

## UC Pest Management Guidelines

---

### AVOCADO GREENHOUSE THRIPS

Scientific Name: *Heliothrips  
haemorrhoidalis*

(Reviewed: 7/01, updated: 7/03)



#### IN THIS GUIDELINE:

[DESCRIPTION OF THE PEST](#)

[DAMAGE](#)

[BIOLOGICAL CONTROL](#)

[CULTURAL CONTROL](#)

[ORGANICALLY ACCEPTABLE METHODS](#)

[MONITORING and MANAGEMENT DECISIONS](#)

[PUBLICATION](#)

[GLOSSARY](#)

---

#### DESCRIPTION OF THE PEST

The greenhouse thrips occurs on avocados, citrus, and a large number of ornamental plants in California. Almost the entire overwintering greenhouse thrips population is destroyed annually by natural leaf drop during flowering and these thrips do not reappear in numbers sufficient to cause injury until some time during early summer. On varieties such as Hass, where the majority of the thrips population [resides on the fruit](#), most of the population is removed annually at harvest.

[Adult greenhouse thrips](#) are tiny, black insects with white legs and wings. All stages are sluggish, and adults seldom fly. Males are not found in California and females reproduce without mating. Individual female thrips may lay as many as 60 eggs that are inserted singly into the leaf tissue beneath the epidermis of either the upper or lower leaf surface or into the fruit. After being laid, eggs gradually increase in size and become swollen. This increase in size causes a corresponding swelling of the leaf cuticle, and resulting egg blisters can be readily seen with a hand lens. Eggs may take as long as 4 to 5 weeks to hatch during summer and even longer over the winter.

[Newly hatched larvae](#) have small, tapered abdomens that

distend after feeding and become slightly yellowish. After two larval instars, they pupate and adults emerge. During the larval and pupal stages, the eyes are red. A peculiar characteristic of larvae is their habit of carrying a [globule of liquid feces](#) on the tip of the abdomen. This fecal liquid is greenish red at first, then turns black. These fecal globules fall off and form the black specks that dot infested fruit and foliage. These specks along with epidermal scarring can denote areas of previous greenhouse thrips activity.

About five to six generations of greenhouse thrips occur annually. Survival of thrips through winter depends on weather. In warmer areas, all stages survive. In colder areas, the egg overwinters and newly hatched larvae appear in mid-February.

## **DAMAGE**

Thrips injury on foliage begins to show in June as small, white-gray patches on upper leaf surfaces where thrips are found in the greatest numbers. The whitish discoloration of foliage and fruit caused by early infestations changes to a brownish discoloration later in the season. The epidermis of leaves and fruit become thickened, hardened, and cracked, and characteristic black specks of thrips excrement are noticeable. Feeding probably causes little damage to tree health and economic damage is from [scars or blemishes](#) larger than 0.75 inch diameter that cause fruit to be culled. Thrips are commonly found on the inside of the tree or the north side, away from direct sun exposure. The preferred habitat of this pest is in the large clusters of fruit where temperatures and humidity extremes are moderated.

Mexican seedling avocados and the Hass variety are extremely susceptible. The least susceptible varieties are Nabal, Anaheim, Dickinson, and Fuerte, all of which are not as widely planted as Hass.

## **BIOLOGICAL CONTROL**

An important natural enemy of greenhouse thrips is a parasitic wasp, *Megaphragma mymaripenne*, that attacks eggs. At times more than half of the egg blisters seen on avocado leaves and fruit have the exit holes of this parasite. A parasitic wasp, [Thripobius semiluteus](#), which attacks second instar larvae, has been released successfully in some orchards along the coast although it does not provide consistent control, and it is not commercially available at this time.

Three species of predaceous thrips ([Franklinothrips orizabensis](#), *Watsoniella flavipes*, and [black hunter thrips](#), *Leptothrips mali*)

are known to prey on greenhouse thrips.

## **CULTURAL CONTROL**

On the Hass variety, where thrips are located primarily on the fruit, an important cultural practice that can significantly reduce greenhouse thrips damage is strip picking of fruit in an early harvest (June/July). The earlier the harvest, the less accumulated damage occurs. Early harvest also minimizes the crop-to-crop overlap period necessary for thrips movement to the new crop and can thus significantly reduce the damage that will occur on the next season's crop. When fruit prices are low, making early harvest less economically feasible, select picking of fruit to reduce fruit clusters will reduce the thrips population. This denies thrips an important harborage during summer months, especially on the Hass variety where the fruit is the primary feeding and breeding substrate.

## **ORGANICALLY ACCEPTABLE METHODS**

Biological and cultural control and sprays of pyrethrin.

## **MONITORING and MANAGEMENT DECISIONS**

Keep a record of the locations of previous years' infestations and check these areas in late March or during April to determine the potential for damage in the current year. Greenhouse thrips populations tend to occur within the most moderate microclimate areas of an orchard, which are consistent from one year to the next. Carefully inspect fruit where it contacts other fruit or foliage for signs of initial feeding injury or the presence of greenhouse thrips in clusters.

If thrips populations are present, they are easy to find by early to mid-May and minimal economic damage will have occurred. There is no established treatment threshold for greenhouse thrips. Without the intervention of extreme weather conditions, successful biological control, or insecticide applications, populations of greenhouse thrips will increase and cause damage. It only takes 25 thrips weeks (one thrips feeding for 25 weeks, five thrips feeding for 5 weeks, or 25 thrips feeding for 1 week, etc.) to produce an economic scar of 0.75 inch diameter.

Thrips populations may be treated in spring with pyrethrin. Use of a pyrethrin is recommended to avoid mortality of natural enemies that control greenhouse thrips and other pests. Malathion sprays invariably lead to outbreaks of other pests such as mites and omnivorous looper. Avoid spraying a whole orchard and concentrate on trees that are infested.

## **TREATMENT**

Pesticide (commercial name)	Amount/Acre	P.H.I.+ (days)
A. PYRETHRIN# (PyGanic Crop Protection, etc.) COMMENTS: Restricted entry interval: 12 hours. Because there is little residual activity, repeat application may be needed in 2-3 weeks and control may be only partial.		
B. MALATHION 8	1.5 pt/100 gal	7
COMMENTS: Restricted entry interval: 12 hours. Only treat infested trees to avoid destroying natural enemies of mites, loopers, scales, and other potential secondary pests.		
C. SABADILLA (Veratran- D)		
	10-15 lb	0
COMMENTS: Restricted entry interval: 24 hours. Acidify water in the spray tank to a pH of 4.5 before adding sabadilla; use citric acid or other approved acidifying agents. Less effective than pyrethrin. Wet, cool weather conditions limit the use of this material because thrips feeding is reduced under these conditions		

+ Preharvest interval. Do not apply within this many days of  
harvest.

# Acceptable for use on organically grown produce.

### **PRECAUTIONS**

### **PUBLICATION**



UC IPM Pest Management Guidelines: Avocado

UC ANR Publication 3436

Insects and Mites

B. A. Faber, UC Cooperative Extension, Santa  
Barbara/Ventura counties

P. A. Phillips, UC IPM Program, UC Cooperative  
Extension, Ventura Co.