

## Behavior of some grapevine varieties from Murfatlar vineyard in the special climatic conditions of the viticultural year 2019-2020

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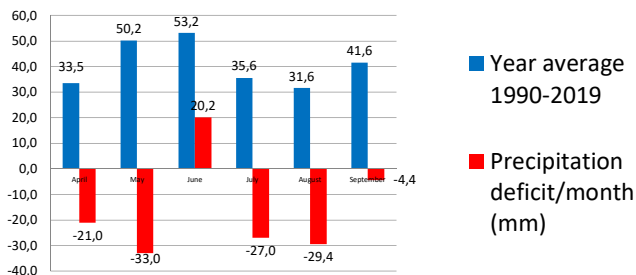
### Introduction

The climatic changes registered in the last decades characterized by the uneven distribution of the precipitations during the year and high temperatures, lead to disturbances of the processes of growth and maturation of the grapes. The choice of thermal and water stress resistant varieties plays an important role in combating this phenomenon.

### Material and methods

Six Murfatlar vineyard representative varieties were chosen (Chardonnay 25 Mf, Columna, Muscat Ottonel, Feteasca Neagra 9 Mf, Mamaia and Cabernet Sauvignon 33 VI) for which the vegetation phases were noted and the elements of grape productivity and quality were determined in the context of the climatic evolution of the wine year November 2019 - October 2020.

#### Precipitation deficit in the April-September 2020 interval

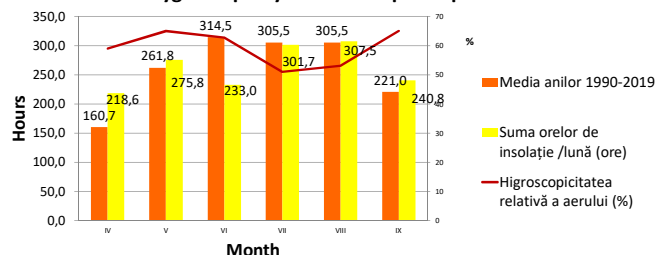


Rainfall in this interval were 23% lower than the usual, recording months with very low precipitation (November - 8.1 mm compared to 40.4 mm, January 1.2 mm compared to 31 mm, July - 8.6 mm compared to 35.6 mm and August - 2.2 mm compared to 31.6 mm)



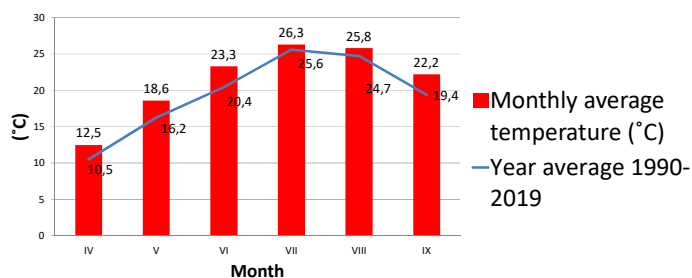
From a climatic point of view, the year 2020 can be characterized as a year with a pronounced dry climate due to the high frequency of the number of days with maximum temperatures > 30°C (62 days), the relative air humidity was <60% (89 days) and precipitation deficit recorded during the active vegetation period of the vine (-112 mm compared to the multiannual average)

#### The sum of the sun exposure hours / month and the relative hygroscopicity of the air April-September 2020



### Results and discussions

#### The evolution of the average monthly temperature between April and September 2020



The wine year 2019-2020 is characterized by an increase in the average monthly temperature by 3,3 °C (14,8°C versus 11,5°C) each month with excess temperatures. The maximums were recorded between May and September, all exceeding a value of 30°C (39°C - in July).

The elements of productivity and quality that characterize the grapevine varieties observed in the wine year 2019-2020 compared to the average of the years 2016-2019

Variety	Year	Average production		G 100 berries (g)	Physico-chemical characteristics of the must	
		kg/ha	kg/trunk		Sugars (g/l)	total acidity (g/l H <sub>2</sub> SO <sub>4</sub> )
Chardonnay 25 Mf	Year average 2016-2019	5606	1,356	112	221,9	5,21
	Year 2020	532	0,128	98	246,0	3,62
Columna	Year average 2016-2019	5070	1,338	192	179,9	4,42
	Year 2020	2640	0,696	158	181,1	3,75
Muscat Ottonel	Year average 2016-2019	3895	0,974	169	217,2	4,13
	Year 2020	2836	0,684	115	200,2	3,48
Fetească neagră 9 Mf	Year average 2016-2019	6382	1,679	126	220,6	4,24
	Year 2020	2200	0,532	125	256,6	3,16
Mamaia	Year average 2016-2019	4803	1,270	208	200,4	4,75
	Year 2020	5289	1,400	170	204,5	3,68
Cabernet Sauvignon 33 VI	Year average 2016-2019	5160	1,248	124	206,1	5,01
	Year 2020	1188	0,287	100	221,4	4,35

### Conclusions

In 2020, the growth and development of trunks, productivity and production quality were influenced by abiotic stressors (drought and heat) manifested during the active vegetation of the vine.

The only variety that had a positive behavior was Mamaia, which benefited from additional water supply.

Considering the increasing incidence of drought years, in the Murfatlar vineyard it is recommended to install the drip irrigation system that will ensure the replacement of the temporary water deficit in the soil and plants.