Distribution pattern and population densities of *Bursaphelenchus xylophilus* in pine tree tissues

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① Introduction

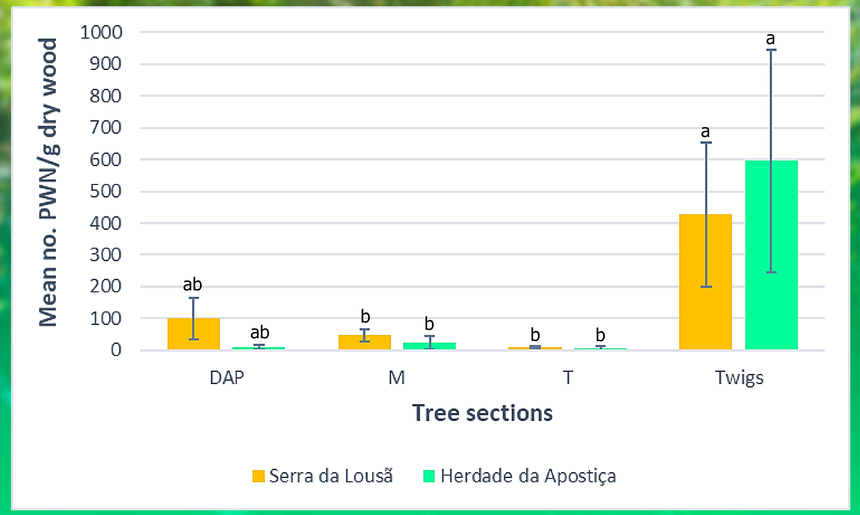
The pinewood nematode (PWN), *Bursaphelenchus xylophilus* (Steiner & Buhrer, 1934; Nickle, 1970), is a quarantine organism in the European Union and the causal agent of pine wilt disease (PWD), a serious threat to pine forests worldwide, leading to rapid decline and death.

Objectives

Determine PWN population densities from different sections of healthy and declining *P. pinaster* (susceptible) and *P. pinea* (resistant) trees.

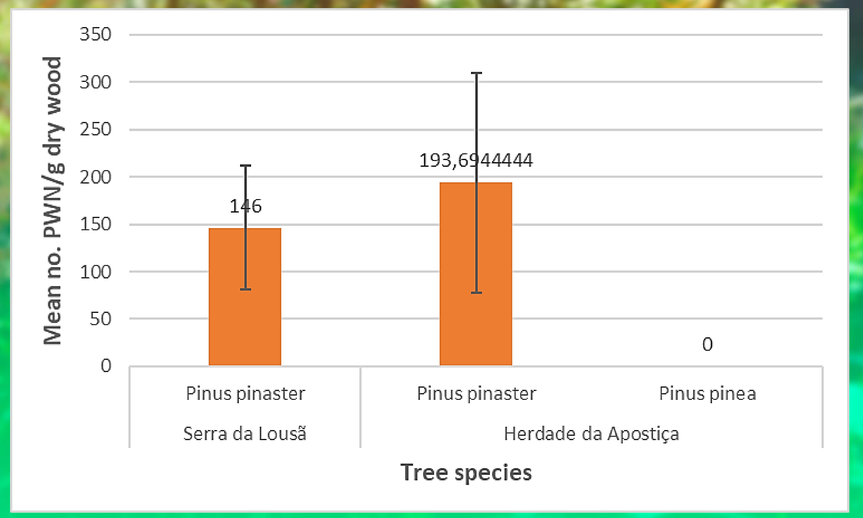
② Material & Methods

Samples from healthy and declining *Pinus pinaster* and *P. pinea* were collected from lower (DAP), middle (M), upper (T) and twigs sections of trees, at Serra da Lousã (Leiria, Portugal) and Herdade da Apostiça (Sesimbra, Portugal), two forests that exhibit areas of moderate to severe decline.



③ Results

- **Significant differences between tree sections (P<0.05)**;
- Twigs consistently had higher PWN densities than other sections in both sites;
- *Pinus pinea* samples were free of the PWN;
- Values are mean ± SE;
- Means with different letters are significantly different (P<0.05).



④ Final considerations

These results show a clear distribution pattern in pine tissues, with *B. xylophilus* being far more abundant in twigs than in any portion of the tree stem. This points to the tree canopy being crucial for the nematode population dynamics. *P. pinea* proved to be a very resistant species. In the future, more sampling should shed light on the drivers of landscape and seasonal patterns linked to *B. xylophilus* abundance.

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