

INFLUENCE OF SPRAYING OF COPPER FUNGICIDES ON PHYSIOLOGICAL PARAMETERS OF *VITIS VINIFERA L. CV. 'MERLOT'*

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Vine downy mildew is one of the most frequent diseases in intensive vineyards. Bordeaux mixture (B.m.), in order to control the disease has been applied onto vineyards since the end of the 19th century. The intensive use of Cu-fungicides could influence the physiology of grapevine. It is also possible that high amounts of foliar Cu sprays trigger stress responses in vine leaves. We tried to estimate the possible effect of the foliar applied copper on leaf photosynthesis (P), transpiration (F), stomatal conduction (g) and chlorophyll (Chl a+b) content in vine cv.'Merlot' grown in Slovenia, where copper fungicides are commonly used in vineyards' management.

The measurements were carried out on eight years old vine cv. 'Merlot', grafted onto SO4. Vines were sprayed with Bordeaux mixture, at two intensities: conventional 'K' (12 kg B.m. ha⁻¹) and integrated pest 'I' (3 kg B.m. ha⁻¹) management and the control 'C' vines were sprayed with non-copper fungicides. The photosynthetic and transpiration activities of the fully developed leaves were measured with a portable measuring system Li-6400 (Licor), at PFD of 1000 $\mu\text{mol m}^{-2} \text{s}^{-1}$, at 360 (A₃₆₀) ad 2000 (A₂₀₀₀) $\mu\text{mol CO}_2 \text{m}^{-2} \text{s}^{-1}$ and at controlled temperature and relative humidity.

The seasonal decrease of photosynthetic and transpiration activities was observed. The highest P activity 9,82 $\mu\text{mol CO}_2 \text{m}^{-2} \text{s}^{-1}$ was obtained on I vines, and the lowest P 9,04 $\mu\text{mol CO}_2 \text{m}^{-2} \text{s}^{-1}$ on C vines. The highest transpiration 2,59 $\text{mmol H}_2\text{O m}^{-2} \text{s}^{-1}$ was measured on C vines, and the lowest 2,31 $\text{mmol H}_2\text{O m}^{-2} \text{s}^{-1}$ on K vines. The highest stomatal conduction 0,141 $\text{mol CO}_2 \text{m}^{-2} \text{s}^{-1}$ was measured on C vines, and lowest 0,130 $\text{mol CO}_2 \text{m}^{-2} \text{s}^{-1}$ on K vines. The lowest Chl a+b content 3,33 $\text{mg g}^{-1} \text{dw}$ was determined in C leaves and highest 4,77 $\text{mg g}^{-1} \text{dw}$ in I leaves. The Cu-fungicide influenced physiological parameters of vine leaves (difference not statistical significant).