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BIOLOGICAL AND POMOLOGICAL PROPERTIES OF JOSTABERRIES IN THE AREA OF BIJELO POLJE, NORTHEAST OF MONTENEGRO

SUMMARY

The subject of this study was the major characteristics of jostaberries in the northeastern part of Montenegro, specifically in the conditions of the area of Bijelo Polje. The following biological characteristics were analyzed: vegetative growth, leaf anatomy and yield. With regards to pomological features, cluster characteristics and physical properties of the fruit were analyzed.

Key words: josta berries, bushes, grape, berry, bud, yield.

INTRODUCTION

Jostaberries fruit is a cluster of 5-10 berries. The berries are dark purple to black and have a smooth surface. The fruit has excellent flavour (Mišić et al. 1994). It can be used fresh, but also for processing into juices, wines, jams, compotes and for deep freezing (Milošević, 1997). It contains about 900-1000 mg/l of vitamin C. When compared to other fruit, jostaberries are among richest in vitamin C (Mišić et al. 1994th and Grozdanić, 2009). Jostaberries are self-fertile and have no special soil requirements. They are propagated from prunings and cuttings (Mišic et al. 1994.). They are more resistant to frost and disease than their parents (Milošević, 1997.). It is planted with spacing 3 x 0.7-1m (per 1ha 3333 to 5600 trees), and in the front gardens it can be 1 to 1.2 m² per plant. This hybrid was introduced to the area of the former Yugoslavia, but it was not studied enough, it is not much present in the plantations and can be found mainly in front gardens (Mišić et al. 1994).

As there are few data on economic characteristics of jostaberries, a biological and pomological analysis is significant for both – the science and practice of fruit growing.

MATERIAL AND METHODS

Biological and pomological analysis of jostaberries was conducted on private farms in the area of Bijelo Polje, Montenegro in the period 2009-2010.

The materials were rows of 20 jostaberry bushes planted with a spacing of 1m between bushes. These plants are used for picking fruits and for analysis of vegetative development and pomological characteristics. Vegetative plant growth was followed by measuring and counting; Cluster and berry characteristics – by

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measuring the dimensions with a calliper and measuring the mass on a balance with three decimal places accuracy; Inflorescence morphology – by counting; Leaf area – with portable area meter.

RESULTS AND DISCUSSION

The research results are shown in Tables 1 to 7.

The results of the total vegetative plant growth are better than those of its parents. The presented results show that jostaberries have many annual shoots per plant (34.2) that will produce fruit, a large number of shoots in general (75.7) and a number of mixed buds per shoot. Compared with studies conducted by Nenadović-Mratinić et al. (1990), our results show a slightly smaller number of mixed buds per shoot and annual shoots per plant.

Table 1 – The overview of the results of the vegetative growth

Parameters	Jostaberries
Number of tillers per plant	75,7
Number of annual shoots per plant	34,2
Length of annual shoots (cm)	58,9
The total number of buds per shoot	20,3
Number of mixed buds per shoot	7,1

Table 2 – Leaf characteristics

Parameters	Jostaberries
Petiole length (mm) Dužina lisne drške (mm)	42,36
Leaf area (cm^2) Površina lista (cm^2)	29,65

As this hybrid plant has a vigorous bush, the study revealed greater leaf area and petiole length.

Table 3 - Yield characteristics

Parameters	Jostaberries
Number of fertile shoots per plant	34,2
Yield per plant (kg)	3,85

All of the above indicators of vegetative development allow more intensive photosynthesis and therefore higher yield per plant or unit area. Our results correspond to the data obtained by Nenadović-Mratinić et al. (1990).

Table 4 - Inflorescence characteristics

Parameters	Jostaberries
Number of inflorescences per shoot	13,15
Number of flowers per inflorescence	3,15
Number of flowers per shoot	42,62

Eames (1961) states that the flowers of jostaberries are gathered in a cluster of flowers. In this study, the number of flowers per inflorescence was 3.15, and the number of inflorescences per shoot 13.15, so the total number of flowers per shoot was 42.62.

Table 5 – Cluster and berry characteristics

Parameters	Jostaberries
Cluster length (cm)	4,13
Cluster mass (g)	5,08
Number of berries	3,03

Table 6 – Physical properties of berries

Parameters	Jostaberries
Berry mass (g)	4,13
Berry length (mm)	14,44
Berry width (mm)	14,27
Shape index	0,988

Fruit size is in direct proportion with its weight, so the bigger fruits had larger dimensions. The obtained data on the cluster and berry characteristics generally coincide with the results Nenadović-Mratinić et al. (1990) got in their research.

Table 7 – Phenophases of flowering and fruiting

Flowering			Fruiting		
Beginning	In full flower	End	Beginning	Full ripening	End
26.04	01.05	09.05	22.06	14.07	20.07

In this area jostaberries usually bloom in late April and early May, and so they avoid late spring frosts that rarely occur after this period. Jostaberries begins to ripen in late June untill the end of July, so the fruiting lasts for almost a month.

CONCLUSIONS

The studied hybrid is vigorous with a large number of annual shoots per plant and a large number of buds per plant. Jostaberries` one-year shoots produce fruit, and the yield is higher than the yield of black currants. Jostaberries in Bijelo Polje area are flowering at a time when the risk of late spring frosts is reduced, which is a very positive characteristic of this hybrid. The fruit ripening lasts for a month, but it depends on the micro location in which it is grown as well as on the effects of agricultural and pomotechnical measures.

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PROUČAVANJE VAŽNIJIH BIOLOŠKO-POMOLOŠKIH OSOBINA JOSTE NA PODRUČJU BIJELOG POLJA, SJEVEROISTOK CRNE GORE

Proučavane su važnije osobine joste u uslovima Bijelog Polja. Od bioloških osobina analizirane su: vegetativna razvijenost, karakteristike lista i rodnost. Od pomoloških: karakteristike grozda i fizičke osobine ploda.

Ključne reči: Josta, žbun, grozd, bobica, pupoljak, prinos.