



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Detection of Four Apple Viruses by ELISA and RT-PCR Assays in Turkey

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Abstract: Plant samples were collected from the main apple growing provinces of Turkey in order to evaluate the incidence of 4 important apple virus diseases during spring 2004. Collected leaves and shoots were tested using enzyme linked immunosorbent assay (ELISA) and reverse transcription polymerase chain reaction (RT-PCR) for Apple mosaic virus (ApMV), Apple stem grooving virus (ASGV) and Apple chlorotic leaf spot virus (ACLSV). Since no commercial antiserum is available, Apple stem pitting virus (ASPV) was tested only using RT-PCR and the results were compared. A total of 174 apple samples were collected from varietal collections belonging to governmental and university institutions and also from commercial orchards. Out of 174 plants, 126 were infected by at least one virus disease. The incidence of the 4 viruses in varietal collections was 70.21%, while it was 75.00% in commercial orchards. The results obtained from the comparison of ELISA and RT-PCR in this study showed that with the RT-PCR technique 8.6% more samples were positive for ACLSV, ASGV and ASPV. Mixed infections were also very common in both varietal and commercial orchards. Among the mixed infections, the most common one was ASPV + ACLSV (84.21%), followed by ASPV + ASGV (36.84%), ACLSV + ASGV (26.32%) and ASPV + ApMV (5.26%). The incidence of the ASPV + ASGV + ACLSV combination was 26.32%. The number of plants infected with any viruses was higher when tested using RT-PCR comparing to ELISA. This study showed that apple virus diseases, especially on symptomless trees, were very common in different provinces of Turkey and RT-PCR can be successfully applied in certification programs of pome fruit trees.

Key Words: Apple, virus, RT-PCR, ELISA, Turkey

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