Identification of resistance donors for fire blight in *Malus*

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Fire blight is a dangerous disease in pome fruit production. The cultivation of resistant apple varieties can prevent losses caused by *Erwinia amylovora* thereby avoiding spraying of chemicals. Some resistant varieties (e.g. 'Reanda', 'Remo', 'Rewena') were bred at the Institute of Fruit Breeding in Dresden-Pillnitz. The donor of resistance is *Malus x floribunda*. To enlarge the genetic basis of resistance to fire blight, a wide range of accessions of wild species, present in the gene bank in Dresden-Pillnitz, was tested for resistance to fire blight in the greenhouse. Some accessions were tested up to 14 times in the last 14 years to find durable resistance donors independent of the *E. amylovora* strain used.

Highly virulent strains of *E. amylovora* were inoculated into growing shoots grafted on rootstocks. Eight weeks p.i. the ratio between length of necrosis and shoot length was calculated. Accessions of *M. x atrosanguinea, M. x dawsoniana, M. fiscia, M. x prunifolia, M. x robusta, M. sieboldii* and *M. x zumi* were found to be highly resistant to fire blight, whereas accessions of *M. tschonosky, M. arnoldiana* and *M. triloba* were very susceptible to the pathogen. Accessions of *M. baccata* revealed large differences in the reaction to fire blight, some of them were very highly resistant and some highly susceptible.

Respective wild species showing stable resistance to fire blight provide a valuable tool for breeding of fire blight resistant cultivars.

A biocontrol agent for bacterial blight that induces systemic resistance as it restrains pathogen multiplication in bean leaf tissue

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The UFV-172 isolate of *Bacillus cereus* was selected in *in vitro* and *in vivo* tests as the best among 501 prokaryotic residents, found on the phylloplane of healthy dry bean plants, for protection against several pathogens. The isolate was identified as *B. cereus* based on the sequence of its 16S ribosomal gene. Although able to protect against all tested bean pathogens in greenhouse and field trials, UFV-172 was not at all antagonistic to them in *in vitro* assays. Known that *B. cereus* is Pen⁺Amp⁺Amx⁺ and Xep is Pen⁺Amp⁺Amx⁺, a possible repression of *X. campestris pv. phaseoli* in bean leaf tissues, previously exposed to the antagonist, was investigated based on the differential sensitivity of each microbial component in their interaction with each of the antibiotics penicillin, ampicillin, and amoxicillin. Plants were exposed to a suspension of the antagonist propagules (OD₅₄₀ = 0.4), and four days later the primary leaves were infiltrated with a pathogen cell suspension (OD₅₄₀ = 0.05). Five leaf disks were removed at intervals from the infiltrated leaves, from a different leaf and at every time interval, weighed, and ground in PBS amended with 1% w/v PVP. Each homogenate was serially diluted and each dilution plated out in the antibiotic-containing culture medium. Population tendencies of the pathogen in leaf tissue exposed and not exposed to the antagonist were in sharp contrast to each other, a clear indication of pathogen repression. To account for
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