

cated that cultivars contain specific GTD fungi, related to the presence of host resistance/tolerance genes. Further studies are required to confirm this conclusion. Metagenomic analyses are being applied to the same samples to validate the data obtained by traditional means, and provide a basis for biosensor development. This will be achieved by identifying the most relevant fungus within the GTD complex affecting Portuguese vineyards. This research is within the TrunkBioCode project, which aims to develop molecular tools for early identification of GTDs in grapevine. One strategy is based on a Biosensor platform, for detection and identification of pathogenic taxa in field conditions.

**Sporocadaceae associated with grapevine trunk diseases in Cyprus.** G. MAKRIS, M. CHRISTOFOROU and L. KANETIS. *Department of Agricultural Sciences, Biotechnology, and Food Science, Cyprus University of Technology, Limassol, 3036, Cyprus. E-mail: loukas.kanetis@cut.ac.cy*

Grapevine trunk diseases (GTDs) are biotic factors that threaten economic sustainability of grape industries. Besides well-known diseases, there is increased interest in wood-colonizing fungi that infect grapevine woody tissues, and new species are being described as GTD causal agents. More than 140 fungal species have been reported in association with GTDs, but the degree of involvement for many GTD-related species remains to be elucidated. In 2017, during a survey conducted in Cyprus, wood samples were collected from vines exhibiting typical GTD symptoms, including decline, and dead cordons and spurs. Based on morphological and multilocus phylogenetic analyses (ITS, LSU, TEF1, and TUB2), four species of *Sporocadaceae* were found in association with GTDs, including *Seimatosporium marivanicum* and *Se. vitis-viniferae*, and *Sporocadus kurdistanicus* and *Sp. rosigena*. Pathogenicity trials with seven selected isolates, representative of each species, were conducted on woody stems of 2-year-old potted grapevines ('Xynisteri'). All the isolates were pathogenic, causing dark brown to black vascular discolouration of wood tissue below the bark, extending upward and downward from the points of inoculation. The *Sporocadus* isolates (mean lesion length 6.9 to 9.2 cm) were more aggressive than *Seimatosporium* isolates (4.0 to 4.1 cm). Re-isolation percentages of the inoculated pathogens were 40% for *Se. marivanicum*, 35–67% for *Se. vitis-viniferae*, 28–44% for *Sp. kurdistanicus*, and 25–32% for *Sp. rosigena*. This is the first report of *Se. marivanicum*, *Sp. kurdistanicus* and *Sp. rosigena* causing symptoms on *Vitis vinifera*

in Europe, and suggesting a potential role for *Sporocadaceae* in the GTD complex.

**Grapevine trunk diseases of cold-hardy grapevine varieties in northern midwest USA coincide with wounds and winter injury.** D. H. DeKREY<sup>1</sup>, A. E. KLODD<sup>2</sup>, M. D. CLARK<sup>3</sup> and R. A. BLANCHETTE<sup>1</sup>. <sup>1</sup>*Department of Plant Pathology, University of Minnesota, St. Paul, Minnesota, United States of America.* <sup>2</sup>*University of Minnesota Extension, Farmington, Minnesota, United States of America.* <sup>3</sup>*Department of Horticultural Science, University of Minnesota, St. Paul, Minnesota, United States of America. E-mail: dekre004@umn.edu*

Surveys to characterize grapevine trunk diseases have been conducted for most major grape growing regions. Many of these share mild Mediterranean-like climates, and mainly grow traditional *Vitis vinifera* cultivars. Vineyards in Northern Midwest United States of America contrast to other growing regions, with an atypical cold climate (as low as -35°C), snowy winters, wet springs, humid summers, wet autumns, and short growing seasons. A survey was carried out to identify the most prominent fungal pathogens associated with this unique climate, and the cold-hardy interspecific hybrid grapevine varieties grown in the region. From 172 samples collected, 640 isolates were obtained by culturing, and these were identified using ITS sequencing. A total of 420 sample-unique taxa were identified. Of these, opportunistic fungi of *Diaporthales*, *Cytospora* and *Diaporthe* spp., were most frequently identified. Species of *Phaeoacremonium*, *Paraconiothyrium*, and *Cadophora* were also prevalent. Species in *Xylariales* and *Botryosphaerales*, which are frequently isolated in many other regions, were only isolated in small numbers. No taxa in the *Phaeomoniellales* were isolated. The compounding effects of winter injury, pathogens, and management strategies will be discussed. Difficulties for studying, understanding, and communicating knowledge on grapevine trunk disease will also be addressed.

**Effects of dual inoculation (*Seimatosporium* species with/without GTD fungi) on lesion length (symptom expression) in Sauvignon blanc vines.** N. BESSELMA<sup>1</sup>, H. J. RIDGWAY<sup>1,2</sup> and E. E. JONES<sup>1</sup>. <sup>1</sup>*Faculty of Agriculture and Life Sciences, Lincoln University, PO Box 84, Lincoln 7647, New Zealand.* <sup>2</sup>*The New Zealand Institute for Plant & Food Research Limited, Private Bag 4704, Christchurch 8140, New Zealand. E-mail: Noureddine.Besselma@lincolnuni.ac.nz*