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# Preliminary data of monitoring natural spread of sharka in Southern Greece

**Christina VARVERI**
Benaki Phytopathological Institute
Kifissia, Athens (Greece)

**Dimitri DIMOU**
Ministry of Agriculture
Dir.of Agric. Development
Nafplion (Greece)

**Biagio DI TERLIZZI**
Istituto Agronomico Mediterraneo
Valenzano, Bari (Italy)

**SUMMARY** - A monitoring for natural spread of PPV in two young apricot orchards in Southern Greece was undertaken in 1996 and 1997. The different results obtained might be attributed to the level of inoculum pressure and the microclimatic conditions occurring in one orchard. Predicting the disease development, even in regions of "high-risk" for PPV infection, seems to be difficult.

**Key words:** apricot, PPV, virus monitoring, virus spread, Greece.

***RESUME*** - *Un monitorage de la diffusion naturelle du PPV dans deux jeunes vergers d'abricotier a été réalisé dans le sud de la Grèce en 1996 et 1997. Les différents résultats obtenus pourraient être attribués au niveau de la pression d'inoculum du virus et aux conditions écologiques qui caractérisent un verger. Il semble qu'il soit difficile de prévoir le développement de la maladie aussi dans des régions à "haut risque" d'infection par le PPV.*

***Mots-clés:*** *abricotier, PPV, monitorage du virus, distribution du virus, Grèce*

The development of diseases caused by aphid transmitted viruses like plum pox potyvirus (PPV) depends upon many factors including virus strain, hosts and cultivar, aphid species, in relation with their population dynamics, and sources of inoculum. Studies regarding PPV spread in apricot orchards were done in Spain and France where D-type isolates were prevalent. In Spain, 100% infection occurred in 2-5 years (Llacer *et al.*, 1992), while in France, 8-9 years were needed (Adamolle *et al*, 1994).

PPV was first described in Greece in 1967 (Demetriades and Catsimbas, 1968) and since then, it has spread throughout the country causing extensive damage and thus becoming the most serious phytopathological problem of fruit trees. Apricot crops suffer the most, as the main commercial cultivars, Tirynthos and Bebeco are highly susceptible. In most cases, the M-serotype is recovered and only in one case, the serotype D was identified in peach from Larissa, Central Greece (Varveri and Boutsika, 1996). M-type isolates are considered to be generally virulent and responsible for severe epidemics. Concrete epidemiological data, however, regarding the speed of virus spread in Greece are not available. Observations in regions of intensive peach cultivation in Northern Greece, where the inoculum pressure was high, showed that reinfection occurs after 2-3 years (Roy and Smith, 1994). Other surveys of apricot orchards in Southern Greece (Argolida), where virus was endemic, revealed very low disease incidence in trees 15 years of age (Varveri and Bem, 1995). These orchards were planted on hillslopes and used for producing propagation material.

To elucidate some of the above features, in the framework of MNFT activities promoted by CIHEAM-Bari, a monitoring of the virus natural spread in young apricot orchards in Argolida County, Peloponnese (Southern Greece) was undertaken in 1996 and 1997. Two different orchards, established in 1992 and 1993 in the area with healthy propagation material of Italian origin, were sampled and tested by ELISA. These orchards were characterised by different ecology. The first orchard, planted in the plain, where intensive apricot and citrus cultivation occurred, comprised of two plots: the first one (1a) was bordered to the south by an old, 100% infected apricot orchard, which served as an inoculum source. The second plot (1b) was separated by the first one by a hedge and a house. To the south it was bordered by a citrus plot. The second orchard, although only 5 kms away from the first one, was located in an isolated area surrounded by hills and cultivated principally with olive trees. It possessed an inoculum source inside the very site, some twenty-year-old infected apricot trees.

In these orchards, only PPV-M serotype was identified using monoclonal antibodies. Under high inoculum pressure in plot 1a, 53.2% infection occurred within 4 years, whereas in plot 1b, with less exposure to the inoculum source, the infection rate was 14,1% in the same time period. The annual increase of PPV incidence in plot 1a was more than the double of that observed in plot 1b. After five years, the infection was 69% in plot 1a. These differences were

attributed to close proximity of plot 1a to the inoculum source found in the direction of the predominant winds (southeastern). In contrast, plot 1b was more isolated both by the hedge and the house to the west and by the citrus orchard to the south. In orchard 2, spread of PPV was slow, although the inoculum source was inside the very orchard. After 5 years, the percentage of infected young apricot trees reached 17%, with an annual increase between 1996 and 1997 of 4.5%. The results here were attributed to the natural isolation and poor exposure to aphid flights and build up. Thus, it seems that the most important factor for PPV dissemination was the actual microclimatic conditions occurring in a particular orchard, and which influenced numbers and activity of potentially viruliferous aphids.

The virus strain did not appear to play such an important role. Spanish data for spread of PPV-D under high inoculum pressure, (situation similar to the one described above), where citrus and apricot production co-existed and *Aphis spiraecola* was the most abundant species (Bem *et al.*, 1992; Gottwald *et al.*, 1995), was comparable with our findings of plot 1a exposed to the M-type strain. We plan to monitor our orchards in the following years.

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