Are *Bursaphelenchus xylophilus*-associated bacteria playing a role in pine wilt disease?

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Pine wilt disease (PWD), presently the most severe coniferous disease worldwide, is caused by the plant parasitic nematode *Bursaphelenchus xylophilus*, the pinewood nematode (PWN). Although PWN is considered the major pathogenic factor in PWD, its associated bacterial community is not ruled out as potential helpers in this complex and still little understood disease. This work presents the characterization of PWN-associated bacteria and plant pathogenicity trials in the pine host *Pinus pinaster*. The 16S rRNA gene sequencing of PWN-associated bacteria revealed the presence of bacteria from two phyla *Proteobacteria* (Burkholderiales, Pseudomonadales, Enterobacteriales and Xanthomonadales) and *Firmicutes* (Lactobacillales and Bacilalles). Phenotypic characterization revealed the presence of a heterogeneous bacterial community associated with PWN, exhibiting plant pathogenic traits common in wilting diseases. Our results suggest the intriguing possibility that some PWN-associated bacteria may play a significant role in the development of PWD.