September 2017

Monitoring *Plum pox virus* in Austria, Greece and Hungary

Plum pox virus (PPV), syn. Sharka disease, is the most important and devastating virus disease causing the highest economic impact in stone fruits worldwide. The virus, classified as a quarantine pest (EPPO A2 list, EU 2000/29 EEC, annex II), was first detected in Bulgaria in the early 1900s, and is now widespread in most European countries. The hosts of PPV are fruit-producing, ornamental and wild species of *Prunus*. Nine strains have been identified based on their biological, serological and molecular properties. One example of the biological relevance of this intraspecific diversity is the PPV-M strain, causing more severe symptoms in peaches than the PPV-D strain. For an effective control and surveillance strategy, it is important to use PPV-free plant material, tolerant/resistant cultivars and quick identification and eradication of diseased plants.

One of the objectives of the project is to develop an improved control and surveillance strategy which requires a correlation between the presence and absence of typical PPV symptoms in diseased and healthy plants.

In Greece, surveys were carried out in six apricot nurseries in the Peloponnese, the most important apricot production area. A total of about 46.000 grafted saplings were visually inspected and PPV symptoms were only observed in propagation material of the old local apricot varieties (i.e. 'Bebecou', 'Early of Tyrinth´, 'Diamantopoulou') and in one sapling of a local PPV tolerant variety (Nostos; Karayiannis *et al*., 2008). A total of 974 samples were randomly collected and tested by ELISA (Loewe Biochemica GmbH) for the presence of PPV. The virus was detected in eight samples of local varieties, which were showing suspicious symptoms. Only the PPV-M strain was identified in nurseries and in the field by RT-PCR/RFLP analyses.

In Hungary, DASI-ELISA is routinely used for PPV screening of certified stocks for production of stone fruit propagating material. PPV strain identification of ELISA positive samples was performed by strain-specific RT-PCR. Both PPV-D and PPV-M strains were detected in certified stocks. The occurrence of PPV-M was a little higher (56%) than PPV-D (43%). Very few recombinants (1%) PPV-Rec were identified. No other PPV strains were detected. Sharka positive trees were eradicated. PPV-like symptoms (rings, spots, mosaics) were reported in plum (*Prunus domestica*) trees but the pathogen could not be confirmed by DASI-ELISA or by RT-PCR.

The symptoms may be associated with *Apple mosaic virus* (APMV) and *American plum line pattern virus* (APLPV) but RT-PCR did not confirm that; instead, *Cherry leaf roll virus* (CLRV) was detected and one sample with stronger signal was directly Sanger sequenced. Based on the sequence data, the plum isolate belongs to CLRV-E (*Sambucus*) group. CLRV was also detected in asymptomatic plum and some apricot (*Prunus armeniaca*) trees from the same place. Very likely, the CLRV infection cannot be associated with the symptoms reported in plum trees.

In Austria three surveys of wild hosts were carried out in areas where PPV has been known to occur. As wild hosts can act as natural reservoirs for PPV, these surveys will contribute to improve control strategies. In one *Prunus spinosa* sample, PPV could be detected with RT-PCR. Additionally, other hosts (apricots, plums) near the positive tested wild host, were analysed and in all plants PPV could be detected. In a next step, strain identification of the PPV-infected wild host is planned.

Project ID: 2015-E-147 Determine different *Plum pox virus* strains in wild hosts and in stone fruit cultivars with different susceptibility as a part of improved control and surveillance strategies