

GLOBAL MEET ON CLIMATE CHANGES AND SUSTAINABILITY



Ilie Bodale^{1*}, Liviu Mihai Irimia²

¹Department of Sciences, “Ion Ionescu de la Brad” Iași University of Life Science, 700490 Iasi, Romania

²Department of Horticultural Technologies, “Ion Ionescu de la Brad” Iași University of Life Science, 700490 Iasi, Romania

Estimation of ripening timing of red wine grape varieties based on phenomenological models

Abstract: Abiotic climatic factors are among the most important parameters that shape plant characteristics over time. Nowadays, studying this topic has become a major concern for researchers and state governments fighting climate change. The present study proposes a Grapevine Ripening Model (GRM) that can predict the timing of ripening of *Vitis vinifera* L. varieties grown in mid-latitude regions of the Northern Hemisphere. The proposed model considers only the action of the forcing temperature and assumes that this phenological stage only occurs when the critical threshold has been reached. The GRM was based on parameters such as daily mean temperature, daily sum of the rate of forcing as well as base temperature and was validated according to phenological evolution of five red wine grape varieties (Cabernet Sauvignon, Pinot noir, Merlot, Fetească neagră and Sangiovese). The Tinytag Talk 2 dataloggers were used to record the temperatures at the vine canopy level in the experimental vineyard of Iasi University of Life Sciences in 2023. Physiological processes are regulated by temperature, which influences the timing of grapevine growth stages. To estimate long-term temperature conditions in Iasi (up to 2050, 2100 respectively), a Shared Socioeconomic Pathways (SSPs) model was considered. The obtained results are important for mapping the thermal suitability for wine grape varieties and their zoning. The phenological Grapevine Ripening Model is a useful tool for predicting harvest time in viticulture that decrease under climate change and can be extended to any grape variety or be adapted for other growth stages.

Biography: Ilie Bodale has completed his PhD and postdoctoral studies from “Alexandru Ioan Cuza” University Iași, Romania. Since 2018, he has been a full position at “Ion Ionescu de la Brad” Iași University of Life Science. He has published more than 20 papers in reputed journals and has been serving as guest editor of Agriculture and Horticulturae journals.