



Evaluation of different methods for the characterization of carrot resistance to the alternaria leaf blight pathogen (*Alternaria dauci*) revealed two qualitatively different resistances

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Résumé en
anglais

Alternaria leaf blight (ALB), caused by *Alternaria dauci*, is one of the most damaging foliar diseases of carrot worldwide. The aim of this study was to compare different methods for evaluating levels of carrot resistance to ALB. Three techniques were investigated by comparison with a visual disease assessment control: in vivo conidial germination, a bioassay based on a drop-inoculation method, and in planta quantification of fungal biomass by quantitative PCR (Q-PCR). Three carrot cultivars showing different degrees of resistance to *A. dauci* were used, i.e. a susceptible cultivar (Presto) and two partially resistant genotypes (Texto and Bolero), challenged with an aggressive or a very aggressive isolate of *A. dauci*. Both partially resistant genotypes produced a higher mean number of germ tubes per conidium (up to 3.42 ± 0.35) than the susceptible one (1.26 ± 0.18). The drop-inoculation results allowed one of the partially resistant genotypes (Bolero, $\log_{10}(S+1) = 1.34 \pm 0.13$) to be distinguished from the susceptible one (1.90 ± 0.13). By contrast, fungal growth measured by Q-PCR clearly differentiated the two partially resistant genotypes with $\log_{10}(I)$ values of 2.77 ± 0.13 compared to the susceptible cultivar (3.65 ± 0.13) at 15 days post-inoculation. This result was strongly correlated ($r^2 = 0.91$) with the disease severity index scored at the same date. Data obtained with the different assessment methods strongly suggest that the Texto and Bolero genotypes have different genetic resistance sources.

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