

PISTACHIO TREE RESPONSES TO PSYLLID CONTAMINATION THROUGH THE GROWING SEASON

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The common pistachio psylla, *Agonoscyta pistaciae* Burckhardt & Lauterer (Hemiptera: Psylloidea) is an indigenous pistachio pest in Iran. It is now the most serious pest throughout the pistachio-producing regions of the country. Usually the psyllid population rapidly increases immediately after bud-break in early spring through to mid-autumn. This is a common pistachio pest in pistachio plantations, usually reaching outbreak levels. This insect does not cause deformation of the plant tissues e.g., leaf-rolling, gall induction, or by injection of toxin into feeding sites, and there are no records of it acting as a vector of plant diseases. However, the psyllid nymphs (in particular) ingest large amounts of the nitrogen-poor phloem sap to obtain their nutritional requirements and this result in the excretion of large amounts of concentrated honeydew of paste-like consistency, which becomes dry almost immediately after elimination. The sap removed by large populations of nymphs and adult psyllids causes severe problems during kernel development, with a subsequent bud drop and defoliation. This damage affects not only the yields in the current year but also in the two subsequent years. Field and laboratory studies have shown that there is an obvious difference in response levels between pistachio cultivars. The well-known commercial cultivars, such as Akbari and Kalah-qochi, appear to be the most attractive cultivars for *A. pistaciae*, whereas cultivars with low nut quality and the wild pistachio species with poor nut quality are significantly less susceptible. The response of the commercial cultivar Kalah-qochi to 4 different levels of psyllid nymph density, e.g., means of 25, 3.2, 1.8 and 0.5 nymphs per leaflet showed that, with decreasing nymphal density, the blanked nuts decreased from 53 to 27%, empty nuts declined from 23 to 7% and split nuts increased from 25 to 66%. In addition, under high nymphal density, bud drop and defoliation occurred. Therefore, the responses of the pistachio trees to *A. pistaciae* are closely related to the number of nymphs per plant, the timing of the invasion, duration of feeding, the fruit density and the cultivar. Defoliation at any time during the growing season causes serious losses, but bud drop almost always occur prior to defoliation. In sensitive cultivars, heavy infestations during the kernel development period, e.g., July and August, or even earlier in the season before endocarp development can cause complete defoliation after a few weeks.