

**PECULIARITIES OF AMPELOGRAPHIC TRAITS OF THE TABLE GRAPES OF ANAPA'S ZESV&W BREEDING IN THE KRIULYANSKIY X CARDINAL COMBINATION**

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Abstract

The breeding work was carried out for a number of years at the Anapa's Zonal Experimental Station of wine growing and winemaking. The aim of this was to create the grape varieties adapted to climatic conditions of cultivation and resistant to diseases and pests, with high rates of productivity and quality of the products. As a donor of stability to mildew and to frost the Kriulyanskiy grapes of the Moldavian breeding was used. As a donor of quality and early ripeness the Cardinal grapes was used. The purpose of crossing of these grape varieties was the receiving of new high-quality grape varieties with beautiful appearance and increased resistance to fungal diseases and frost, of a high taste quality and early ripening term. As a result of the research conducted by us 16 perspective forms were received after crossing. Morphological, agrobiological and phenological studies of the selected forms were carried out using the classic methods accepted in viticulture. As a result of the long-term hybridological analysis the hybrid forms were selected, studied and reproduced in a vegetative way; these forms have a beautiful appearance of the berries and bunches, a high crop and a high quality of production, on the level of the European control grapes varieties. These forms received the names of the following varieties: Cardinal Anapa, Lunny, Taman, Zori of Anapa and Prikubanskiy. It is indicated that the selected perspective grape varieties of table direction can be used in the further breeding and genetic research. These varieties of grapes can be donors of such valuable qualities as the resistance to frosts, the elegant appearance of bunches and berries, immunity to mildew, productivity and quality of production, and it is important when it is necessary to create the new varieties of grapes.

Key words: variety, grapes, breeding, quality of production.

INTRODUCTION

The research strategy of selectionists of the Anapa Zone Viticulture and Winemaking Experimental Station has always been oriented at breeding varieties for table use, which are characterized by exceptional flavor, attractive appearance of clusters and berries, and resistance to frosts, diseases and insects.

For many years the experimental station has been engaged in selection aimed at breeding the grape varieties adapted to the natural environment and climatic conditions of viticulture, temperature and water stress, resistant to diseases, mildew in particular, highly productive, of high quality, and with good consumer characteristics and quality of grape products [1].

Objects and methods of research.

Breeding new grape varieties we used the following as parent varieties:

– as a donor for resistance to mildew and frosts – the Kriulyanskiy variety selected in Moldova and characterized by high vigor, high yield, late ripening, and high resistance to frosts and fungal diseases [2];

– as a donor for quality and early ripening – the Cardinal variety, of very early ripening, with large, beautiful, attractive clusters and berries, exceptional flavor, but with low resistance to frosts and fungal diseases [3, 4].

Hybridization of these varieties was aimed at breeding new high quality grape varieties with attractive appearance, enhanced resistance to frosts and fungal diseases (characteristics gained from the Kriulyanskiy variety), and exceptional flavor and early ripening (acquired from the Cardinal variety).

In the result of the research carried out we have identified 16 promising grape forms obtained in the result of hybridization of the parent varieties.

Morphological, agro-biological and phenological studies of the identified forms have been performed using the traditional methods recognized in viticulture.

RESULTS AND DISCUSSION

In the result of our hybridological analysis of many years we have identified, studied and asexually reproduced hybrid grape forms characterized by attractive appearance, high yield and quality of products, that meet the requirements to the standard European varieties and later were named as the following grape varieties: Cardinal of Anapa, Lounniy, Taman', Zori of Anapa, and Prikubanskiy [5].

Taman'. Selection number B-27-3 (Pic. 1). Clusters – large, loose, of conical “shouldered” shape. Berries – oval, with dark stripes, large, fleshy, crisp, medium skinned. Flavor – harmonious, with mild Muscat aroma. Seeds in a berry – 2-3. Vigor – high, fruit bearing coefficient 1.1. Yield – 120-160 hundred kilograms per hectare. Berry juice sugar content at harvesting – 17.0-18.0 g/100 cm³ with titratable acidity of 7.0 g/dm³. Transportability of the variety is good [6, 7].

Lounniy. Selection number P-27-2 (Pic. 2). Clusters – large, loose and semi-tight, of conical “shouldered” and conical shape. Peduncle – 5-6 cm. Max cluster weight – 1.5 kg. Berries – large to medium, tough skinned, fleshy, crisp. Flavor – harmonious, with strong Muscat aroma. Seeds in a berry – 2-3. Vigor – high. One-year-old mature shoots are light brown, shoot internodes are smooth. Fruit bearing shoots – 96%. Clusters per mature shoot – 2.0. Clusters per fruit bearing shoot – 2.1. Average cluster weight – 550 g. Yield – 150 hundred kilograms per hectare. Berry juice sugar content at ripening – 17.5 g/100 cm³ with titratable acidity of 6.5 g/dm³ [6].

Prikubanskiy. Selection number P-74-2 (Pic. 3). Clusters – semi-tight, of cylindrical-conical shape. All berries in a cluster are straightened. Peduncle – medium sized, green, quite strong. Berries – large, with a pit at the base, dark violet, with thick and tough skin, fleshy, with refreshing flavor. Vigor – medium. Mature shoots – 89% and higher. Fruit bearing shoots – 85-90%. Fruit bearing coefficient – 0.9. Yield – 120-140 hundred kilograms per hectare. Berry juice sugar content – 170-180 g/dm³ with titratable acidity of 8.0 g/dm³ [6].



Pic. 1. *Taman'* table grape variety



Pic. 2. Lounniy table grape variety



Pic. 3. Prikubanskiy table grape variety

Cardinal of Anapa. Selection number B-10-1-21 (Pic. 4). Clusters – large and medium sized, loose, of conical “shouldered” shape. All berries in a cluster are straightened. Peduncle – medium sized. Berries – fleshy, tough skinned. Flavor – pleasant, refreshing. Seeds in a berry – 2-3. Mature shoots are brown, rippled. Vigor – high. Shoots mature well (85-90%). Fruit bearing shoots – 89%. Fruit bearing coefficient – 1.3. Yield – 140 hundred kilograms per hectare. Berry juice sugar content – 17.0-18.0 g/100cm³ with titratable acidity of 7.5-7.8 g/dm³ [6].

Zori of Anapa. Selection number B-19-1-17 (Pic. 5). Clusters – large, of cylindrical-conical shape. Berries – large, fleshy and juicy, with strong Muscat aroma, tough skinned. Flavor – harmonious, refreshing. Seeds in a berry – 1-3. Vigor – high. Fruit bearing coefficient – 1.4. Yield – 150 hundred kilograms per hectare. Berry juice sugar content at maturity, and harvesting – 17.5 g/100cm³ with titratable acidity of 8.0 g/dm³ [6].

Analyzing the data of the Table below and characteristics of the varieties we should note that this combination resulted in the traits of enhanced frost resistance only at the Prikubanskiy variety which is characterized by late ripening and large attractive clusters. Early ripening manifested itself at three varieties – Cardinal of Anapa, Lounniy, and Taman'. These grape varieties are characterized by attractive appearance of clusters and berries and exceptional flavor that has received high flavor ratings for fresh grapes. The varieties of Cardinal of Anapa, Lounniy, Zori of Anapa, and Prikubanskiy acquired enhanced resistance to mildew from the Kriulyanskiy variety.

Cardinal of Anapa, Lounniy and Taman' acquired early ripening, attractive appearance and high quality of products from the Cardinal variety. The best variety of this combination, which has obtained positive traits of both varieties (attractive appearance of clusters and berries, exceptional flavor, enhanced resistance to mildew and frosts), proved to be the grape variety of Lounniy.



Pic. 4. Cardinal of Anapa table grape variety



Fig. 5. Zori of Anapa table grape variety

Characteristics of grape varieties with the combination of Kriulyanskiy x Cardinal

Variety	Cluster weight, g	Berry size and shape	Berry color and flavor	Frost resistance, °C	Mildew resistance, score	Ripening	Flavor ratings, score
Cardinal of Anapa	450-550	round, 8.0-9.0	red violet, harmonious	-18	2.0	early 120-135 days	8.7
Lounniy	400-550	round, 6.5-7.0	white pink, with Muscat aroma	-20	2.0	early 125-135 days	8.7
Taman'	550-600	oval-round, 9.0	dark red, with mild Muscat aroma	-18	3.0-3.5	early 125-135 days	9.0
Zori of Anapa	430	round 6.0-6.5	red, neutral	-18	2.0	late 145-155 days	8.6
Prikubanskiy	450-700	round 7.0-8.0	dark violet, neutral	-22	2.0	late 145-155 days	8.6

CONCLUSIONS

1. In contrast with the parent forms, all five grape varieties showed, first of all, positive morphological features of both parents – Kriulyanskiy and Cardinal, namely: attractive appearance of clusters and berries, their size and shape. The varieties acquired enhanced resistance to frosts and mildew and late ripening from the Kriulyanskiy variety, and a short ripening period and exceptional flavor – from the Cardinal variety.

2. In the result of our selection job of many years we have acquired table grape varieties with exceptional flavor and enhanced resistance to mildew and frosts to be cultivated in the viticulture zones on the Black Sea coast.

3. Developed promising table grape varieties can be used in further selection and genetic research as donors for valuable properties, such as resistance to frosts, attractive appearance of clusters and berries, insusceptibility to mildew, yield potential and high quality, which is important when breeding new grape varieties.

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