Sanitary status of stone fruit industry in the Mediterranean countries: Lebanon

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LEBANON

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Stone fruit trees are planted in all regions of Lebanon and rank among the most important crops in the country with some 7,350 ha present in 1993 (Saadé, 1994). In terms of production value, stone fruit is third after citrus and grape. Almonds are grown mostly at the lower elevations of Mount Lebanon, in the areas of Byblos and Batroun located in north of Beirut and to a lesser extent in the South around Saida and in the hills of Akkar Caza in the North. Peach and plum are grown at slightly higher altitudes mostly in the Chouf mountains, in the eastern hills of the Mount Lebanon, and to a lesser extent in the Bekaa plains and Akkar highlands. Cherries are produced in the mountainous areas of the western part of Mount Lebanon and in the Central Bekaa plains. Apricot production is relatively limited to the northern Bekaa region.

Whereas the area planted with peaches and almonds greatly expanded in the past 7 years, the increase in the plum and cherry growing areas showed a modest increase. Apricot showed a drastic decline. In Lebanon, stone fruit production in the last years was constrained by a decline in profitability, which was due to the absence of a clear market strategy. There is the uncontrolled importation of fruits from external regional markets resulting in severe competition, combined with poor post-harvest storage conditions, limited market channels, and agrofood industries, and absence of an effective extension service.

The sanitary status of most agricultural crops in Lebanon was properly monitored in the sixties and the seventies (Saad and Nienhaus, 1969; Sardy *et al.*, 1970). During the next 20 years of the Lebanese Civil Conflict, however, no systematic surveys on the sanitary situation of agricultural crops was undertaken. Recently, a thorough survey on the virus and virus-like diseases of stone fruit in commercial orchards in Lebanon was made (Jawhar *et al.*, 1996) and collected samples underwent to biological indexing and serological testing (ELISA).

The major fungal diseases affecting stone fruits in Lebanon are peach leaf curl (*Taphrina deformans*), powdery mildew (*Sphaerotheca pannosa*), and brown rot (*Monilinia laxa, M. fructicola*) mostly in its blossom and twig blight phase. All are endemic and widespread. Other diseases reported but of less importance include trunk and root rot disorders (*Rosellinia necatrix*), shot

hole and fruit spot (*Coryneum carpophilium*), rust (*Tranzschelia spp.*), leaf blotch (*Polystigma spp.*) and other leaf spotting fungi (*Cercospora spp., Cylindrosporium spp.*). *Verticillium* wilt was also observed in almonds in the Bekaa. Bacterial diseases reported on the stone fruits in Lebanon, include the shot hole (*Xanthomonas pruni*), canker and gummosis (*Pseudomonas mors-prunorum*) and crown gall (*Agrobacterium tumefaciens*). These diseases, however, have been reported to be severe but only in localised areas, and rarely widespread.

Several viruses were reported to occur in stone fruit trees. Around 15,000 stone fruit trees were observed for symptoms covering 115 commercial orchards from the main stone fruit growing areas in the country. Around 1,700 samples (ca. 10% of trees observed) were collected for laboratory tests (450 almonds, 200 apricots, 350 cherries, 500 peaches and 200 plums). The overall average incidence of infection with viruses was c.a. 25% and the most abundant viruses found were prunus necrotic ring spot ilarvirus (PNRSV), prune dwarf ilarvirus (PDV), and apple chlorotic leaf spot trichovirus (ACLSV). Mixed infections of these viruses were common. Cherry was highly infected by viruses (45% of the samples tested), followed by peaches (24%), almonds (21%), plums (18%), and then apricots (5%). The incidence of infection for certain viruses reached levels over 60% as in the cases of PDV in cherry and ACLSV in peach. All samples gave negative results when tested for the presence of plum pox virus (PPV). Sharka is apparently not present in the country despite its presence in our neighbours. Further testing of samples from nurseries and commercial orchards is being undertaken to check for its occurrence. Other viruses tested but not detected in the survey of commercial orchards included apple mosaic ilarvirus (ApMV), and six nepoviruses (SLRV, TBRV, RRSV, CLRV, ArMV, and TomRSV).

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