

## The comportment of the grapevine seedless clone Perlette 10 St. under the current climate conditions

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**Abstract** During the period 1983 – 1999, at INCDBH Stefanesti, the elite Perlette 10 St. was selected and grown in contest plantations in order to be destined to the fresh grapevine consumption. The identification of the biotypes (clones) having superior quality and production characteristics which manifest constantly, has been achieved through the study of the elites chosen in comparative fields, using the method of repeated determinations in groups of years, under specific vineyard conditions. Through repeated verification of the elites in the contest plots the elite Perlette 10 St. stood out by superior quality, constant and sustained production of grapevines and the maintenance of the quality characters. The elite was homologated in 2008. Perlette 10 St. is a variety obtained by Popa Camelia and coll. in 2008, by clonal selection. It is a variety with white, middle, seedless grapes which can be used mainly in obtaining raisins, jam and compote.

### Key words

clone selection, phyto-sanitary testing, plantation mother, comparative study

The grape is the most complete nutriment from the vegetal world, being compared to mother's milk [6]. The raisins represent a product which can be easily transported and preserved, obtained from the dehydration of the seedless grapes. Raisins represent a high energetic value nutrient: 3.340 kilocalories/kg [3].

Romanian viticulture includes very few varieties destined to the production of raisins; thus, it is desired that new varieties of this group should be extended in culture and new clones should be selected. Paradoxically, the multiple achievements in the creation of new varieties situate our country on top level in the world [2].

Since Romanian viticulture has very few varieties destined to the production of raisins, it is highly recommended that new varieties of this group should be extended to culture and more clones should be selected. In Romania, the table grapes varieties are less and less cultivated; the year 2008 recorded a production of grapes for fresh consumption of 87,2 thousand tones, far below the mark of the demand for grapes on the Romanian market [1,7], and this production is on the decrease.

The parent stock on which seedless varieties are grafted, gives them vigour in culture, thus the variety Crimson Seedless grafted on 1103 Paulsen has great vigour in culture but also high productivity [5]. Under the conditions of the Ștefănești vineyard, the parent stock used at grafting gave the vines great culture vigour and also productivity. The studied varieties are grafted on the parent stock Kober 5 BB

and planted at the distance 2,5 m between rows and 1,2 m on the row. The applied cutting is the Guyot type on high semistocks.

The study has been effectuated over a period of 3 years (2010-2012) and consisted in the agrobiological and technological determinations of the variety as compared to the Perlette 10 St. variety.

### Material and Method

As regards the geographical location, the Ștefănești vineyard is located between 44°42' and 44°55' northern latitude, at the southern limit of the platform Căndești, in the contact zone with Câmpia Română. The viticultural plantations are located at altitudes between 200 and 415m, the maximal altitudes being the Izvorani Hill (415m) and the Pietroasa Hill (325m).

The meteorological data have been extracted from the database of the Ștefănești Institute, collected during the interval 2010 – 2012 (table 1).

During 2010-2012 researches have been carried out on certain table and raisin grapes, varieties with valuable agrobiological properties which can meet the requirements of the market .

The varieties are on fruition in an ampelographic collection at I.N.C.D.B.H.Ștefănești. They were grafted on the parent stock Kober 5 BB and planted at the distance of 2,2m between rows and 1,0 m on the row. The grapevines were oriented according to the semi tall Guyot stems.

The pedo-climatic conditions are specific to the Ștefănești vineyard. The experimental plot has been placed on an umber argillo-illuvial soil, having a clayey to clayey-argillaceous structure in the first 60-80 cm, and a sandy structure in depth. The structure of the soil at the surface has an acid reaction (5,6), the topsoil is of 1,82 and decreases in depth. The potassium element has appropriate values on the A horizon, at the depth of 0-20 cm.

The meteorological data have been extracted from the specific databases of the Ștefănești Institute,

collected during 2010 - 2012. Climatically, the territory of the Institute belongs to the moderate warm-semi humid II-nd zone which includes the area characterized by mean annual temperatures between 8 –10,5°C, solar radiation of 114 -128 Kcal / cm<sup>2</sup>, a sum of temperatures higher than 0°C between 3400 - 4100°C, higher than 10°C between 2800 - 3500°C and superior to 10°C (effective) of 1100 -1600°C. The zone is also characterized by annual mean rainfall ranging from 450 -700 mm.

Table 1

The synthesis of climate elements 2010-2012

Month	Year					
	2010		2011		2012	
	Air temperature (average)		Air temperature (average)		Air temperature (average)	
	minimum	maximum	minimum	maximum	minimum	Maximum
January	-10,8	17,8	-	14,2	-5,6	3,5
February	-12,2	17,7	-	17,3	<b>-9,1</b>	0,0
March	-7,3	20,9	<b>-10,6</b>	20,4	-0,5	12,2
April	1,2	22,6	0,9	21,1	6,8	18,9
Mai	6,5	27,7	1,2	27,8	11,7	22,9
June	8,4	33,8	8,2	32,3	15,3	28,0
July	12,9	32,4	10,5	<b>34,7</b>	18,3	<b>32,5</b>
August	10,2	<b>34,9</b>	14,5	28,7	14,6	32,3
September	6,3	29,4	12,4	26,9	11,3	26,6
October	-2,7	17,6	3,5	16,6	-	-
November	-1,6	24,8	-5,4	6,3	-	-
December	<b>-14,5</b>	17,4	-1,5	7,5	-	-

Observations and determinations have been effectuated over the resistance to cold during winter, the vigour of the grapevines, the development of the main phenophases, the duration of the vegetation period, and the absolute and relative fertility coefficients, the production indicators, the quality and quantity of the grape yield have been calculated, too.

**PERLETTE:** has been obtained at Davis University in California, through the hibridation of the varieties Queen of vineyards x White Sultanină (H. P.OLMO, 1936). It belongs to the same group with the varieties Delight and Beauty Seedless. It can be noticed through early maturation and the commercial value of the grapes. The grapes are uniaxial, taper, medium-sized (240 – 380 g, average), compacted. The berry is medium-sized (2,65 – 5,39 g), globular, white-greenish

due to the thick layer of bloom; the pulp is fleshy, crisp, not flavoured. The stem and the cob are herbaceous (nonlignified). Biological resistances: sensitive to cold (-16°C . . . -18°C): very sensitive to mildew; splits the matured berries very easily, even at reduced rainfall; is attacked by wasps [4,8].

## Results and Discussions

### Agrobiological and technological characteristics:

The variety falls in the group with great growth vigour. It has a medium tolerance to low temperatures during winter at mildew. It matures in phase IV.



Fig. 1. Perlette 10 St clone

**PERLETTE 10 Șt.** (fig. 1): has been obtained through clone selection from the variety Perlette at INCDBH Ștefănești and homologated in 2008; It can be noticed through early maturation and the commercial value of the grapes. The grapes are uniaxial, taper, medium-sized (245 – 390 g, average), compacted. The berry is medium-sized (2,70 – 5,45 g), globular, white-greenish due to the thick layer of

bloom; the pulp is fleshy, crisp, not flavoured. Biological resistances: sensitive to cold (-17°C . . . - 19°C): very sensitive to mildew; splits the matured berries very easily, even at reduced rainfall; [7].

The development of phenophases is synchronized integrally by the influence of the climatic factors . Table no.2 shows the limits (the first and the last day of the phenophase).

Table 2

Nr.	Variety	Dezmugurit	Blooming	Ripening	Full maturity
1	<b>Perlette 10 Șt.</b>	08.04 - 16.04	22.05 - 06.06	13.07 – 28.07	07.08 - 26.08
2	<b>Perlette population (M)</b>	09.04 - 18.04	24.05 - 08.06	15.07-30.07	05.08 - 28.08

The value of the viability percentage of the shoots demonstrated that Perlette 10 Șt. variety has a medium resistance to cold which is peculiar to varieties

apryens. The two varieties presented over 90% viable eyeholes.

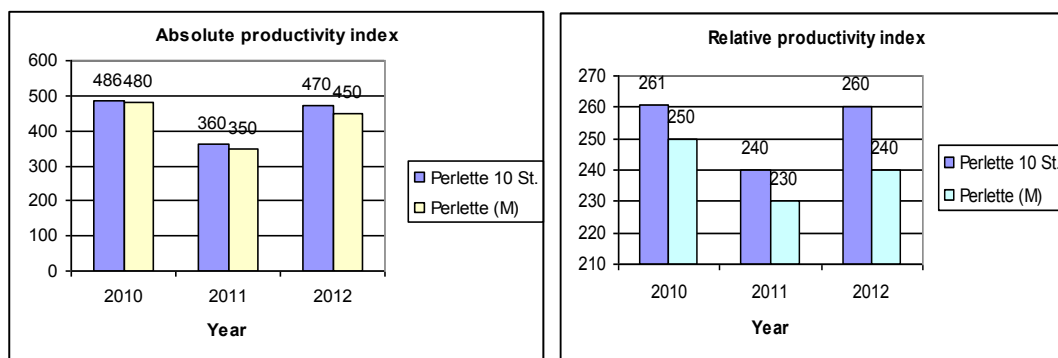


Fig. 2 Absolute and relative productivity index

As regards the weight of 100 grapes, the differences are middle, ranging between 205-270 g at the Perlette 10 Șt. variety as compared to the witness Perlette variety 200-260 g. It can be noted that the

analyzed variety has the weight of the grape included between 333-450 g. During favourable years for viticulture, the grape of this variety exceeds 2,6 g. (fig. 2.).

Table 3

Year	Production Kg/ha		Sugars g/l		Acidity g/l H <sub>2</sub> SO <sub>4</sub>	
	Perlette 10 Șt.	Perlette (M)	Perlette 10 Șt.	Perlette (M)	Perlette 10 Șt.	Perlette (M)
2010	6,3	6,0	132	130	3,5	3,2
2011	4,0	4,1	135	132	4,7	4,5
2012	5,5	5,2	138	135	3,2	3,0
<b>Average</b>	<b>5,3</b>	<b>5,1</b>	<b>135</b>	<b>132</b>	<b>3,8</b>	<b>3,6</b>

Other elements contributed to the qualitative features of this variety: the weight of the bunch (450g)

and of the grape 2,6g) which beat the witness with 10g and respectively 0,5g (fig. 3).

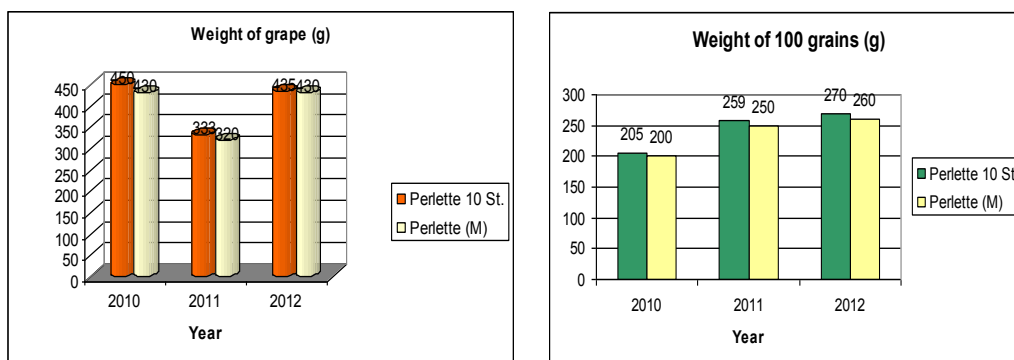


Fig. 3. Weight of grape and 100 grains

As for the content of sugars in the wine pressing, this is typical for the groups of jam grapes, with medium maturation. Greater accumulation of sugars can be noted in 2012 – 138 g/l at the Perlette 10 St. variety and a constant of this element as regards the Perlette variety of 130 g/l. The acidity of the wine pressing has been very high during 2011 in case of the Perlette 10 St. variety (4,7 g/l H<sub>2</sub>SO<sub>4</sub>), and lower during 2012 (3,00 g/l H<sub>2</sub>SO<sub>4</sub>) (table 3.).

## Conclusions

1. Under the climatic conditions of the viticultural centre Ștefănești-Argeș, the variety apiren Perlette 10 St. had a good comportment, distinguishing through the size of the grape.

2. The accumulation of sugars recommend it, besides seedless, in the category of the table and jam varieties, being able to replace other varieties of the same type. The accumulation sugars have been higher in 2012 than other years.

3. In 2012 due to high summer temperatures, the grapes research maturity much earlier.

4. Perlette clone 10 St. showed resistance to frost; after temperatures recorded in the winter of 2011-2012, vine development was normal.

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