

# Spring and Fall Cankerworms

Cankerworms, or inchworms, are common shade tree defoliators in Minnesota. Hosts include elm, apple, hackberry, basswood, oak, boxelder, maple, and ash trees as well as shrubs growing beneath heavily infested trees. Cankerworms go through natural cycles with periods of abundance ranging from two to seven years (with an average of four years) followed by periods of low populations lasting 13 to 18 years. However, spring and fall cankerworms have not had a significant population outbreak since the late 1970s, although isolated infestations have occurred since that time. One explanation for this may be the reduced number of elm trees in Minnesota. As the population of elm (the preferred host for cankerworms in Minnesota) continues to decrease due to Dutch elm disease, the number of remaining hosts may not be suitable for supporting large populations of cankerworms. Thus, it's difficult to determine when the next population outbreak may occur, or whether one will ever occur again.

## Identification

Spring and fall cankerworms look very similar. Adult females of both species are wingless, giving them a spider-like appearance (Figure 1). They are both grayish brown and about 5/16 of an inch long. Males have grayish brown wings and an average wingspan of 1 1/8 inches long (Figures 2 and 3). There are slight differences in markings and size between the two species that are difficult to detect.



Fig. 1. Female fall cankerworm moth (William M. Ciesla, [insectimages.org](http://insectimages.org)).



Fig. 2. Male fall cankerworm moth (William M. Ciesla, [insectimages.org](http://insectimages.org)).



Fig. 3. Male spring cankerworm moth (Nolie Schneider, [insectimages.org](http://insectimages.org)).

The larvae also look very similar. Full-grown cankerworms are about 1 inch in length and can vary in color. Spring cankerworms range from yellow-green to brownish to blackish. They often have a white stripe that runs along the side of its body from the head to the posterior. Fall cankerworms range from light green to dark green to black. You can distinguish the two species by counting the number of prolegs (false legs) on the back half of the abdomen. Fall cankerworms have three prolegs (Figure 4) while spring cankerworms have only two (Figure 5).



Figure 4. Fall cankerworm larva (Joseph Berger, [insectimages.org](http://insectimages.org)).



Figure 5. Spring cankerworm larva (James Hanson, [insectimages.org](http://insectimages.org)).

## Life History

Spring and fall cankerworms feed at the same time of year, often on the same trees, causing the same kind of damage. They start to feed on buds and expanding leaves right after egg hatch in the spring. As they feed on leaves, they create small BB-sized holes. As the larvae become larger, these holes expand until all tissue between the veins is consumed. Despite the similarities in their feeding, there are differences in their life cycles.

**Fall Cankerworm** -- This species emerges from the soil as an adult moth, generally in late October after a hard freeze. The male moths emerge a few days before the females. Mating takes place as the females crawl up tree trunks in search of small twigs on which to glue neatly ordered egg clusters. The males and females die shortly after the eggs are deposited.

Eggs stay on trees throughout the winter and hatch in the spring. Egg-hatch varies from late April to mid-May depending on weather conditions. It normally coincides with the opening of elm buds. Newly hatched fall cankerworm larvae are less than 1/16 of an inch long, and spin silk threads that allow them to readily blow from tree to tree. They reach full-grown length in about four weeks. Larvae then drop to the ground to pupate in the soil before emerging as adults later in the season.

**Spring Cankerworm** -- Spring cankerworms differ from fall cankerworms in several ways. First, the pupae in the soil do not emerge as adult moths until early spring. Emergence of the winged males and wingless females typically occurs during the third week in March in the Twin Cities area. Another difference is that eggs are deposited in loose clusters in bark cracks and under bark scales and are not easily seen. Spring and fall cankerworm egg hatch about the same time in the spring and the larvae have similar life histories.

## Damage

A mature, vigorous tree is able to withstand a single season of complete defoliation with little effect on tree health. Even two seasons of defoliation produce only a slowing of growth. However, limb dieback and loss of vigor can result if the same tree is completely defoliated for three or more consecutive years. Young, newly transplanted, or weakened trees are more susceptible to injury from defoliation. Therefore, a tree's age, size, vigor, and previous history of defoliation should be considered before choosing management tactics.

Many people are not as concerned about the health of their tree as they are about the nuisance that cankerworms can cause. Large numbers of caterpillars spinning to the ground on silken threads, crawling or falling on picnic tables, doors, walks, and/or house siding, can create an unpleasant environment. Fortunately, if this behavior occurs, it usually lasts only about one week. Management is not effective at this stage of the cankerworm's life cycle. Cankerworms may also create a nuisance during the spring and fall as moths crawl up exterior walls of homes. Again, management is not effective nor recommended at this time.

## Management

Chemical -- Whether the purpose is to protect trees or to eliminate the nuisance of cankerworms, management measures need to be taken when the caterpillars are relatively small and inconspicuous. The best time for chemical treatment is in the second week of feeding when the damage is minor, the caterpillars are still small (less than 1/2 inch), and leaves have fully expanded. Both the cankerworms and the early damage can be easily missed so look at your trees closely. If leaves are still growing and pesticides are applied, pesticide coverage will be reduced as the leaves continue to grow, reducing management efficacy.

Cankerworms rapidly increase in size during the third and fourth weeks after egg-hatch. During this period, damage becomes extensive and very noticeable. In many cases, large portions of the leaves have been eaten and only the veins remain. Unfortunately, treatment at this time is not effective because the damage to the tree is already done, and insecticides can actually irritate the cankerworms causing them to drop from trees in larger numbers.


Several insecticides are effective for treating cankerworms when applied at the correct time including: *Bacillus thuringiensis* (Dipel, Thuricide); carbaryl (Sevin); cyfluthrin; esfenvalerate; malathion (Malathion); permethrin (Eight). However, the bacterial insecticide *Bacillus thuringiensis* should be used when possible. This environmentally compatible product has the advantage of being specific for the caterpillars of moths and butterflies and does not harm beneficial insects, wildlife, or humans. *Bacillus thuringiensis* must be applied while the cankerworms are still small (less than 1/2") to achieve good management. The following steps are suggested to achieve good cankerworm management:

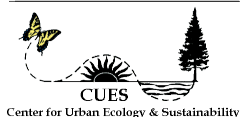
1. Determine egg-hatch date by either:
  - a. Finding fall cankerworm egg masses and observing them during early spring for signs of hatching (hatched eggs will have a hole in the center), or
  - b. Examining foliage of several trees for the first signs of young cankerworms or their feeding.
2. Add 10 days to the date of hatch as determined in step one. This will be the best date for spraying.
3. Examine representative trees during the 10-day post-hatch period to determine if development has slowed or quickened because of weather conditions.
4. Modify the spray date as necessary, keeping in mind that the worms should be less than 1/2 inch in length and that at least 50% of the leaf surface should be intact.

5. Spray with one of the suggested materials.

**Trunk Banding** -- One widely-known method of treating cankerworms is the use of sticky barriers applied to tree trunks. As the wingless females crawl up the trunk to lay eggs, they are trapped in these sticky bands. Despite the publicity, there is little evidence that this method is worthwhile even in areas where most trees have been banded. The possible exception would be on a tree that is isolated from other cankerworm-susceptible trees.

Although the practice is fine in theory, it generally fails because of one or more of the following reasons: (1) people do not clean and renew the sticky material as often as the bands become crowded with moths; (2) people fail to recognize and band for the two species (one moving up the tree in the fall, the other in the spring); (3) unbanded trees in an area may produce young cankerworms that can readily blow to banded trees on silk threads. Furthermore, the sticky material is expensive, messy to work with, and tends to mar the appearance of the trunk for a long time. Thus, banding is not recommended.

Krischik Lab   
Dept. of Entomology  
Saint Paul, MN 55108



Legislative Citizen Commission  
on Minnesota Resources (LCCMR)  
Conservation Biocontrol 2017 - 2020