



Grape must quality and mesoclimatic variability in Fruška Gora wine-growing region, Serbia

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INTRODUCTION

The Fruška Gora mountain is a traditional wine-growing region in Serbia situated in the Pannonian Basin. Due to such a position, the vicinity of the Danube River and the presence of concave configuration, it is suitable for grape production. This paper provides analyses of spatial variations in meteorological parameters and grape juice quality within Fruška Gora wine region over three consecutive vintages (2018-2020).



MATERIAL AND METHODS

The analyses of grape must samples (190 in total) of five cultivars (Cabernet-Sauvignon, Merlot, Chardonnay, Sauvignon blanc and Grašac (Welschriesling)) commonly grown across the region (19 sites), were performed using Fourier Transform Infrared Technology (FTIR).

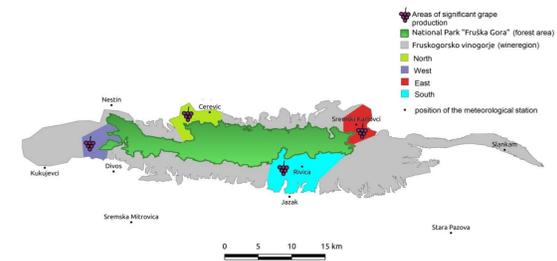


Figure 1– Positions of main vineyard areas and meteorological stations

RESULTS

The examined period can be defined as warm with cool nights during September (AVG 18,9°C; GDD 1918°C; CI 12°C°F) and with the presence of mesoclimatic variability. The East part of the study area was somewhat drier and hotter compared to other parts of the region

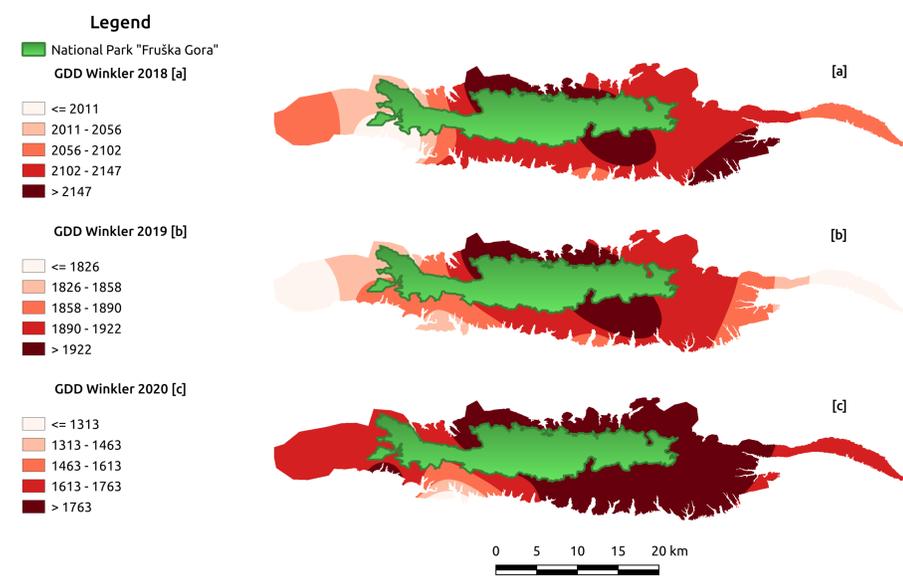


Figure 2– GDD spatial distribution over three consecutive seasons within Fruška Gora wine region

Location	Elevation (m)	Year	AVG (°C)	GDD Winkler (°C)	Huglin (°C)	Cool night index (°C)	Precipitations (mm)
Nestin	119	2018	19.5	2037	2581	11.64	465
		2019	18.4	1842	2382	12.2	511
		2020	18	1745	2340	12.1	513
Sremski Karlovci	121	2018	19.9	2125	2633	12.6	437
		2019	18.8	1898	2447	12.1	561
		2020	18.4	1822	2378	13.1	276
Rivica	217	2018	20.1	2169	2800	12.4	406
		2019	19	1955	2559	12.3	532
		2020	18.6	1861	2512	13.5	449
Slankam	128	2018	19.6	2069	2719	11.2	289
		2019	18.4	1816	2498	11.5	536
		2020	17.96	1742	2492	12.1	341
Jazak	140	2018	19.7	2086	2693	11.7	377
		2019	18.7	1877	2468	11.8	515
		2020	18.3	1805	2442	13.2	591
Kukujevci	116	2018	19.8	2101	2710	10.6	273
		2019	18.3	1794	2487	10.8	380
		2020	18	1700	2300	11.4	NA
Divos	105	2018	19.13	1961	2644	9.5	355
		2019	18.7	1880	2433	11.8	527
		2020	18.3	1799	2383	13.3	493
Cerevic	130	2018	20.1	2165	2669	12.6	479
		2019	18.98	1944	2517	12.1	578
		2020	18.8	1913	2479	13.2	511
Stara Pazova	80	2018	20.7	2299	3114	12.5	395
		2019	18.6	1859	2497	11.1	464
		2020	17.8	1709	2353	11.6	382
Sremska Mitrovica	75	2018	20.7	2310	2944	10.7	330
		2019	18.1	1744	2386	11.0	404
		2020	17.7	1665	2315	12.0	394

Table– Climatic indices over three consecutive seasons within Fruška Gora wine region

Among all cultivars, Sauvignon blanc was harvested first in the East area (DOY=246±5, GDD at harvest=1552±74, 22.2±0.7 °Brix), while the latest harvest was recorded for Cabernet-Sauvignon in the West (DOY=283±5, GDD at harvest=1936±187, 23.4±1.0 °Brix). Both the red and white cultivars had higher acidity and YAN in the grape must if the vines were grown in the North and East compared to South and West areas. According to PCA analysis, Grašac showed the lowest variation in grape must chemical composition. Thus, the results confirm that Grašac is the most stable cultivar in Fruška Gora. All monitored cultivars reached technological fruit ripeness by the end of the growing season. However, it was difficult to reach full ripeness of red cultivars, mostly because of uncoupling of technological and phenolic ripeness. Thus, Cabernet-Sauvignon had higher variations in GDD sums at harvest compared to other cultivars, which probably increased variations in grape must quality.

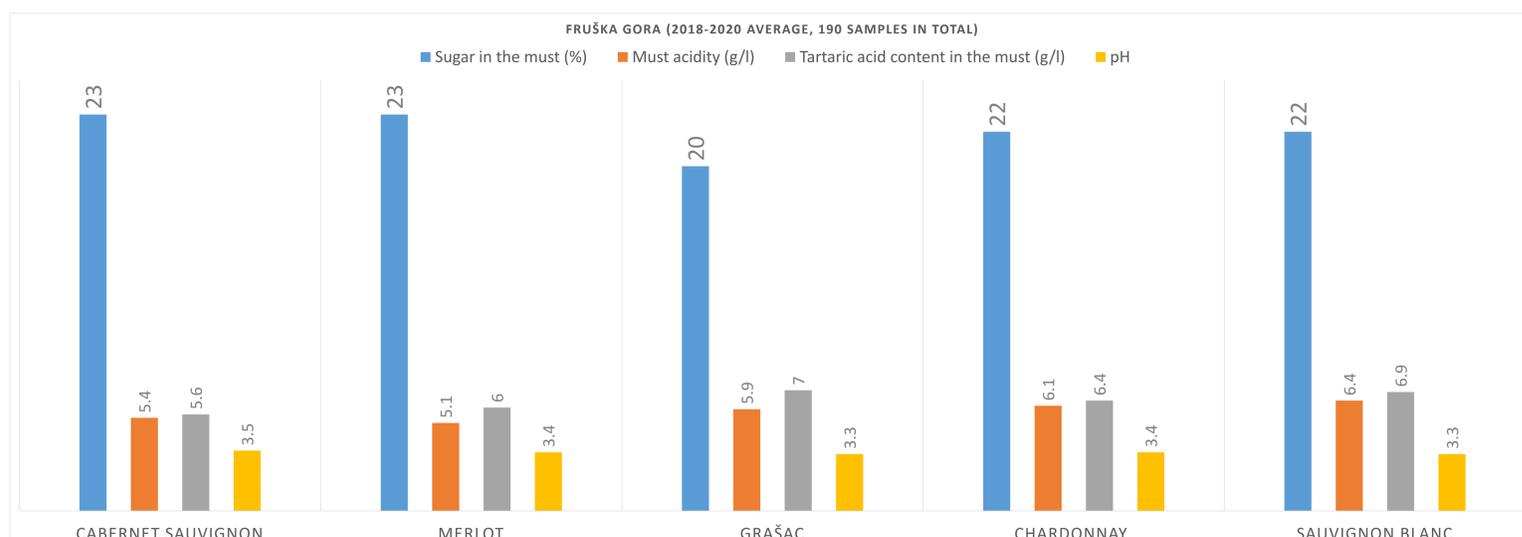


Figure 3– Some grape chemical composition parameters at harvest (2018-2020)

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