

# DISEASE MANAGEMENT IN GRAPEVINE AND FUNGAL ENDOPHYTIC POPULATIONS

M. Pancher, S. Yousaf, P.E. Corneo, I. Pertot, A. Campisano

IASMA Research and Innovation Centre, Fondazione Edmund Mach, Via E. Mach 1, 38010 San Michele all'Adige (TN), Italy

e-mail: [ilaria.pertot@fmach.it](mailto:ilaria.pertot@fmach.it)

**Keywords:** Agricultural practices, Fungal endophytes

Grapevine tissues are colonised by a variety of endophytic fungi with no detectable involvement in pathogenesis. The roles of the non pathogenic mycota associated with internal tissues are still not fully understood. Endophytic fungi are often considered an (as yet) untapped source of biocontrol microorganisms, and a reservoir of biological functions plants can benefit from. More recently, a role for some endophytic species as potential allies of incoming pathogens was hypothesised.

As grapevines are intensively subjected to the application of antifungal compounds, we investigated the impact of different agricultural practices on endophytic fungi. The analysis of distribution of culturable fungi was integrated by a DNA-dependent approach, involving fingerprinting the ITS regions of all strains colonising the studied plants. Plants from *cultivars* Chardonnay and Merlot were sampled, from both organic and IPM vineyards, in seven different areas of a renowned Italian wine-growing county (Trentino). For comparison, endophytic fungi and total DNA were isolated from stems of *Vitis vinifera* subsp. *sylvestris* plants.

We found the composition of fungal endophytic communities in plants of cultivated grapevines (*V. vinifera* subsp. *vinifera*) to be highly homogeneous. The prevalent taxa were *Alternaria* spp., *Epicoccum nigrum* and *Aureobasidium pullulans*. Multivariate statistical analysis showed that fungal communities were different between plants from vineyards adopting organic and IPM management, supporting the hypothesis that vineyard management affects non pathogenic fungi associated with plant tissues. A slighter difference was observed between fungi associated with grapevines of different cultivars.

A largely different microbial community was detected on wild grapevines (*V. vinifera* subsp. *sylvestris*). The prevalent fungal isolates identified from the tissues of wild grapevine were *Cladosporium* sp., *Acremonium* sp., *Cryptococcus* sp. and to a lesser extent, *Alternaria* sp. The ability of new fungal endophytes, isolated from wild grapevine, to colonise domesticated grapevines is being studied to understand if these new tools can be applied for plant biocontrol purposes.