Utah State University Extension

Orchard IPM Series HG/Orchard/09

Campylomma Bug

Campylomma verbasci

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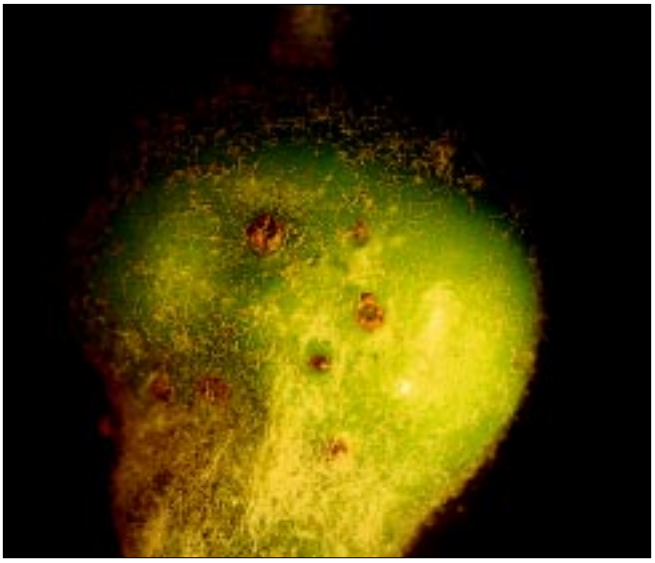
Young nymphs cause fruit injury on apples when they feed on blossom calyxes and developing fruit.

Do You Know?

- A new pest to Utah apples; controls are recommended only if there has been a history of damage
- Damaging stage: first generation nymphs feed on developing fruit
- Monitor nymphs in the spring from pink through petal fall
- Insecticides are currently the major control tactic
- Late nymphal stages and adults are predators of mites, aphids and psylla.

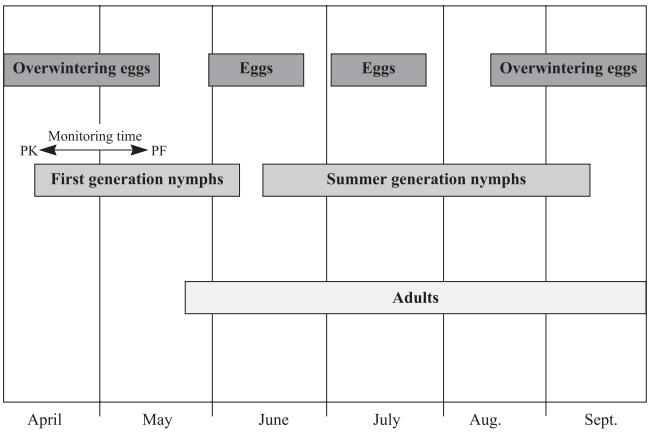
The adult is a beneficial predator of aphids, mites and pear psylla.

The campylomma bug (or mullein plant bug) causes some damage in Utah apple orchards. Damage is inflicted by nymphs, which feed on developing fruit causing dimpling and fruit distortion. As apple fruits mature they become less susceptible to campylomma injury. Injury appears shortly after petal fall as small corky areas alone or small corky areas surrounded by a depression. Golden Delicious is typically more susceptible to damage than Red Delicious. Pear fruit rarely suffer damage, even at high campylomma populations. Campylomma overwinter as eggs laid in the young twigs of apple, pear and other rosaceous plants. These eggs begin hatching in the spring at about pink stage of apple bud development. This insect has three to four generations per year. A portion of first generation adults migrate from orchard trees to herbaceous weeds particularly common mullein. However, campylomma can be found in apple and pear orchards throughout the growing season. Late nymphal stages and adults are beneficial predators of aphids, mites and pear psylla. In late summer through fall, adults on herbaceous weeds will migrate into orchards to lay overwintering eggs.



Early season feeding on apple fruits by nymphs, results in corky bumps and occasionally in fruit distortion.

Campylomma Life History



The arrow indicates the time of year when monitoring of nymphs should occur on apples (PK = pink, PF = petal fall).

Hosts

apple	common mullein
pear	oak

Life History

Egg—Overwintering Stage

- **Size and shape:** 1/28 inch long and sac shaped
- **Where:** inserted into the bark or under budscales with only the lid exposed, making the egg almost impossible to see
- **When:** overwintering eggs hatch in the spring beginning as early as tight cluster and continuing through petal fall
- Hatching peaks during bloom

Nymph—Damaging and Monitoring Stage

- **Color and shape:** translucent white and oval shaped just after hatching
- **When:** nymphs are present in orchards from April through mid-September. However, apples are susceptible to injury only from bloom until fruit are about ½ inch in diameter.
- Passes through five instars in about 4 weeks depending on temperature
- Gradually turns from translucent white to pale green
- Older nymphs have black spines on their legs
- In early stages, campylomma nymphs may be confused with young white apple leafhopper nymphs, but the campylomma nymph has longer, moveable, segmented antennae.
- First instar nymphs may be confused with early instar aphids, but the aphid is spherical in shape, darker green, and much more sluggish
- First generation nymphs damage developing fruit

Adult—Monitoring Stage

- **Size, color, and shape:** 1/10 inch long, greenish brown to grayish brown, and shaped like an elongated oval
- **Distinguishing feature:** dark spot on the first segment of the antennae and black spines on the legs
- **When:** first appears in mid- to late May
- There are three to four generations a year and a percentage of first generation adults migrate to herbaceous hosts outside the orchard
- Late summer generations return to orchards from herbaceous hosts in late summer through fall to mate and lay eggs that will hatch the following spring
- Females live about 17 days and lay about 38 eggs each
- Adult is a predator that feeds on mites, aphids and pear psylla and can be beneficial

Life history timing is from research conducted in central Washington and may be different in Utah

Host Injury

- Damage is caused by the nymphs, which feed on blossom calyxes and developing fruit, causing dimpling and fruit deformity.
- The injury appears shortly after petal fall as small corky areas alone or small corky areas surrounded by a depression. Severe injury can cause cat-facing.
- Golden Delicious appear to be more sensitive to injury from Campylomma feeding than darker-skinned cultivars, such as Red Delicious.

Timing Control

Sample apple trees starting at pink stage of apple bud development, because research in Washington indicates that prebloom and bloom chemical treatments are more effective than postbloom treatments. Campylomma nymphs are sampled by hitting a limb three times with a padded stick and jarring nymphs on to a cloth tray. The tray can be square or round and measure 18 inches x 18 inches (square) or 20 inches diameter (round). Sample one limb on each of at least 10 trees in blocks of 5 acres or less and on 20 trees in blocks larger than 5 acres. Research from Washington state indicates, that if there is less than 0.1 insect per tray on

Golden Delicious and less than 1.0 per tray on Red Delicious at bloom, there will be less than one percent fruit damage at harvest on those varieties. Fruit appears to lose sensitivity to damage as it matures and fruit larger than ½ inch in diameter is fairly insensitive to campylomma injury.

Management

At the present time, there are no effective cultural control tactics for campylomma. In addition, no effective natural enemies have been discovered. Therefore, control efforts currently rely on properly timed application of chemicals.

Insecticides

There is a narrow opportunity for control between when the eggs hatch and when fruit damage by the nymphs occurs. Fruit is susceptible to injury from bloom until fruit reaches about ½ inch in diameter. However, the bloom through petal fall stage is the most susceptible to injury. Therefore chemical controls applied by late bloom are the most effective. If there has been a history of campylomma problems in an orchard, Lorsban can be used in the delayed dormant application to provide some suppression of spring nymph densities.

Recommended chemicals

- chlorpyrifos (Lorsban)
- diazinon (Diazinon)
- endosulfan (Thiodan)
- formetanate hydrochloride (Carzol)

Note: Rotenone (organic), Lorsban, and Diazinon, may cause russetting on Golden Delicious.
Remember that the adult is a beneficial predator.
Do not control unless necessary.

Campylomma Sampling Form

Orchard Block: _____ **Variety: _____**

Date: _____ **Stage of Bud Development: _____**

Sampling Procedure:

1. Hit one limb on each tree three times with a padded stick, count all the campylomma nymphs that fall onto the tray.
2. Sample at least 10 trees in blocks of 5 acres or less and at least 20 trees in blocks of larger than 5 acres.

Treatment Thresholds:

Pink to bloom, 0.1 nymph per tray on Golden Delicious and 1.0 nymph per tray on Red Delicious.

Bloom to petal fall, 0.2 nymphs per tray on Golden Delicious and 1.75 nymphs per tray on Red Delicious.

Tray Sample No.	Campylomma nymphs
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
Total nymphs for trays 1-10	
Nymphs per tray = Total/10	

Tray Sample No.	Campylomma nymphs
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
Total nymphs for trays 1-20	
Nymphs per tray = Total/20	