

THE INFLUENCE OF SOME GLICOZID-STEROIDICS ON GRAPEVINE GROWTH AND FRUCTIFICATION

INFLUENȚA UNOR PREPARATE GLICOZID-STEROIDICE DE ORIGINE VEGETALĂ ASUPRA CREȘTERII ȘI FRUCTIFICĂRII VIȚEI DE VIE

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Abstract. *Within the Iassy „V. Adamachi” didactical farm was tested the influence of the „Ecostim” product on grapevine, Chasselas dore variety; has been settled three experimental variantes with different cocentration of „Ecostim”, comparad with an experimetal variants untreatet as control. During the vegetation period has been made determinations concerning the foliar pigments content, yield and grape quality. The grape yield was superior to control in all the experimental variantes; smaller differences than control, of 1.1 t/ha, has been registered in V₁, bigger differences than control, of 4.7 t/ha and 6.3 t/ha, has been registered in V₂ and V₃. The grape quality was not related to experimental variants, it was related to the grape yield.*

Key words: Ecostim, grapevine, Chasselas dore variety

Rezumat. *În cadrul fermei didactice V. Adamachi Iași s-a testat influența produsului „Ecostim” asupra viței de vie, soiul Chasselas dore; au fost stabilite trei variante experimentale în care produsul a fost aplicat în diferite concentrații, variante comparate cu un martor netratat. Pe parcursul perioadei de vegetație au fost efectuate observații și determinări privind conținutul în pigmenți foliari, productivitatea butucilor, producția de struguri și calitatea acesteia. Producția de struguri a fost mai mare față de martor în toate variantele experimentale; diferențe mai mici (1,1 t/ha), semnificativ pozitive față de martor s-au înregistrat la V₁; diferențe mai mari, de 4,7 t/ha și 6,3 t/ha, cu valori foarte semnificativ pozitive s-au înregistrat în V₂ și V₃. Conținutul în zaharuri nu a fost infuențat semnificativ de varianta experimentală, acesta s-a corelat cu producția de struguri.*

Cuvinte cheie: Ecostim, viță de vie, Chasselas dore

INTRODUCTION

Adjust plant growth and development through the use of biologically active substances is currently one of the most effective methods used in agriculture. Interest in this group of compounds is subject to the broad spectrum of their action on plants can adjust various stages of growth and development for resource mobilization potential of the body plant increased production of grapes and quality.

MATERIAL AND METHODS

In the period 2006-2007 has been tested on vines Ecostim product. The research was conducted in the discipline of Viticulture ampelographic Collection at White Feteasca grafted on rootstock Kober 5 BB. Plantation was established in 1985 with planting distances of 2.2 x 1.2 m; plants were led in the form of bilateral semiinalte cords (0.8 m height. Building upon cutting the vines was made in the rod rings formed by rod cordiform 4-6 eyes. Maintenance technology was the specific vineyard lasi.

Ecostim product was applied by spraying the leaves in three stages: before flowering, after flowering and grain growth fenofaza fixing the following test:

V1 - Ecostim 0.0001%

V2 - Ecostim 0.001%

V3 - Ecostim 0.005%

Experimental variants were compared with untreated control. During the growing season were made the following observations and determinations: leaf pigment content, productivity plant, grape production and quality.

RESULTS AND DISCUSSIONS

Content of leaf pigments was different depending on the experimental variant and time determination. In July (table 1) the lowest values assimilator pigment content occurred in control variant (3.04 mg/g s. pr.); V_3 in photosynthetic efficiency increased very significantly, so each pigment and the total pigments (17.76% of control); V_2 has a positive influence photosynthetic efficiency, resulting in an increase, with 15.79% of total pigment content (increase significantly distinct from positive control); in V_1 the photosynthesis was positively influenced, resulting in a significant increase compared to positive control (10.20%).

In August (table 2) the highest values of assimilator pigment content occurred in V_3 (4.42 mg / g s. pr.); with very significant differences from positive control, the photosynthetic efficiency of V_2 increased very significantly, so each pigment and the total pigment, close to the V_3 (4.30 mg / g s. pr), V_1 also positively influence photosynthesis, resulting in a distinct increase significantly compared to control positive (10,12%), the lowest values assimilator pigment content were found in March with a value of 3.46 mg / g s. pr.

In September (table 3) the lowest values assimilator pigment content occurred in control variant (2.99 mg / g s. pr.). Control close values, insignificant differences, were obtained in V_1 (3.11 mg / g s. pr.), the V_3 and V_2 photosynthetic efficiency increased very significantly, so each pigment and the total pigments (11.37% and 10.37% of control).

Productivity vine was influenced by product Ecostim (table 4). Number of grapes obtained on the plant increased significantly compared to controls at all experimental variants, the highest values were recorded at V_3 (33.5) and V_2 (35.5), but positive values with significant differences from control were were obtained in V_1 (31.7). The control was recorded the lowest number of grapes formed on plant, only 29.3.

The average weight of grapes increased in V₃ and V₂ variants Ecostim treated compared with controls (80.2 g), with significant distinct positive differences in V₃ (90.3 g) and significant V₂ (85.6 g). In V₁ showed the reduced value of the average weight of a grape (79.3 g), but with significant differences compared to controls.

Table 1

**Influence of fertilization on photosynthetic efficiency
on vines (white Feteasca) - July 2007**

Variants	Chlorophyll a mg/g fresh subs.	Chlorophyll b mg/g fresh subs.	Carotene mg/g fresh subs.	Total pigments			
				mg/g fresh subs.	diff. contr.	%	semn.
Ecostim 0,0001%	1,74	0,76	0,85	3,35	0,31	110,20	x
Ecostim 0,001%	1,78	0,85	0,89	3,52	0,48	115,79	xx
Ecostim 0,005%	1,83	0,84	0,91	3,58	0,54	117,76	xxx
Control	1,63	0,66	0,75	3,04	-	100	-

DL 5% - 0,23 mg/g s. pr.
DL 1% - 0,35 mg/g s. pr.
DL 0,1% - 0,52 mg/g s. pr.

Table 2

**Influence of fertilization on photosynthetic efficiency
on vines (white Feteasca) - August 2007**

Variants	Chlorophyll a mg/g fresh subs.	Chlorophyll b mg/g fresh subs.	Carotene mg/g fresh subs.	Total pigments			
				mg/g fresh subs.	diff. contr.	%	semn.
Ecostim 0,0001%	1,95	0,89	0,97	3,81	0,35	110,12	xx
Ecostim 0,001%	2,18	0,96	1,16	4,30	0,41	124,28	xxx
Ecostim 0,005%	2,20	0,99	1,23	4,42	0,52	127,75	xxx
Control	1,75	0,79	0,92	3,46	-	100	-

DL 5% - 0,15 mg/g s. pr.
DL 1% - 0,25mg/g s. pr.
DL 0,1% - 0,39 mg/g s. pr.

Ecostim influenced, also, the mass of 100 grains and grain diameter. Mass of 100 grains grew obviously only V₃ (160g), the V₁ and V₂ of 100 grain weight showed values around the control, with insignificant differences. Grain diameter increased slightly in the experimental variants, with 0.2 mm in V₁, V₂ and 0.8 mm to 1.2 mm in V₃.

Production of grapes (table 5), both on vine and per hectare were higher than controls in V₂ and V₃, the largest grape production, with very significant positive difference was obtained in V₃ (3, 3 kg/vine, ie 11.5 t/ha); in V₂ grape

production has lower values compared to the V₃, but with significant differences from control (2.7 kg/vine, respectively 9.4 t/ha); in V₁ grape production was equal to that obtained in the control variant (2.5 kg/vine, respectively 8.7 t/ha).

Table 3

**Influence of fertilization on photosynthetic efficiency
on vines (white Feteasca) - September 2007**

Variants	Chlorophyll a mg/g fresh subs.	Chlorophyll b mg/g fresh subs.	Carotene mg/g fresh subs.	Total pigments			
				mg/g fresh subs.	diff. contr.	%	semn.
Ecstim 0,0001%	1,71	0,65	0,75	3,11	0,12	104,01	-
Ecstim 0,001%	1,78	0,73	0,79	3,30	0,31	110,37	xxx
Ecstim 0,005%	1,81	0,71	0,81	3,33	0,34	111,37	xxx
Control	1,62	0,63	0,74	2,99	-	100	-

DL 5% - 0,14 mg/g s. pr.
DL 1% - 0,22 mg/g s. pr.
DL 0,1% - 0,27mg/g s. pr.

Sugar content (table 5) was less influenced by Ecstim product, with insignificant differences compared to control; the largest sugar contents were recorded V₁ (218 g/l) and control (213 g/l), a slightly lower content, correlated negatively with its grape production was registered in the V₂ and V₃, with 212 respectively 207 g/l.

Acidity presented values close to all variants, it was easily influenced by the production of grapes, insignificant values higher than control occurred in V₃ (5.20 g/l H₂SO₄).

In all experimental variants, including the control, at full maturity, the grapes had a green-yellow, with juicy pulp, specific for a variety of wine grape.

CONCLUSIONS

Ecstim product applied to vines presented a positive influence on photosynthetic efficiency, grape production and quality.

Leaf pigments content recorded higher values in all experimental variants, both elements (chlorophyll a, chlorophyll b, carotene) and the total highest pigment content was observed in the first part of August to variants V₂ and V₃; increased pigment content in the area and increased leaf photosynthetic efficiency.

Table 4

The productivity of white Feteasca Ecostim treated, vineyard Iasi, 2007

Variants	Average number of grapes on plant				Average weight of grapes				Mass of 100 grains (g)	Grain diameter (mm)
	No.	Diff.	%	Semn.	g	Diff.	%	Semn.		
Ecostim 0,0001%	31,7	2,4	108,2	x	79,3	-0,9	98,9	-	128	9,9
Ecostim 0,001%	33,5	4,2	114,3	xx	85,6	5,4	106,7	x	132	10,5
Ecostim 0,005%	35,5	6,2	121,2	xxx	90,3	10,1	112,6	xx	160	10,9
Control	29,3	-	100,0	-	80,2	-	100,0	-	131	9,7

DL 5% - 2,1 strug.
DL 1% -3,3 strug.
DL 0,1% -4,7 strug

DL 5% -4,1 g
DL 1% -7,8 g
DL 0,1% -10,7 g

Table 5

Grape DL production and its quality in white Feteasca treated Ecostim, vineyard Iasi, 2007

Variants	Grape production					Sugar content				Acidity g/l H ₂ SO ₄	Grain color
	Kg/plant	t/ha	Diff.	%	Semn.	g/l	Dif.	%	Semn.		
Ecostim 0,0001%	2,5	8,7	0,0	100,0	-	218	5,0	102,3	-	4,83	Green-yellow
Ecostim 0,001%	2,7	9,4	0,7	108,0	x	212	-1,0	99,5	-	4,70	Green-yellow
Ecostim 0,005%	3,3	11,5	2,8	132,0	xxx	207	-6,0	97,2	-	5,20	Green-yellow
Control	2,5	8,7	-	100,0	-	213	-	100,0	-	4,78	Green-yellow

DL 5% - 0,6 t/ha
DL 5% -1,5 t/ha.
DL 5% -2,3 t/ha

DL 5% -7,3 g
DL 5% -10,1 g
DL 5% -14,7 g

Productivity and grape production has increased significantly in the experimental variants V_2 and V_3 , with higher values compared to control concerning the number of grapes on the vine, the average weight of grapes, the mass of 100 grains, grain diameter, the production of grapes on the vine and the yield; the V_1 variant, recorded values of productivity and grape production close to the control, without significant differences. Quality grape production was similar to control in all experimental variants.

The influence of Ecostim product correlate positively with the concentration used in the treatment solution, best results were obtained in V_2 (Ecostim 0.001%) and V_3 (Ecostim 0.005%).

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