

DETERMINATION THE MECHANICAL COMPOSITION OF THE GRAPEBUNCH AND BUNCHES OF LOCAL GRAPE VARIETIES AND SELECTING GOOD VARIETIES

Nafosat Djonibekova

Senior Teacher, PhD of “International School of Finance Technology and Science”

Sukhrob Robbimov

Senior Teacher, of “International School of Finance Technology and Science”

ABSTRACT

In this article, the grape varieties, grapebunch weight, size, number of bunches, petiole, skin, juice, and fruit percentage were determined, and the highest grapebunch weight was determined in the varieties Katta Kurgan (445 g), Oktyabrsky (470 g), Sultani (600 g), Muscat Uzbekistansky (550 g), Khusayne Kelin Barmoq (478 g). The largest grape heads were recorded in the Andijansky Chorny, Rizamat, and Muscat Uzbekistansky varieties. The Andijansky Chorny, Djanjal Kara, Doroi, Nimrang, Perlet, and Rizamat varieties with the lowest percentage of bunch to the total grape head weight were distinguished. Among the grape varieties, the highest juice yield to the total grape head weight was determined in the Oktyabrsky, Ranniy Shroedera, Soyaki, Khusayne Muskatny, and Ertapishar varieties. Among the grape collection, differences in seed size and size were found among different varieties.

Keywords: Grape, bunch, petiole, variety, grape bunch, skin, flesh.

INTRODUCTION

Grapes (*Vitis vinifera*) belong to the genus *Vitis* L. of the family Vitaceae Juss. They are a cultivated plant widely distributed in subtropical and temperate climate regions [150] and are highly valued as a favorite fruit product in many countries of the world. In countries with developed industrial viticulture, continuous scientific and research work is being carried out in the world to create new promising varieties [4; 5; 14]. Viticulture is developed in many countries of the world in various directions, that is, in many countries food, raisin and technical viticulture are developed [13; 17]. Therefore, A.M. Avidzba et al. [1; 2] emphasized that it provides great opportunities for the creation and production of grape varieties. In the production of high-quality products from grapes, in particular, the grape variety is of decisive importance, as many scientists have written that it is an important selection source, and it is also noted that the quality of the product depends on varietal characteristics, as well as diseases and pests, adverse environmental factors and many other reasons [4; 6; 7].

In particular, scientists such as M.V.Melkonyan, E.L.Belenko and N.L.Studennikova [18] state that the quality of grape wine largely depends on the raw material, its biochemical composition. Therefore, studying the processed material from a biochemical point of view, determining the laws of substance metabolism, and crossbreeding grape varieties allows ensuring the inheritance of chemical properties of grapes, and most importantly, increasing the amount of individual chemical components in the yield of different varieties.

The influence of various ecological and agrotechnical factors was studied by K. A. Serpukhovitina et al. [15; 16; 19], it was noted that in most regions of Russia, where raw materials for the wine-growing industry are grown, the sum of active temperatures is 3000 – 4500 ° C, which allows varieties to accumulate sufficient sugars at a favorable bud load. According to T.I. Guguchkina [9], the decrease in the quality of grape products in Russia is caused by poor-quality grape raw materials, which leads to an increase in the cost of produced grape products. The dependence of grape growing on environmental factors in the experiences of many scientists has required a scientific approach to the rational use of grape genetic resources [8; 10; 11].

In order to enrich and replenish the set of regionalized grape varieties in the republic with varieties that are promising, meet today's requirements and allow for the cultivation and production of various fruits intended for export, a sample of grape varieties from the genetic collection was studied. The mechanical structure of grapes is characterized by the weight and quantitative ratio of the structure of individual elements of the grape head and bunch. The structural index allows you to form a general idea of the grape head and bunch of the variety under consideration.

MATERIALS AND METHODS

Mechanical analysis of grape head composition was carried out according to the method recommended by Professor M.A. Lazarevsky [12] and generally accepted methods in viticulture [3]. For mechanical analysis, five average-sized grape heads, typical for the variety, with undamaged and unbroken clusters, are taken. The grape heads are weighed on a scale, all clusters are cut with a knife at the base, their number is counted and their weight is weighed. The bunches of all five grape heads are weighed and the average weight of the bunches, the average number and weight of clusters per grape head are found. 100 clusters are taken randomly from five grape heads, placed in a gray cloth bag and the juice is squeezed vigorously. To determine the cluster index, the length and diameter of 25 clusters are measured before squeezing the juice.

RESULTS AND DISCUSSION

The results showed that during the study years, the highest weight of the grape head among the grape varieties was determined in the following varieties: Katta Kurgan (445 g), Oktyabrsky (470 g), Pobeda (Mers) (470 g), Sultani (600 g), Muskat Uzbekistansky (550 g), Khusayne Kelin Barg (478 g), Khusayne Muskatniy (450 g). The lowest weight in this group was recorded in the varieties Doroi (225 g), Tuya Tish (209 g), Guzal Kara (261 g), Shtur Angur (267 g), Djanjal Kara (267 g). The average weight of the grape head in these varieties varied between 209 and 267 g. The remaining varieties in terms of average grape head weight occupied an intermediate position between the above varieties, and their average grape head weight was around 325 – 371 g.

A study of grape head size in grape varieties showed that the largest grape heads were recorded in the Andijansky Chorny, Rizamat and Muskat Uzbekistansky varieties. The grape head size in these varieties was around 20.8×11.3 ; 17.0×9.0 and 19.6×10.2 cm, respectively.

All other varieties had small grape heads typical of food varieties. The length of their grape heads was 11.8 – 15.2 cm and the width was 7.2 – 10.0 cm. The Andijansky Chorny, Parkent, Pobeda (Mers) and Ertapishar varieties stood out with the largest number of clusters on the vine. In them, the average number of clusters on one vine was around 151 – 166 pieces. The vines with the least number of clusters were formed on the Nimrang, Surhak Kitabsky, Taifi Rozavy, Tuya Tish, Muskat Aleksandrsky and Muskat Uzbekistansky varieties. In these varieties, the number of clusters on one vine did not exceed 99. The remaining varieties occupied an intermediate position in terms of the number of clusters on the vine, varying around 104 – 141 pieces (see table 3.10).

Analysis of the components of grape varieties showed that the highest percentage of petiole in the grape variety was recorded in the varieties Surhak Kitabsky, Muskat Aleksandrsky, Husayni Kelin Barmak, Husayne Muskatny, Husayne Chorny and Ertapishar. The percentage of petiole in the grape variety in these varieties was around 3.0 – 3.8%. The Andijansky Chorny, Djanjal Kara, Daroi, Nimrang, Perlet and Rizamat varieties stood out with the lowest percentage of petiole in relation to the total weight of the grape variety. In these varieties, the percentage of petiole in the total weight of the grape variety did not exceed 1.6 – 1.9%. The remaining varieties occupied an intermediate position in terms of the percentage of petiole in the total weight of the grape variety, and this biometric indicator in them varied around 2.3 – 2.8%.

Differences were also observed between varieties in terms of the amount of skin in the bunch. The highest skin yield in relation to the total weight of the bunch was recorded in the varieties Guzal Kara, Taifi Rozaviy, Tuya Tish, Khusayne Kelin Barmoq and Shtur Angur. In these varieties, the share of skin in relation to the total weight of the bunch was around 7.0 – 7.6%. The varieties with the least skin yield can be identified as Andijansky Chorny and Doroi. In these varieties, the share of skin in the total weight of the bunch did not exceed 2.7 – 2.9%. The remaining varieties occupied an intermediate position in terms of skin yield, and this biometric indicator varied around 3.0 – 6.8%.

Table 3.10 Mechanical composition of grape varietal samples (2020 - 2022)

Name of the variety	Grapebunch			Grapebunch structure (percentage relative to total weight)				
	weight, g	size, cm	number of bunches, pieces	petiole	skin	juice	flesh	seed
Andijanskiy chorniy	359	20.8	154	1.6	2.9	69.9	23.2	2.4
Guzal kara	261	15.2	127	2.6	7.9	68.8	17.2	3.5
Djanjal kara	267	15.0	125	1.9	4.2	69.0	21.8	3.1
Doroi	225	13.8	104	1.9	2.7	69.1	23.4	2.9
Katta Kurgan	445	19.6	92	2.8	5.3	65.1	24.0	2.8
Nimrang	350	14.0	89	1.9	3.0	65.7	26.6	2.8
Oktyabrskiy	470	13.9	140	2.3	5.3	70.1	17.7	4.6
Parkent	417	13.8	166	2.7	4.8	66.6	22.7	3.2
Perlet	325	13.0	97	2.3	5.0	68.3	19.7	-
Pobeda (Mers)	470	14.0	160	1.7	6.6	69.9	18.5	3.3
Ranni Shredera	400	13.8	130	2.3	5.4	70.3	18.4	3.6
Rizamat nazorat	409	17.0	141	1.9	5.1	69.3	20.5	3.2
Soyaki	335	14.2	116	2.3	5.3	73.5	15.7	3.2
Sultani	600	11.8	116	2.5	5.8	61.7	26.2	3.8
Surxak kitabskiy	350	14.0	82	3.3	6.8	65.3	22.3	2.3
Tayfi rozoviy	390	13.0	99	2.8	7.6	65.9	19.7	4.0
Tuya tish	209	14.0	83	2.6	7.1	65.3	23.0	2.0
Muskat aleksandriskiy	282	16.8	57	3.1	4.8	61.7	26.8	3.6
Muskat Uzbekistanskiy	550	13.8	119	2.9	4.9	71.5	17.9	2.7
Xurmani kizil	360	13.2	128	2.1	5.1	67.3	22.5	3.0
Xusayne beliy	371	13.8	116	2.7	5.9	70.3	18.2	2.9
Xusayne kelin barmoq	478	13.9	129	3.8	7.3	68.9	16.1	3.9
Xusayne Muskatniy	450	14.0	126	3.1	6.1	70.4	16.5	3.9
Xusayne chorniy	350	14.1	119	3.1	5.8	69.6	17.5	4.0
Shtur angur	267	13.8	107	3.0	7.0	66.6	19.8	3.6
Ertapishari	390	14.1	151	3.0	5.6	74.2	14.1	3.1
EKF ₀₅	9.8	2.2	4.0	-	-	-	-	-
Sx %	3.6	3.1	3.4	-	-	-	-	-

It should be noted that in food grape varieties, juice yield in relation to the total weight of the bunch is the most important economic indicator. Among the grape varieties, the highest juice yield in relation to the total weight of the grape head was distinguished by the varieties Oktyabrsky, Ranni Shroedera, Soyaki, Khusayne Muskatny and Ertapishari. Their juice yield was around 70.1 - 74.2%. All other varieties had almost similar indicators in terms of juice yield, and the juice yield varied by varieties within the range of 61.7 - 69.9%. The share of seeds in the total weight of the grape head was almost similar by varieties and ranged from 2.7 - 5.8% (see table 3.10).

Among the grape collection, it was possible to determine the differences in seed size among different varieties. Consequently, the largest seeds were formed in the grape varieties Djanjal

Kara, Doroi, Oktyabrsky and Muskat Aleksandrsky. The weight of 100 seeds in these varieties was around 5.0 - 5.2 g. The Sultani variety stood out for producing the smallest seeds. The weight of 100 seeds in this variety was 2.7 g. The remaining varieties occupied an intermediate position in terms of the weight of 100 seeds, and this indicator varied in the range from 3.3 g to 3.9 g (see table 3.10).

CONCLUSION

Based on the morphobiological characteristics of grape varieties, the heaviest grape head, high-yielding varieties were identified as Oktyabrsky (470), Katta Kurgan (445), Muscat Uzbekistansky (550), Sultani (600), Khusayne Kelin Barmoq (478), Pobeda (Mers) (470). Another important indicator of grape head structure is the high juice content, which is determined by all varieties in a high percentage, this indicator was 61.1% - 74.2%. The study of the morphobiological characteristics of the varieties selected in this study allowed us to identify varieties not only for their high yield, to select the best of them, to determine their resistance to transportation, to create new grape varieties in the future, and to identify varieties that can be selected as parent combination varieties.

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