

Apple

Leafhoppers

Scientific name:

White apple leafhopper: *Typhlocyba pomaria*

Rose leafhopper: *Edwardsiana rosae*

(Reviewed 8/06, updated 3/09)



In this Guideline:

- [Description of the pests](#)
- [Publication](#)
- [Glossary](#)
- [Damage](#)
- [Management](#)

DESCRIPTION OF THE PESTS

There are two generations of white apple leafhopper per year. Eggs of this species overwinter in the apple trees and hatch shortly after bloom. Adults of the first generation appear in the last part of May to early June. Nymphs of the second generation develop in July and August.

Rose leafhoppers do not overwinter in apple trees; instead they overwinter on plants of the rose family such as blackberries. In spring, the first generation develops on the overwintering host; adults then migrate to other hosts, including apples. The second generation and apparently a third generation may be spent on apples. This species often reaches great abundance near to or after apple harvest.

The adults of both species are white, about 0.12 inch long and cannot be readily distinguished from one another. Rose leafhopper populations can be identified by the presence of black spots at the base of thoracic setae on older [nymphs](#); these spots are not found on [nymphs](#) of the white apple leafhoppers.

DAMAGE

Leafhoppers feed by sucking on leaf tissue. Their feeding causes a white [stippling](#) on leaves. In heavy infestations, fruit may be reduced in size and buds may be weakened. Excrement dropped by leafhoppers will appear as black specks on apples. These specks are easily removed by washing. Leafhoppers also produce honeydew, which forms into sticky droplets around the calyx end after rainfall or overhead sprinkling, and is not easily removed.

MANAGEMENT

White apple leafhopper has become an increasing problem in the past decade because it has developed resistance to organophosphate insecticides. Start monitoring at petal fall to determine need for treatment.

Biological Control

Parasites of the white apple or rose leafhopper have not been studied in California apple orchards. In other areas, parasitization of eggs may be significant in holding populations in check.

Monitoring and Treatment Decisions

Insecticides are most effective when applied during the first four nymphal instars of the first generation, especially in the fourth instar. These stages occur between [petal fall](#) and the first codling moth spray. Start monitoring for this leafhopper at petal fall. At weekly intervals sample

four leaves per tree from 25 trees dispersed throughout the orchard. Peak nymphal emergence typically occurs 3 to 4 weeks after the first nymphs are found. Treatment is warranted when populations exceed an average of 0.5 nymphs per leaf or when 30% of the leaves are infested. Rose leafhopper is a concern when high populations of nymphs exist near harvest; treatment of nymphs may be warranted at this time.

Common name (trade name)	Amount to use** (conc.)	Amount to use** (dilute)	R.E.I.+ (hours)	P.H.I.+ (days)
<i>When choosing a pesticide, consider information relating to the impact on natural enemies and honey bees Not all registered pesticides are listed. Always read label of product being used, and environmental impact.</i>				
A. IMIDACLOPRID				
(Provado) 1.6F	4–8 fl oz	1–2 fl oz	12	7
MODE OF ACTION GROUP NUMBER ¹ : 4A				
COMMENTS: Allow 10 days between applications. Repeat applications of <i>any</i> neonicotinoid insecticide (acetamiprid-Assail; imidacloprid- Provado; and thiacloprid-Calypso) can lead to resistance to <i>all</i> neonicotinoids. Alternate neonicotinoids with an insecticide that has a different mode of action to help delay the development of resistance.				
B. ACETAMIPRID				
(Assail) 70WP	1.1–1.7 fl oz	0.275–0.425 fl oz	12	7
MODE OF ACTION GROUP NUMBER ¹ : 4A				
COMMENTS: Repeat applications of <i>any</i> neonicotinoid insecticide (acetamiprid-Assail; imidacloprid- Provado; and thiacloprid-Calypso) can lead to resistance to <i>all</i> neonicotinoids. Alternate neonicotinoids with an insecticide that has a different mode of action to help delay the development of resistance.				
C. INDOXACARB				
(Avanta)	5–6 fl oz	—	12	14
MODE OF ACTION GROUP NUMBER ¹ : 22				
COMMENTS: Must be timed for leafhoppers and not other pests to be effective. Do not apply dilute applications of more than 200 gal water/acre. For best results, use 50–150 gal water/acre. Minimum interval between treatments is 7 days. Make no more than 4 applications/season or 3 applications before hand-thinning.				
D. DIAZINON* 50WP	3–4 lb	0.75–1 lb	4 days	21
MODE OF ACTION GROUP NUMBER ¹ : 1B				
COMMENTS: Apply when nymphal stages are present. Applications made during the foliage season are very disruptive of beneficials. Avoid drift and tailwater runoff into surface waters.				
E. CARBARYL*				
(Sevin) 80S	1.875 lb	0.5 lb	12	3
MODE OF ACTION GROUP NUMBER ¹ : 1A				
COMMENTS: Will thin apples up to 30 days after full bloom. May cause severe outbreaks of spider mites. One application early in the season does not cause mite increase in coastal areas.				
F. ENDOSULFAN*				
(Thionex) 50WP	4 lb	1 lb	4 days	30
MODE OF ACTION GROUP NUMBER ¹ : 2A				

** For dilute application, rate is per 100 gal water to be applied in 300–500 gal water/acre, according to label; for concentrate applications, use 80–100 gal water/acre or lower if the label allows.

- + Restricted entry interval (R.E.I.) is the number of hours (unless otherwise noted) from treatment until the treated area can be safely entered without protective clothing. Preharvest interval (P.H.I.) is the number of days from treatment to harvest. In some cases the REI exceeds the PHI. The longer of two intervals is the minimum time that must elapse before harvest.
 - * Permit required from county agricultural commissioner for purchase or use.
 - Not recommended or not on label.
- ¹ Rotate chemicals with a different mode-of-action Group number, and do not use products with the same mode-of-action Group number more than twice per season to help prevent the development of resistance. For example, the organophosphates have a Group number of 1B; chemicals with a 1B Group number should be alternated with chemicals that have a Group number other than 1B. Mode of action Group numbers are assigned by IRAC (Insecticide Resistance Action Committee). For additional information, see their Web site at <http://www.irac-online.org/>.

PUBLICATION



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Insects and Mites

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