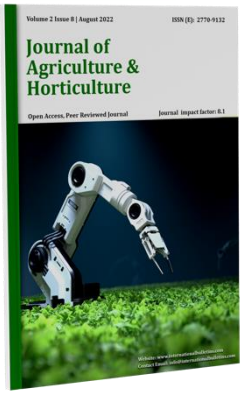

THE INFLUENCE OF THE CULTIVATION METHOD ON THE YIELD AND QUALITY PARAMETERS OF THE GRAPE VARIETY PARKENT

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Abstract: in the article, the results of the research conducted to study the effect of the method of growing grapes on the productivity and quality indicators of the Parkent variety are presented with a deep scientific analysis. Also, the article describes the effect of the cultivation method on the chemical composition of the Parkent variety bunch juice.

Key words: varieties, yield, quality indicators, bunch, chemical composition of juice, sugar and acidity.

Introduction

Cultivation methods are one of the agrobiological factors that have a significant impact on the productivity of vine bushes and the yield per unit area. Because in different cultivation methods, the number and location of perennial rusts on vines, the number of productive branches and replacement branches and their spatial location change. As a result of this, the circulation of air among the vines, the nature of sunlight reaching the leaves (upright or spread) and their photosynthetic productivity will change in one direction or another. All this is reflected in the productivity parameters of the vine bush and their quality indicators [2,3,6].

In the successful development of viticulture, it is important to choose the conditions close to the area of its natural origin. In particular according to N.A.Urdenko et al. [9], the analyzes of the productivity and physical and chemical indicators of grapes grown in different soil and climate conditions of the Crimea and the corresponding technologies show that the indicators of the grape Kefesia have also changed as the difference from the climatic conditions of the Simeiz terroir, from which this variety originated, has increased. In this case, the highest yield coefficient is obtained in Sudak terroir with medium-bodied multi-rust fan-shaped formation (K1=0.92), in Livadia terroir to the south with medium-bodied double cord formation (K1=0.85) and in Alminksiy terroir with high-bodied one-shouldered Guyot method (K1=0.69) was recorded. It was found that terroir factors, agrotechnical elements and the aboriginality of the variety had a significant effect on the average weight of the grape heads, the productivity and its quality indicators. As the Kefesia variety spread from Eastern Crimea to the south and then to its western parts, the value of the above indicators increased: the average weight of grape heads increased by 1.5-1.8 times, yield by 1.4 times, sugar content by 10.9-11.9 percent.

The method of growing the vine bush and the location of the harvest elements from it should be designed to be suitable for harvesting by machine [5].

G.A. Abdulkerimov and M.D. Mukailov stated [1] that it is important to optimize phytoclimatic conditions in vineyards. For this, it is necessary to change the architecture of the bush in such a way that it ensures the maximum use of light, heat and moisture resources. According to the researchers, the supply of light, temperature and humidity in the branches of vine bushes varies depending on the time of day, the phases of vegetation and the method of

shaping.

Materials and Methods

In this experiment, the local universal variety of grape Parkent, which was used in the previous experiment, served as a research object. In this case, observations and biometric measurements were carried out in vineyards established by different cultivation methods based on this grape variety. Depending on the method of cultivation, the effect on the productivity and quality indicators of vine bushes was determined.

Results and Discussion

Our observations showed that cultivation methods had a significant effect on the total number of grape heads on the vines and clearly confirmed our above opinion. In this case, the highest amount of grape heads per bush compared to the control was determined in the experimental option grown by the single shoulder cord method. In these experimental options, the total number of grape heads formed on the bushes of the local Parkent grape variety reached an average of 57.8 pieces. This means 6.9 heads more than this indicator of the control option.

Compared to the control, the lowest number of vines formed on the bushes was recorded in the experimental option, where vine bushes were grown by the two-shouldered Guyot method. In this experimental option, the average number of grape heads formed per bush did not exceed 41.7 units, which means 9.2 units less than this indicator of the control option. The low number of vines in the double-shouldered Guyot method can be explained, in our opinion, by the low number of perennial rusts in this cultivation method.

Cultivation method also had a significant effect on the average weight of grape heads formed on vines. In this case, the largest grape heads were determined in the experimental option grown by the single shoulder cord method. The average weight of the grape heads formed in this experimental option reached about 405.8 g, which is 7.2 times heavier than this indicator of the control option.

In the experimental option, in which vines were grown by the two-shoulder Guyot method, the average weight of grape heads was at the control level, but insignificantly lower, and was 397.3 g. At this time, the average weight of grape heads from the control option reached 398.6 g.

Such a difference in the average weight of grape heads obtained from vine bushes in different growing methods was also clearly expressed in their sizes. Therefore, the largest grape heads were determined in the experimental option grown by the single shoulder cord method. In these experimental options, the average size of the grape heads formed on the bushes of the local Parkent grape variety reached 25.9x12.6 cm. At this time, the average size of the grape heads obtained from the control option - short rust glove-grown bushes was in the range of 23.1x11.2 cm (see Table 1).

Table 1

The effect of the method of growing bushes on the yield of the local grape variety Parkent (2021-2023)

Cultivation method	bush load	The number of grape heads on the bush, pieces;	Grape head		Average yield of the bush, kg;
			size, cm	average weight, g	
One shoulder cord	120	57,8	25,9x12,6	405,8	23,5
Two-shouldered Guyot	120	41,7	21,2x10,7	397,3	16,6
Short rusty ellipse - con	120	50,9	23,1x11,2	398,6	20,3

Compared to the control, the smallest size of the grape heads formed in the bushes was recorded in the experimental option where the vine bushes were grown by the two-shoulder Guyot method. In this experimental option, the average size of grape heads formed on each bush did not exceed 21.2x10.7 cm.

The data in the table above shows that the amount and location of perennial rusts on the vines, the amount of productive branches and replacement branches and their spatial location in the vineyards cultivated by different methods, and the average productivity of the vines also differed. Compared to the average productivity of bushes in the control option (20.3 kg), the highest yield of vine bushes was determined in the experimental option grown by the single shoulder cord method. In this experimental option, the average productivity of one bush reached 23.5 kg. This is 3.2 kg higher than the average productivity of the control option bushes.

Compared to the control option, the lowest average yield from each bush was recorded in the vineyards grown by the two-shouldered Guyot method. In this experimental option, the average yield of bushes did not exceed 16.6 kg. This means 3.7 kg less than the average productivity of control option bushes. In this experimental option, the average number and average weight of grape heads formed per bush, as well as the minimum average yield from the bush, according to our opinion, the amount and their location of perennial rusts on vine bushes, the amount of productive branches and replacement branches and their spatial location will change, as a result of which It is explained by the air circulation between the vines, the nature of sunlight reaching the leaves (upright or spread) and the difference in their photosynthetic productivity.

The different productivity of vine bushes in different cultivation methods had a direct proportional effect on their productivity per unit area. According to the rule, the highest yield per unit area was recorded in vineyards grown by the single-shouldered cordon method, with the highest average yield of vine bushes. In this experimental option, recalculated per hectare (planting scheme 3 x 2.5 m, the number of bushes per unit area is 1333), the yield reached almost 260.6 centners. At this time, the theoretical yield of the control option was 225.4 centners. It can be seen that the additional yield obtained in this experimental option compared to the control option reached 35.2 centners. The lowest yield obtained in comparison with the control option was recorded in the vineyards where vine bushes were grown by the two-shouldered Guyot method, according to the rule. In this experiment, the yield per unit area did not exceed 184.1 centners, or was 41.3 centners lower than the yield

obtained in the control option (225.4 centners) on average (see Figure 1).

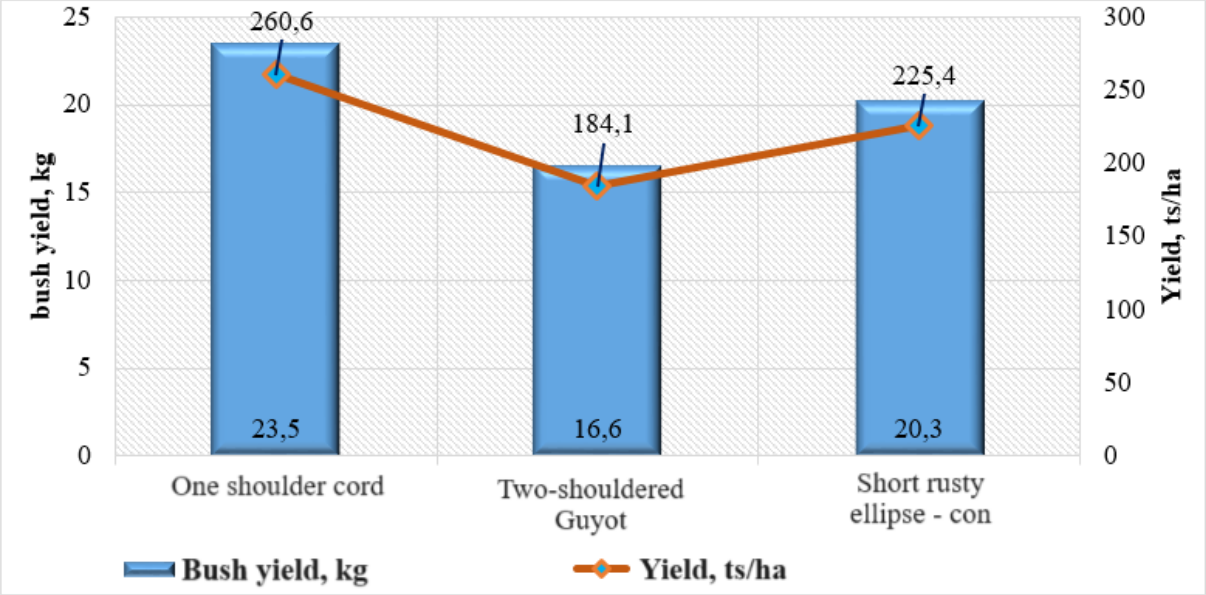

Figure 1. The influence of the cultivation method on the productivity of the local Parkent variety of grapes (2021-2023)

Since the local Parkent variety is grown mainly for technical purposes, in this experiment we also compared the mechanical composition and properties of the cluster of grape heads grown in different ways. Our observations showed that, depending on the method of cultivation, the amount of solid parts in the skin and flesh of the grape cluster also differed according to the experimental options. In this case, the smallest value of this indicator was determined in the vineyards cultivated by the single-shouldered cord method compared to the control - short rust glove-shaped method. In this experimental option, the amount of solid parts in the skin and flesh of the grape cluster did not exceed 21.3%. At this time, this indicator of the control option was 22.7%, and the difference between these breeding methods differed by 1.3%. The highest values for the amount of hard parts in the pulp and pulp were recorded in the experimental options where the vine bushes were grown by the two-shouldered Guyot method. In these experimental options, the amount of solid parts in the skin and flesh of the grape bunch reached about 24.8%. This is 2.2% more than the control option (see Figure 2).

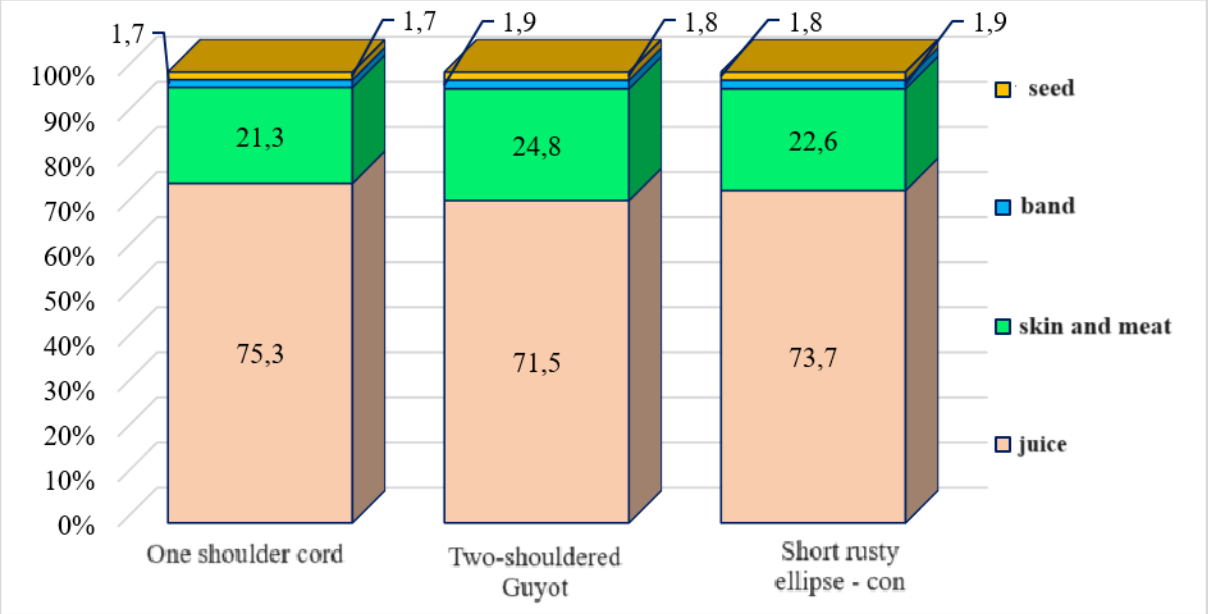

Figure 2. The influence of the cultivation method on the mechanical composition of local Parkent varieties of grapes (2021-2023)

The data in the above figure show that the mechanical composition of the grape head and the percentage of seeds differed, albeit insignificantly, depending on the method of cultivation. In this case, it was found that in the vines grown by the method of single-shouldered cordon, the amount of band and seed was relatively insignificant, but smaller. Therefore, in this experimental option, the share of the band and seed in the mechanical structure of the grape head was around 1.7%, while in the control option, this indicator was 1.9 and 1.8%, respectively. In the experimental version, where vine bushes were shaped by the two-shouldered Guyot method, this technological factor had the same value as the control version.

Depending on the difference in the amount of hard parts in the peel and flesh, the percentage of the band and the seed in the harvest obtained from vine bushes grown in different ways, the amount of juice extracted from them was also different according to the experimental options. Consequently, the highest yield of grapes was obtained from vines grown in single-shouldered cordon vines. In this experimental option, the share of juice in the mechanical composition of grape heads (obtained in a laboratory press) reached 75.3%. At this time, the amount of juice obtained from grape heads in the control option was around 73.7%, and the difference compared to the above-mentioned experimental option was 1.5% less.

Compared to the control, the least amount of juice from the grape heads was determined in the experimental option in which vine stems were shaped by the two-shouldered Guyot method. In this experimental option, the percentage of juice in the mechanical composition of the grape head did not exceed 71.5%. This means that it is 2.2% less than this indicator of the control option. This situation can be explained by the formation of grape heads and bunches of different sizes and densities, as well as the difference in the percentage of juice in them, due to the fact that the amount of perennial rusts on vine bushes and their location, the amount of productive branches and substitute branches and their

spatial location are different in different cultivation methods.

As we mentioned earlier, the amount of total sugars and organic acids in the grape bunch is of great importance in the production of high-quality juice and wine material from technical or universal varieties of grapes. After all, these indicators are one of the main criteria for determining which grapes can be used to make juice or which type of wine. Based on this idea, we made a comparative analysis of the biochemical composition of the juice obtained in laboratory conditions from the cluster of the local Parkent variety of grapes grown in different ways. In the laboratory analysis, mainly two technological factors were determined - total sugar content and titratable acidity.

Laboratory analyzes showed that the total sugar content of grape juice obtained from local Parkent grape bunches differed according to experimental options. In this case, the highest sugar content was determined in the harvest obtained from vine bushes grown by the single shoulder cord method. In this experiment, the total sugar content of bunch juice was 22.7% and was 1.6% higher than that of the control version. At this time, the sugar content of the juice obtained from the bunches of grape heads in the control option was around 21.1%. Compared to the control, the lowest expression of sugar content of bunch juice was determined in the yield of the vines grown in the two-shouldered Guyot method. In this experimental option, the sugar content of bunch juice did not exceed 20.3%. This is 0.8% less than the control option.

It is worth noting separately that, according to our opinion, the change in the sugar content of the bunches of the Parkent grape variety, when grown in different ways, the amount and location of perennial rusts on the vines, the amount of productive branches and replacement branches and their spatial arrangement changes, as a result of which air circulation between the vines, sunlight on the leaves It is explained by the nature of growth (upright or spreading) and the difference in their photosynthesis productivity. In particular, perennial rusts are slightly more common in grapevine bushes when they are grown in the short-rusted and single-shouldered cord method. On the contrary, in the Guyot method, the number of perennial rusts is minimal.

The experimental data presented in the above figure show that the acidity of the juice of the clusters of Parkent grapes grown in different ways did not differ so much according to the experimental options and was around 5.4-5.6 g/l. It was found that the titratable acidity increased insignificantly only in the option of the experiment in which the tubers were shaped by the Guyot method.

Conclusion

The method of cultivation is also an important factor affecting the productivity of the stem. The amount of buds produced by local grape varieties Parkent was the highest - 82.4% (79.3% in the control) in the vineyards grown by the one-shouldered cordon method, the number of shoots growing from the buds was high even though it was imperceptible when grown by the two-shouldered Guyot method, and the total loading 80.7% of bruises from the eyes.

When the bushes of the local Parkent variety of grapes were grown by the single-shouldered cord method, the number of harvested branches reached about 64.1% and was 3.4% higher than this indicator of the control option. It did not exceed 58.3% in vine bushes grown by the double-shouldered Guyot method.

When the local Parkent variety of grapes was grown by the single-shouldered cordon

method, the most grapes - up to 57.8 pieces - were formed. This physiological indicator did not exceed 41.7 units in the experimental option grown by the two-shouldered Guyot method, which means 9.2 units less than this indicator of the control option.

When the local Parkent variety of grapes is grown by the one-shoulder cord method, the highest yield is 23.5 kg/bush and 260.6 t/ha, and the lowest yield is 16.6 kg/bush and 184.1 t/ha in the vineyards grown by the two-shoulder Guyot method. received. At the same time, the yield in the control - short rust glove-shaped option grown by the method was 20.3 kg/bush and 225.4 t/ha. When the local Parkent grape variety was grown by the single-shouldered cord method, the amount of solid parts in the skin and flesh of the grape cluster did not exceed 21.3%, and the juice yield reached 75.3%. These technological indicators were the lowest - 24.8% and 71.5%, respectively, in the experimental option grown by the two-shouldered Guyot method. At this time, these indicators of the control option were 22.6% and 73.7%.

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