

THE INFLUENCE OF PRUNING SYSTEMS ON THE PRODUCTION LEVEL OF FETEASCA NEAGRA 7 OD. CLONE FROM THE CONDITIONS OF THE VINEYARD ODOBESTI

INFLUENȚA UNOR TIPURI DE TĂIERE ASUPRA PRODUCȚIEI LA FETEASCĂ NEAGRĂ CLONA 7OD. IN CONDIȚIILE SPECIFICE DIN PODGORIA ODOBEȘTI

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***Rezumat.** Soiul Feteasca neagra reprezinta unul din soiurile autohtone cu un viitor incontestabil in viticultura romaneasca. Ca urmare in perioada 2004-2006, la SCDVV Odobesti au fost efectuate cercetari care au urmarit stabilirea tehnologiei de cultura a clonului Feteasca neagra 7-20 omologat sub denumirea de FN 7 Od.*

Pentru a stabili cea mai buna solutie tehnologica s-a studiat cu atentie lucrarile agrofitehnice in special taierea de fructificare in perioada de repaus (tipul de taiere incarcatura de ochi si repartizarea acesteia pe elementele de productie) cat si efectul lucrarilor si operatiilor in verde, in scopul valorificarii la maxim a potentialului cantitativ si calitativ al soiului.

Variantele experimentale au scos in evidenta superioritatea elementelor de rod lungi (coarde de 12-14 ochi) in defavoarea celor scurte (cepi de 2-3 ochi) . Un element esential in asigurarea unei bune fertilitati il constituie asigurarea la taiere a ordinii de amplasare a lemnului (lemn de 1 an, pe lemn de 2 ani, pe lemn de 3 ani) . Deasemenea asigurarea unui raport optim intre suprafata foliara si incarcatura de struguri pe butuc, reglat si prin lucrarile in verde, constituie o conditie de baza in obtinerea unor productii superioare cantitativ si calitativ.

Feteasca neagra 7 Od. is one of the most valuable clones, created at the Research and Development Station for Viticulture and Enology Odobesti, starting from the indigenous variety called Feteasca neagra. The potentialul of production can be estimated agro-productively more efficiently within the same category are the sort of grapes destined to obtain red wines with a name from a controlled origin (DOC).

Feteasca neagra clone 7 Od. is characterized through a relatively low productive potential, however positive characteristics of this clone can be made significant through pruning methods, this way we can control the potential of production in a positive way by applying a specific pruning method with different potential crops.

The purpose of the present research is to establish a comparative study with respect to the response reaction regarding the productivity of the Feteasca neagra clone 7 Od. through the application of specific pruning methods and different potential crops.

Aiming for the optimization of the cultural technology in order to fully express its biological potential in the ecoclimatic conditions of the vineyard Odobesti, two pruning systems (the short pruning and the cane pruning) were studied, as well as several bud loads that have a different distribution for the fruit-bearing parts of the vine.

MATERIAL AND METHODS

The research works were developed during 2004-2006 period at the Research and Development Station for Viticulture and Enology Odobesti.

The research material taken into studies is Feteasca neagra clone 7Od. selected at the Research and Development Station for Viticulture and Oenology Odobesti and homologated in year 2005, grafted on Kobber 5BB rootstock.

The vines were planted at a distance of 1,4 m in ranges and 2,0 m between the ranges, the training on half stem, the pruning system – the short pruning and the cane pruning, the pruning types - Guyot on half stem and Cordon system, the potential crop/m.sq. - 10-14-16-17.

It was studied 5 experimental variants on which applied two type of pruning (Guyot on half stem and Cordon system), and the potential crop/m.sq. - 10-14-16-17 presented in Table 1.

Table 1

The experimental variants studied

Variant	Pruning type	Units	No. of buds/sq.m.	No. of buds/vine
V ₁	Cordon system	20 spurs of 2 eyes	14	40
V ₂	Guyot on half stem	4 units of one spur of 2 eyes + one cane of 8 eyes	14	40
V ₃	Guyot on half stem	4 units of one spur of 2 eyes + one cane of 9 eyes	16	44
V ₄	Guyot on half stem	4 units of one spur of 2 eyes+one cane of 10 eyes	17	48
V ₅	Guyot on half stem	2 units of one spur of 2 eyes+one cane of 12 eyes	10	28

For every experimental variant 4 repetitions were done, the vines being randomly distributed in the plantation in accordance with the method of the Latin square. Every experimental variant consisted of 18 vines each.

Observations, measurements and determinations were made concerning the influence of the pruning system, the potential crop and the buds distribution, upon the fertility and the grapes yield of the clone Feteasca neagra 7Od .

The climatic conditions for vegetative period which had influenced the experimental period and the multiannual values are presented in Table 2

Table 2

Main climatic elements for the experimental period

Year Month	Temperature (°C)			Precipitation (mm)			Sunlight (hour)		
	2003	2004	2005	2003	2004	2005	2003	2004	2005
April	9.8	11.8	10.5	20.3	63.0	25.1	192.9	238.3	181.6
May	20.5	15.4	16.9	57.9	29.3	58.5	326.8	233.2	248.8
June	21.8	19.7	18.5	12.2	55.8	97.4	360.2	257.1	224.5
July	22.1	21.5	21.5	63.5	10.7	302.8	260.1	249.1	260.6
Aug.	23.1	20.8	21.2	42.4	94.6	45.6	282.3	272.1	262.1
Sept.	15.9	16.3	17.6	68.3	31.4	91.1	179.6	227.0	190.5
Oct.	9.8	11.8	11.5	74.6	15.3	16.5	128.8	158.4	167.5
Average	17.5	16.7	16.8	48.4	56.7	91.0	247.2	233.6	219.3
Sum				339.2	397.1	637	1730.7	1635.2	1535.6
Multiannual values	M16.8			M 60.0 Σ 420.4			M 237.8 Σ 1602.3		

RESULTS AND DISCUSSIONS

The influence of the pruning systems, of the potential crop and the buds distribution on different fruit-bearing parts of the vine, upon the fertility of the Feteasca neagra clone 7 Od. is presented in Table 3:

- the average of fertile shoots ranges between 14.45 (V1) and 27.68 (V3);
- the average of sterile shoots ranges between 7.95 (V5) and 21.25 (V1);
- the average of total shoots is directly influenced by the potential crop per vine and varied between 24.13 (V5) and 41.08 (V3);
- number of inflorescences per vine ranges between 16.30 (V1) and 27.28 (V3).

Table 3

The influence of pruning system , the potential crop and the buds distribution upon the fertility of the shoots

Variant	Average shoots number/vine									Average inflorescences number/vine.		
	Fertile			Sterile			Total			Val.	Diff.	S.
	Val.	Diff.	S.	Val.	Diff.	S.	Val.	Diff.	S.			
V1	14.45	-5.75	0	21.25	4.86	**	35.70	-0.88	-	16.30	-5.03	-
V2	17.45	-2.75	-	14.28	-2.11	-	31.73	-4.85	00	19.40	-1.93	-
V3	27.68	7.48	**	13.40	-2.99	0	41.08	4.50	**	27.28	5.95	*
V4	23.73	3.53	-	16.43	0.04	-	39.18	2.60	-	23.73	2.40	-
V5	16.18	-4.02	-	7.95	-8.44	000	24.13	-12.45	000	17.93	-3.40	-
Exp. average	20.20	0.00	-	16.39	0.00	-	36.58	0.00	-	21.33	0.00	-
DL 5%	4.244			2.795			3.171			5.906		
DL 1%	5.879			3.871			4.392			8.180		
DL 0.1%	8.111			5.340			6.059			11.286		

Table 4

The influence of pruning system, the potential crop and the buds distribution, upon the percentage of the fertile shoot and the relative coefficient of fertility

Variant	Fertile shoots (%)			Relative fertility coefficient (C.F.R.)		
	Val.	Diff.	Sem.	Val.	Diff.	Sem.
V1	40.50	-14.02	00	0.48	-0.10	-
V2	54.87	0.35	-	0.61	0.03	-
V3	67.36	12.84	**	0.66	0.08	-
V4	60.44	5.92	-	0.60	0.02	-
V5	67.03	12.51	**	0.74	0.16	*
Exp. average	54.55	0.00	-	0.58	0.00	-
DL 5%		8.950			0.136	
DL 1%		12.396			0.189	
DL 0.1%		17.102			0.260	

Referable to the influence of the pruning system, the potential crop and the buds distribution on different fruit-bearing parts of vine upon the percentage of the fertile shoot and the relative coefficient (Table 4), result a big difference between the variant with short pruning (spur) V1(40.50%) and all the variants with the long cane pruning (over 54%).

This prove the fact that the short pruning (spur), isn't recommended for to have a high fertility. The highest fertility was encountered for the variant V3, namely, for the variant with a potential crop by 44 buds/vine and pruning in the long canes (9 buds/vine).

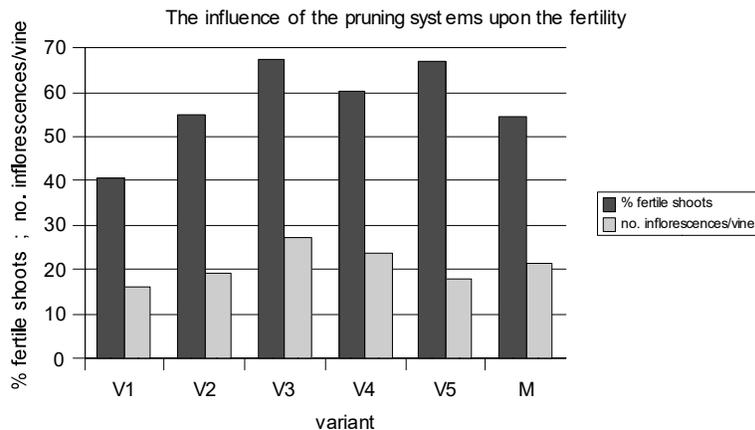


Fig. 1 Influence of the pruning system upon the fertility

The coefficient of relative fertility registered the mean variances, the lowest value was obtained for variant V1 (0.48) while the highest value was seen from variant V5 (0.74).

Table 5

The influence of pruning system , the potential crop and the buds distribution, upon the number and the average weight of grapes per vine and the grapes yield

Variant	Grapes											
	Average number/vine			Average weight (g)			Grapes yield/vine (Kg)			Grapes yield/ha (To)		
	Val.	Diff.	S.	Val.	Diff.	S.	Val.	Diff.	S.	Val.	Diff.	S.
V1	12.00	-2.33	0	155.67	-12.00	00	1.87	-0.56	00	6.81	-2.12	00
V2	15.23	1.00	-	169.33	1.66	-	2.59	0.16	-	9.56	0.63	-
V3	16.00	1.67	-	177.67	10.00	*	2.84	0.41	*	10.46	1.53	*
V4	17.33	3.00	**	164.67	-3.00	-	2.84	0.41	*	10.48	1.55	*
V5	12.00	-2.33	0	170.33	2.66	-	2.04	-0.39	0	7.52	-1.41	0
Exp. average	14.33	0.00	-	167.67	0.00	-	2.43	0.00	-	8.93	0.00	-
DL 5%		2.045			7.930			0.332			1.246	
DL 1%		2.833			10.983			0.460			1.727	
DL 0.1%		3.908			15.153			0.634			2.382	

The influence of the pruning systems upon the number and the average weight of the grapes

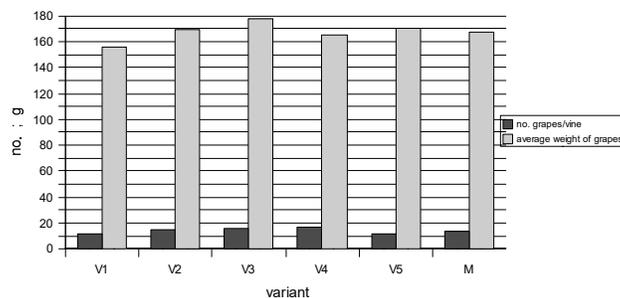


Fig. 2 Influence of the pruning system upon the number and the average weight of grapes per vine

The influence of the pruning system, the potential crop and the buds distribution on vine upon the number and the average weight of grapes per vine and the grapes yield for Feteasca neagra clone 7 Od. is presented in Table 5, therefore:

- as for the average number of the grapes per vine, the values oscillate between 12.0 for the variants V1, V5 and 17.33 for the variant V4;
- as to the average weight of the grape, the values varied between 155.67 g for the variant V1 and 177.67 g for variant V3;
- as for the average the grapes yield per vine this is content between 1,87 kg/ vine for variant V1 and 2,87 kg/vine for variants V3 and V4;
- the grape yields which was evaluated varied between 6.81 to/ha for variant V1 to 10.48 to/ha for variant V4.

Analyzing the quantitative characteristics for the grapes yield obtained, presented in Table 5, is evidently – as to the number of grapes per vine, a distinctive significant difference was noted between the variant V4, with the highest potential crop (48 buds/vine) in comparison to the experimental average, and negatively significant

difference for the variants V1 (40 buds/vine – the spur pruning), and V5 (28 buds/vine – the long cane pruning) with the lowest potential crop.

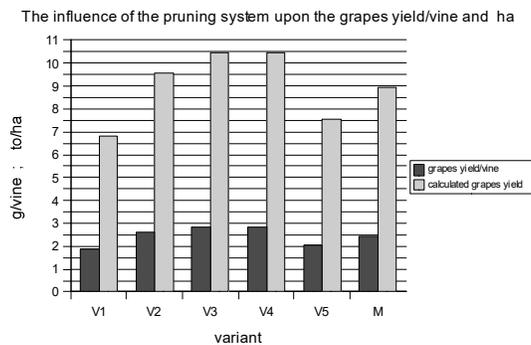


Fig. 3 Influence of the pruning system upon the grapes yield per vine and per ha

The situation is different as for the average weight of the grape, so, the lowest value – significant negatively distinct is encountered for the variant V1 (40 buds/vine - the spur pruning), and a significant difference for variant V3 (44 buds/vine - the long cane pruning).

The analyze of quantitative grapes yield per vine and per ha (calculated), showed a positive significant difference for the variants V4 and V3, with the values very approach, namely 10.48 to/ha, and respectively 10.46 to/ha and distinct significant negatively for the experimental variant with the spur pruning (V1 – 40 buds/vine), with 6.81 to/ha, with 0.71 to/ha less even the experimental variant with the lowest potential crop (V5- 28 buds/vine).

This result confirm the fact that a bigger potential crop will determine to a bigger quantitative grapes yield for the varieties with a high growing vigour (such like the way Feteasca neagra clone 7 Od.), in the case when the potential crop is distributed on the units comprise one spur of 2 eyes + one cane of 9-10 eyes.

CONCLUSIONS

1. The results which were obtained emphasized that the Feteasca neagra clone 7 Od., achieved the very good quantitative grapes yield (10.46 to/ha for V3 and 10.48 to/ha for V4) used the cane pruning system;
2. The relative fertility of the clone FN 7 Od. decrease substantially (67,36 - V3 to 40,50 – V1) in the case used the spur pruning;
3. The grapes yield were obviously influenced quantitatively by the way the potential crop were distributed on the vine cane or the spur;

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