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Researches on the adoption of cheap solutions to produce the own rooted vines for small family plantations

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Abstract Establishment of a vineyard requires significant financial resources and therefore is not available to anyone willing. Given the high cost of grafted vines, we propose a simple and inexpensive alternative for obtaining the vines on own roots.

In this paper, to obtain vines on their roots we taken to experience six varieties of vine: Fetească Regală, Muscat Ottonel, Moldova, Victoria, Muscat de Hamburg and Chasselas dore, that we have pursued during the forcing, rooting and in field in the first year after planting.

The results obtained showed that the method is effective and can be achieved with minimal costs, consequently, suited very well the family plantation.

Key words

vines on own roots, inexpensive technology

We believe that this method of obtaining the vines on own roots it is indicated for for moderate vine, for small vineyards, who lack the necessary facilities of nurseries(2).

Vines on own roots are more easily obtained, with a much lower cost and fairly reproduce the characters of variety the varieties they belong to(1).

It should be noted that the vines on own roots can be grown only on uninfested land of phylloxera, being very sensitive to this pest attack(4). The technology of production of vines on own roots is conforming to the wine law in force(3).

Material and Method

The research was conducted in 2009-2010 in the Laboratory of Viticulture and in the vine-growing plantation of the Didactic Station of USAMVB Timişoara and aiming to produce rooted cuttings from varieties: Fetească Regală, Muscat Ottonel, Moldova, Victoria, Muscat de Hamburg and Chasselas dore, the latter used as control.

Vine chords necessary for the research were collected on 23.02.2009 at the end of winter, just to avoid keeping the vine chords in winter and hence a cost.

Preparation of cuttings was done after the classical rules of technology obtaining vines on their roots, differing only during wetting, which was 20 days.

The next step cuttings were treated with Atonik, a bio-stimulator for rooting, after which they were placed in plastic pots filled with a soil mixture composed of furrow soil, garden soil and perlite. Plastic pots we have achieved by refurbishing PET.

Pots with cuttings of vines were watered thoroughly once every three days and were kept for 40 days at room temperature 18-25 ^{0}C.

In the last decade of April, to become accustomed to the climate conditions in the field, vines were acclimatized for 8 days and only then they were planted in the permanent place in the field, in late April.

When planting rooted cuttings in the field they correspond to the technical and quality standards.

Results obtained

Every week we have made observations on sprouting and rooting of cuttings.

Calculating an average of data recorded during the two years, roots number varied between the limits of 2,81 cm at the Muscat of Hamburg and to 4,62 cm at the Fetească Regala. The length of roots, it was satisfactory to all varieties. There are obvious differences between varieties, the average length was the lowest for Muscat of Hamburg, 11,93 cm, and the highest value was recorded for the Moldova variety, 21,61 cm.

Table 1

Dimensions vine organs in the moment of planting (average 2009-2010)

Variety	No. roots	The root lenght(cm)		The vine chord length (cm)	The difference from the control (The vine chord length)	Significance
		Medium	Total			
Fetească Regală	4,62	17,52	80,94	22,79	4,62	-
Muscat Ottonel	4,10	16,88	69,20	20,00	1,83	-
Moldova	4,56	21,61	98,54	27,52	9,35	*
Victoria	3,36	15,8	53,08	25,91	7,74	*
Muscat de Hamburg	2,81	11,93	33,52	10,97	-7,2	0
Chasselas dore (MT)	4,25	17,42	74,03	18,17	-	-
DL 5% = 6,48 cm		DL 1% = 11,28cm			DL 0,1% = 20,34cm	

Regarding the length of the vine chord, with the exception of Muscat Hamburg variety which presented a lower growth, while the rest of the varieties had a corresponding behaviour. Moldova variety and Victoria variety had the largest vine chords, of 27,52 cm, 25,91 cm respectively. They have registered significant positive differences to the control variant.

Table 2

The annual growths in the first year after planting (average 2009-2010)

Variety	No. shoots	Annual growths (cm)		The difference from the control (total annual growths)	Significance
		Medium	Total		
Fetească Regală	2,15	79,38	170,66	+11,31	*
Muscat Ottonel	2,32	65,51	151,98	-7,37	-
Moldova	2,72	98,44	267,75	+108,4	***
Victoria	2,00	71,55	143,1	-16,25	0
Muscat de Hamburg	1,83	55,99	102,46	-56,89	000
Chasselas dore (MT)	2,37	67,24	159,35	-	-
DL 5% = 11,21cm		DL 1% = 21,78 cm		DL 0,1% = 44,69cm	

Annual growths in the first year after planting are very important and they show how the vines on own roots can adapt to external environmental conditions. Analyzing the average of two years we find that the varieties had a 2.23 average number of shoots, that is also due to green operations carried out by us, by removing some of the shoots to foster growth and maturation of shoots that were left on the vine stock. The medium length of shoots was different from one variety to another, most vigorous being registered for Moldova variety by 98.44 cm. Smaller vine chords have been registered for Muscat Hamburg varieties (55.99 cm) and Muscat Ottonel (65.51 cm). For all varieties, the medium length of vine chords was corresponding for the first year of vegetation.

Table 3

The matured growths in the first year after planting(average 2009-2010)

Variety	The medium length of the shoot matured		Matured growths on vine stock (cm)	The difference from the control(Matured growth on vine stock)	Significance
	cm	%			
Fetească Regală	33,61	42,34	72,26	2,75	-
Muscat Ottonel	25,81	39,39	59,87	-9,64	-
Moldova	31,75	32,25	86,36	16,85	*
Victoria	29,91	41,80	59,82	-9,69	-
Muscat de Hamburg	16,64	29,71	30,45	-39,06	000
Chasselas dore (MT)	29,33	43,62	69,51	-	-
DL 5% = 10,25cm	DL 1% = 19,32 cm		DL 0,1% = 33,21cm		

The matured growths are also an important indicator that shows, in addition, the adaptation to environmental conditions and varieties' resistance to the negative temperatures in winter. In the first year after planting the medium length of mature vine chords was 27.84 cm, with limits ranging from 16.64 cm to 33.61 cm at Muscat de Hamburg and Fetească Regală varieties. The varieties with highest percentage of mature vine chords were: Chasselas dore (43.62%), Fetească Regală(42.34%) and Victoria (41.80%), and the lowest percentage was for Muscat de Hamburg (29.71%). Regarding the matured growths of the vine stock, there are significant differences between varieties. The only variety which showed significant positive differences to the control was Moldova. The matured growths in the first year after planting have allowed the normal pruning of formation for all varieties.

Conclusions

For those who want to establish a small vineyard but do not have the financial resources necessary, production of planting material by the method proposed by us can be a viable solution.

Vines obtained by this method are according to quality standards, but we must take into account the fact that the vines grown on own roots are highly susceptible to phylloxera and are recommended to be grown on uninfested land, with sandy soils with a clay content below 8%.

The method proposed by us lend itself very well for all studied varieties, so that the vines could be planted at their final place in the same year of production, winning one year from the classical method.

This technology is simple and can be done with minimal costs, reason why we recommend it for all who want to plant a few cuttings in their own household.

We do not recommend this method if the vines are used for large plantations, because there is the risk that their roots to be attacked by phylloxera.

Aspects of the period of the research

References

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