AMPELOGRAPHIC DESCRIPTORS OF THE NOROCEL - A NEW SEEDLESS GRAPEVINE VARIETY CREATED IN ROMANIA

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ABSTRACT

The aim of the present paper is to describe the ampelographic characteristics of the new seedless table grape cultivar Norocel, created at National Research and Development Institute for Biotechnology in Horticulture Stefanesti - Arges (I.N.C.D.B.H., Romania), by conducted hybridization of varieties (Augusta x Askari) x Black Pearl, by Camelia Popa and Gheorghe Smaranda.

For this purpose there were selected and used 83 ampelographic descriptors, of which: five morphological descriptors for young shoot, thirteen descriptors for shoot, five descriptors for young leaf, twenty-nine descriptors for mature leaf, one descriptor for woody shoot, three descriptors for inflorescence, eight descriptors for bunch, fifteen *descriptors for berry and four descriptors for phenological characteristics.*

All measurements were made at different times during the growth cycle, in accordance with the International Office of the Vine and Wine (OIV), the International Union for the Protection of New Varieties of Plants (UPOV) and Bioversity.

INTRODUCTION

The importance of grapevine genetic resources and the need for their conservation, evaluation and use have been increasingly emphasized in the last years (Ciobotea Cristina &coll., 2014; Gorjan S., 2013; Mattheou A. &coll., 1995; Popescu Carmen Florentina &coll., 2015).

The requirements and exigencies of consumers and table grapes producers, growing on the supply of table grapes, have led in the last decades to an increase in the concerns and research in Romania in the direction of diversification of the assortment of grapes varieties for fresh consumption, ensuring the consumption over a longer period of time during the year and thus obtaining varieties with resistance to biotic and abiotic stresses (Bunea C.I. &coll., 2009; Cichi Daniela &coll., 2013; Dobrei A. &coll., 2009; Rățoi I. & coll.,2013; Rotaru Liliana, 2009).

Within the breeding programs performed in Romania, in the last 40 years, 32 table grape varieties have been obtained, of which 29 seeded grapes varieties and only 3 seedless table grapes varieties (Cichi Daniela & Costea D.C., 2008).

Seedless grapes development of grapevine can be parthenocarpic or stenospermocarpic (Stout, 1936; Ramming & coll., 2000).

The new seedless table grapes variety, ***Norocel***, was created at National Research and Development Institute for Biotechnology in Horticulture Stefanesti - Arges (I.N.C.D.B.H., Romania) and registered in the *Official Catalog of the Crop Plants Varieties of Romania* in 2017.

MATERIAL AND METHOD

Seedless table grapes variety *Norocel* (Figure1 and Figure 2) was obtained by conducted hybridization of varieties (*Augusta x Askari*) x *Black Pearl*, by Camelia Popa

and Gheorghe Smaranda at National Research and Development Institute for Biotechnology in Horticulture Stefanesti-Arges, Romania.

With a view to describe the Norocel cultivar, there were retained and used the following ampelographic descriptors: five morphological descriptors for young shoot (OIV 001-005), thirteen descriptors for shoot (codes OIV 006-014, 015-1, 015-2, 016, 017), five descriptors for young leaf (codes OIV 051, 053- 056), twenty-nine descriptors for mature leaf (codes OIV 065, 067- 080, 081-1, 081-2, 082, 083-1, 083-2, 084- 094), descriptor for woody shoot (OIV 103), three descriptors for inflorescence and flower (codes OIV 151, 152, 153), eight descriptors for bunch (codes OIV 202, 203, 204, 206, 207, 208, 209, 502), fifteen descriptors for berry (codes OIV 220, 221, 222, 223, 225, 226, 227, 228, 231, 232, 235, 236, 238, 240, 241) and four descriptors for phenological characteristics.

All observations and measurements were made at different times during the growth cycle, in accordance with *OIV descriptor list for grape varieties and Vitis species* (2nd edition, 2009), I.P.G.R.I. (1997) and U.P.O.V. (1999).

For statistical analysis XLSTAT-Pro for Microsoft Excel were used.

RESULTS AND DISCUSSIONS

Shoot is horizontal before tying, with green and red internodes on the dorsal side and green on the ventral side (Table1). Density of prostrate hairs on internodes is low and to none or very low on nodes. Number of consecutive tendrils is 2 or less and in relation to the length of tendrils (24.70 ± 2.75 cm), they are long (Table 3, Figure 1a).

Table 1

Ampelographic descriptors of young shoot and shoot - table grape variety Norocel

Characteristics	OIV	UPOV	IPGRI	Notes	
Young shoot:					
Opening of the shoot tip	001	2	6.1.1	half open	3
Distribution of anthocyanin coloration on prostrate hairs of the shoot tip	002			absent	1
Intensity of anthocyanin coloration on prostrate hairs of the shoot tip	003	4	6.1.2	none	1
Density of prostrate hairs on the shoot tip	004	3	6.1.3	very low	1
Density of erect hairs on the shoot tip	005	5	6.1.4	none	1
Shoot:					
Attitude (before tying)	006	9	6.1.5	horizontal	5
Color of the dorsal side of internodes	007	10	6.1.6	green and red	2
Color of the ventral side of internodes	008	11	6.1.7	green	1
Color of the dorsal side of nodes	009	12	6.1.8	green	1
Color of the ventral side of nodes	010	13	6.1.9	green and red	2
Density of erect hairs on nodes	011		6.1.10	none or very low	1
Density of erect hairs on internodes	012	14	6.1.11	none or very low	1
Density of prostrate hairs on nodes	013		6.1.12	none or very low	1
Density of prostrate hairs on internodes	014		6.1.13	low	3
Distribution of anthocyanin coloration on the bud scales	015-1			up to 3/4 of bud scale	3
Intensity of anthocyanin coloration on the bud scales	015-2			medium	5
Number of consecutive tendrils	016		6.1.14	2 or less	1
Length of tendrils	017	15	6.1.15	long	7
Woody shoot:					
Main color	103	44	6.1.42	yellow-brownish	1/2

a. **b.**

Figure 1. Norocel grapevine variety (a. young shoot; b. young leaf)

Figure 2. Norocel table grape variety (Mature leaf and bunch)

Young leaf (4th leaf) is greenish-yellowish on the upper side of blade, with the low density of the prostrate or erect hairs between the main veins on the lower side of the blade (Figure 1b).

Table 2

Ampelographic descriptors for young and mature leaf, flower, bunch and berries - table grapes variety Norocel

Characteristics	OIV	UPOV	IPGRI	Notes	
0	*1*	*2*	*3*	*4*	
Young leaf:					
Color of upper side of blade (4th leaf)	051	6	6.1.16	green-yellow	1/2
Density of prostrate hairs between main veins on lower side of blade (4th leaf)	053	7	6.1.17	low	3
Density of erect hairs between main veins on lower side of blade (4th leaf)	054		6.1.18	low	3
Density of prostrate hairs on main veins on lower side of blade (4th leaf)	055		6.1.19	low	3
Density of erect hairs on main veins on lower side of blade (4th leaf)	056	8	6.1.20	very low	1
Mature leaf:					
Size of blade	065	17	6.1.21	large	7
Shape of blade	067	18	6.1.22	circular - kidney-shaped	4/5
Number of lobes	068	20	6.1.23	five	3
Color of the upper side of blade	069			medium green	5
Area of anthocyanin coloration of main veins on upper side of blade	070			absent	1
Area of anthocyanin coloration of main veins on lower side of blade	071			absent	1
Goffering of blade	072			weak	3
Undulation of blade between main or lateral veins	073			present	9
Profile of blade in cross section	074		6.1.25	V-shaped	2
Shape of teeth	076	26	6.1.27	both sides convex	3
Size of teeth in relation to blade size	077			medium	5
Length of teeth compared with their width	078	25	6.1.29	medium	5
Degree of opening / overlapping of petiole sinus	079	23	6.1.30	closed-overlapped	5/7
Shape of base of petiole sinus	080			U-shaped	1
Teeth in the petiole sinus	081-1		6.1.31	none	1
Petiole sinus base limited by vein	081-2*		6.1.32	not limited	1
Degree of opening / overlapping of upper lateral sinuses	082*	22	6.1.33	slightly overlapped	3
Shape of the base of upper lateral sinuses	083-1			V-shaped	3
Teeth in the upper lateral sinuses	083-2			none	1
Density of prostrate hairs between main veins on lower side of blade	084	28	6.1.35	none or very low	1
Density of erect hairs between main veins on lower side of blade	085		6.1.36	none or very low	1
Density of prostrate hairs on main veins on lower side of blade	086		6.1.37	none or very low	1
Density of erect hairs on main veins on lower side of blade	087	29	6.1.38	none or very low	1
Prostrate hairs on main veins on upper side of blade	088		6.1.39	absent	1
Erect hairs on main veins on upper side of	089			absent	1

blade					
0	*1*	*2*	*3*	*4*	
Density of prostrate hairs on petiole	090			none or very low	1
Density of erect hairs on petiole	091			none or very low	1
Length of petiole compared to length of middle vein	093	30	6.1.40	equal	5
Depth of upper lateral sinuses	094	21	6.1.34	deep	7
Inflorescence and flower:					
Sexual organs	151	16	6.2.1	fully developed stamens and fully developed gynoecium	3
Insertion of 1st inflorescence	152			3rd and 4th node	2
Number of inflorescences per shoot	153		7.1.3	1 to 2 inflorescences	2
Bunch:					
Length (peduncle excluded)	202		7.1.5	long/ very long	7/9
Width	203			medium - wide	5/7
Density	204	33	6.2.3	loose	3
Length of peduncle of primary bunch	206	34	6.2.4	medium	5
Lignification of peduncle	207			at the base only	1
Shape	208			funnel shaped	3
Number of wings of the primary bunch	209			4-5 wings	3/4
Single bunch weight	502		7.1.14	medium	5
Berry:					
Length	220		6.2.5	long	7/9
Width	221			narrow - medium	3/5
Uniformity of size	222			uniform	2
Shape	223	36	6.2.6	obtuse ovoid	6
Color of skin	225	37	6.2.8	green - yellow with rose	1/2
Uniformity of skin color	226			uniform	2
Bloom	227			medium	5
Thickness of skin	228	39	7.1.6	medium	5
Intensity of flesh anthocyanin coloration	231	40	6.2.9	none	1
Juiciness of flesh	232		6.2.10	medium juicy	2
Firmness of flesh	235	41	6.2.11	slightly firm	2
Particular flavor	236	42	6.2.12	herbaceous	4
Ease of detachment from pedicel	240	38	6.2.13	easy	2
Formation of seeds	241	43	6.2.7	none	1
Single berry weight (g)					

Table 3

Some biometric measurements at the table grape variety Norocel

Characteristics	**Cod OIV**	$\overline{X}$ **±SD***
Length of tendrils (cm)	017	24.70 ± 2.75
Length of teeth compared with their width (Length of teeth / width of teeth)	078	1.48 ± 0.15
Length of petiole compared to length of middle vein (Length of petiole/ Length of middle vein)	093	1.06 ± 0.22
Length of vein N1 (mm)	601	15.62 ± 3.05
Length of bunch, peduncle excluded (mm)	202	240.20 ± 20.05
Width of bunch (mm)	203	13.41 ± 1.56
Length of peduncle of primary bunch (mm)	206	6.00 ± 0.44
Single bunch weight (g)	502	401.25± 31.70
Single berry weight (g)	503	5.96 ± 1.72
Length of berry (mm)	220	22.1 ± 2.54
Width of berry (mm)	221	15.00 ± 1.55

*SD- standard deviation

Table 4

Phenology descriptors for table grape variety Norocel

Characteristics	Cod OIV	Period	Notes	
Time of bud burst	301	10-24 April	medium	5
Time of full bloom	302	3-6 June	early	3
Time of beginning of berry ripening (veraison)	303	16-19 July	early	3
Time of full physiological maturity of the berry	304	25-29 August	early	3

Mature leaf. The shape of the blade, at a mature leaf, is circular- kidney shaped. The blade of the mature leaf is medium-green (Figure 2), with five lobes and without prostrate or erect hairs on the main veins on the upper side (shiny appearance). The main veins are green on both sides of the leaf blade.

The petiole sinus is closed-overlapped with base of sinus in **U** – shaped (table 2 and table 3). The petiole sinus base is not limited by the vein.

The upper lateral sinuses are slightly overlapped, with the shape of the base of sinuses in **V-** shaped**.** Mature leaves do not have teeth in the upper lateral sinuses.

Goffering of blade (OIV 072) is weak, while the undulation of blade between main or lateral veins is present.

Shape of teeth (OIV 076), between N2 and N3 excluding teeth of N2 and N3, is a both sides convex.

Density of prostrate and density of erect hairs between main veins on lower side of blade is very low. Prostrate hairs and erect hairs are absent on the main veins on upper side of blade.

The flower is hermaphrodite, with fully developed stamens and fully developed gynoecium. The first inflorescence on the shoot is inserted at 3rd and 4th node up.

The bunch is long (24.20 ± 2.05 mm length, peduncle excluded), narrow-medium width (13.41 ± 1.56 mm), it has medium weight (401.25± 31.70 g, single bunch weight) and loose density (table 2 and table 3). The shape of the bunch is funnel shaped, with 4-5 wings (Figure 2). The peduncle of the primary bunch is medium in length (6.00 ± 0.44 mm) and it shows lignification at the base only (Table 2 and Table 3).

The berries are long (22.1 ± 2.54 mm length), they have narrow-medium width (15.00 ± 1.55 mm) and they have uniform size. The berry has obtuse ovoid shaped. The skin berry has medium thickness, it is greenish - yellowish with pink colour on the sunny side and medium bloom. The flesh is medium juicy and slightly firm, with herbaceous flavour.

The berries are seedless, Norocel table grapes variety is parthenocarpic, type Corinthe.

The phenological characteristics are presented in Table 4. The time of bud burst at the Norocel seedless table grapes variety is medium. The beginning of berry ripening (veraison) and the full physiological maturity of the berry are early installed at Norocel variety.

CONCLUSIONS

The ampelographic descriptors presented in this paper are the reference for the description and recognition of the new seedless table grape variety Norocel.

The new table grape variety Norocel can successfully diversify the assortment of grapes for fresh consumption in Romania.

This new grapevine variety can attract consumers through the appearance and the size of the bunch, the berries size and, above all, through the seedless grapes.

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