RESEARCHES CONCERNING GREEN FERTILIZERS APPLICATION INFLUENCE UPON VIGOUR, WOOD MATURATION AND YIELD IN CASE OF SOME WINE GRAPES VARIETIES

CERCETĂRI PRIVIND INFLUENȚA APLICĂRII ÎNGRĂȘĂMINTELOR VERZI ASUPRA VIGORII, MATURĂRII LEMNULUI ŞI A PRODUCȚIEI LA CÂTEVA SOIURI DE STRUGURI PENTRU VIN

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Abstract: *Researches were made between 2006-2007 periods in a young plantation in Buzias-Silagiu viticutural centre. Researches referred to the way in which green fertilizers are influencing vigour, wood maturation, quantity and quality of the yield at Sauvignon Blanc, Merlot and Burgund varieties. Winter fooder used as green fertilizer had a positive influence upon yield increase and also upon soil phisico-chemical features. Soil maintenance using plants cultivation as green fertilizer represents an important alternative of the classic soil maintenance system because provides a lot of advantages.*

Rezumat: *Cercetările au fost efectuate în anii2006-2007 într-o plantație tânără situată în centrul viticol Buzias-Silagiu.Ele au vizat modul în care influențează îngrășămintele verzi vigoarea, maturarea lemnului, cantitatea şi calitatea producției la soiurile Sauvignon Blanc, Merlot şi Burgund .Borceagul utilizat ca şi îngrășământ verde, a avut o influență pozitivă atât asupra creşterii producției cât şi asupra însuşirilor fizico-chimice ale solului. Intreținerea solului prin cultivarea plantelor pentru îngrășământ verde este o alternativă importantă la sistemul clasic de întreținere a solului, deoarece asigură o serie de avantaje.*

Key words**:** *green fertilizers, vigour, wood maturation, yield, wine grapes varieties*
Cuvinte cheie : *îngrășăminte verzi, vigoare, maturarea lemnului, soiuri de struguri pentru vin*

INTRODUCTION

Soils on which vine is cultivated are generally soils with a low natural fertility, considered to be improper for the majority of the agricultural cultures.

If, besides all this, we take into consideration high grapes yield, secondary biomass (cords, leafs) which are produced year after year in viticultural plantations, results the necessity to give back to the soil the organic matter yearly exploited.

Because in the last years time manure is an organic fertilizer to much harder to find, transport and administrate, plants cultivation as green fertilizers represents a viable solution concerning organic soil fertilization, which also respects biological viticulture principles, more and more actual nowadays.

MATERIALS AND METHOD

Researches were made into a young viticultural plantation located in Buzias-Silagiu viticultural centre. Planting distances were of 2,2 m between rows and 1m between vines/row.

The studied varieties were: Sauvignon Blanc, Merlot and Burgund. Were made investigations concerning soil maintenance system influence using plants cultivation as green fertilizers upon leafs surface, total and matured annual growths, grapes yield and its quality.

Statistically speaking, the experience is placed using random blocks method and calculus method used was variation analysis.

RESULTS AND DISCUSSION

The years of research 2006-2007 were different climatically speaking, that's why we consider that our presented results are conclusive and illustrating.

The year 2006 was a year less favorable for viticulture; meanwhile 2007 conditions ware very favorable with high light and thermal resources. In the year 2006 (Table 1) green fertilizers which were seed, mown and incorporated in soil, had a positive influence upon leafs surface and also upon total annual and matured growths, in case of the studied varieties.

Table 1

Green fertilizers application influence upon vigour and wood maturation in the year 2006

Variety	Leafs surface (m^2/vine)	Leafs surface (m^2/vine)		Difference to the control		Significance	
		Total	Matured	Total annual growths	Matured annual growths	Total growths	Matured growths
Sauvignon Blanc	4,6	16,1	13,3	-2,2	-1,03	-	-
Merlot	5,2	18,3	11,9	-0,23	-2,43	-	0
Burgund	6,5	20,5	17,8	+2,2	+3,47	-	**
Average (Control)	5,43	18,3	14,33	-	-	-	-

Total annual growths DL 5% = 2,37; DL 1% = 3,81; DL 0,1% = 6,02
Matured annual growths DL 5% = 1,98; DL 1% = 3,02; DL 0,1% = 5,78

Given the experience average taken as control, the variety with the highest vigour was Burgund variety, with a leafs surface of 6,5 m^2/vine and 18,3 m total annual growths/vine.

Even that green fertilizers did amplify into a small measure vine growths, they didn't influenced wood maturation percentage, this one being sufficient in case of all three varieties.

In the year 2007 (Table 2) climate conditions were very favorable, mostly as concerns grapes quality and the obtained yields were higher and secondary biomass obtained (leafs, cords) was lower.

Table 2

Green fertilizers application influence upon vigour and wood maturation in the year 2007

Variety	Leafs surface (m^2/vine)	Leafs surface (m^2/vine)		Difference to the control		Significance	
		Total	Matured	Total annual growths	Matured annual growths	Total growths	Matured growths
Sauvignon Blanc	3,7	14,2	12,7	-1,56	-0,13	-	-
Merlot	4,5	15,3	10,2	-0,46	-2,63	-	0
Burgund	4,8	17,8	15,6	+2,04	+2,77	*	*
Average (Control)	4,33	15,76	12,83	-	-	-	-

Total annual growths DL 5% =2,02; DL 1% =3,31; DL 0,1% =5,71
Matured annual growths DL 5% =1,72; DL 1% =2,81; DL 0,1% =4,97

Leafs surface and total annual and matured growths values were lower in comparison with the previous year but varieties phasing type was the same.

Analyzing the results concerning vigour and wood maturation on research cycle, they showed that plants used as green fertilizer amplified in small measure vigour, without affecting significantly wood maturation process (Table 3).

Table 3

Green fertilizers application influence upon vigour and wood maturation-Average 2006-2007

Variety	Leafs surface (m^2/vine)	Leafs surface (m^2/vine)		Difference to the control		Significance	
		Total	Matured	Total annual growths	Matured annual growths	Total growths	Matured growths
Sauvignon Blanc	4,15	15,15	13,0	-1,88	-0,58	-	-
Merlot	4,85	16,80	11,05	-0,23	-2,53	-	0
Burgund	5,65	19,15	16,7	+2,12	+3,12	-	**
Average (Control)	4,88	17,03	13,58	-	-	-	-

Total annual growths DL 5% =2,21; DL 1% = 3,57; DL 0,1% = 5,86
Matured annual growths DL 5% =1,83; DL 1% = 2,93; DL 0,1% = 5,33

The only variety which registered smaller values of the matured wood was Merlot variety, this variety being known for its sensibility as concerns less favorable climate conditions.

The obtained yields in 2006 were situated between 7800 kg/ha in case of Merlot variety and 8310 kg/ha in case of Burgund variety

Qualitatively speaking, this was good, green fertilizers besides that contributed to yield increase, didn't influence into a negative way its quality.

In the year 2007, the obtained yield was superior to the previous year, 2006, quantitatively and qualitatively speaking.

Sugar content was higher in case of all varieties, outrunning 200g/l, acidity remained in equilibrium, so that wines can be framed in the category of the ones of high quality.

Table 4

Green fertilizers influence upon yield in the year 2006

Variety	Yield (kg/ha)	Sugar (g/l)	Acidity (g/l H_2SO_4)	Difference to the control (kg/ha)	Significance
Sauvignon Blanc	7910	187	5,2	+136,67	-
Merlot	7100	190	5,1	-673,33	0
Burgund	8310	182	5,5	+536,67	*
Average(Control)	7773,33	186,33	5,26	-	-

DL 5% =512,6; DL 1% = 798,2; DL 0,1% =1173,3

Table 5

Green fertilizers influence upon yield in the year 2007

Variety	Yield (kg/ha)	Sugar (g/l)	Acidity (g/l H_2SO_4)	Difference to the control (kg/ha)	Significance
Sauvignon Blanc	8915	205	4,7	+131,67	-
Merlot	8320	210	4,5	-463,33	-
Burgund	9115	193	4,9	+331,67	-
Average (Control)	8783,33	202,66	4,7	-	-

DL 5% =571,6; DL 1% = 875,8; DL 0,1% =1238,3

Table 6

Green fertilizers influence upon yield -Average 2006-2007

Variety	Yield (kg/ha)	Sugar (g/l)	Acidity(g/l H_2SO_4)	Difference to the control (kg/ha)	Significance
Sauvignon Blanc	8412,5	196	4,95	+134,17	-
Merlot	7710	200	4,8	-568,33	0
Burgund	8712,5	187,5	5,2	+434,17	-
Average (Control)	8278,33	194,5	4,98	-	-

DL 5% =559,2 DL 1% = 821,2 DL 0,1% =1212,3

CONCLUSIONS

Plants use as green fertilizers constitutes a solution, by its help being bring into soil an important quantity of organic matter, in the context in which manure, the main organic fertilizer it is harder and harder to find.

Green fertilizers, winter fodder in our case, have a favorable influence upon yield and also upon soil phisico-chemical features, which is essential in case of viticultural soils impoverished in organic matter.

In Buzias-silagiu viticultural centre, which has sufficient rainfall resources, green fertilizers use represents an adequate and appropriate solution.

LITERATURE

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