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Must Characteristics of Selected Grapevine Varieties Used for Local Wine Production

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Abstract: The must characteristics of some old varieties (present on the list of varieties allowed for land wine making) were compared with their commercial relatives, in order to estimate their specific benefits and advantages for wine processing. In the case of Portuguese blue and Pinot noir précoce, we additionally identified the influences of environmental conditions on their must composition and wine quality. Clear differences in sugar accumulation among varieties were detected, as well as differences in earliness.

Keywords: earliness; Pinot noir précoce; sugar accumulation; Traminer white; Zenit

Since 2002, the number of wine varieties for wine production has grown, with a list of varieties allowed for land wine production. Due to this new freedom, there is a chance for some old European varieties to be reintroduced for local wine production. The new trends in the wine making and selling sectors again favour white, and especially rosé wines. In the last two years there is a new young wine product called Svatomartinské which has become very popular and successful on the Czech market.

The aims of this study were to compare the earliness and sugar accumulation (additionally in adverse climatic conditions), and to discuss our results in relationship to the available literature data concerning old varieties. On the basis of must composition, we make recommendations for the best utilization of ancient varieties in the wine making process.

On the basis of previous evaluation of the *Vitis* collection, we selected accessions showing earliness in ripening and high sugar content in must. The following were chosen: Pinot noir, Pinot noir précoce, Pinot meunier, Portuguese blue, Traminer rot, Traminer white, and Zenit.

The samples of bunches were collected at both early and full ripening, and the values of the must parameters, indicating ripening, were measured. They were: weight of 50 berries; pH; sugar concentration (NM); titrateable acids; whole acids (HPLC); fermentable sugars; tartaric, L-malic, D-malic and citric acids; glucose; fructose; and the amount of gluconic acid were established.

Finally, we made micro samples of wine from accessions of Portuguese blue and Pinot noir précoce, collected in two vineyards from different regions (Karlštejn and Bošovice). Vinification was carried out using traditional methods in open vessels, without the addition of any enzyme. The cup was manually punched down; pressing took place after 7 days. No additives were used for the final processing.

Sugar content is often the first parameter checked in vineyards, to set the optimal date for harvest. A comparison of sugar accumulation in our investigated accessions clearly showed the well known earliness of Pinot noir précoce. This accession already had exhibited a higher content of fermentable sugar in must at the beginning of September; with the amount of sugar increased steadily, up to the end of October in Karlštejn (and it increased slightly in Bošovice). The difference in the amount of fermentable sugars between Pinot

Table 1. Quantitative characteristics of harvested grapes and qualitative parameters of fresh musts

Date	Samples	Location	Weight of 50 berries (g)	pH	TSS (°Bx)	NM	Acids titrable	HPLC-acids	Fermen-table sugars	Tartaric acid	L-malic acid	D-malic acid	Citric acid	Glukose	Fruc-tose	Glu-konic acid
							(g/l)									
09. 09. 08	PNP	Karlštejn	59.150	3.16	20.0	18.9	8.14	12.1	191.0	7.08	3.64	0.43	0.21	100.29	90.68	0.42
23. 09. 08	PNP	Karlštejn	85.262	3.37	19.0	17.7	6.45	9.3	210'3	6.42	2.10	0.31	0.14	107.74	102.53	0.12
29. 10. 08	PNP	Karlštejn	59.04	3.60	26.0	25.8	4.99	10.5	244.6	6.29	2.39	0.71	0.38	123.76	120.88	0.70
09. 09. 08	PB	Karlštejn	90.617	2.94	12.0	9.6	11.22	13.6	104.3	5.60	6.86	0.04	0.24	53.71	50.58	0.00
23. 09. 08	PB	Karlštejn	92.682	3.02	14.0	11.9	8.41	9.6	131.4	5.10	3.80	0.07	0.13	66.23	65.18	0.00
08. 10. 08	PB	Karlštejn	87.652	3.29	19.4	18.2	6.89	9.1	155.8	4.58	3.54	0.29	0.15	77.63	78.19	0.13
29. 10. 08	PB	Karlštejn	79.323	3.49	20.5	19.5	4.74	8.3	173.2	3.84	3.17	0.56	0.17	85.77	87.48	0.27
09. 09. 08	PN	Karlštejn	71.299	2.95	16.0	14.3	16.66	21.4	139.7	8.61	10.65	0.35	0.35	71.12	68.59	0.00
23. 09. 08	PN	Karlštejn	88.130	3.18	19.0	17.7	14.52	19.0	168.8	8.24	8.74	0.56	0.27	84.58	84.21	0.00
29. 10. 08	PN	Karlštejn	65.877	3.18	20.0	18.9	8.21	14.9	174.3	7.11	5.62	0.68	0.53	87.85	86.49	0.10
09. 09. 08	PM	Karlštejn	75.778	2.91	14.0	11.9	14.21	17.5	117.6	8.46	7.64	0.22	0.22	59.30	58.29	0.00
23. 09. 08	PM	Karlštejn	63.255	3.13	16.0	14.3	10.11	13.5	141.8	7.73	4.64	0.36	0.17	70.12	71.73	0.00
29. 10. 08	PM	Karlštejn	77.080	2.88	19.5	18.3	8.13	13.1	160.9	7.27	4.26	0.67	0.28	77.58	83.30	0.00
10. 09. 08	PNP	Bošovice	53.764	3.19	22.0	21.2	7.73	10.9	211.8	7.71	2.51	0.19	0.16	110.66	101.19	0.00
23. 09. 08	PNP	Bošovice	47.326	3.38	22.0	21.2	8.18	12.1	219.1	7.95	2.94	0.46	0.25	115.03	104.12	0.10
10. 09. 08	PB	Bošovice	71.766	3.23	17.5	16.0	8.57	12.1	164.0	6.50	4.54	0.17	0.27	84.66	79.33	0.00
23. 09. 08	PB	Bošovice	75.892	3.36	17.5	16.0	7.92	11.1	162.2	6.60	3.50	0.25	0.20	82.39	79.81	0.00
23. 09. 08	TW	Karlštejn	71.123	2.94	19.0	17.7	12.11	14.9	170.7	9.86	4.14	0.14	0.19	84.81	85.87	0.00
08. 10. 08	TW	Karlštejn	69.574	3.07	21.5	21.0	11.72	13.6	206.5	9.27	2.94	0.19	0.24	99.58	106.91	0.00
23. 09. 08	ZENIT	Karlštejn	67.288	2.93	16.5	14.8	9.01	10.5	147.8	7.03	2.97	0.06	0.08	70.06	77.75	0.00
8. 10. 08	ZENIT	Karlštejn	65.836	3.04	20.9	20.4	8.69	9.54	202.2	6.71	2.14	0.11	0.14	94.73	107.46	0.00

PNP – Pinot noir précoce; PB – Portuguese blue; PN – Pinot noir; PM – Pinot meunier; TW – Traminer white; NM – sugar concentration; TSS – soluble solid

noir and Pinot noir précoce in Karlštejn reached 5.8 NM in late October. The traditional early ripening red variety is recommended for young wine production. Portuguese blue apparently started to accumulate sugar in its berries later than Pinot noir précoce; at the end of October it exhibited a similar level of sugar as Pinot noir précoce had one month earlier.

Two white accessions in our experiment, Traminer white and Zenit, started to accumulate sugar at the end of August, and in warm autumn weather were ready for harvest in the middle of September. August and September of 2008 were subnormal in temperatures, and August was more humid than average. That is why the harvest of these two accessions took place about 10 days later than usual; but it was found that the accumulation of sugar reached a very high level, when compared with other commercially planted white varieties in Czech vineyards.

Table 1 summarizes the results of must analysis and the measurement of berry weight. The changes of the quantitative and qualitative characteristics during ripening depend on the earliness of the appropriate cultivar. Earliness in ripening was also influenced by the favourable weather conditions in the Moravian locality Bošovice

Must characteristics of the investigated accessions, presented in Table 1, indicate the usefulness of a Pinot noir précoce plantation in suitable locations, with the objective of producing high quality wine. This is in accord with a suggestion mentioned by Blaha (1947). The suitability of this accession for making young wine was not confirmed, due to the higher level of tartaric acid in the must. However, there should be differences among clones selected in Germany. Both white accessions, Traminer white and Zenit, can be recommended for marginal regions because of the high sugar levels in their must.

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