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## Soil organic matter accumulation in vineyards as a function of cultivar and parent material

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The aim of this work was to understand of how parent material and plant cultivar interactively control soil organic matter (SOM) accumulation and stabilization in vineyards.

Three experimental vineyards located in the Valpolicella area (North of Italy) were investigated. These sites were very close each other and, consequently, characterized by the same climatic conditions; at the same time, the corresponding soils developed from completely different parent materials (volcanic vs. calcareous). Two autochthonous grapevine (*Vitis vinifera* L.) cultivars, planted in 2003 and grown in organic system (no fertilization), were selected in all sites, and the corresponding soils sampled in triplicate with a 10-cm depth resolution. An uncultivated soil profile for each site was used as a control.

Soil samples (n. 88) were characterized for pH, EC, bulk density, total organic C (TOC), total N (TN), texture and major and trace elements. Moreover, particulate organic matter (POM) and mineral associated organic matter (MAOM) fractions were isolated and characterized by elemental analysis (CHNS).

Control soils showed different organic C stocks, ranging from 27 in the volcanic soil with a loamy sand texture to 90 t/ha in the two calcareous soils with a clay texture. A similar trend was observed for TN, ranging from 2 in the volcanic soil to 9 t/ha in the calcareous soils. Moreover, 2/3 of TOC were recovered as MAOM in both clay soils, whereas POM was the main fraction in the volcanic, loamy sand soils.

The cultivation of grapevine affected SOM accumulation. In particular, an increase (1.3-1.5×) of both TOC and TN in the top 30 cm of soil was observed in 2 out of 3 sites, while an opposite trend (0.7×) was recorded in one site. Preliminary data suggest that SOM accumulation is promoted in vineyard soils with lower organic C contents (and a wide range of texture) and through different mechanisms, whereas the cultivar factor did not affect TOC and TN stocks.

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