



Contents lists available at Canadian Scientific Journal

Canadian Scientific Journal

journal homepage: www.csjournal.ca



Specificity of the yield formation of different varieties of grape in conditions of Zaporozhye region

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ARTICLE INFO

Article history:

Received 30 September 2014

Received in revised form 13 March 2016

Accepted 28 May 2016

Keywords:

Grape

Formation of yield

Adaptation

ABSTRACT

This article describes the specificity of the yield formation of different varieties of grapes in the south of Ukraine. It is proved that the varieties of white grapes which are grown in Zaporizhzhya region, characterized by an average length berries - 1.5-3 sm, in diameter - 1.5-2 sm, the average number of seeds - 2-4 pieces. Investigated varieties of white grapes that have adapted to arid conditions of southern Ukraine and the lack of moisture, can also produce high yields, forming smaller vegetative mass. This experimental research has great practical importance as to identify of most promising varieties of soil and climatic conditions of Zaporozhye region allows to predict the yield and improve the quality of the resulting product.

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1. Introduction

Grapes in Ukraine are one of the leading places. Favorable soil and climatic conditions for the industrial cultivation of grapes are characterized southern region - Odessa, Kherson, Nikolaev, Zaporozhye, accounting for 99% of the country's vineyards (Malchikov, Holodryha, 2001; Dashkevych, 2006).

The southern regions of Ukraine, including the Zaporozhye region, where the coefficient of moisture is less than unity, are forming a zone of risky agriculture. Last year for each square kilometer area has an average of total: Kherson - 4,9*10²; Odessa - 10,5*10²; Zaporozhye - 22,8*10²; Nikolaev - 23,2*10² km³ of fresh water, which accounts for 0,79; 1,69; 3,70 and 3,75% precipitation (Dunaevskyy, Ponyk, 1990).

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Grapes are a valuable food product and raw material for canning and wine industry. The fruits of grapes and its products have important therapeutic properties, excellent taste and nutritional quality. Depending on the variety, degree of maturation, harvest and cultivation conditions in kilograms berries contain up to 300 or more grams of sugar (Komarova, Panasovych, 1998; Koval, 2000). In addition, grapes contain from 0,5 to 1.4% tartaric, malic and other organic acids; 0,3-0,5% - minerals, including phosphorus, iron, potassium, kaltung; 0,15-0,9% - proteins; 0,3-1% - pectin and vitamins A (caroting), B (anevrin), B2 (riboflavin), C (ascorbic acid), B6 (adermin) and P (citrine) (Avroryn, 2000; Lobanov, 2006).

2. Materials and Methods

In our study objects were white grape varieties: Arcadia, Diana, Kesha, Laura, Gift Zaporozhye, New century, Demeter, coronal (Ayvazyan, Dokuchaeva, Babanyna, 2002), which were grown in Zaporizhzhya region (Educational and Research Branch «Forest city» MDPU named after B. Khmelnytsky, Melitopol, Zaporozhye) during 2011-2014. In the graph shows the average values obtained not less than 30 measurements. All digital material obtained from studies treated mathematically by using a computer. The average error of these measurements does not exceed 5%. Measurement of the mass and diameter of clusters was carried out by generally accepted physiological methods (Kazakov, 2000).

3. Results

We proved that in the Zaporozhye region length berries plant specimens varieties “Demeter” is 2,8-3sm, their diameter - 1,9-2,6 sm (fig.1), number of seeds in the fruit - 2-3 pcs., Seed color is white. Grape varieties “Demeter” is soft berry that is very juicy and crunchy with a mild sweet flavor.

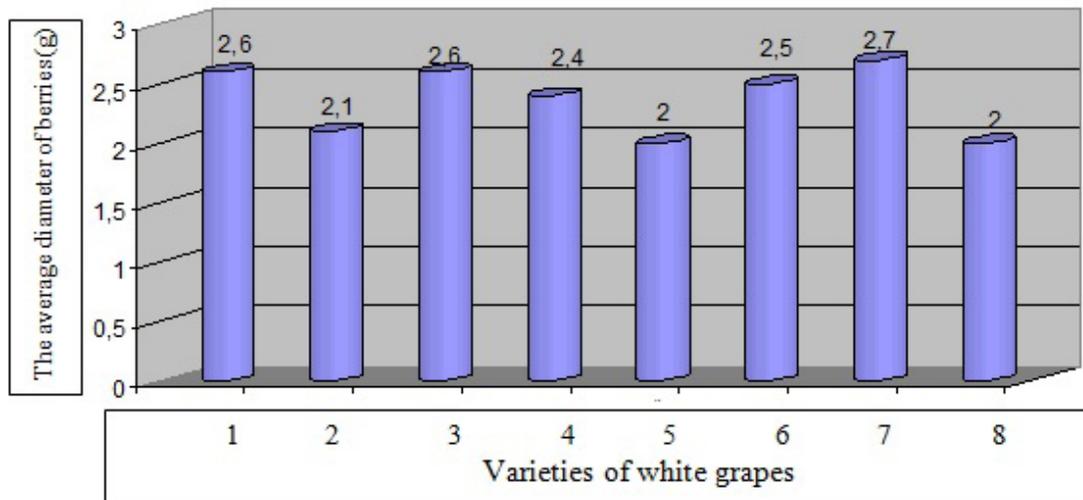


Fig 1. The average diameter of berries varieties of white grapes:

1 – Arcadia, 2 – Diana, 3 – Kesha, 4 – Demeter, 5 – Coronal, 6 - New Century, 7 - Gift Zaporozhye, 8 – Laura

For plant varieties of “New Century” the characteristic features are: soft skins, the taste of berries are significantly different from other varieties of white grapes. Length berries - 2,3-2,7 sm, their diameter - 2-2,1sm (fig.1), number of seeds - 2-4 pcs., Color - dark brown.

Quality “Kesha” is characterized by thick-skinned, sweet and sour taste of berries with length - 2-3sm and diameter – 1,8-2,6 sm (fig.1), number of seeds in the fruit - 1-4 pcs., And color - pale brown.

Taste of the variety “Arcadia” is soft. The fruit of this plant - strong and sweet, its length – 2,3 sm in diameter - 2,3-2,4 sm (fig.1), number of seeds - 3-4 pcs. Their color is light brown.

Plant varieties “Coronal” observed secondary skin softness, moderately sweet berries, the length of which is 2,2-3,2 sm in diameter - 1,5-2,1 sm (fig.1), number of seeds - 1 to 5 pcs., it’s color is light-brown.

Quality “Diana” in taste much different from other varieties, so that is poorly pronounced flavor berry dense in structure, length berries - 2-3 sm, in diameter - 2-2,5 sm (fig.1), number of seeds - 2-4 pcs., color is green.

Prototypes class “Gift Zaporozhye” characterized by strong surface berries and crispy with a soft sweet flavor. Length berries was 2,5-4 sm, in diameter - 2,7-3 sm (fig.1), seed number from 1-5 pcs., whose color was pale green.

Quality “Laura” is characterized by strong surface berries and crispy with a soft sweet flavor. Length berries was 2,5-4 sm, in diameter – 1,8-2,0 sm (fig.1), seed number from 1-3 pcs., whose color was pale green and brown.

4. Discussion and Conclusions

Thus, all experimental varieties of white grapes that are grown in Zaporizhzhya region, characterized by an average length berries – 1,5-3 sm, in diameter – 1,5-2 sm, the average number of seed - 2-4 pcs., So they can described as high-harvest, evidenced by weight of bunches and berries varieties of white grapes, specificity of growth processes and productivity. Investigated varieties of white grapes that have adapted to arid conditions of southern Ukraine and the lack of moisture can also produce high yields, forming smaller vegetative mass. This experimental research is of great practical importance as to identify the most promising varieties of soil and climatic conditions of Zaporozhye region allows to predict the yield and improve the quality of the resulting product.

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