

nematode *Pratylenchus penetrans*

Cláudia Vicente^{1,3*}, Jorge Faria¹, Dora Teixeira², Paulo Vieira³, Margarida Espada³, Pedro Barbosa³, Manuel Mota³, Joana Figueiredo⁴, Joana Sá Cardoso⁴, Ivânia Esteves⁴, Isabel Abrantes⁴, Rita Varela¹, Filomena Nóbrega¹, Maria de Lurdes Inácio¹

¹INIAV I.P. - Instituto Nacional de Investigação Agrária e Veterinária, Oeiras, Portugal
²HERCULES – Herança Cultural, Estudos e Salvaguarda, Universidade de Évora, Évora, Portugal
³MED – Instituto Mediterrâneo para a Agricultura, Ambiente e Desenvolvimento, Universidade de Évora, Évora, Portugal
⁴CEF – Centro de Ecologia Funcional, Universidade de Coimbra, Coimbra, Portugal
*cvicente@uevora.pt

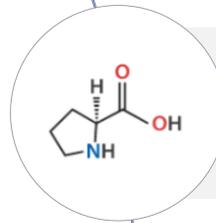
Pratylenchus penetrans, one of the most detrimental root-lesion nematode species, greatly reduces the production in numerous important agronomic crops (e.g., corn, potato), ornamental plants (e.g., lily, roses) and fruit trees (e.g., almond, cherry orchards). In the EU, *P. penetrans* has been reported as the most damaging species associated with potato (*Solanum tuberosum* L.). In Portugal, this species was also detected in potato production fields across the country and often related with their low yield.

Plant metabolomics is an emerging approach to the study crop resistance against plant-parasitic nematodes, which can be applied to expedite traditional crop breeding programs and the development of novel pesticides.

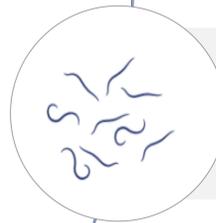
PratyOmics



Potato Inoculation trials with
Pratylenchus penetrans



Plant metabolic profiling in
response to *Pratylenchus
penetrans*



In vitro screening of plant-derived
compounds for nematicidal action



Transcriptome of *Pratylenchus
penetrans* treated with plant-derived
compounds

PratyOmics aims:

- (i) to compare global metabolomic profiling of resistant and susceptible potato cultivars in response to *P. penetrans* infection for the identification of host resistant-induced plant secondary metabolites (PSM) with potential anti-nematode activity;
- (ii) to evaluate the nematicidal bioactivity of the candidate PSM against *P. penetrans*; and
- (iii) to understand the mechanism of action of the most promising PSM by transcription profiling of nematode affected nematode molecular pathways, which can be translated into targets for the **development of new effective nematode control strategies.**