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6. Soil in the digital era
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SOIL CONSERVATION IN OLD VINEYARDS: WHAT IS THE OPTIMAL LEVEL OF INTERVENTION - IS LESS MORE?

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In viticulture, the soil can be strongly influenced, compared to the possibilities of anthropogenic influence on other abiotic factors of terroir, such as climate. Old vineyards, aged over 40 years, are characterized by small areas, rare grapevine varieties, lower vigour, and yields. Old vines have a deeper, more developed root system, traditionally believed to have improved access to nutrient and water reserves, sustaining themselves with minimal human intervention. The preservation of old vineyards is invaluable for the heritage of wine-growing areas, enhancing the conservation of genetic biodiversity.
The study focused on six old vineyards identified as candidates for conservation in central Serbia, within the Tri Morave wine-growing region/PDO, known for its rich cultivation history. These vineyards, planted between 1930 and 1979, feature local grapevine varieties including Prokupac, Tamjanika, and Kavcina. Pedological investigations revealed two soil types: Eutric Cambisol (Ochric) and Haplic Vertisol. Mechanical composition was found to be linked to soil type, while pH and carbonate content were associated with the micro location. However, the content of organic matter and readily available nutrients P and K showed significant anthropogenic influence, indicating a notable deficiency in these elements. The soil is well supplied with accessible microelements (Zn, Fe, Mn), but has a very low boron content. Total copper content was high, exceeding 100 ppm at five locations due to prolonged use of copper-based fungicides. Insight into agricultural practices revealed imprecise record-keeping by owners, with old vineyards commonly left without fertilization, while pesticides are still applied.
This research indicates the degradation of old vineyard soil, emphasizing the need for deliberate intervention. Vulnerable vineyards like these deserve all contemporary available nurture to ensure their survival. In the conservation process, non-invasive 'green' measures must be implemented aiming to restore soil health. It is necessary to avoid copper-based treatments and maintain continuous soil monitoring. Critical grapevine nutrition can be achieved through judicious foliar application, avoiding deep fertilizer incorporation with the aim of preserving undisturbed soil.

Keywords: old vineyards,soil conservation,local grapevine varieties