

RESULTS REGARDING THE TESTING OF SOME THE CONDUCTION FORMS OF VINE FOR THE PERIOD OF 2002 – 2006 IN SCDVV IASI

REZULTATE PRIVIND EXPERIMENTAREA UNOR FORME DE CONDUCERE A VIȚEI DE VIE LA SCDVV IASI ÎN PERIOADA 2002 - 2006

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Abstract. *During the period 2002-2006 at SCDVV Iași, semi-high and high forms of support in the semi-protected culture system were experimented. In Copou viticulture centre, the high form of direction with bilateral cord is generally used. In time, these cords are stripped off because of unfavorable climatic factors (frost, draught), because of the inappropriate application of the fructifications cut and the tendency to attribute a high load. The researches focused on eliminating these shortcomings by promoting some forms and types of cutting that aim at reducing the leaf bud weight (9-10 leaf buds/m²), by ensuring the renewal of cords every year, by maintaining the production capacity in optimal parameters and the increase of crop quality.*

Rezumat. *În perioada 2002 – 2006 la SCDVV Iași s-au experimentat forme de conducere semiînalte și înalte în sistem de cultură semiprotejată. În centrul viticol Copou este generalizată forma de conducere înaltă cu cordon bilateral. În timp, aceste cordoane se degarnisesc datorită unor factori climatici nefavorabili (îngheț, secetă), a aplicării necorespunzătoare a tăierilor de rodire și tendința atribuirii unor încărcături mari. Cercetările vizează îndepărtarea acestor neajunsuri prin promovarea unor forme și tipuri de tăiere care urmăresc reducerea încărcăturii de ochi (9 – 10 ochi/m²), asigurarea reînnoirii cordoanelor an de an, menținerea capacității de producție la parametrii optimi și creșterea calității recoltei.*

The introduction of the forms of conduction stalk, in the North-Eastern area of the country was performed relatively late comparing to the other areas (Pîțuc et al., 1975) due to the climatic conditions with a restrictive character, during the vegetal rest period.

The studies performed during years presented the disadvantages of the cultivation of the vineyard in a base form and the advantages of the types of conduction of the stalk. The types of stalk conduction decrease the negative effect of the low temperatures at ground level, which creates a series of biological premises favorable to the differentiation of the buds, the reduction of the working force consumption and the increase of the quantitative and qualitative production (Macici et al., 1983). The results of the researches demonstrated that the height of the stalk of 70 – 100 cm is the best for the biggest production, without a significant decrease of its qualities.

At the same time, in the conditions of the Copou vine growing center Iași there was a generalization of the type of conduction of bilateral cord with loads situated between 14 – 23 leaf buds/m², depending on the variety and with safety elements at the basis of the vine.

The influence of some unfavorable climatic factors (frost, draught) and the tendency to leave big loads during the fructification cutting led, in time, to the unpacking of the cords by the drying out of the fruit elements or to their pushing to the edges. (Pițuc et al., 1989).

For the disappearance of these unwanted processes, during 2002 – 2006 the SCDVV Iași experimented types of conductions with the height of the stalks between 0,8 m and 1,0 m and types of cuts that insure the reduction of the fruit load, the yearly renewal of the cords, the maintenance of the production capacity at the optimum parameters and the increase of its quality.

MATERIAL AND METHOD

The experiment took place in the Agro-technical Polygon of the Iasi Station of Research and Development for vine growing and wine production on the Aligoté variety grafted on Kober 5 BB planted at the distance of 2,2 m between rows and at 1,2 m on a row, on a terrain of South -Western inclination and a slope of 5 – 6 %. The maintenance system of the ground is field worked alternatively with natural duration of grass growth. The vines were transformed from the method of conduction of the stalk – bilateral cord, to the type of stalk conduction with a height of 0,8 and 1,0 m., leaving during cuts a load of 26 leaf buds per vine, distributed on two spigots of 2 leaf buds, 2 cord of 10 leaf buds and a safety spigot at the basis of the vine. These variants were compared to the type of conduction on stalks of 1,0 m with bilateral cord and a load of 46 leaf buds on vine distributed on spigots and cords.

At the same time, there were performed changes on the system of maintenance as> for the variety with a length of stalk of 0,8 m the first wire was fixed at a length of 0,7 m, the second at 0,9 m, and the first row of double wires at 1,4 m. These allowed the performance of the tying of the cord in a circular shape, thus stimulating the uniform development of spring on their whole length (image 1).

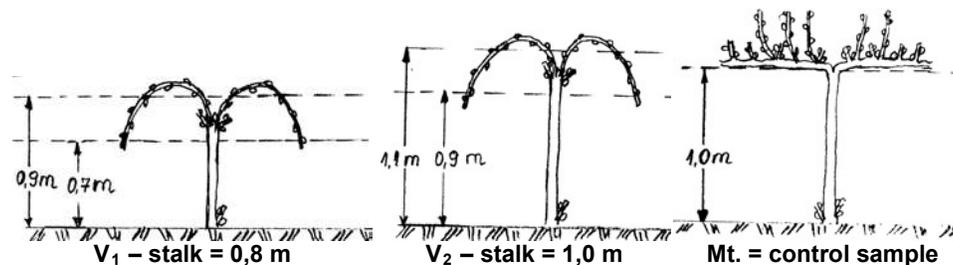


Image 1 – Experimental variants

There were performed observations and experimentation on the starting in vegetation (number of started leaf buds), of the fertility (total of spring, fertile spring, number of inflorescences), on the quantitative production (number of grapes, the medium weight of grape, mass and volume of 100 grapes, the vineyard production) and of its quality (the content on carbohydrates, the acidity of the must).

The variants were distributed in randomized blocks in four repetitions, every one of the 16 vine to be harvested. A series of data were statistically processed, using the variety analysis, mono factorial experiments, a series of years, counting the limit difference for the probability of 5%, 5 %, 1 % and 0,1 % for the decision of the significance of the differences among the variants.

RESULTS AND DISCUSSIONS

Both the starting of the vegetation and the grape production were influenced by the climatic conditions of the years that were taken into account. We mention the fact that in 2005 it was not possible to perform observations due to the fact that the wine production was compromised by the massive attack of the marna. The affluent precipitations during the period prior to the blooming prevented the performance of the fitosanitary treatments at the best moment.

The fertility coefficients registered superior values compared to the control sample, in all the observation years (table 1). These had absolute values between 2,15 – 2,35 and relative of 1,73 – 1,96. An exception is the year of 2006, when the buds were affected by frost, with repercussions on the fertility and productivity of the variety. The relative productivity index, indicator of the medium production of each sprout, accentuates the variant no. V₁ (196 – 216), lower level for the variant no. V₂ (190 – 196), but superior to the control sample. The absolute and relative productivity indices reflect the resultant of the complex interaction between the variety and the biotope being useful to the grape growers, being an indicator of the capacity of production of the vineyard, offering solutions regarding the establishment of the load of the fruit.

Table 1

The starting of the vegetation of the Aligoté variety

Variants	2002			2004			2006		
	V ₁	V ₂	Mt	V ₁	V ₂	Mt	V ₁	V ₂	Mt
No. of leaf buds/vine	26	26	46	26	26	46	26	26	46
No. of leaf buds/m ²	10	10	17	10	10	17	10	10	17
Total sprouts	23	23	53	24	25	55	24	26	48
Fertile sprouts	19	17	34	20	20	36	5	18	30
Sterile sprouts	4	6	19	4	5	19	9	8	18
Number of inflorescences	41	40	56	47	44	58	28	33	36
The absolute fertility coefficient	2,15	2,35	1,64	2,35	2,20	1,61	1,87	1,83	1,20
The relative fertility coefficient	1,78	1,73	1,05	1,96	1,76	1,05	1,17	1,27	0,75
The absolute productivity index	237	259	180	259	242	177	206	201	132
The relative productivity index	196	190	116	216	194	116	129	140	83

V₁ – stalk = 0,8 m; V₂ – stalk = 1,0 m; Mt. = control sample;

Regarding the quantitative productions of grapes, these were irregular from one year to another, the smaller values dating back to 2002 and the biggest ones to 2004. Although in the case of the variants V₁ and V₂ the fruit load was of only 26 leaf buds/vine as opposed to the control sample no. 46 leaf buds/vine, during some years of production of the vine were pretty much the same not existing significant differences (table 2).

The superiority of the conduction forms is also reflected on the quality of the wine production. Thus, for the variant in which it was adopted the conduction form on stalks of 1,0 m height (V₂) the grapes were bigger, with equal grapes, achieving an average mass between 104 – 150 g/grape, values statistically guaranteed, comparing to the control sample where the grapes did not exceed 114 g. The quantity of sugar from the must indicates a higher potential of accumulation of these for the studied variants, in comparison with the control sample, for all the years of experimentation, existing differences between 18 – 40 g/l, statistically guaranteed.

Table 2

Qualitative and quantitative parameters

Variants	2002			2003			2004			2006		
	V ₁	V ₂	Mt	V ₁	V ₂	Mt	V ₁	V ₂	Mt	V ₁	V ₂	Mt
No. of grapes/vine	24,5	25,7	51,9	44,7	46,1	71,2	49,4	51,5	65,7	32,2	35,8	48,0
Grape production, kg/vine	2,03 ^{ooo}	2,38	3,19	5,90	6,7	7,58	6,9 ^{ooo}	7,55	7,92	3,96 ^o	5,07	5,44
DL 5 %	0,34			2,47			0,42			1,03		
DL 1 %	0,52			3,75			0,63			1,56		
DL 0,1 %	0,83			6,02			1,01			2,50		
Average weight of a grape, g	96	104 ^x	86	134	146 ^x	106	140	148 ^x	121	130 ^x	150 ^{xxx}	114
DL 5 %	17			34			26			12		
DL 1 %	26			52			39			19		
DL 0,1 %	41			84			63			30		
Sugar, g/l	206 ^{xx}	198 ^{xx}	166	192	202 ^x	184	164 ^x	159	146	190 ^{xx}	181 ^x	159
DL 5 %	18			14			16			16		
DL 1 %	28			22			24			24		
DL 0,1 %	44			35			38			38		
Acidity, g/l H ₂ SO ₄	5.3	5.4	6.1	5.8	5.5	6.0	6.2	6.9	6.5	6.9	6.8	7.6
The mass of 100 grapes, g				190	204	168	171	164	156	188	179	150
The volume of 100 grapes, cm ³				176	188	160	154	147	140	183	172	146

CONCLUSIONS

1. The decrease of the fruit load for the Aligoté variety, from 46 leaf buds/vine to 26 leaf buds/vine, led to the registration of some values superior to the fertility coefficients and to the productivity indices, for the achievement of similar productions and with a higher qualitative level.

2. The insurance of a higher content of carbohydrates leads to the increase of the qualitative level of the quality of wine and a exploitation for a competitive price.

3. The forms of conduction experimented have the advantage of allowing , every year, due to the fructification cuts, to renew the fruit elements, thus avoiding the phenomena of degarnishing of the cords. At the same time, the ease and the efficiency of the execution of the maintenance works (dry cuts, directed and ties sprouts, fitosanitary treatments) constitutes another positive characteristic of these.

4. The adaptation of the conduction forms and of the type of cutting for the environmental conditions represents a decisive measure for the achievement of constant productions year after year and of a superior quality.

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