

## **Study of specific genes of infection by *Bursaphelenchus xylophilus* in Portuguese pine trees**

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The Pine Wood Nematode (PWN) *Bursaphelenchus xylophilus* (Steiner and Buhrer) Niclke is the cause of Pine Wilt Disease (PWD). Symptoms consist in a decrease in photosynthesis, chlorosis of needles, denaturation of xylem and cortex parenchyma cells, traumatic resin canal formation, production of phytotoxic substances and enhanced respiration and ethylene production, thus threatening worldwide pine forests and related economy. Particularly in Portugal, this has been a great problem distributed throughout a large segment of our pine production areas.

We have recently found that peroxidase is very important in the early response to the infection and also the already referred ethylene, whose production is over-expressed by the plant under stress induced conditions.

A targeted gene expression approach was taken out in order to verify the infection mechanisms by *B. xylophilus* in *Pinus pinaster* and *Pinus pinea* and to enlighten the molecular mechanisms of tree resistance and susceptibility. The main goal of this work was to identify genes expressed after the infection with virulent (HF isolated from Setubal region) and avirulent (C14-5 isolated from Japan) strains, to find an effective way to induce resistance to the nematode in pine trees. The methods were based on semi-quantitative RT-PCR in RNA extracted from inoculated and non inoculated trees, and identification of specific genes expressed by the plant and nematode in a time course trial. Two target sequences were found to be very important in the infection mechanism, namely the transcription factor Myb in the plant and xylanase, which is responsible for breaking down plant cell walls by the nematode.

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