UTAH PESTS fact sheet
UtahState University COOPERATIVE EXTENSION
Published by Utah State University Extension and Utah Plant Pest Diagnostic Laboratory ENT-82SF-06 June 2010

## Utah Pests Sampling Form:

# White Apple Leafhopper

## Leaf Count Method and Beating Tray Method

**Orchard Block:**_____ **Variety:** _____

**Date:** _____ **Generation:** _____

**Number of Early Nymphs (First Generation Sampling)**
**Number of Nymphs and Adults (Second Generation Sampling)**

| | Terminal Number | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Tree Total |
| Tree 1 | | | | | | | | | | | |
| Tree 2 | | | | | | | | | | | |
| Tree 3 | | | | | | | | | | | |
| Tree 4 | | | | | | | | | | | |
| Tree 5 | | | | | | | | | | | |
| Tree 6 | | | | | | | | | | | |
| Tree 7 | | | | | | | | | | | |
| Tree 8 | | | | | | | | | | | |
| Tree 9 | | | | | | | | | | | |
| Tree 10 | | | | | | | | | | | |
| | | | | | | | | | Total number of nymphs and/or adults for 10 trees | | |
| | | | | | | | | | Average number of nymphs and/or adults per terminal for 10 trees (divide above sum by 100) | | |

**Beat Tray Sampling (Second Generation Sampling - Alternate Method)**

| | Tree 1 | Tree 2 | Tree 3 | Tree 4 | Tree 5 | Tree 6 | Tree 7 | Tree 8 | Tree 9 | Tree 10 | Total Leafhoppers for trees 1-10 | Leafhoppers/ tree (total/10) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Adults and Nymphs | | | | | | | | | | | | |

# White Apple Leafhopper Sampling Instructions

## When and How Often to Sample:

*First Generation*

Begin sampling at bloom for early instar nymphs to the end of petal-fall (approximately late April – early June).

*Second Generation*

If the first generation was not treated, or if there is a history of reinfestation from outside sources, sample again during the month of August.

## Materials:

*First Generation Sampling*

1. Small stool to reach terminals

*Second Generation Sampling*

1. Beating Tray: You can purchase one or make your own. Cut a black or white cloth with and sew the corner edges down to make a pocket. Bind two sticks or rods to make an "x", and wrap the cloth corners into the edges of each stick. (Nymphs are easier to see on black cloth.) Alternatively, wrap a cloth tightly around an old window frame and attach a stick or rod to hold it.
2. Beating Stick: Use a stiff rubber hose, stick or PVC pipe covered with padding and duct tape.
3. 16 - 20x magnifying lens.

## Instructions:

*First Generation*

1. Choose representative orchard blocks for sampling. For orchard-specific pest control, all orchards should be sampled.
2. Randomly select 10 trees scattered throughout a 1- to 10-acre block.
3. Examine all leaves in 10 terminals or spur leaf clusters on each of 10 trees, for a total of 100 terminals. (You do not need to remove the leaves.)
4. Carefully inspect the leaf underside first where nymphs congregate and then briefly inspect the top of the leaf. Count all nymphs in instars 1-4 (the early instars are less mobile than later ones) and ignore cast skins.
5. Record counts on sampling form. If leafhopper counts are high, record counts from every terminal. Otherwise, record only total counts from all 10 terminals from each tree. Determine the average number of leafhopper nymphs per terminal by dividing the total by 100.

*Second Generation*

1. Use the sampling method above except examine 25 leaves from each tree rather than 10 terminals. Select leaves from the inside of the tree, and search for nymphs and adults. Record findings for each tree in the column "tree total."
2. Alternatively, use the beating tray method:
   a. Randomly select at least 10 trees.
   b. Hit one limb on each tree three times with a padded stick, over the tray. Note that populations will be higher on watersprouts.
   c. Tip tray slightly so that larger debris falls away.
   d. Quickly count all the leafhopper nymphs and adults that fall onto the tray and record for each tree.

## Treatment Thresholds

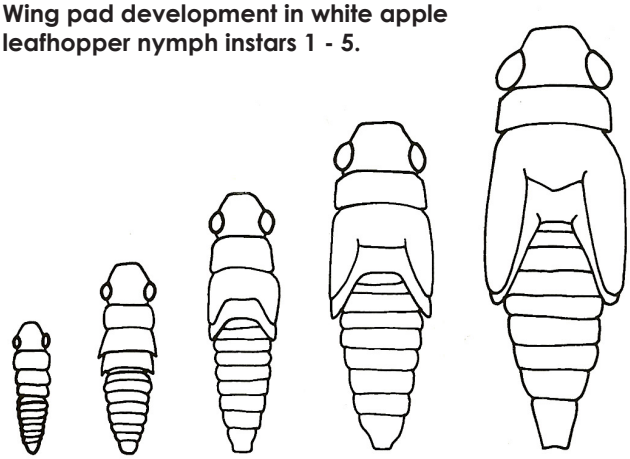
*First Generation*

Petal fall to early June: 0.5-1.0 early nymphs (instars 1-4) per terminal or spur leaf cluster
1/leaf if nuisance, 3/leaf if not. (Research from Virginia and Washington showed that populations of 5-6/leaf showed no injury to fruit

*Second Generation*

1-3 nymphs or adults/leaf

**Wing pad development in white apple leafhopper nymph instars 1 - 5.**



For more information, see the White Apple leafhopper fact sheet.