



PLUM POX OF STONE FRUITS

Plum pox, caused by the *Plum pox virus* (PPV), was observed in Bulgaria during 1915 and 1918. Subsequently, the disease was reported from most Mediterranean regions and Europe. Plum pox was reported in Pennsylvania in 1999. The disease has not been observed in Illinois or other states in the Midwest. Plum pox is a serious disease of plums, peaches, nectarines, and apricot.

Symptoms

Plum pox virus infects leaves and fruits. Yellowing and necrotic (browning) ring patterns, and chlorotic bands develop on infected tissues (Figure 1). Infected leaves and fruits may not develop visible symptoms. Infected fruits of apricot and plum may be misshapen and deformed, or rings may be present on their stones (Figure 2). In eastern and central Europe, premature fruit drop and bark splitting of susceptible plum cultivars have been reported.



Figure 1. Leaves and fruits showing chlorotic and necrotic ring patterns, and chlorotic blotches. **A)** Chlorotic ring patterns in peach fruits; **B)** Chlorotic blotches in peach leaves; **C)** Chlorotic ring patterns in plum leaves **D)** Necrotic ring patterns on apricot fruit. Courtesy P. Gentit, Ctifl, France; M. Nemeth, PHSCS, Hungary; and M. Barba, ISPAVE, Italy.

Life cycle

Plum pox virus is a member of the Potyvirus group, characterized by its flexuous, filamentous single-stranded RNA particles, measuring approximately 750 nm long. Four strains of PPV have been characterized that are referred to as PPV strain M, D, EA, and C. PPV is detected and identified using various molecular methods, including enzyme-linked immunosorbent assay (ELISA).

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PPV is transmitted by at least 20 aphid species, but only 4-6 species are considered important vectors. Aphids transmit PPV in nonpersistent matter. The efficiency of transmission is dependent on the virus strain, host cultivar, age of the host cultivars, aphid species, and time of year. The most important, and *Phorodon humuli*. Aphids can acquire the virus in probes as short as 30 seconds, and can transmit for up to 1 hour. Aphids that have been starved before feeding can transmit for up to 3 hours after acquisition. There is no correlation between the ability to transmit PPV and the ability to colonize the host.

Disease management

Planting PPV-free nursery stocks is essential for managing this viral disease. When PPV is established in an area, it is very difficult to eradicate the pathogen. Growing cultivars resistant to all strains of PPV is a goal of managing plum pox. Despite the fact that resistance to this disease has been sought ever since its discovery, there are few reliable reports of high-level resistance in plums. Sources of resistance to PPV have been identified and developing reliable resistant cultivars are expected.

The productivity of orchards with low levels of infectin can be prolonged by frequent inspection and removal of infected trees. Rigorous spraying for aphids may delay the spread of virus. In areas where plum pox virus is common, the use of tolerant cultivars is the only effective control



Figure 2. *Apricot stones with plum pox virus-induced ring patterns in the fruit of A) mature apricot; and B) unripened apricot. (Courtesy of M. Barba, ISPAVE, Italy, and J. Dunez, INRA, France).*

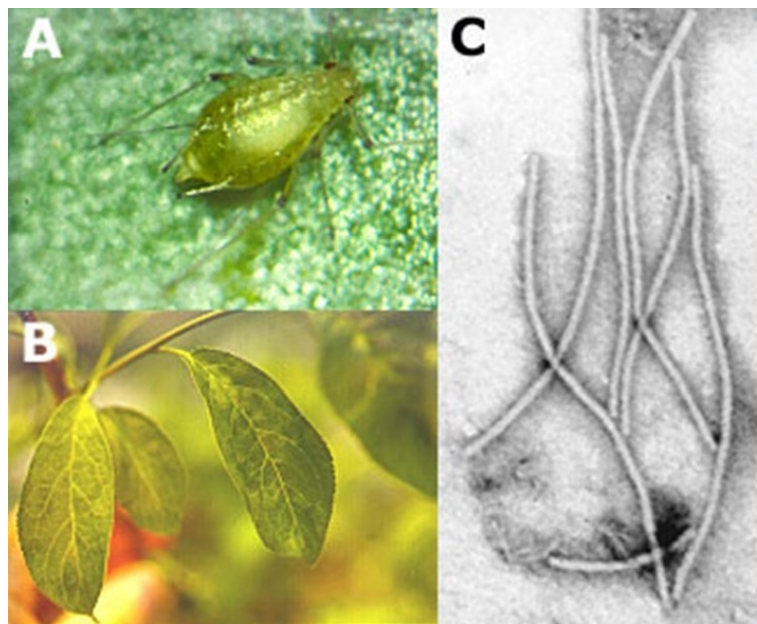


Figure 3. *A) PPV aphid vector; B) PPV in plum from Pennsylvania; C) plum pox virus particles. Courtesy Vern Damsteegt.*