Development and optimization of resistance test methods to detect resistance to *Fusarium oxysporum* (Schlecht.) in asparagus (*Asparagus officinalis* L.)

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Fusarium oxysporum is a serious disease that causes root and crown rot in asparagus. Large asparagus growing areas in Europe are infected with *Fusarium oxysporum*, resulting in yield and quality losses at harvest. It cannot be effectively controlled by cultural or plant protection methods. Therefore, breeding resistant cultivars is an important strategy for managing *Fusarium oxysporum* in asparagus. The first step to achieve this goal is to establish a meaningful and reproducible resistance test.

A method for testing resistance of asparagus seedlings to *Fusarium oxysporum* has been developed and optimized to produce resistant basic material for breeding. It was tested on 11 asparagus cultivars and 3 wild relatives. Seedlings were inoculated with two strains of *Fusarium oxysporum* isolates, one low virulent and one high virulent isolate, and incubated for two weeks in a climate-controlled cabinet. Disease symptoms were quantified using a digital image analysis system (Lab Scanalyzer LS10) and PCR.

This resistance test will be further developed into a 'greenhouse test' to analyse resistance behaviour at later plant stages. In addition, an *in vitro* resistance test will be developed to allow test application under sterile conditions.