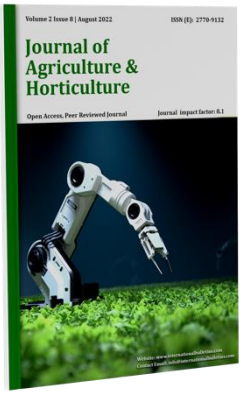

THE INFLUENCE OF PLANTATION SCHEMES ON THE PRODUCTIVITY OF RASPBERRY VARIETIES

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https://doi.org/10.5281/zenodo.10527416

ABSTRACT

In this article, the effect of different planting schemes on the yield of Barnaulskaya and Progress raspberry varieties is studied. In this case, the yield of raspberry varieties was analyzed according to the following 2,0×0,3 m, 2,0×0,4 m, 2,0×0,5 m, 2,5×0,3 m, 2,5×0,4 m, 2,5×0,5 m planting schemes. Productivity was higher in the 2,0×0,4 m planting scheme compared to other schemes and was 82,9 s/ha in the Barnaulskaya variety and 125,0 s/ha in the Progress variety.

KEYWORDS: *raspberry, varieties, planting scheme, productivity, weight of one fruit, yield per bush.*

INTRODUCTION

Raspberry productivity depends on the specific characteristics of each variety, the number of branches on a raspberry bush, agrotechnical measures and planting schemes. It is very important to choose the right planting scheme when growing raspberries. Because the planting schemes during the cultivation of raspberry varieties can cause a violation of the photosynthesis process in the leaves due to the thickening of the branches in the plant, and this directly depends on the productivity. In addition, as a result of the violation of air circulation between the bushes and the increase of moisture between the bushes, conditions for the development of diseases and pests can be created in the plant.

The ripening period of the raspberry plant lasts a long time. It takes place in the same sequence as the formation and differentiation of flower buds. First, the fruits are yields on the side branches closer to the tip of the branches, and then the fruits on the lower part of the branch are yields. After the raspberry is pollinated, a berry is formed. Formed fruits are first green, then red, yellow and other colors depending on the variety [2].

Raspberry is a light-demanding plant that cannot tolerate shade for a long time. As a result of lack of light, the growth period of young branches is delayed, the number of fruiting branches decreases, the number of fruits and their mass decreases. At the same time, the taste qualities of the fruits and their biochemical composition deteriorate. As a result of low light, metabolic processes are disturbed and plants are easily affected by pests and diseases [3, 4]. Therefore, in order to find optimal planting schemes that positively affect the growth and development of the raspberry bush, the impact of planting schemes on productivity was studied for the years 2019-2021.

MATERIALS AND METHODS

The method "Calculations and phenological observations in experiments with fruit and

berry fruit plants" (Buriev Kh.Ch., Enileev N.Sh and others, 2014) was used to study the productivity of raspberry varieties. In this case, ordinary Barnaulskaya and remontant Progress varieties of raspberry 2,0×0,3 m, 2,0×0,4 m, 2,0×0,5 m, 2,5×0,3 m, 2,5×0,4 m, 2,5×0,5 m planting schemes and yield was determined.

RESULTS AND DISCUSSION

During the years of research, the productivity indicators of Barnaulskaya and Progress raspberry varieties were determined in 2,0×0,3 m, 2,0×0,4 m, 2,0×0,5 m, 2,5×0,3 m, 2,5×0,4 m, 2,5×0,5 m planting schemes. In this case, the average weight of one fruit was 2,7 g, the yield per bush was 722,3 g, and the total yield per hectare was 68,6 s/ha in the 2,0×0,5 m (control) planting scheme.

The average weight of one fruit of the Barnaulskaya variety was 3,1 grams compared to the control in the 2,5×0,5 m planting scheme. Compared to the control, the lowest indicator was 2,0 grams per fruit in the planting scheme of 2,0×0,3 m. When the productivity indicators of one bush were determined and analyzed, the higher indicator was 843,3 grams observed in the 2,5×0,5 m planting scheme compared to the control option. Compared to the control, the lowest indicator of the yield per bush was observed in the 2,0×0,3 m planting scheme and was 515,3 grams. Barnaulskaya variety, when the yield indicators on 1 hectare were determined in different planting schemes, the highest yield compared to the control was observed in the 2,0×0,4 planting scheme due to the number of seedlings and the abundance of side branches on the bush and it was 82,9 s/ha. Compared to the control, the lowest productivity index was 64,0 s/ha in the 2,5×0,5 planting scheme (Table 1).

Table 1

Productivity of raspberry varieties in different planting schemes (2019-2021)

Planting scheme, m	Weight of one fruit, g (M±m)	Yield in one bush, g (M±m)	Productivity s/ha (M±m)	Relative to control, %
Barnaulskaya				
2,0×0,5 (control)	2,7±0,18	722,3±54,1	68,6±5,1	100
2,0×0,4	2,4±0,14	698,7±45,2	82,9±5,3	120,8
2,0×0,3	2,0±0,15	515,3±36,7	81,2±5,8	118,4
2,5×0,5	3,1±0,12	843,3±40,1	64,0±3,0	93,4
2,5×0,4	2,6±0,08	716,0±25,7	68,0±2,4	99,2
2,5×0,3	2,3±0,08	528,0±25,1	66,7±3,1	97,2
EKF_{05}	0,1	3,4	1,1	-
Sx %	0,8	0,1	0,3	-
Progress				
2,0×0,5 (control)	3,7±0,23	1085,3±72,9	103,1±6,9	100
2,0×0,4	3,5±0,08	1052,7±26,8	125,0±3,1	121,2
2,0×0,3	2,8±0,17	775,0±50,5	122,2±7,9	118,5
2,5×0,5	4,2±0,17	1147,3±41,7	87,1±3,1	84,5

2,5×0,4	3,8±0,15	1106,3±17,2	105,0±1,6	101,8
2,5×0,3	3,3±0,15	789,3±28,3	99,7±3,5	96,7
EKF_{05}	0,2	2,2	0,9	-
Sx %	0,8	0,1	0,1	-

The productivity of the Progress variety in different planting schemes was similar to the Barnaulskaya variety, but the Progress variety had higher productivity indicators due to the large number of side branches on the bush and the higher assimilation surface of the bush compared to the Barnaulskaya variety.

In the 2,0×0,5 m (control) planting pattern of the Progress variety, the average weight of one fruit was 3,7 g, the yield per bush was 1085,3 g and the total yield per hectare was 103,1 s/ha. In the Progress variety, the weight of one fruit was higher in the 2,5×0,5 m planting scheme compared to the control and was 4,2 grams, while the lowest value compared to the control was 2,8 grams in the 2,0×0,3 m planting scheme. The yield indicators per bush in the 2,5×0,5 m planting scheme were higher than the control option and amounted to 1147,3 grams. Compared to the control option, the lowest indicator of the yield per bush was observed in the 2,0×0,3 m planting scheme and was 775,0 grams. The productivity indicators of 1 hectare studied in different planting schemes compared to the control option, the highest result was observed in the 2,0×0,4 planting scheme and was 125,0 s/ha. Compared to the control option, the lowest productivity index was 87,1 s/ha in the 2,5×0,5 planting scheme (Figure 1).

Figure 1. The process of determining the productivity of raspberry varieties

During the years of research, when analyzing the yield of Barnaulskaya and Progress varieties of raspberries according to the planting schemes, the average weight of fruits and the yield per bush were lower in the densely planted schemes between the bushes, but the yield per hectare increased due to the number of seedlings and side branches per bush. On the other hand, in the schemes planted sparsely between the bushes, the fruits were large and the yield per bush was high, but the yield per hectare was lower.

CONCLUSION

Among the studied planting schemes Barnaulskaya and Progress varieties showed the highest yield in the 2,0×0,4 m planting scheme Among the planting schemes, the yield in the 2,0×0,3 m planting scheme was close to the yield in the 2,0×0,4 m planting scheme, but in the 2,0×0,3 m

planting scheme, due to the thickness of the branches between the bushes, air circulation and light under the bush as a result of the difficulty of reaching the leaves, the rate of photosynthesis in the leaves of the plant decreased, and the productivity showed a slightly lower result than the 2,0×0,4 m planting scheme. Among the studied planting schemes, the 2,0×0,4 m planting scheme was considered the most optimal for effective treatment against diseases and pests in raspberry varieties, for growing quality fruits and obtaining a high yield.

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