

Fungal community composition across different organs in two distinct almond tree cultivars

A. Faustino^{1,2,3}, M.M. Oliveira⁴, M.R. Félix⁵, L. Marum^{1,2}

¹Alentejo Biotechnology Center for Agriculture and Agro-Food (CEBAL)/ Polytechnic University of Beja (IPBeja), 7801-908 Beja, Portugal. ²MED – Mediterranean Institute for Agriculture, Environment and Development & CHANGE – Global Change and Sustainability Institute, CEBAL, 7801-908, Beja, Portugal. ³MED – Mediterranean Institute for Agriculture, Environment and Development, Instituto de Investigação e Formação Avançada, Universidade de Évora, Pólo da Mitra, Ap. 94, 7006-554 Évora, Portugal. ⁴Instituto de Tecnologia Química e Biológica António Xavier, Universidade NOVA de Lisboa, Plant Functional Genomics Laboratory, 2780-157 Oeiras, Portugal. ⁵MED & CHANGE – Global Change and Sustainability Institute, Departamento de Fitotecnia, Universidade de Évora, Pólo da Mitra, Apartado 94, 7002-554 Évora, Portugal.

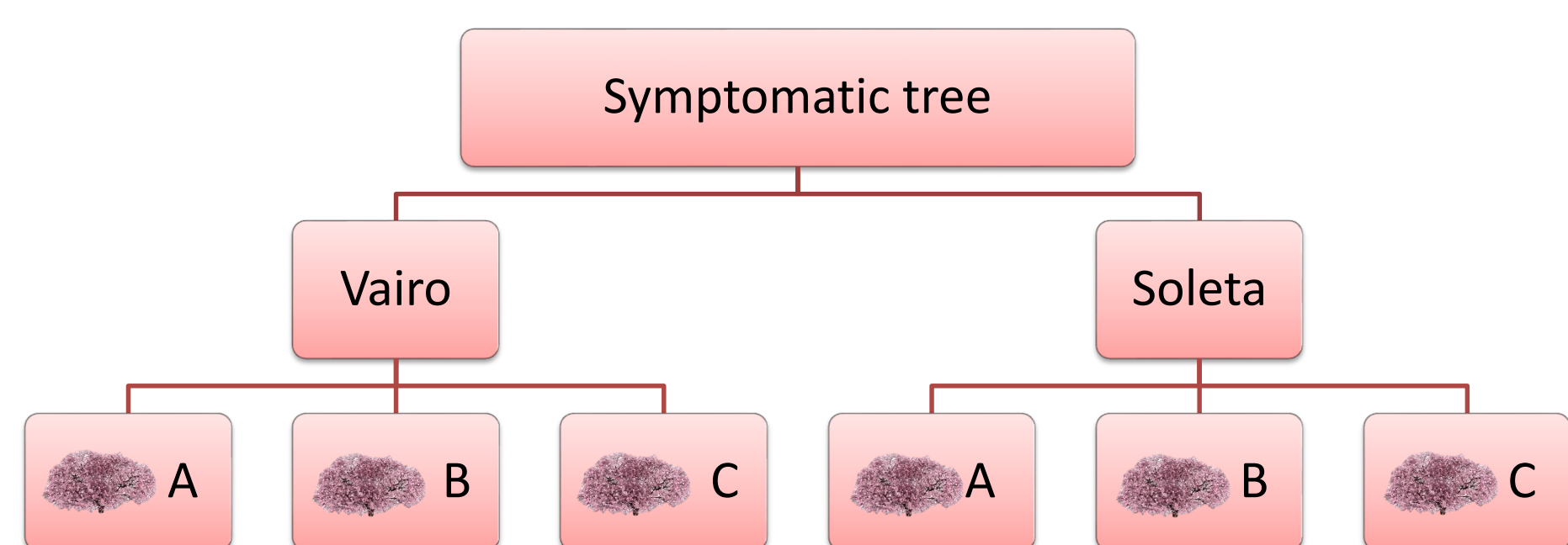
INTRODUCTION & AIM

- The implementation of advanced irrigation systems, combined with modern agricultural techniques, allows for the establishment of almond plantations in new Mediterranean regions, including southern Portugal.
- The incidence of diseases affecting almond trees is increasing, particularly fungal diseases. This trend may be intensified by the effects of climate change and the adoption of intensive irrigation systems.

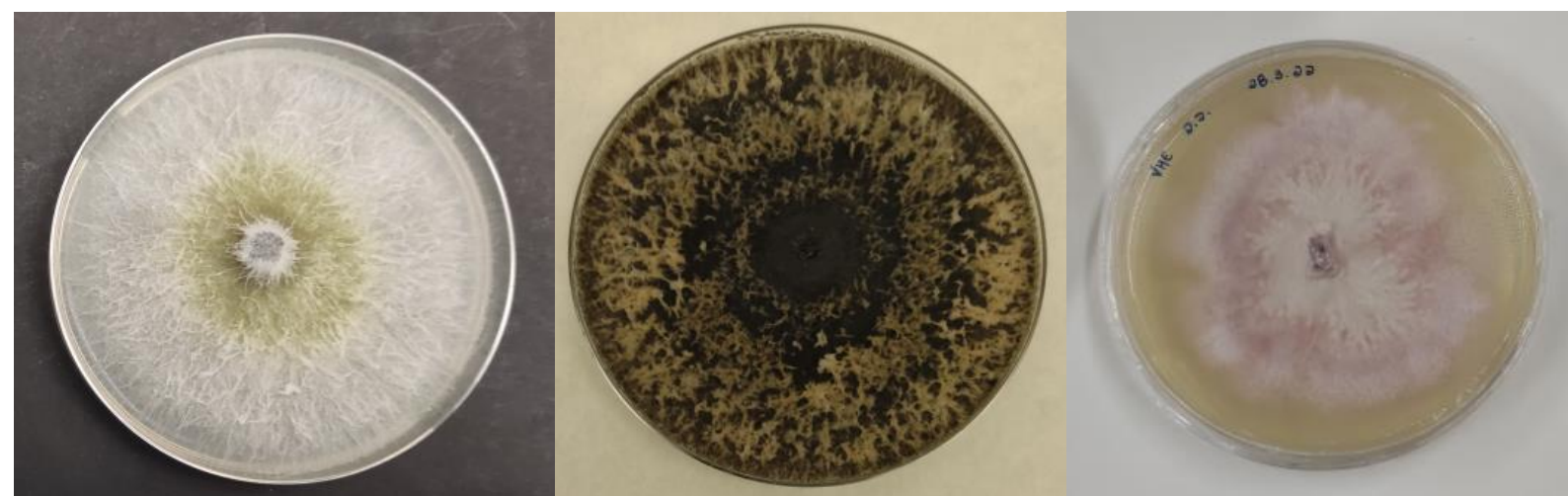
AIM: To understand the composition and distribution of fungal communities in different organs of symptomatic almond trees from a plantation in Beja, Alentejo.

METHODS

Experimental design



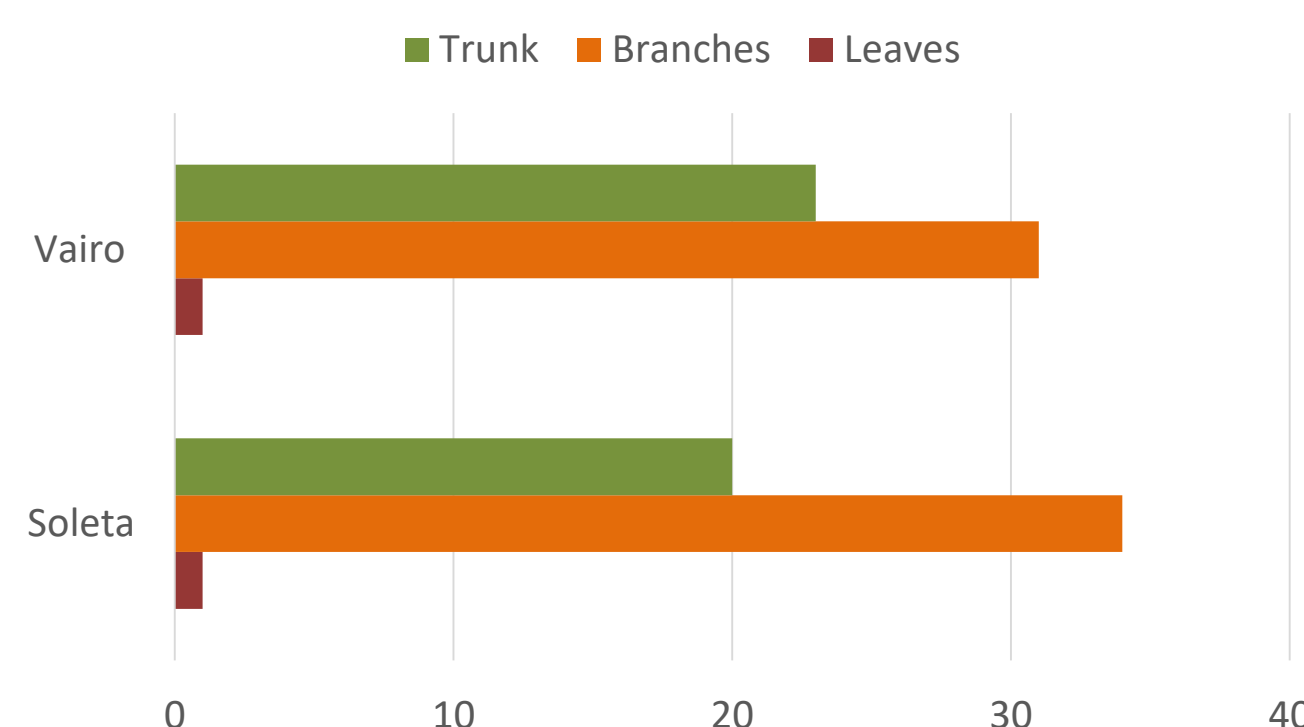
- Collection of branches, leaves, and exudate from each tree.
- Surface sterilization and inoculation of the samples on Petri dishes with Potato Dextrose Agar medium (PDA) in darkness at 25 °C.
- Isolation of fungi by repeated sub-culture to new Petri dishes.



- DNA extraction, PCR, and Sanger sequencing.

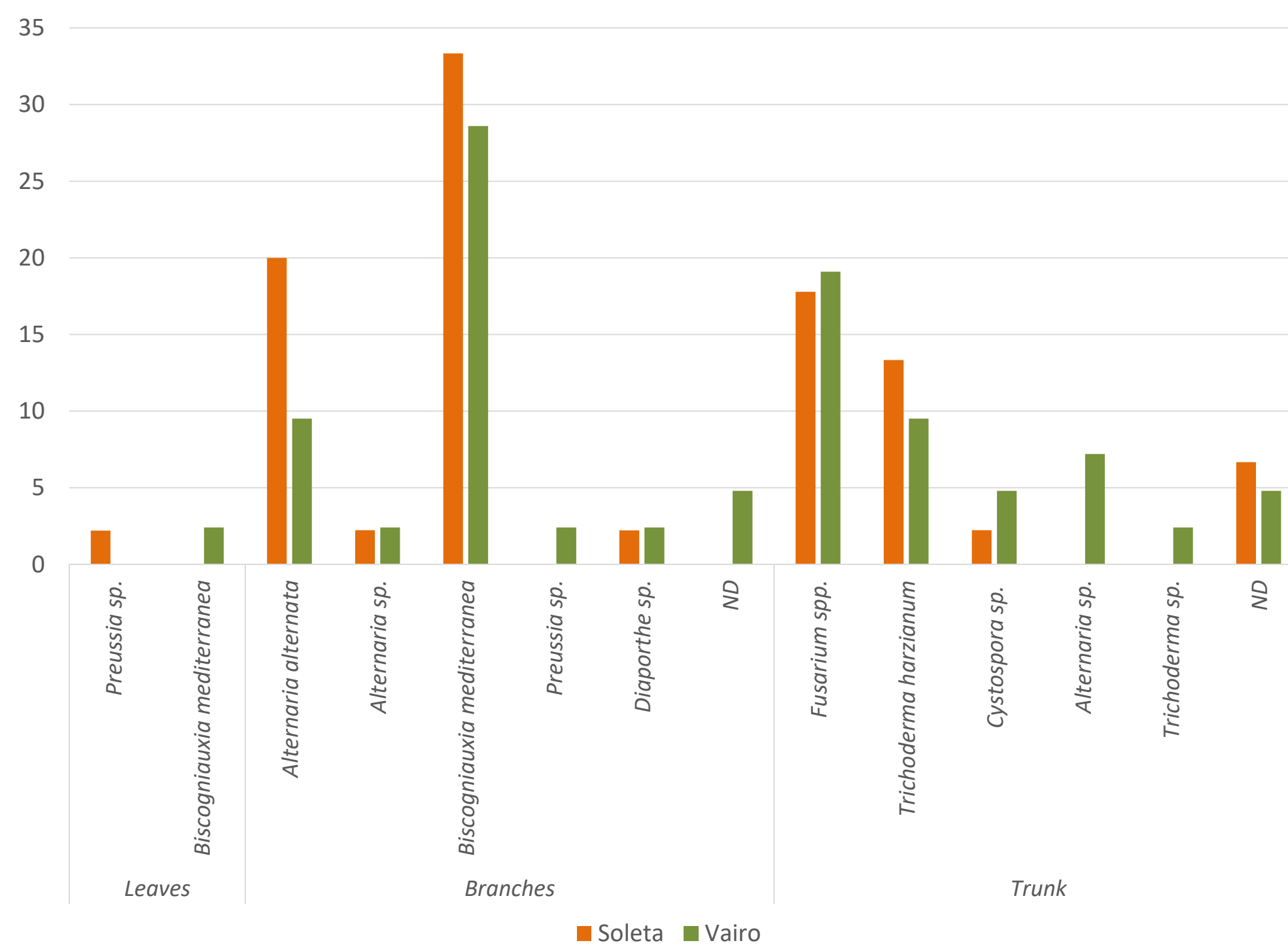
RESULTS & DISCUSSION

Number of isolates obtained by organ and cultivar



The number of isolates obtained from each organ was similar in both cultivars. The **highest number** of isolates was obtained from the **branches**, followed by the **trunk**.

Relative abundance by organ and cultivar



- Only **two fungal** isolates were obtained from **leaves** (*Biscogniauxia mediterranea* and *Preussia* sp.).
- In the **branch** samples, ***B. mediterranea***, followed by ***Alternaria alternata***, are the most representative fungi in both cultivars.
- Fusarium* spp.**, ***Cystospora* sp.**, and ***Trichoderma harzianum*** are only present in **trunk** samples.

CONCLUSION

- In terms of the fungal community, we **did not observe differences between the two cultivars**, but we observed **distinct patterns in community structure across organs**.
- Biscogniauxia mediterranea*** was identified for the **first time** on almond trees and later confirmed by our group as a **pathogen** causing **canker symptoms in almond trees** (Faustino *et al.* 2025).

REFERENCE

A. FAUSTINO, C. MARINHO, M. M. OLIVEIRA, do ROSÁRIO FÉLIX M., and L. MARUM, "First report of *Biscogniauxia mediterranea* causing cankers on almond trees (*Prunus dulcis*)", *Phytopathol. Mediterr.*, vol. 64, no. 2, pp. 191–197, Sept. 2025.

FUNDIG

This work was performed in the scope of Inov-Amendo-AL: Microenxertia in vitro de amendoeiras selecionadas para a promoção do amendoal no Alentejo (ALT20-03- 0246-FEDER-000068) supported by Program Alentejo 2020, through the European Fund for Regional Development (ERDF), within the scope of the Collective Action Support System – Transfer of scientific and technological knowledge – Domain of Competitiveness and Internationalization. This work is funded by National Funds through FCT – Foundation for Science and Technology under the Project UID/5183/2025 and UIDB/04551/2020 to GREEN-IT Bioresources for Sustainability, as well as LA/P/0121/2020 to Global Change and Sustainability Institute (CHANGE), and still the Contrato – Programa of L. Marum (CEECINST/00131/2018), and the Ph.D. grant of A. Faustino (UI/BD/153511/2022).