

**MODERN PRODUCTIVITY ELEMENTS OF LOCAL
AND AUTOCHTHONOUS GRAPE CULTIVARS FROM
THE AMPELOGRAPHIC COLLECTION OF RDSVW DRĂGĂȘANI**

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Keywords: *vineyard, grape cultivars, coefficient of variation, productivity, germplasm*

ABSTRACT

The study was carried out in the ampelographic collection of RDSVW Drăgășani, a collection that is part of the national viticultural germplasm. During the period of 2020-2022, the productivity elements of local and autochthonous Romanian grape cultivars were monitored, demonstrating the fact that they are grape cultivars of a certain value both from a productive and qualitative point of view. In addition to the observations and determinations made in the collection field, statistical significance was determined by the post hoc Tukey test ($p < 0.05$). The purpose of this study was to enhance the value of these Romanian grape cultivars in order to obtain quality white and red wines, their promotion in the future, so as not to lose a valuable national viticultural genetic fund.

INTRODUCTION

The Drăgășani vineyard was and is still famous for its red and white wines. The assortment of grape cultivars in the old plantations before the attack of phylloxera consisted of valuable native and local grape cultivars (Cichi and Costea 2008; Cichi et al, 2009, Mărăcineanu, 2011).

The pre-phyloxera assortment of grape cultivars for white wines in the Drăgășani Vineyard under study is "Cârlogancă", "Românie", "Slaviță", "Teișor" (Gorjan, 2013).

The pre-phyloxera assortment for red wines from the Drăgășani Vineyard under study contains the following grape cultivars: "Bătută neagră", "Negru mare", "Negru vârtos", "Negru Românesc" (Măcău and Gorjan, 2016).

MATERIAL AND METHODS

Since the biological material studied is found in the ampelographic collection at the Research and Development Station for Viticulture and Vinification (RDSVW) Drăgășani, the experience is organized within the collection fields located on the territory of this research unit.

The collection has in its composition a number of 5-20 grafted plants of each grape cultivar and is organized according to the method of randomized blocks, with 5 repetitions containing a number of 1-4 plants of each grape cultivar.

Observations were made regarding the productivity elements over a period of three years 2020-2022, the cutting system used being dr. Guyot bilaterally. The number of grapes per bunch (no), grape weight (g), grape berry weight (g), grape size (cm), 100 seed weight (g), seed length (mm), seed width (mm), the weight of 100 seeds (g).

For statistical interpretation, the following were used: mean, variance (s²), standard deviation (s) and coefficient of variation (CV%). Statistical significance was determined using ANOVA and Tukey's post hoc test (p < 0.05) (Boștinariu, 2023)

RESULTS AND DISCUSSIONS

Regarding the number of grapes per hub, we have a three-year average of 18.7 grapes for the "Cârlogancă" variety, at "Românie" and "Slaviță", of 17 and 17.1 grapes respectively "Teișor" 22.8 grapes per plant. "Bătută neagră" 23.8 grapes per vine, "Negru mare" - 13.7 grapes per plant. "Negru vârtos" - 24.3 grapes per plant and "Negru Românesc" - 16.7 grapes per plant. The differences are insignificant, with a significant exception of the variety "Negru mare" with a lower number of grapes per plant of 13.7 (table 1 and fig 1).

Table 1

	Number of grapes per plant				
	2020	2021	2022	Average	Signification
"Cârlogancă"	20,3	16,3	19,3	18,7	ABC
"Românie"	16,3	17,3	17,3	17,0	BC
"Slaviță"	16,3	17,3	17,7	17,1	BC
"Teișor"	22,0	22,7	23,7	22,8	AB
"Bătută neagră"	24,7	25,0	21,7	23,8	AA
"Negru mare"	12,0	13,7	15,3	13,7	C
"Negru vârtos"	26,7	20,7	25,7	24,3	A
"Negru românesc"	17,0	16,3	16,7	16,7	BC
Average	19,4	18,7	19,7		

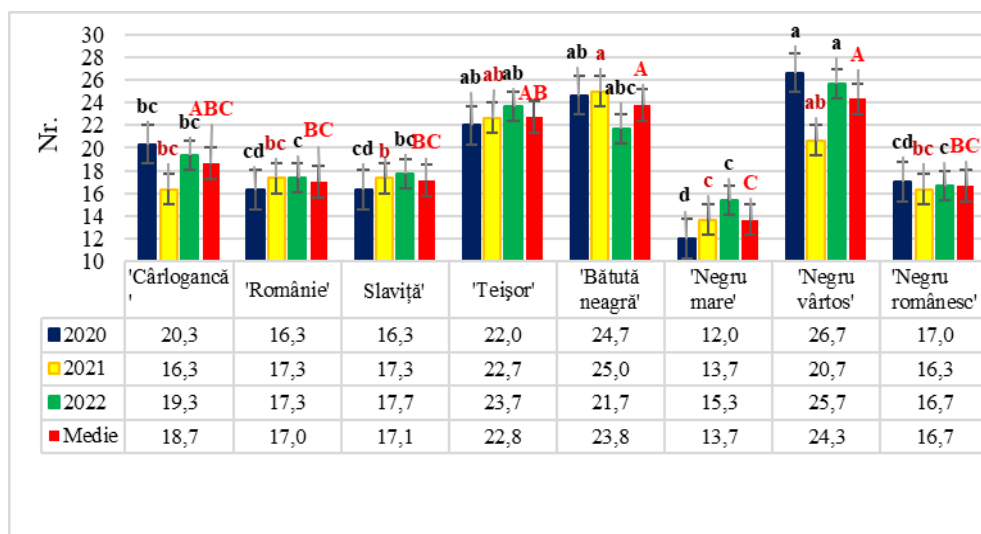


Figure 1 Number of grapes per plant

The average weight of the grape (g) over the three years studied for these grape cultivars is as follows: “Cârloganca” 685.3 g with the highest weight compared to the other varieties: Românie 400.7 g, “Slaviță” 204.8 g, Teișor 190.7g, “Bătută neagră” 356.3 g, “Negru mare” 432.6 g, “Negru vârtos” 408.2 g and “Negru Românesc” with 436.8 g. We have insignificant differences in most grape cultivars, significant differences being in the varieties “Slaviță” 204.8 g, “Teișor” 190.7 g and “Cârloganca” 685.3 g (table 2 and fig 2).

Table 2

The average weight of the grape (g)

	2020	2021	2022	Average	Signification
“Cârlogancă”	583,0	685,3	787,7	685,3	A
“Românie”	391,7	408,7	401,7	400,7	B
“Slaviță”	208,3	197,7	208,3	204,8	C
“Teișor”	187,0	198,0	187,0	190,7	C
“Bătută neagră”	361,0	357,0	351,0	356,3	B
“Negru mare”	417,7	432,7	447,3	432,6	B
“Negru vârtos”	406,3	406,0	412,3	408,2	B
“Negru românesc”	438,7	438,0	433,7	436,8	B
Average	374,2	390,4	403,6		

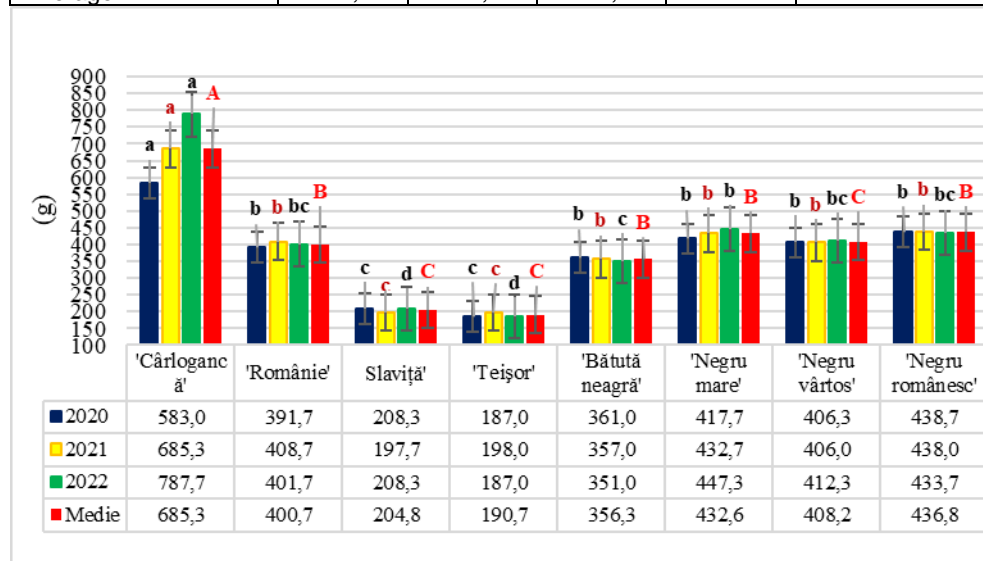


Figure 2 The average weight of the grape

According to Tukey’s post-hoc test regarding the average weight berry of the grape (g), we have insignificant differences in all the analyzed grape cultivars, the average seed weight having values between 1.9-4.4g (table 3 and fig 3).

The average size of the grapes (cm) for these grape cultivars over the three years studied is between 13.6 cm and 20.8 cm. Therefore, we have the following determinations “Cârlogancă” 19.4 cm, “Românie” 18 cm, “Slaviță” 13.6 cm, Teișor 15.3 cm, “Bătută neagră” 18.4 cm, “Negru mare” 20.2 cm, “Negru vârtos” 20.8 cm and “Negru Românesc” 19.7 cm. There are significant differences in the grape cultivars “Slaviță” and “Teișor”, which have small values, namely 13.6 cm and 15.3

cm, respectively, the other grape cultivars showing insignificant differences (table 4 and fig 4).

Table 3

The average weight berry of the grape (g)

	2020	2021	2022	Average	Signification
“Cârlogancă”	3,0	2,3	2,3	2,6	B
“Românie”	2,0	2,0	2,0	2,0	B
“Slaviță”	1,7	2,0	2,0	1,9	B
“Teișor”	2,0	2,0	2,0	2,0	B
“Bătută neagră”	4,0	4,0	4,3	4,1	AB
“Negru mare”	4,3	5,0	4,0	4,4	A
“Negru vârtos”	2,0	2,0	2,0	2,0	B
“Negru românesc”	4,0	4,0	4,0	4,0	AB
Average	2,9	2,9	2,8		

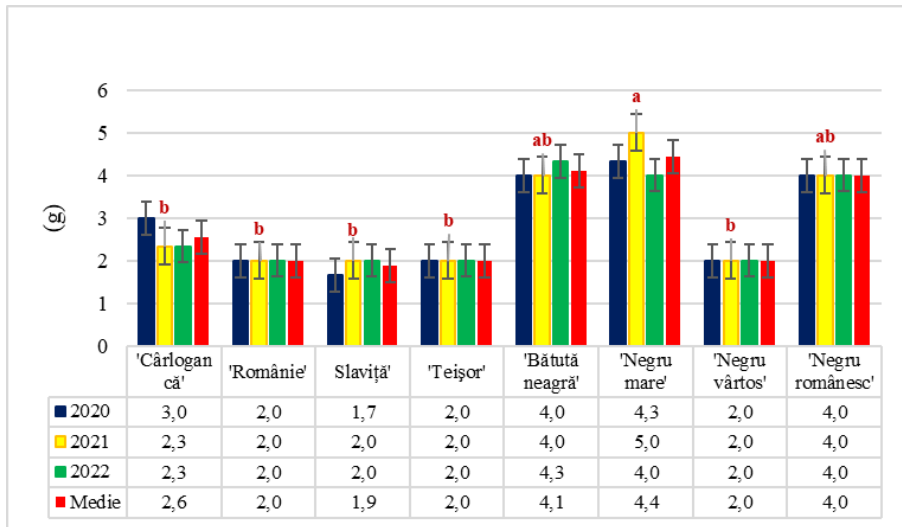


Figure 3 The average weight berry of the grape

Table 4

Average size of the grapes (cm)

	2020	2021	2022	Average	Signification
“Cârlogancă”	19,0	19,0	20,3	19,4	A
“Românie”	17,7	17,7	18,7	18,0	AB
“Slaviță”	12,7	13,3	14,7	13,6	C
“Teișor”	14,3	16,0	15,7	15,3	BC
“Bătută neagră”	18,3	19,0	18,0	18,4	AB
“Negru mare”	20,0	20,0	20,7	20,2	A
“Negru vârtos”	21,3	20,7	20,3	20,8	A
“Negru românesc”	20,0	20,0	19,0	19,7	A
Average	17,9	18,21	18,41		

The average weight of 100 berries of the “Cârlogancă” grape cultivar is 275,5 g, for the “Negru mare” grape cultivar of 436 g, the rest of the grape cultivars having

a lower weight, there being significant differences between the grape cultivars (according to table 5 and fig 5).

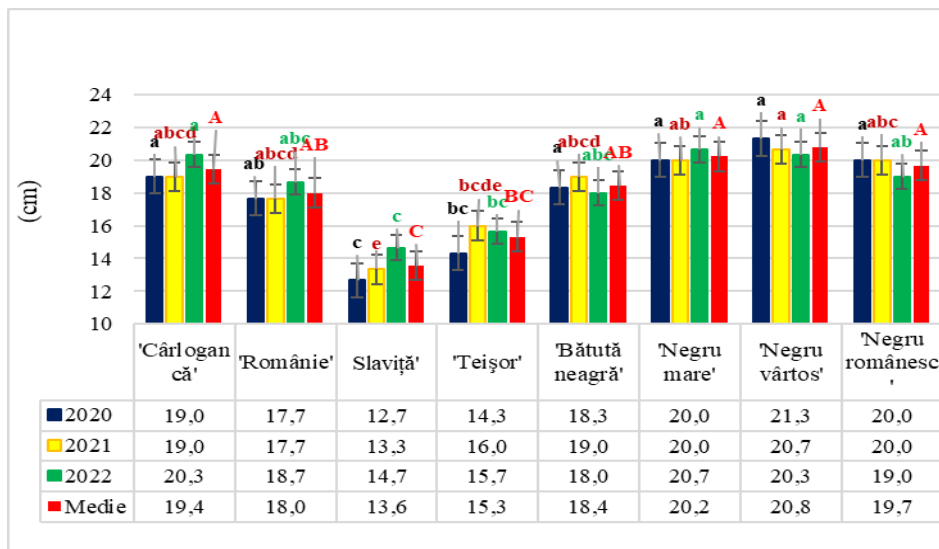


Figure 4 Average size of grapes

Table 5

Average weight of 100 berries (g)

	2020	2021	2022	Average	Signification
"Cârlogancã"	284,46	273,33	269,00	275,5	A
"Romãnie"	263,3	259,33	265,33	262,7	B
"Slaviřã"	202,0	203,66	194,33	200,0	C
"Teiřor"	187,3	189,33	187,33	188,0	C
"Bãtutã neagrã"	315,7	324,00	320,33	320,0	B
"Negru mare"	438,7	436,66	432,66	436,0	A
"Negru vãrtos"	201,0	205,00	204,33	203,4	C
"Negru romãnesc"	308,3	316,66	314,66	313,2	B
Average	275,1	276,00	273,50		

Regarding average length of grape seeds (mm), it varies in these grape cultivars between 4.8 mm and 7.1 mm on the three repetitions studied, with significant differences between the grape cultivars (table 6 and fig 6).

The average width of grape seeds (mm) shows insignificant differences in all the analyzed varieties, the width of the seeds being between 3 mm and 5.1 mm (table 7 and fig 7).

The average weight of 100 seeds is 41.3 g at "Cârlogancã", 23 g in "Romãnie", 39.9 g to "Slaviřã", Teiřor 37.9 g, "Bãtutã neagrã" 37.9 g, "Negru mare" 35.1 g, "Negru vãrtos" 40 g and "Negru Romãnesc" 67.7 g. There are significant differences in the studied grape cultivars (table 8 and fig 8) (Bořtinaru, 2023).

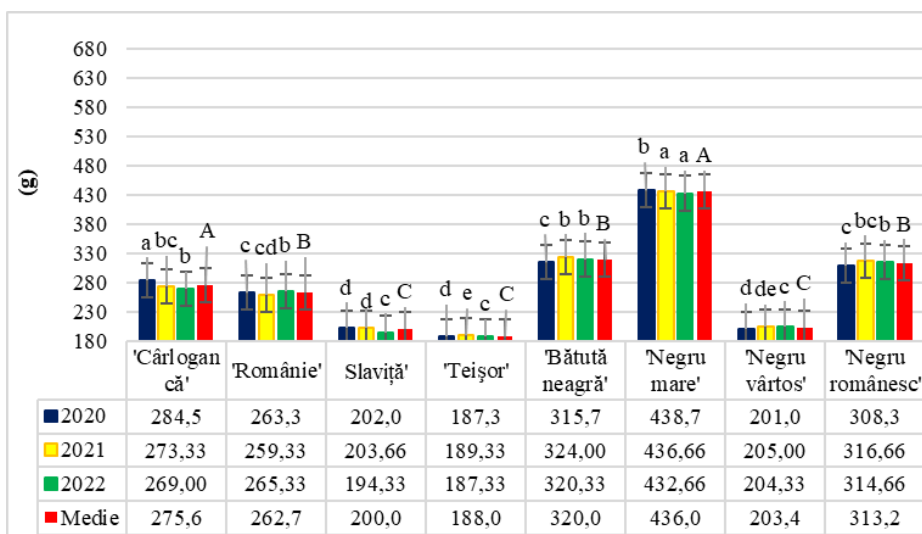


Figure 5 Average weight of 100 berries

Table 6

Average length of grape seeds (mm)

	2020	2021	2022	Average	Signification
"Cârlogancă"	5,7	5,7	5,7	5,7	BC
"Românie"	4,7	5,0	4,7	4,8	C
"Slaviță"	5,7	5,7	3,0	4,8	C
"Teișor"	5,7	5,7	5,7	5,7	BC
"Bătută neagră"	6,7	6,0	6,7	6,4	ABC
"Negru mare"	8,0	7,7	7,7	7,8	A
"Negru vârtos"	6,0	6,0	6,0	6,0	BC
"Negru românesc"	7,0	7,3	7,0	7,1	AB
Average	6,2	6,12	5,79		

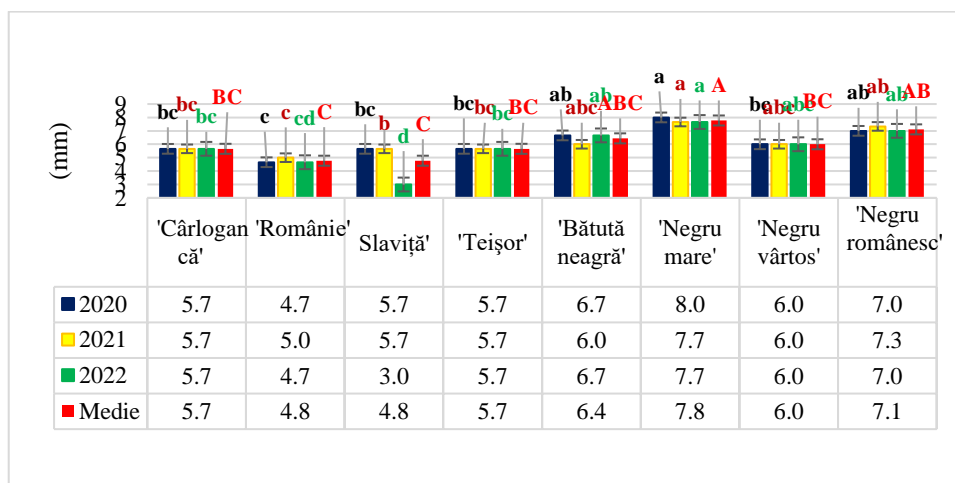


Figure 6 Average length of grape seeds

Table 7

Average width of grape seeds (mm)

	2020	2021	2022	Average
"Cârlogancă"	4,0	4,0	4,0	4,0
"Românie"	3,0	3,0	3,0	3,0
"Slaviță"	3,0	3,0	3,3	3,1
"Teișor"	4,3	4,3	4,3	4,3
"Bătută neagră"	4,0	4,0	4,0	4,0
"Negru mare"	5,0	5,0	5,0	5,0
"Negru vârtos"	4,0	4,3	4,0	4,1
"Negru românesc"	5,0	5,3	5,0	5,1
Average	4,0	4,12	4,08	

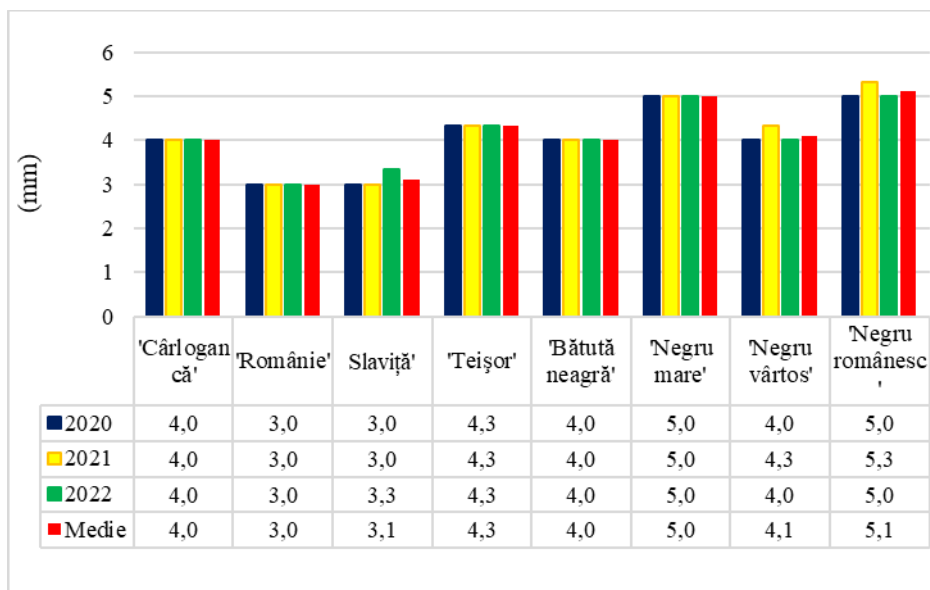


Figure 7 Average width of grape seeds

Table 8

Average weight of 100 seeds (g)

	2020	2021	2022	Average	Signification
"Cârlogancă"	41,0	42,0	41,0	41,3	B
"Românie"	22,7	23,3	23,0	23,0	E
"Slaviță"	40,0	40,0	39,7	39,9	BC
"Teișor"	38,0	38,0	37,7	37,9	C
"Bătută neagră"	38,0	37,7	38,0	37,9	C
"Negru mare"	35,0	35,3	35,0	35,1	D
"Negru vârtos"	40,0	40,0	40,0	40,0	BC
"Negru românesc"	67,3	68,0	67,7	67,7	A
Average	40,2	40,54	40,25		

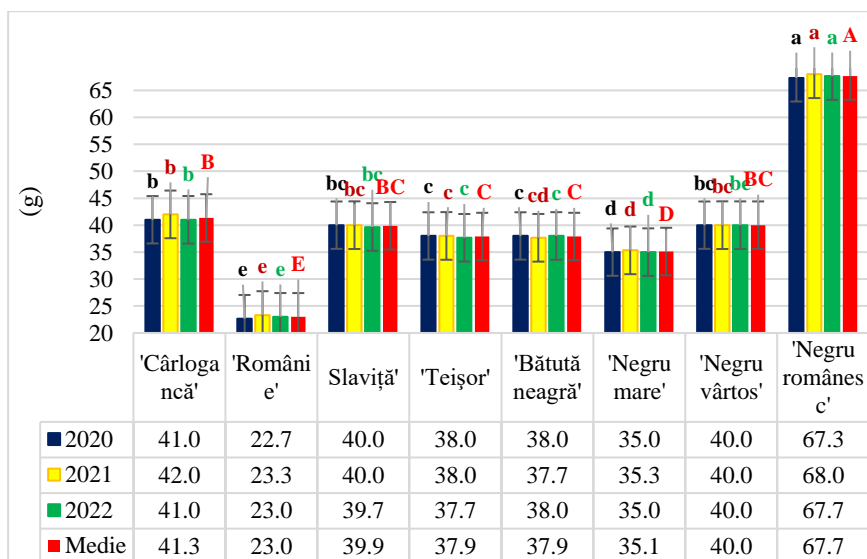


Figure 8 Average weight of 100 seeds

CONCLUSIONS

The autochthonous and local grape cultivars studied ("Cârlogancă", "România", "Slaviță", "Teișor", "Bătuță neagră", "Negru Mare", "Negru vârtos", "Negru Românesc") are among those that have part of the old assortment of the Drăgășani vineyard, based on which wines were obtained whose quality ensured its prestige over time.

The productivity elements are very good in order to obtain quantitative and qualitative productions.

These grape cultivars can offer beneficial alternatives for Romanian viticulture, in obtaining high quality white and red wines, appreciated in the future on the wine consumption market.

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