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## **Methods for the quantification of resistance of apple genotypes to European fruit tree canker caused by *Neonectria ditissima***

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European fruit tree canker, caused by *Neonectria ditissima*, is an important disease of pome fruit worldwide. Apple cultivars differ in their levels of susceptibility to *N. ditissima*.

In order to design an effective plant resistant test, we examined the effectiveness of two resistance parameters, i.e. infection frequency and lesion growth. Both parameters were evaluated in parallel tests using ten apple cultivars in three experimental years, applying semi-natural infection of leaf scars (infection frequency) or inoculation of artificial wounds (lesion growth). We compared six parameters for lesion growth, of which a new parameter, Lesion Growth Rate (LGR), appeared the best with respect to reproducibility and statistical significance. LGR is defined as the slope of the regression of lesion size versus time. The slope was estimated for each lesion, employing a common start date, and a lesion specific end date determined by the girdling of the lesion. The two parameters: infection frequency and Lesion Growth Rate, were examined in separate experiments and in three successive years, and provided complementary information and resulted in reproducible conclusions on the relative resistance levels to *N. ditissima* of the tested cultivars. The presented methods can be used to develop strategies for the control of European fruit tree canker: e.g. in the breeding of new apple cultivars with high levels of resistance to *N. ditissima*.