

STUDY ON THE BEHAVIOR OF SOME SEEDLESS GRAPEVINE VARIETIES UNDER VARIOUS PRUNING METHODS

STUDIU PRIVIND COMPORTAREA UNOR SOIURI DE VIȚĂ DE VIE APIRENE LA DIFERITE METODE DE TĂIERE ÎN USCAT

**BOTNARENCO A.^{1*}, SAVIN GH.¹, CORNEA V.¹,
ANTOCI A.¹, CRAVEȚ NATALIA¹,**
*Corresponding author e-mail: andrei.botnarenco@gmail.com

Abstract. *The main aim of the work was to study the behavior of some seedless grapevine varieties (Apiren negru de Grozești, Apiren roz and Apiren Bessarabean) to various pruning methods of the canes at 2+3-4 buds and 2+7-8 buds, the reaction of each variety to the norming of inflorescences/grapes. The parameters characterizing the production and quality of grapes were determined: the average weight of a grape, the yield per plant and hectare, the sugar and titratable acidity content of the must. The results are generalized over three years of study (2019-2021) and, from a statistical point of view, a significant influence of the climatic conditions of the years on the values of the studied characters was found. The significant difference between the variants on pruning length was found only in the accumulation of sugar content for the Apiren roz variety and insignificant in the rest of the characters.*

Key words: grapevine, seedless varieties, pruning and norming of grapes

Rezumat. *Scopul principal al lucrării a fost de a studia comportarea unor soiuri apirene raionate (Apiren negru de Grozești, Apiren roz și Apiren Basarabean) la diferite metode de tăiere în uscat a coardelor la 2+3-4 ochi și 2+7-8 ochi, de asemenea reacția fiecărui soi în parte la normarea inflorescențelor/strugurilor. S-au determinat parametrii, care caracterizează producția și calitatea strugurilor: greutatea medie a unui strugure, producția la butuc și la hectar, conținutul de zahăr și aciditate titrabilă în must. Rezultatele sunt generalizate pe trei ani de studiu (2019-2021) și, din punct de vedere statistic, s-a constatat o influență semnificativă a condițiilor climatice la valorile caracterelor studiate. Diferența semnificativă dintre variante pe lungimea de tăiere s-a constatat numai la acumularea conținutului de zahăr la soiul Apiren roz și nesemnificativă la restul caracterelor.*

Cuvinte cheie: vița de vie, soiuri apirene, tăierea în uscat și normarea strugurilor

¹ Research and Practical Institute for Horticulture and Food Technologies, Chisinau, Republic of Moldova

INTRODUCTION

Grapevine pruning is one of the most important jobs during the rest period of vineyard. The correct establishment of the number of buds to retain on each individual bush, depending on the vigor of growth and, also the correct performance of green operations in optimal terms, determines the stability of the harvest from year to year, the normal growth and development of the shoots, which essentially influences the quality of the grapes and plantation longevity.

The optimal buds load of the bush can be obtained by the pruning according to the biological method (Mihailiuc, 1975; Agroukazaniya, 1989). This method ensures a balanced development of the shoots of which no less than 50% are normal shoots with a length of 120-150 cm and a diameter of 7-12 mm, which is characterized by a high degree of maturation (80-90%) and a good deposition of inflorescences in winter eyes. In good wintering conditions and compliance with technological works, this method ensures optimal, stable, high-quality harvests.

The study of the optimization of the pruning system was carried out according to the types of plantations both for classic varieties and for those of new selection depending on the training system, the condition of the 1 year-old canes and the winter buds. It has been found that on the bushes trained with the trunk increase the potential fertility and the viability of the buds. This conclusion argues for the possibility of switching from long pruning of canes to shorter pruning while respecting the optimal buds load, taking into account the growth vigor of the bush.

MATERIAL AND METHOD

The research was carried out during the years 2019-2021 within the experimental sector of the grapevine Genofond of I.P. IȘPHTA (46°58'39.65" N and 28°46'21.68" E). The seedless varieties Apiren negru de Grozești, Apiren roz and Apiren Basarabean, recommended for cultivation in the agro-industrial sector of the Republic of Moldova, were included in the study (Savin, 2012; Catalog of plant varieties, 2022). Planting scheme of 3.00x1.50 m, the training system of the bushes is bilateral cordon on the trunk of 80 cm. Vertical trellis with 3 wire levels. The arms of the cordon are placed on the first wire, and on the following they during the vegetation are tied vertically-obliquely the shoots. During these years, two pruning lengths of canes were studied: 2+3-4 buds and 2+7-8 buds. Average grape weight, the yield on the bush, sugar content and tritrable acidity in the must were determined.

RESULTS AND DISCUSSIONS

The results obtained during the years 2019-2021 are presented in table 1.

Seedless varieties with a universal use (fresh grapes, raisins, jam, wine, etc.) are characterized by a medium ripening period (Apiren negru de Grozești and Apiren Basarabean) and medium-late (Apiren roz) (Savin, 2012; Savin *et al.*, 2017).

Table 1

Productivity and quality of grapes depending on the buds load on the bush

Year of research	Variant		No. of infi./ grapes on bush	Weight of bunch, g	Yield on:		Content of must in:	
	pruning method	No. of retained buds			bush, kg	1 ha, t	sugar, g/dm ³	titratable acidity, g/dm ³
Apiren negru de Grozești								
2019	2+3-4	31	43/20	246	4.9	9.8	218	7.9
	2+7-8	45	58/20	225	4.5	9.0	199	8.0
2020	2+3-4	40	35/20	127	2.5	5.0	216	7.8
	2+7-8	60	42/20	121	3.0	6.0	214	8.0
2021	2+3-4	39	60/30	224	6.7	13.4	226	10.1
	2+7-8	38	52/30	220	6.6	13.2	207	10.7
Average value	2+3-4	43	46/23	199	4.7	9.4	220	8.6
	2+7-8	54	51/23	189	4.7	9.4	207	8.9
Apiren roz								
2019	2+3-4	28	34/20	427	8.5	17.0	210	6.8
	2+7-8	33	37/20	350	7.0	14.0	207	6.9
2020	2+3-4	37	27/20	238	4.8	9.6	204	7.9
	2+7-8	49	29/20	210	3.2	6.4	201	8.2
2021	2+3-4	44	31/30	317	9.5	12.0	199	8.6
	2+7-8	49	54/30	310	9.3	13.6	197	8.8
Average value	2+3-4	36	31/23	327	7.0	15.2	204	7.8
	2+7-8	44	40/23	290	6.5	13.0	202	8.0
Apiren Basarabean								
2019	2+3-4	34	35/20	224	4.5	9.0	220	8.0
	2+7-8	38	41/20	205	4.1	8.2	204	6.7
2020	2+3-4	44	28/20	156	3.1	6.2	212	2.4
	2+7-8	54	40/20	140	4.2	8.4	211	2.6
2021	2+3-4	54	39/30	170	5.1	10.2	239	10.4
	2+7-8	74	56/30	170	5.1	10.2	238	10.7
Average value	2+3-4	44	34/23	183	4.2	8.5	224	9.9
	2+7-8	55	46/23	172	4.5	8.9	218	9.0

The average grape yield varied depending on the variety from 8.5-8.9 t/ha for the Apiren Basarabean variety and from 13.0-15.2 t/ha for the Apiren roz variety. On the pruning of canes on 2+3-4 buds, the reaction of the Apiren roz variety was more visible and for the weight of the grapes. According to the sugar content, the variant with cutting at 2+3-4 buds was also highlighted for all the varieties, but the highest sugar content was obtained for the Apiren Basarabean variety - of 224 g/dm³ in the average over 3 years. The highest development of inflorescences was observed in 2021 for all varieties, due to the abundant precipitations from May-June, which significantly influenced the growth and normal development of the shoots.

Performed ANOVA analysis show that, from a statistical point of view, a significant influence of the climatic conditions of the years on the values of the

studied characters was found. The significant difference between the variants on pruning length was found only in the accumulation of sugar content for the Apiren roz variety and insignificant in the rest of the characters.

CONCLUSIONS

1. The new seedless varieties can be cultivated on unprotected culture on a 0.8 m trunk, applying the short pruning of the canes on 2+3-4 buds while respecting the optimal load of buds according to the biological method.

2. The lack of precipitation (year 2020) influenced the average weight of the grape for all varieties, but it was more significant for the Apiren roz variety.

3. It has been found that the regulation of inflorescences/grapes is mandatory to be carried out annually in order to obtain high quality production.

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