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A new Micrometeorological Research Facility at the Faculty of Agriculture Experimental Vineyard in Zagreb

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VITiculture and CLImate Change in Croatia (VITCLIC) is a new project in Croatia for the analysis of the current situation in viticulture; its focus is on changes in the times of harvest and the basic parameters of quality grapes. One of the main goals of the project is the establishing a monitoring system of phenological phases and grape maturation through reference points.
Micrometeorological measurements are performed at two locations: i) in the Istrian peninsula and ii) in the viticulture and wine experimental station at the Faculty of Agriculture near Zagreb (partly supported by the Croatian-Hungarian bilateral scientific program) during the vegetation periods 2017–2018 and 2018–2019.
At the latter place microclimate of two places of cordon cultivated grape have been studied for the investigation of the effect of cultivation method. In one row grapes were left to be naturally covered by leaves while in the other the leaves were being thinned corresponding to the cultivation method. For characterizing the microclimate the relative humidity and temperature (Vaisala sensors), wind speed and direction (3D Gill sonic), UV radiation (CUV5 Radiometer, Kipp & Zonen), leaf wetness (L-237 from Campbell) and leaf temperature (IRTS-P infrared sensor) were measured inside the cordon rows among the leaves.Temperature, relative humidity (Vaisala HMP 45) and wind speed gradient (1 Hz Gill and one cup anemometer) have been also measured above the plants. Radiation budget components were detected with CNR1 net radiometer (Kipp & Zonen). Heat flux into the soil and the soil temperature and moisture profiles from the surface to a depth of 1 m were also determined. Two soil heat flux plates (HFP01-L) were set at depth of 8 cm. Measurement frequency was 5 sec and the averaging time was 1 min using Campbell data collecting systems (CR3000 and CR23X).
Our goal, besides the agroclimatic investigations, is the estimation of soil and surface energy budget components (using Bowen ratio and gradient methods) and the determination of the optimum roughness length and displacement height as a function of the wind velocity. Daily variation of meteorological elements and energy budget components are demonstrated with case studies.