

Identification and determination of transmission ability of thrips species as vectors of two tospovirus, tomato spotted wilt virus (TSWV) and impatiens necrotic spot virus (INSV) on ornamental plants in Iran

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Abstract: Tomato spotted wilt virus (TSWV) and impatiens necrotic spot virus (INSV) infect several ornamental plants and cause different level of losses to ornamental and also other cultivated crops. Therefore identification of the thrips vector is of importance and can help in selecting the proper control management measures. We have collected 220 ornamental plant samples from glasshouse and cultivations areas of Pakdasht and Mahallat that were suspicious to be infected by virus. Infections of collected plants by INSV and TSWV were rechecked and confirmed using specific antibody by Tissue blot immunoassay (TBIA) and ELISA. Samples of thrips infesting ornamental plants that showed virus like symptoms were also collected. In this study, 5 colonies of different thrips species from each plant were collected and from each thrips population, 2-3 thrips were preserved in 75% alcohol for species identification. Five thrips species were identified: *Thrips tabaci*, *Microcephalothrips abdominalis*, *Tenothrips frici*, *Tenothrips discolor* and *Frankliniella intonsa*. 2-3 thrips from each thrips populations were rechecked for the presence of INSV and TSWV using ELISA. Of the 220 ornamental plants collected, 158 were shown to be infected with TSWV (95) and INSV (63). Mix infections with both viruses were also recorded in few samples. Of the 68 ornamental plant samples which were infested by thrips populations, 45 plant samples were tested by ELISA to be positive for INSV and TSWV. The colonies of *T. tabaci* were infected by TSWV and INSV. Colonies of *M. abdominalis* and *T. discolor* were not found to be infected by these viruses. Colonies of *T. frici* and *F. intonsa* only in mixture with *T. tabaci* were positive in ELISA test to TSWV and the pure colonies of these two thrips species were not infectious. Only *T. tabaci* transmitted TSWV isolate in transmission tests in greenhouse, but did not transmitted INSV in biological tests. The high transmission ability, their population abundance in greenhouses and the existence of virions in this vector are the main results of this survey.

Key Words: ornamental plants, thrips, TSWV, INSV, Iran