

Endophytic microflora of woody tissue of healthy and trunk diseased-grapevines.

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Microbial communities colonizing the woody tissue of grapevines that have or have not expressed foliar symptoms of Esca/Black Dead Arm diseases, were studied by using both microbiology and molecular biology techniques (Single Strand Conformation Polymorphism [SSCP] and DNA sequencing). Our sampling design was made in order to determine the diversity of microbial communities and the evolution of the microflora over a growing season. Fungal and bacterial communities were particularly abundant in the apparently healthy woody tissue in comparison with the necrotic tissue. Within the non-necrotic tissue, a shift in fungal communities was observed when spring, summer, autumn and winter samples were compared. Only fungal communities from summer and autumn samples tended to be similar. As far as the bacterial microflora is concerned, an evolution was observed over the growing season. Most of the bacterial communities from symptomatic and asymptomatic plants were different, particularly during the winter. Moreover, fungal and bacterial microflora that colonizes the various necroses was markedly different from that of the healthy tissue. Finally, our study indicates that potentially pathogenic and potentially beneficial fungi colonize the healthy wood of relatively young grapevines (10 years old) and that a competition between them likely occurs within the trunk. On the contrary, in mature vines (15–25 years old), wood is always necrotic, and only a few fungal species colonize these damaged areas. The factors responsible for this huge change and the possible role of bacteria in this process will be discussed.