
Session D

Pear fire blight resistance breeding research

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In Germany, the demand for both conventional and organic pears cannot currently be met from domestic production. The pear market is dominated by the varieties 'Alexander Lucas', 'Conference' ahead of 'Williams Christ', the 'Delicious of Charneux' and 'Clapp's Favourite'. These cultivars, as well as most other pear cultivars, are highly susceptible to the regulated non-quarantine pest (RNQP) *Erwinia amylovora*, which is the causal agent of fire blight, the most important disease in pear production. Since no suitable control measures are available in pear cultivation, the cultivation of resistant cultivars and the close and regular monitoring of pear plants and neighboring host plants are regarded as the best control options. Whereas in apple, intensive work is being done in various breeding programs to investigate fire blight resistance mechanisms and to breed resistant cultivars, efforts in pear are limited and available data are sparse. The project aims to contribute to improved effectiveness in breeding pear cultivars with resistance to fire blight, and to evaluate genetic resources of cultivated pear and *Pyrus* wild species to identify potential sources of resistance and make them available for breeding. The objectives are to analyze possible additive effects of resistance QTLs as well as to detect and test the efficacy of additional resistance loci, to use them in pear breeding using molecular markers, and to select pear genotypes with good resistance to fire blight. The development of molecular markers for effective resistance loci is the prerequisite for early selection in pear breeding for resistance to fire blight and acceleration for the development of new resistant cultivars.

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