

The study of fertility on table grape varieties obtained at NRDIBH Stefanesti-Argeş

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Abstract There were taken into study the grapes varieties: Argessis, Golden Ștefănești, Muscat Adda 22 Șt. and Perlette 10 Șt. The grape varieties are table grapes. The researches were made at Ștefănești Argeș plantation belonging to NRDIBH Ștefănești Argeș and part of Ștefănești vineyard, in 2010-2012 and there were studied the fertility values of these grapes. The fertility studied varieties was different from year to year depending on weather conditions. The varieties obtained from NRDIBH Stefanesti Arges will be expanded in culture and in other parts of the country.

Key words

table grapes, fertility coefficient, productivity

In the experimental plot located in the representative viticultural area of Muntenia (Ștefănești Argeș), observations and determinations have been made as regards the fertility of the table grapes of the varieties Argessis, Auriu de Ștefanesti, Muscat Adda 22 St and Perlette 10 St. in the pedoclimatic conditions of the Argeș country. The grapevine plantation has a distance of 2,5 m/ interval and 1,0 m/row (4000 vines/ht), the applied cutting is the Guyot type on semistock, supported by 5 wires espaliers. The parent stock used for grafting the variety Argessis was Kobber 5BB. The studied variety had been planted in a brown, colluvial, clayey soil, with a medium input of phosphorus and potassium, weakly carbonated, with a low acid Ph (6,2-6,4) [5].

The grapes varieties and the clones that were taken into study were created at INCDBH Ștefanesti Arges: Argessis by Popa Camelia, Bădișescu Margareta in 2002, Golden Ștefanesti by Popa Camelia, Smaranda Gh., Bădișescu Margareta in 2007 and clones Muscat Adda 22 St. by Popa Camelia, Rădulescu Ion in 2009, Perlette 10 St. by Popa Camelia in 2008 [8].

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], and this production is on the decrease.

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].

Material and Method

Description of varieties

ARGESSIS (fig. 4) – variety homologated in 2002 at SCDVV Ștefănești. The first tablegrape variety obtained under the pedoclimatic conditions specific to the vineyard Ștefănești-Argeș. Pleasant commercial aspect, large berry (7,5-8,0 g), ovoidal, bluish-black colour. Large, uniaxial grape(450-480 g). Good tolerance to cryptogamic diseases (mildew, blight, rot). High vigour vines, suitable for arbour cultue. Average production reaches 15 t/ht [7,9,10].

AURIU DE ȘTEFĂNEȘTI (fig. 2) – the first grapevine variety for white tablegrapes, having a very early maturation, obtained under the pedoclimatic conditions specific to the vineyard Ștefănești-Argeș, homologated in 2007 at INCDBH Ștefănești. Pleasant commercial aspect, large berry (5,5-6,8 g), globular, golden-yellow colour. Large grape (400-450 g), winged. Good tolerance to cryptogamic diseases (mildew, blight, rot). The maturation of grapes in phase I (28.07-05.08). Suitable for ecological cultures. Extension in culture of the variety ensures an average production of 14 t/ha [9].

MUSCAT DE ADDA 22 ȘT. (fig. 1) – has been obtained through clone selection from the variety Muscat d'Adda at INCDBH Ștefănești and homologated in 2008; it is a variety destined for fresh consumption; the leaf is green; the grapes are medium sized, towards large (270-340 g); the berries are disposed equally on the cluster, being medium to large size; semicrisp pulp with specific taste and flavour; the skin is thick, black-aubergine coloured, highly bloomed; the vigour of the vines medium to large; it has good resistance to drought and diseases (mildew, blight and grey rot); the maturation of the grapes in September; a production of 4,9-5,3 kg/vine; it accumulates 187 g/l sugars and 3,9 g/l acidity; it has an

increased resistance to handling, transport and storage [1].

PERLETTE 10 Șt. (fig. 3): 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 (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 [1].

The research were taken place in the Comparison Field of INCDBH Ștefanesti Arges, between 2010-2012. The system of culture in non-protected, semi stem and the grapevine are planted at the distance of 2,2 meters between the rows and 1,0 meters between the vines of a row (4545 grape vine/ha). There were studied five vines from each grape variety and noticed total buds, total dead buds, total viable buds, total copause, fertile copause, sterile copause, total inflorescences and fertile copause percentage. Also, we made a synoptic table of fertility with the fertility coefficient (relative and absolute).



Fig.1 Muscat de Adda



Fig.2 Auriu de Ștefănești



Fig.3 Perlette



Fig.4 Argessis

Results Obtained

Ștefanesti vineyard location in geographical is between 44° 42' and 44° 55' Nordic latitude at the southern edge of the platform Candesti in contact with the Romanian Plain. Vineyard are situated at altitudes between 200-415 m (maximum altitudes are Izvorani hill = 415 meters and Pietroasa hill = 325 meters).

The characters studied are:

- total number of buds/vine = T_b ;
- total viable buds/vine = T_v ;
- total number of copause/vine = T_{nc} ;
- number of fertile copause/vine = F_{nc} ;

- total number of inflorescences/vine = T_{inf}
- number of sterile copause/vine = S_{nc} ;

The fertile vine shoots percentage (%) is obtained by dividing the fertile copause at total copause (T_{nc}) and multiply with 100.

The relative fertility coefficient (r.f.c.) its obtain by dividing the number of the inflorescences at the number of total of number copause (T_{nc}) (r.f.c. = T_{inf}/T_{nc}) and the absolute fertility coefficient (a.f.c.) is obtained by dividing the number of the inflorescences at the number of fertile copause (a.f.c. = T_{inf}/S_{nc}).

Table 1

The fertility of grapes in 2010-2012							
Year	Variety	Studied characteristics					
		Tb	Tv	Tnc	Fnc	Tinf.	Snc
2010	Argessis	23	22	22	14	20	8
	Golden Stefanesti	19	13	13	7	7	6
	Muscat Adda 22 St.	27	24	24	13	15	11
	Perlette 10 St.	20	17	17	10	14	7
2011	Argessis	27	26	26	22	30	4
	Golden Stefanesti	26	24	24	20	22	4
	Muscat Adda 22 St.	24	24	24	20	32	4
	Perlette 10 St.	32	27	27	22	35	5
2012	Argessis	27	24	24	17	28	7
	Golden Stefanesti	38	31	31	27	53	4
	Muscat Adda 22 St.	20	19	19	14	16	5
	Perlette 10 St.	24	23	23	12	13	11

The maximum fertile copse percentage is 87,0 (Golden St., in 2012) and minimum is 52,1(Perlette 10 St., in 2012). The best year regarding the average of fertile buds/vine is 2012 at Golden Stefanesti (27%) and 2011 at Argessis and Perlette 10 St. (22%).

The maximum relative fertile coefficient is at Perlette 10 St. in 2011 (1,29) and the worst at Golden Stefanesti in 2010 (0,53).

The maximum absolute fertile coefficient (figure 5) is at Golden Stefanesti in 2012 (1,96) and the smallest at Golden Stefanesti in 2010 (1,00).

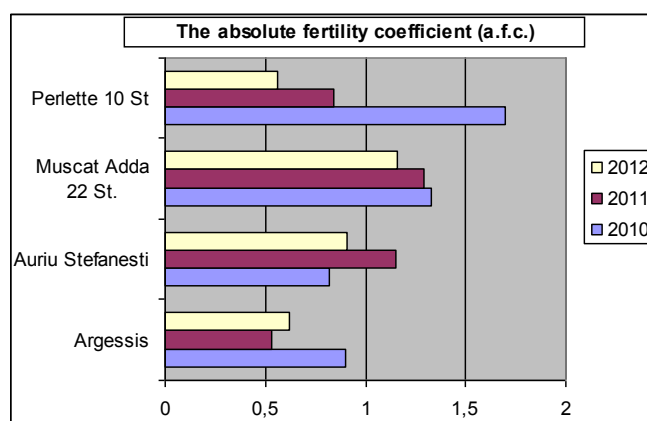


Fig. 5 The absolute fertility coefficient

We can observe that in the year 2012 the maximum fertile vine shoots percentage is 87% at Golden Stefanesti and the minimum is at Perlette 10 St. with 52,1%. The average of total viable buds/vine is also superior to Golden Stefanesti and inferior to Perlette 10 St.

The year 2011 is the worst year for Golden Stefanesti and Muscat Adda 22 St., with a maximum fertile vine shoots percentage of 84,6 % at Argessis and the smallest percentage at Perlette 10 St., with 81,4%. Also, the average of total viable buds/vine is superior to Argessis and inferior to Perlette 10 St.

The best year regarding fertile vine shoots percentage is 2012 with maximum of 87% and

minimum of 81,4%. The worst year for Golden Stefanesti and Muscat Adda 22 St. was the year 2010, with values of 53,8 % and 54,4 % and the worst year for Perlette 10 St. was 2011, with a value of 81,4% (table 1).

The fertility coefficient at all the grape varieties is middle with values between 1,00-1,96. In 2011 the highest fertile coefficient is at Muscat Adda 22 St.(1,33/1,60) and the smallest at Golden Stefanesti (0,91/1,10). The fertile coefficient is middle at all grape varieties except the relative at Golden Stefanesti which is small.

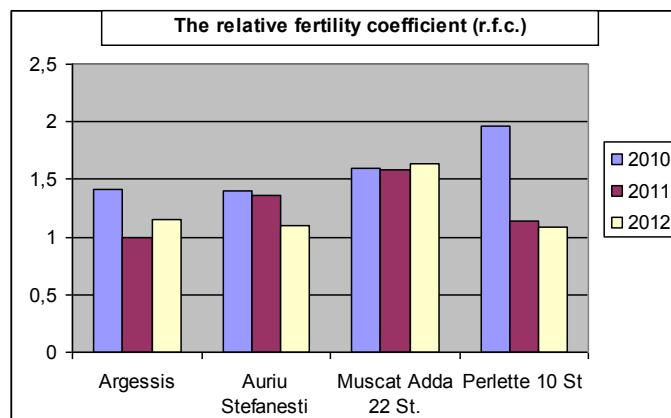


Fig. 6 The relative fertility coefficient

In 2012, the fertile coefficient reaches 1,70/1,96 at Golden Stefanesti and the minimum relative fertile coefficient is 0,56 (Perlette 10 St.) and minimum absolute fertile coefficient is 1,08 (Perlette 10 St.). In 2010 the fertile coefficient is middle at all grape varieties. The best year of the fertile coefficient at Perlette 10 St. and Golden Stefanesti is 2010 and for Argessis and Muscat Adda 22 St. is 2011 (fig. 6)

Conclusions

1. From the point of view of the fertile copen percentage the best year was 2012, with a maximum of 87 % (Golden Stefanesti) and minimum of 52,1 % (Perlette 10 St.). The worst year was 2010 (for Golden Stefanesti and Muscat Adda 22 St.) with values of 53,8 % and 54,4 % and for Perlette 10 St. was the year 2011 (81,4 %).

2. From the point of view of the fertile coefficient, the maximum relative fertile coefficient is at Perlette 10 St. (1,29, in 2011) and the worst at Golden Stefanesti (0,53, in 2010). The maximum absolute fertile coefficient is at Golden Stefanesti (1,96, in 2012) and the smallest at Golden Stefanesti (1,00, in 2010).

3. As an average of these three years, the file copen percentage for Golden Stefanesti is 87,0%, for Muscat Adda 22 St. is 73,6%, for Argessis is 70,8 %, for Perlette 10 St. is 52,1 %.

4. In all three years, the fertile coefficient is middle at all the grapes varieties, except the relative fertility coefficient at Perlette 10 St, in 2011, which is small to middle.

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