

1 Understanding fungal communities of olive tree 2 leaves for application to climate change adaptation

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7 **Abstract:** The olive tree (*Olea europaea* subsp. *europaea* L.) is a typical plant of the Mediterranean
8 vegetation, well adapted to drought and poor soils being also tolerant to high solar irradiance. The
9 phyllosphere microbiota associated with these plants is likely to play a role in their tolerance to such
10 harsh environmental conditions. Here, we have characterized the endophytic and epiphytic fungal
11 community present in leaves of olive trees, for potential application of these insights to climate
12 change adaptation. Leave samples were collected from a rainfed olive orchard near Mirandela (NE
13 Portugal). Fungi were isolated and counted from the surface and inner tissues of leaves. The isolates
14 obtained were identified by ITS rRNA gene sequencing and their phylogenetic diversity was then
15 analyzed. A *Celerioriella*-like species and two unassigned species belonging to *Phaeomoniellaceae* and
16 *Pleosporineae* were the most abundant taxa within 23 species (out of 161) found in both epiphytic
17 and endophytic subsamples. These strains are good candidates to be studied for their resilience to
18 climate changes in order to be applied as "tolerance inducers" in olive crops from this Mediterranean
19 area.

20 **Keywords:** *Olea europaea*; microbiota; fungal diversity; endophytes; epiphytes; internal transcribed
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