PRODUCTION AND TECHNOLOGICAL CHARACTERISTICS OF SOME FRENCH CLONES OF THE CHARDONNAY VARIETY IN YUGOSLAVIA

PRODUCTIVITE ET CARACTERISTIQUES TECHNOLOGIQUES DE CERTAINS CLONES FRANÇAIS DE LAVARIETE CHARDONNAY EN YOUGOSLAVIE

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ABSTRACT

Testing was held in the interval from 1996 to 1998. The trial was set up in 1992 with clones no. 75, 95, 96 and 277 of the Chardonnay variety. Rootstock Kober 5BB. Planting material as virus tested originates from France. Training form cordon. Long pruning. Planting distance 3.5 x 1 m (2,857 plants per hectare).

Climate moderately continental. Soil character Cambisol.

Zoning of the Chardonnay variety in vineyard districts of FR Yugoslavia.

The following indicators have been tested: yield of grape, cluster mass, berry mass, shape, length and width of cluster, shape of berry, colour of berry epidermis, content of sugar and acids in must, content of alcohol in wine, (vol. %) organoleptic appreciation, etc.

RESUME

L'observation est effectuée entre 1996 et 1998. L'expérience a commencé avec des clones numérotés: 75, 95, 96 et 227 de la variété Chardonnay. Le porte greffe est le Kober 5 BB. La forme de conduite est le cordon. La taille est longue. La densité de plantation est 3,5 x 1 mètre (2857 ceps par 1/ha).

Le climat est moyen continental. Le sol est type de Cambisol.

On a examiné les indicateurs suivants : la production du raisin; le poids, la forme, la longueur et largeur du grappe le poids, le forme, la couleur de la pellicule le contenu en sucre et

l'acidité dans le moût, la teneur en alcool dans le vin (vol.%); la couleur; l'appréciation organoleptique du vin, etc.

INTRODUCTION

Several clones of the Chardonnay variety have been introduced in Yugoslavia. At first, the greatest interest was in Italy clones R/8, VCR 4 and VCR 10. Special interest was expressed in French clones no. 75, 76 and 96 being grown already on large commercial plants. However, according to methodic of work of the Commission for recognition of varieties of agricultural plants, in order that clones be introduced in the Yugoslav register, they have to be reported to this Commission first, for placing them in the network of trials and establishing biological, productional and technological characteristics of these clones. After completion of testings, appropriate clones are recognized and entered in the register of clones with a decision to be entered in the list of varieties to be grown in Yugoslavia. Following these regulations, company "NAVIP" of Zemun - Belgrade imported clones no. 75, 95, 96 and 227 and submitted them to the Commission for recognition to place them in the network of trials, the results of which are given in this paper.

EQUIPMENT AND METHODS

Tests commenced in 1992. The trial was set-up with 5 repeats in the network of trials of the Commission for recognition of agricultural varieties in the vineyard district in Leskovac (Sth. Serbie).

The following clones were tested:

1. F/75 on rootstock Kober BB;
2. F/95 on rootstock Kober BB;
3. F/96 on rootstock Kober 5 BB;
4. F-277 on rootstock Kober 5 BB;
5. Control was Chardonnay, from en masse selection on rootstock Kober 5 BB.

Planting material of clones presented the virus-tested material with blue label.

Planting distance 3.5 x 1 m (2,857 plants per ha).

Training form cordon. Long pruning.

The following indicators have been tested in field and laboratory conditions: yield grapes, cluster mass, berry mass, length and width of cluster, berry shape, berry epidermis colour, contents of sugar and total acids in must, content of alcohol in wine (Vol.%) and organoleptic appreciation of wine.

Grapes were processed using the method of microvinifications.

Agrotechnique in vineyard classical.

LSD: 0.05 - 0.01.

CLIMATIC AND SOIL CONDITIONS

a) Significant climatic indicators are:

- Mean annual air temperature (t) 11.3.

- Highest observed air temperature + 41.5 ° C (August); lowest -28.6 ° C (January).

Annual sum of rainfall (H) 607 mm. The most rainfalls are in June, and least in September.

- Bioclimatic index for the vineyard district is 8.36, which means that it is within the limits of tolerable values for growing grapevine.

b) Significant soil indicators:

- Altitude 220 m.
- Soil character Cambisol.
- Chemical characteristics: neutral reaction, slightly humus. Total nitrogen absent. Good supply of available potassium. Medium or poorly supply of available phosphorus.

TEST RESULTS

Test results are given in tables 1, 2, 3 and 4.

a) Varying of yield of grapes of tested clones and check-up in the interval from 1996 to 1998 (table 1).

Analysis of data in table 1 shows that average yield of grapes varied depending on the clone tested and ranged from 6.468 kg/ha (clone no. 277) to 7.667 kg/ha (clone no. 95) to. On control the average three-year yield of grapes was 6.363 kg/ha.

Compared to control, the biggest increase of yield was 1.314 kg/ha (clone no. 95) with clones no. 75, 96 and 277 following.

b) Varying of indicators of quantitative characteristics of cluster and berry in the interval 1996-1998 (table 2).

Analysis of data in table 2 shows the following varying:

1) Clone no. 75. Average data showed the following values: cluster mass 65.4 gr, berry mass 1.12 gr, cluster length 7.8 cm, cluster width 4.13 cm.

2) Clone no. 95. Average data showed the following values: cluster mass 63 gr, berry mass 1.08 gr, cluster length 9.08 cm, cluster width 4.81 cm.

3) Clone no. 96. Average data showed the following values: cluster mass 59 gr, berry mass 1,1 gr, cluster length 7.8 cm, cluster width 4.24 cm.

4) Clone no. 277. Average data showed the following values: cluster mass 55.3 gr, berry mass 1.08 gr, cluster length 7.55 cm, cluster width 4.15 cm.

5) Control. Average data showed the following values: cluster mass 54.9 gr, berry mass 1.08 gr, cluster length 7.55 cm, cluster width 4.15 cm.

c) Varying of sugar content in must of tested clones and control in the interval from 1996-1998. (table 3).

Analysis of data in table 3 shows the following average sugar content in must:

1) Clone no. 75, sugar content 21.03%.

2) Clone no. 95, sugar content 21.31%.

3) Clone no. 96, sugar content 22.16%.

4) Clone no. 277, sugar content 21.38%.

5) Control, sugar content 20.74%.

Biggest content of sugar was recorded with clone no. 96, and least with control. Biggest theoretical content of alcohol may be expected in clone no. 96 (13.07 vol.%), and least in control (12.23 vol . %).

d) Varying of content of overall acids in tested clones and check-up in the interval from 1996-1998 (table 4).

Analysis of data in table 4 shows the following average contents of total acids in must:

1) Clone no. 75, average 7.72 g/l;

2) Clone no. 95. average 8.24 g/l.

3) Clone no. 96, average 8.66 g/l;

4) Clone no. 277, average 8.53 g/l.

5) Control, average 7.81 g/l.

e) Organoleptic wine appreciation of tested clones and average in the interval from 1996 to 1998.

Results of organoleptic appreciation of wine characteristics (points 1-20) show the following values:

1) Clone no. 75, average 17.8 points.

2) Clone no. 95, average 18.2 points.

3) Clone no. 96, average 18.6 points;

4) Clone no. 277, average 18.3 points.

5) Control, average 17.5 points.

All wines are of green-yellow colour, clear, aromatic, with flowery scent and taste.

f) Zoning of variety and clones.

Classical Chardonnay of en masse positive selection was zoned for all vineyard districts in Yugoslavia.

Of the clones tested, the following have been recognized and introduced in the register: clones 96 and 277. Zoning of clones is now in progress.

CONCLUSION

On the basis of data presented, the following significant data can be derived:

1. Tests with introduced French clones no. 75, 95, 96 and 277 were performed in the interval from 1996 to 1998.
2. Climatic and soil conditions were favourable for growing and success of said clones.
3. Average yield of grapes varied in allowed limits.

4. Quantitative characteristics of cluster and berry varied depending on the clone tested and other conditions.

5. Average sugar content in must was relatively high and gave the basis for making quality wines.

6. Average content of total acids was especially favourable.

7. Produced wines expressed all characteristics of quality and high-quality wines, as characterized by clone makers.

8. Taking into account the total test results, average clones may, with special requirements be recommended for growing in almost all vineyard districts of Yugoslavia.

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Table 1. Varying of yield of grapes of clones and control tested in the interval 1996-1998

Clone No.	Minimum kg/ha	Maximum kg/ha	Trial average 1996-1998 kg/ha	Yield increase compared to control, kg/ha
75	6.971	8.285	7.558	1.195
95	6.777	8.445	7.677	1.314
96	6.758	7.003	6.916	553
277	4.937	7.134	6.468	105
Control	5.856	6.793	6.363	0

Table 2. Varying of indicators of quantitative characteristics of cluster and berry in the interval from 1996 to 1998.

Clone No.	Indicator	Min.	Max.	Trial average 1996 – 1998
75	Cluster mass (gr.)	43.60	103.30	65.40*
"	Berry mass (gr.)	1.04	1.18	1.12
"	Cluster length (cm)	6.54	9.10	7.80
"	Cluster width (cm)	4.10	4.87	4.13
95	Cluster mass (gr)	60.60	65.60	63,00
"	Berry mass (gr.)	61.04	1.11	1.08*
"	Cluster length (cm)	8.28	9.50	9.08
"	Cluster width (cm)	4.74	4.94	4.81
96	Cluster mass (gr.)	53.90	71.50	59.06*
"	Berry mass (gr.)	1.05	1.14	1.10
"	Cluster length (cm)	7.05	8.62	7.80
"	Cluster width (cm)	4.00	4.85	4.24
277	Cluster mass (gr.)	40.50	66.20	55.35*
"	Berry mass (gr.)	1.10	1.14	1.11
"	Cluster length (cm)	5.48	8.20	7.09
"	Cluster width (cm)	3.60	4.75	4.07
Control	Cluster mass (gr)	42.60	69.50	54.98*
"	Berry mass (gr.)	1.02	1.12	1.08
"	Cluster length (cm)	6.90	8.10	7.55
"	Cluster width (cm)	3.90	4.2o	4.15

Table 3. Varying of sugar content in must of clones and control tested in the interval from 1996 to 1998

Clone No.	Minimum %	Maximum %	Average (1996-1998) %	Increase compared to control %	Theoretical expected content of alcohol (vol. %)
75	20.84	21.24	21.03	0.29	12.40
95	20.50	22.50	21.31	0.57	12.57
96	20.40	24. 83	22.16	1.42	13.07
277	19.10	21.50	21.38	0.64	12.61
Control	20.00	22.00	20.74	0,00	12.23

Table 4. Varying of total content of acids in must of clones and control tested in the interval from 1996 to 1998

Clone No.	Minimum g. / lit.	Maximum g. / lit.	Average (1996-1998) g. / lit.	Increase compared to control g. / lit.	Average organoleptic wine appreciation (0-20 points)
75	7.02	8.94	7.72	0,00	17.80
95	7.90	8.63	8.24	+ 0.43	18.20
96	7.60	10.83	8.66	+ 0.85	18.60
277	7.74	10.45	8.53	+ 0.72	18.30
Control	7.25	9.30	7.81	0,00	17.50