

Screening for genetic resistance in advanced selections of almond rootstocks for the recognition of genotypes resistant to fungal root pathologies

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Almond crops require the adoption of strategies to minimise the effect of stresses that, in the context of climate change, will limit the yields of new orchard plantings. Thus, the present work conducted screening and selection of rootstocks tolerant to specific biotic stresses associated with two important fungal diseases affecting plant roots, namely root rot caused by *Armillaria mellea*, or trophic stem and root rot caused by genus *Phytophthora*. Several selections belonging to the Prunus-rootstock breeding program of CITA – Agromillora (Spain) were evaluated for their level of resistance against *Phytophthora* spp. (10 genotypes) and *Armillaria* (11 genotypes) during two-year bioassays. In addition, five commercial rootstocks were evaluated as controls: ‘GF-677’, Garnem® and Rootpac® R as controls in *Phytophthora* tests (artificially inoculated on wounds made at the base of the stem/root collar); and Rootpac® 20 and Rootpac® R for *Armillaria* (inoculated along with the roots as colonised oak acorns). The genotypes employed in each bioassay were distributed in 30 pots of 3 m³. Trials were conducted outdoors with an irrigation and fertilisation regime as needed for 120 days. In the *Phytophthora* trials, the presence and length of cankers were recorded and compared, together with leaf desiccation and wilting, while for *A. mellea*, lesions in root and crown and aerial symptoms were considered. Results showed differential response among the genotypes employed, but as a rule, accessions ‘ACI81042-01’ (*P. insititia* x *P. dulcis*) and ‘ACI51406-07’ (*P. dulcis* var. ‘Marcona’ x *P. persica* var. ‘Nemaguard’) x *P. fenzliana*) exhibited little or no symptoms associated with both *A. mellea* and *Phytophthora*, giving them great potential for use as resistant commercial rootstocks. Tests to identify sources of resistance to diseases contribute to the incorporation of new descriptors in a breeding program.

Fungal diseases, hybrid rootstock, phenotyping, artificial inoculation, root-associated pathogens