

THE MAIN BIOMETRIC CHARACTERISTICS OF THE LEAVES OF THE LOCAL AND AUTOCHTHONOUS GRAPE CULTIVARS GROWN IN THE AMPELOGRAPHIC COLLECTION OF RDSVW DRĂGĂȘANI

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Abstract

The study was carried out between 2020-2022 in the ampelographic collection of RDSVW Drăgășani, on old local and autochthonous grape cultivars. The study followed the main biometric characteristics of the leaves, carried out by the Duncan method and the Tukey statistical test ($p < 0.05$), an in-depth analysis of the leaves of these grape cultivars, where the length of the leaf, the width of the foliar leaf, the leaf height, leaf radius, the perimeter of the leaf and petiole length. It can be seen that the differences are insignificant from the point of view of the average, the standard deviation and the Average $\pm$ Standard Deviation ratio for all the leaves analyzed for each individual grape cultivar.

Key words: leaf, meanings, determinations, vine plants, statistical test

INTRODUCTION

The study was carried out during the period 2020-2023 at the Research and Development Station for Viticulture and Vinification Drăgășani, in the Ampelographic Collection of the unit, a collection that is part of the national viticultural germplasm of Romania (Popa et al., 2024).

The autochthonous and local grape cultivars studied ('Cârlogancă', 'Românie', 'Slaviță', 'Teișor', 'Bătută 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 (Gorjan, 2013).

The pre-phylloxera assortment of grape cultivars for white wines in the Drăgășani Vineyard under study is 'Cârlogancă', 'Românie', 'Slaviță', 'Teișor' (Popa et al., 2023).

The pre-phylloxera assortment for red wines from the Drăgășani Vineyard under study contains the following grape cultivars: 'Bătută neagră', 'Negru mare', 'Negru vârtos', 'Negru Românesc'.

width of the foliar leaf, the leaf height, leaf radius, the perimeter of the leaf and petiole length. Since the biological material under study is found in the ampelographic collection at the Research and Development Station for Viticulture and

MATERIALS AND METHODS

The Duncan method was used, an in-depth analysis of the leaves of these grape cultivars, where the length of the leaf, the

Vinification (RDSVW) Drăgășani, the experience is organized within the collection fields located on the territory of this research unit (Boștinăru, 2023).

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.

RESULTS AND DISCUSSIONS

With the help of the Digimizer image analysis software (MedCalc Software-Digimizer Image Analysis Software), the biometric characteristics of the leaves were analyzed, this *Tukey* statistical test ($p < 0.05$) being an in-depth analysis of the leaves of these varieties, where they were

highlighted the length of the leaf, the width of the foliar leaf, the leaf height, leaf radius, the perimeter of the leaf and petiole length. The leaves of these grape cultivars were analyzed over a period of three years 2020-2022, in three repetitions. A number of 30 mature leaves were harvested from each plants, resulting in a total number of 300 leaves for each variety, from these grape cultivars 'Cârlogancă', 'România', 'Slaviță', 'Teișor', 'Bătută neagră', 'Negru mare', 'Negru vârtos', 'Negru românesc'.

In tables from 1 to 7 we present the analysis of these grape cultivars using the *Tukey* statistical test ($p < 0.05$) in the in-depth analysis of the leaf. The analysis was carried out on 10 leaves of each grape cultivar.

Table 1 Leaf length

No. Crt.	Variety	Leaf length (cm)								Average +/- Standard deviation
1	'Cârlogancă'	10.476	12.060	13.158	12.395	12.134	11.004	12.117	11.160	11.847 ± 0.868
2	'România'	10.316	9.143	9.758	9.593	8.526	7.934	8.892	11.042	9.400 ± 0.996
3	'Slaviță'	15.655	14.415	10.766	11.256	10.321	10.238	14.005	11.719	12.296 ± 2.090
4	'Teișor'	10.786	10.887	12.621	8.556	8.531	7.766	7.942	6.159	9.156 ± 2.098
5	'Bătută neagră'	11.722	11.511	12.374	10.788	12.435	12.661	11.967	9.579	11.629 ± 1.022
6	'Negru mare'	13.451	13.432	12.153	9.01	10.500	9.769	12.002	9.621	11.242 ± 1.749
7	'Negru vârtos'	11.912	12.151	12.368	12.994	13.587	13.575	11.600	11.879	12.508 ± 0.780
8	'Negru românesc'	10.476	12.06	13.158	12.395	12.134	11.004	12.117	11.160	11.847 ± 0.868

Table 2 Foliar width

No. Crt.	Variety	Leaf width (cm)								Average +/- Standard deviation
1	'Cârlogancă'	12.440	13.121	13.432	14.124	13.523	12.691	14.201	13.301	13.354 ± 0.466
2	'România'	11.201	9.886	10.142	9.865	9.159	8.144	8.955	11.080	9.804 ± 0.789
3	'Slaviță'	16.139	14.816	11.250	11.463	11.027	11.217	14.227	11.822	12.745 ± 1.737
4	'Teișor'	11.883	11.086	12.627	9.326	9.537	8.585	8.951	7.208	9.900 ± 1.474
5	'Bătută neagră'	12.004	11.868	12.559	11.192	12.932	13.494	12.067	9.741	11.982 ± 0.786
6	'Negru mare'	14.091	14.114	12.992	10.150	11.035	10.682	12.003	9.709	11.847 ± 1.453
7	'Negru vârtos'	12.922	13.817	13.447	13.645	13.765	13.685	11.765	12.098	13.143 ± 0.661
8	'Negru românesc'	10.752	12.572	13.911	12.493	12.227	11.740	12.530	11.694	12.240 ± 0.637

Table 3 Leaf height

No. Crt.	Variety	Leaf height (cm)								Average +/- Standard deviation
1	'Cârlogancă'	7.726	7.612	8.359	9.195	8.887	7.427	8.243	8.306	8.219 ± 0.473
2	'Românie'	6.517	6.261	7.000	6.496	6.115	6.165	7.126	7.593	6.659 ± 0.435
3	'Slaviță'	10.341	10.744	8.276	8.316	7.017	7.830	8.829	8.216	8.696 ± 0.956
4	'Teișor'	8.937	8.977	9.833	7.406	6.846	6.396	6.595	5.106	7.512 ± 1.303
5	'Bătută neagră'	7.421	7.510	7.561	7.261	7.314	7.846	7.352	5.217	7.185 ± 0.492
6	'Negru mare'	7.805	7.818	6.950	7.325	7.134	7.514	6.995	7.520	7.383 ± 0.282
7	'Negru vârtos'	7.003	8.651	7.264	7.658	7.687	7.634	6.897	7.871	7.583 ± 0.396
8	'Negru românesc'	7.932	8.133	9.052	9.315	8.536	7.790	9.059	7.804	8.453 ± 0.538

Table 4 Radius of the leaf

No. Crt.	Variety	Radius of the leaf (cm)								Average +/- Standard deviation
1	'Cârlogancă'	6.502	6.332	7.308	7.521	7.177	8.830	7.604	7.324	7.324 ± 0.495
2	'Românie'	5.157	4.659	4.496	4.378	4.527	4.648	4.679	6.652	4.899 ± 0.503
3	'Slaviță'	7.898	7.409	5.751	5.538	6.616	6.523	7.927	6.596	6.782 ± 0.722
4	'Teișor'	6.160	6.187	7.836	5.792	5.229	5.426	5.585	4.863	5.884 ± 0.632
5	'Bătută neagră'	6.898	6.109	6.611	5.319	6.832	7.603	6.243	5.888	6.437 ± 0.548
6	'Negru mare'	7.118	7.870	7.028	5.251	5.139	5.728	6.398	5.780	6.289 ± 0.815
7	'Negru vârtos'	5.803	7.575	6.645	6.707	6.896	6.786	6.606	6.745	6.720 ± 0.280
8	'Negru românesc'	5.856	6.108	6.650	6.938	6.097	5.683	6.707	6.005	6.255 ± 0.382

Table 5 The perimeter of the leaf

No. Crt.	Variety	The perimeter of the leaf (mm)								Average +/- Standard deviation
1	'Cârlogancă'	101.73 9	106.21 2	151.65 0	182.60 6	147.38 9	117.19 8	136.46 4	142.03 0	135.661 ± 26.718
2	'Românie'	150.50 9	145.06 7	138.95 6	168.27 2	109.43 4	158.26	104.61 3	149.86 0	140.621 ± 22.522
3	'Slaviță'	139.29 3	130.90 7	121.67 8	91.583	95.450	90.384	147.92 1	147.68 9	120.613 ± 24.856
4	'Teișor'	89.462	90.579	110.19 4	74.259	76.951	68.513	88.472	79.691	84,765 ± 12.970
5	'Bătută neagră'	103.96 9	129.19 2	116.43 0	102.71 5	123.98 1	126.20 7	126.71 8	95.836	115.631 ± 13.004
6	'Negru mare'	110.10 9	106.89 9	10.,835	73.073	85.285	81.147	106.26 7	68.781	91.674 ± 16.517
7	'Negru vârtos'	104.14 2	143.36 0	119.09 2	116.38	127.90 5	128.30 3	163.72 3	92.270	124.397 ± 22.260
8	'Negru românesc'	105.27 2	123.66 2	145.44 8	136.80 0	128.00 8	115.43 2	150.34 2	123.19	128.510 ± 15.100

Table 6 The length of the petiole

No. Crt.	Variety	The length of the petiole(cm)								Average +/- Standard deviation
1	'Cârlogancă'	9.416	8.869	7.981	8.871	8.132	7.728	8.119	7.666	13.354 ± 0.528
2	'Românie'	6.848	6.010	5.450	5.111	6.790	6.857	7.247	6.928	9.804 ± 0.661
3	'Slaviță'	7.737	8.927	7.107	7.861	6.754	5.977	8.265	7.291	12.745 ± 0.708
4	'Teișor'	6.730	7.631	7.887	6.310	6.753	6.824	6.764	6.303	9.900 ± 0.429
5	'Bătută neagră'	7.842	7.519	6.831	7.482	7.410	8.558	7.776	7.002	11.982 ± 0.380
6	'Negru mare'	7.826	7.820	6.927	7.802	6.786	7.598	8.103	7.836	11.847 ± 0.365
7	'Negru vârtos'	6.015	7.187	6.344	5.765	6.091	6.654	6.995	7.492	13.143 ± 0.514
8	'Negru românesc'	7.994	7.335	7.699	7.825	8.708	7.685	8.060	7.053	12.240 ± 0.352

We can see in table 7 for the grape cultivars analyzed, an average length of the leaf between 9 cm and 12 cm, and the width of the leaf foliar from 8 cm to 13 cm. The height of the leaf is between 6 cm and

8 cm. The radius of the average leaf is between 9 and 13 cm and the perimeter of the leaf 80 mm and 140 mm. The average length of the petiole is between 9 cm and 13 cm.

Table 7 Statistical significance of leaf measurements

The autochthonous and local grape

No. Crt.	Variety	Leaf length (cm)	Foliar width (cm)	Leaf height (cm)	Radius of the leaf (cm)	The perimeter of the leaf (mm)	The length of the petiole(cm)
1	'Cârlogancă'	11.847 ± 0.868 a	13.354 ± 0.466 n.s.	8.219 ± 0.473 n.s.	7.324 ± 0.495 n.s.	135.661 ± 26.718 n.s.	13.354 ± 0.528 n.s.
2	'Românie'	9.400 ± 0.996 b	9.804 ± 0.789 n.s.	6.659 ± 0.435 n.s.	4.899 ± 0.503 n.s.	140.621 ± 22.522 n.s.	9.804 ± 0.661 n.s.
3	'Slaviță'	12.296 ± 2.090 a	12.745 ± 1.737 n.s.	8.696 ± 0.956 n.s.	6.782 ± 0.722 n.s.	120.613 ± 24.856 n.s.	12.745 ± 0.708 n.s.
4	'Teișor'	9.156 ± 2.098 b	9.900 ± 1.474 n.s.	7.512 ± 1.303 n.s.	5.884 ± 0.632 n.s.	84.765 ± 12.970 n.s.	9.900 ± 0.429 n.s.
5	'Bătută neagră'	11.629 ± 1.022 ab	11.982 ± 0.786 n.s.	7.185 ± 0.492 n.s.	6.437 ± 0.548 n.s.	115.631 ± 13.004 n.s.	11.982 ± 0.380 n.s.
6	'Negru mare'	11.242 ± 11.749 ab	11.847 ± 1.453 n.s.	7.383 ± 0.282 n.s.	6.289 ± 0.815 n.s.	91.674 ± 16.517 n.s.	11.847 ± 0.365 n.s.
7	'Negru vârtos'	12.508 ± 0.780 a	13.143 ± 0.661 n.s.	7.583 ± 0.396 n.s.	6.720 ± 0.280 n.s.	124.397 ± 22.260 n.s.	13.143 ± 0.514 n.s.
8	'Negru românesc'	11.847 ± 0.868 a	12.240 ± 0.637 n.s.	8.453 ± 0.538 n.s.	6.255 ± 0.382 n.s.	128.510 ± 15.100 n.s.	12.240 ± 0.352 n.s.
	Average	11.241	11.877	7.711	6,323	117.734	11.877

CONCLUSIONS

Their agrobiological properties prove to us the fact that the old grape cultivars lend themselves very well from an eco-pedological point of view to the Drăgășani vineyard.

Regarding the determinations made, it can be seen that the differences are insignificant from the point of view of the average, the standard deviation and the Average +/- Standard Deviation ratio for all the leaves analyzed for each individual grape cultivar.

This fact is due to the typicality of the grape cultivar following the observations made on these studied grape cultivars, namely the length of the leaf, the width of the foliar leaf, the leaf height, leaf radius, the perimeter of the leaf and petiole length.

cultivars studied ('Cârlogancă', 'Românie', 'Slaviță', 'Teișor', 'Bătută neagră', 'Negru Mare', 'Negru vârtos', 'Negru Românesc') are among those that have part of the old assortment of the Drăgășani vineyard, on the basis of which they were obtained wines whose quality ensured its prestige over time.

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