

BIOLOGICAL CONTROL OF MITES AND GREENHOUSE THRIPS ON AVOCADO

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Avocado Mites

Research was directed toward ecology and biological control of *Oligonychus perseae*, a highly damaging spider mite recently found in San Diego County. Identification of the mite was made in cooperation with Dr. E. W. Baker of the USDA, considered the world authority on classification of spider mites. It was initially identified as *Oligonychus peruvianus* (reported from carob trees in California in 1919) because it was thought at the time that *O. perseae*, originally described from collections on avocado from Mexico, was not a valid species. However, after reexamination of our specimens, Dr. Baker concluded that they are in fact two very similar species, with *perseae* probably being a recent introduction to California.

Monitoring of populations of *O. perseae* was started in late 1991. Biweekly counts showed peak numbers in June 1992 of over 1600 mites (excluding the egg stage) per leaf. In early January, 1993, numbers declined to less than 0.1 mite/leaf (markedly lower than the previous winter). The common predaceous phytoseiid mite, *Euseius hibisci*, was present throughout the period, but this species is not considered effective because it rarely penetrates the dense sheet of webbing that *O. perseae* produces. Consequently, *E. hibisci* can only attack the spider mites that are migrating between colonies. However, a previously uncommon native species, *Galendromus (Typhlodromus) annectens*, was observed in increasing numbers in this and other orchards. This species readily moves through the spider mite webbing to attack the prey beneath, and it probably had a significant impact on numbers of *O. perseae* later in the season.

Preliminary investigations were made to determine the ability of several introduced species of phytoseiid mites in culture to penetrate the webbing and feed and reproduce on *O. perseae*. *Galendromus helveolus* from Florida (also common in Mexico and Central America), *G. porresi* from Mexico and a strain of *G. annectens* from Mexico all looked promising as predators in the laboratory because these three species readily entered the spider mite colonies to feed and reproduce. Field releases were made in an attempt to establish these predators on a permanent basis. Only *G. helveolus* has been recovered in samples to date. This species became more abundant than the two native species in the release plot and population sampling data indicated that suppression of the pest mites occurred sooner in this plot compared to non-release plots in which only *G. annectens* and *E. hibisci* were present. Thus both *G. helveolus* and the native strain

of *G. annectens* are mortality factors of potential importance in southern California.