

Terroir et vignoble: how the farming management can affect the production of a quality wine

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Italian wine is one of the most exported wine in the world. The particular climate, the soil characteristics and other several factors have contributed to this success. Italy is located in the temperate belt, with a suitable climate for grapevine cultivation. For this reason, all regions in Italy produce wine, first of all the Veneto region, with 8.569.000 hl of wine in 2011.

Wine quality derives from the perfect interaction among climate, morphology, soil and plant, i.e. the terroir. So, knowledge of the land characteristics, together with cultivation techniques and management, is essential to understand this interaction and the typicality of the wine.

For example, large utilization of fertilizers and pesticides may determine accumulation of toxic substances in soil and possible translocation to the food chain. For this reason, metal contamination of soils and plants becomes a main issue in agricultural production.

Therefore, our attention was focused on the determination of soil quality of the Prosecco DOCG (controlled and guaranteed denomination of origin) area, particularly in Conegliano.

Conegliano is a town located in Veneto, in the province of Treviso, known for its wine. This wine variety is regulated by the Conegliano-Valdobbiadene production Consortium, to protect both consumers and producers.

The goals of this research are:

- evaluation of trace metal content (Al, Cd, Cr, Cu, Fe, Mg, Mn, Ni, P, Pb, V and Zn) in soils and possible uptake by grape leaves;
- estimation of biological soil quality (QBS-ar index);
- analysis of oxidative stress in dandelion (*Taraxacum officinale*) and grape leaves, by the Lipid peroxidation test (LPO test).

Results concerning trace metal concentration show: i) a high content of Al, Mg and P in soils, and ii) high concentration of Al, Cu, Fe and Zn in grape leaves.

High contents of Al in topsoil are consistent with the high concentration of organic matter. Instead, high Al contents in subsoil are related to clay. Mg and P are usually added to soil as fertilizer.

In grape leaves, Al concentration is related to Al content in soil, Cu could derive from foliar fungicides and no signs of toxicity from high content of Fe and Zn are visible.

LPO test values are below the reference value, therefore vegetation in the study area is not affected by oxidative stress.

Concerning the biological soil quality, 3 different classes (4, 5 and 6) were recorded (with noteworthy microarthropods adaptation to soil conditions). This result suggests that the study area presents good grade ecosystem stability and limited stress evident.

In conclusion, it is possible to assert that the study area is characterized by not polluted soils of good quality and without environmental stress.

It is likely that the agronomic practices do not produce any negative effect on plant growth and, thus, on quality of wine.