

OVERVIEW OF AVOCADO PEST CONTROL IN ISRAEL

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In Israel, 96 species of pests belonging to 45 families were recorded on avocado. Most of them occur sporadically in the orchards, and others are controlled by natural enemies without human intervention. There are only 9 species of economic importance: the long-tailed mealybug, *Pseudococcus longispinus* (Targioni-Tozzetti) (Homoptera: Pseudococcidae) (Fig. 1); the pyriform scale, *Protopulvinaria pyriformis* Cockerel (Homoptera: Coccidae); the Japanese bayberry whitefly, *Parabemisia myricae* (Kuwana) (Aleyrodidae: Aleyrodidae) (Fig 2.); the honeydew moth, *Cryptoblabes gnidiella* (Milliere') (Lepidoptera: Phycitidae); the carnation leaf roller, *Cacoecimorpha pronubana* (Huebner) (Lepidoptera: Tortricidae); the giant looper, *Boarmia selenaria* (Schifferrmuller) (Lepidoptera: Geometridae); the greenhouse thrips, *Heliethrips haemorrhoidalis* (Bouche') (Thysanoptera: Thripidae); the red vine thrips, *Retithrips syriacus* Mayet (Thysanoptera: Thripidae) (Fig 3) and the recently introduced orchid thrips, *Chaetanaphothrips orchidii* Moulton (Thysanoptera: Thripidae).



Figure 1. Damage of the long tailed mealybug, *Pseudococcus longispinus*, to different stages of avocado fruits.

Figure 2. The Japanese bayberry whitefly, *Parabemisia myricae* on young avocado leaf.



Figure 3. Damage to avocado var, Horshim caused by the red vine thrips, *Retithrips syriacus*.



Taking the Integrated Pest Management control approach for each of these pests, different control methods are used based on introduction and augmentation of natural enemies (inoculative and inundative releases) and the use of selective products. Against lepidopterous pests *Bacillus thuringiensis* Berliner var. *kurstaki* (*B.t.*) products are used. The honeydew moth is very susceptible to *B.t.*, whereas the carnation leaf roller is less susceptible and only the young stages of the giant looper are susceptible to this compound. For early detection of young caterpillars, a pheromone monitoring system based on virgin females traps was developed. The long tailed mealybug is controlled by two parasitoid wasps, *Arhopoideus peregrinus* (Compere) and a wasp introduced from Australia, *Anagyrus fusciventris* Girault (Encyrtidae). The Japanese bayberry whitefly is controlled by *Eretmocerus debachi* Rose and Rosen (Hymenoptera: Aphelinidae) imported from California. The pyriform scale is controlled by *Metaphycus stanleyi* Compere (Hymenoptera: Encyrtidae) (imported from many places of origin) and by application of mineral oils. The greenhouse thrips is managed by the use of *Thripobius semiluteis* Boucek (Hymenoptera: Eulophidae) introduced from California but originating from Brazil and Australia and by the egg parasitoid *Mega-phragma mymaripenne* Timberlake. The black vine thrips is controlled by *M. priesneri* Kryger (Hymenoptera: Trichogrammatidae) and by Sabadilla, a plant-based insecticide. The recently introduced orchid thrips, is being dealt with by *Spinosad* which has a one-year temporary emergency permit. The influence of this product on natural enemies of avocado pests is being evaluated currently.