

## Biotechnology of temperate fruit trees

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Since genetic and phytosanitary improvement of perennial crop plants is a long term effort, the application of biotechnological methods can make some important contributions. These range from the identification and conservation of valuable genetic resources, to pathogen detection and elimination by *in vitro* methods, resistance breeding against pathogen to molecular determination of internal quality parameters of food.

Characterisation and determination of fruit tree cultivars are difficult using conventional methods. Consequently, molecular approaches should be implemented in cultivar identification and breeding programmes. Results obtained with SSRs in apricot are presented [1].

Pathogen infection seriously limits stone fruit production in Europe and in the Mediterranean region. The most important viral pathogen is Plum pox virus (PPV), however, other viruses (e.g. Prune dwarf virus [PDV] and Prunus necrotic ringspot virus [PNRSV]), but also phytoplasmas [ESFY], represent a major threat. Experiments on *in vitro* thermotherapy and meristem culture led to virus-free plant material [2].

Different traits have been modified in transgenic fruit trees, which comprise altered processing and storage qualities, resistance to abiotic stresses and resistance to biotic stresses. The breeding and cultivation of virus resistant plants is a major contribution to the control of viral diseases, since there do not exist chemical control strategies. Currently at the IAM we have over 100 different apricot, plum, cherry and grapevine lines transformed with different sequences of the Plum Pox-Virus genome, the Prunus Necrotic Ringspot-Virus genome the genome of different grape viruses, e.g. GFLV, ArMV, GVA and GVB, but also with different marker genes, e.g. GUS, GFP or NPTII [3-5]. Efforts are required to create public understanding and acceptance for these crop plants, which are carried out in the frame of a project supported by the BMBWK and BMLFUW, Austria ([www.boku.ac.at/Sicherheitsforschung](http://www.boku.ac.at/Sicherheitsforschung)).

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