Grapevine List is the first step in the examination of grapevine varieties /accessions[5]. The biodiversity of the accessions object of this study is great. They were distinguished by their morphological characters. The accessions explored for fresh consumption are classified 12 with large bunch and 8 with medium bunch (table2). Regarding the berry size, 12 accessions have the large berries and 8 accessions have the medium berries. Regarding the shape of the berries, 7 accessions have spherical shape and 12 ovoid shape (table 3). Only 7 have the pulp crispy. Two of them have the berries rarely displayed on the bunch that is a preference of consummators such as ‘I bardhi i Beçishtit’ and ‘Qelibar i Dragotit. The color of the skin varies: 13 have red color, 5 green-yellow and only one has black color (table 3). About the seeds, all have 1-2 seeds. The aroma that is another feature that is very important is not present in this group of accessions. About the tolerance of pathogens three of them present the resistance. (Qelibar i Dragotit, I kuq i Zekajve, Dimëror)

The accessions of grapes for wine, as compared to the table grape varieties were characterized by small or medium bunches and accurately 8 of the accessions present small bunches and 13 medium bunches. (table2). The berries placed densely on the bunch result in 6 accessions; the pulp of the berry was juicy and with high quantities of sugar such as ‘Kokërr vogli i Iballës’, ‘Rrushi blu’, ‘Naraç’, ‘I bardhi i Libohovës’, ‘Centrali’.

The cultivars with double used are generally characterized by medium-sized grapes, [10] with the berries placed appropriately on the bunch. Berries are medium sized, with elastic or rigid skin, colored green-yellowish or blu-black. The pulp of the berries was pulpy, crispy or even juicy, with a pleasant taste, slightly flavored, with 2-3 medium sized seeds. Almost all of these varieties have a pleasant commercial appearance, close to that of table grapes and some of them a high quantity of sugar for obtaining wine. From this group we can distinguished Kozarka, Debinë e Libohovës, I ziu i Libohovës which are rare and suitable both for fresh consumption and for winemaking.

**Table 2 Old local grapevines explored and classified by size of bunch**

Accessions	Large bunch	Medium bunch	Small bunch
Fresh consumption	12	8	
winemaking		8	13
mixed		4	

**Table 3 Old local grapevines explored and classified by colour, shape and size of berries**

Berry color	Berry shape	Berry size	Accessions
blue-black	round	small	3
		medium	3
	oval	medium	2
Green-yellow	round	small	1
		Medium	9
		large	1

Red	elliptic	large	1
	oval	medium	3
		large	1
	round	medium	4
		large	1
	elliptic	medium	3
		large	9

#### 4. Conclusion

The exploration of eleven zones has made possible to find 45 old local grapevine varieties or biotypes. They represent a significant part from the total number. It is updated the national inventory of grapevine and there are identified 12 rare varieties. Analyses of the ampelographic features showed that old local studied varieties are characterized by polymorphism of the bunches, berries, as well as by some technological characteristics. Three of them present the biological resistance against pathogens. The present study provided particular knowledge on grapevine germplasm helping to prevent disappearing of local varieties and to preserve such germplasm in native collection for future studies.

#### 5. References

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