Adv. Hort. Sci., 2013 27(3): 109

Prevention and control strategies against *Agrobacterium* vitis in grapevine multiplication material

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Agrobacterium vitis is the etiological agent of grapevine crown gall disease, an abnormal tissue growth occurring mostly in the basal part of the trunk. The infection starts at wound sites and it is often caused by freezing temperature. The pathogen does immediately not cause the tumour, but it can stay latent in the plant for a long time, without clear damage. Infections occurring in the first years of planting lead to debilitation of infected grapevines, together with poor quality and quantity of grape production.

In Italy in the last three years crown gall, a disease already known previously, has shown an unexpected increase, especially due to the cold temperatures in the 2009-2010 winters. This spread has caused serious damage for nurserymen, and the consequences continue now: grape growers are complaining about crown galls in one-year-old vineyards, and foreigner importers are asking for *A. vitis*-free rootlings.

Unfortunately, control strategies applied at present are successful in decreasing the damage but not in eliminating the pathogen. For these reasons, CRA-VIT, together with ERSA and several nurserymen (VITIVER, VCR, MIVA), is studying this disease in order to identify critical points in the grapevine production process and possible solutions to control the infection in mother plants and in nurseries.

The research activities include: i) monitoring of soils and mother plants in the Verona area; ii) monitoring and optimization of procedures in the grapevine production chain; iii) experimental trials to verify the effectiveness of *Trichoderma* spp. treatments of grafts and rootlings; iv) cleaning of multiplication material by chemical or alternative agents; v) hot water treatments; and vi) molecular characterization of *A. vitis* strains in order to establish molecular markers for traceability of infection sources.

Hot water treatments, unfortunately, are completely ineffective in obtaining bacterium-free rootlings (Lucchetta *et al*., 2013), while initial analyses of soils and mother plants in the Verona area have been encouraging; cleaning trials with acidic water and Virkon need further study. Other experimental trials are ongoing and initial results will be outlined in the presentation.

Acknowledgements

This work is financed by AGRO.FREE project (PSR Regione Veneto 2012-14), ERSA, MIVA and VCR. We are grateful to the CRA-VIT staff, the nurserymen involved and CBC Europe for the collaboration.

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