Home and Horticultural

PESTS

K-STATE Research and Extension

Web-Producing Caterpillars in Kansas

Trees and woody ornamentals are subject to attack by various species of foliar feeding caterpillars. Damage varies from year to year and location to location within the state. Most people object to defoliation, and web masses associated with caterpillars may also be unacceptable because they interfere with tree aesthetics. Eastern tent caterpillar and the fall webworm are the two main species of web-forming caterpillars in Kansas.

Eastern Tent Caterpillar

Seasonal life history. Eastern tent caterpillars produce a single generation each year. They overwinter as black, glistening egg masses that encircle twigs on preferred host plants (Figure 1). Larvae emerge in mid to late March and immediately construct a small silken nest, usually in the fork of a major branch (Figure 2). Larvae cluster within the growing nest (Figure 3), leaving to forage on new foliage (Figure 4).

By early to mid May, mature larvae are 2 inches long (Figure 5). They pupate in silken cocoons coated with a fine yellow to whitish powder (Figures 6 and 7). Moths emerge from late May through mid June. Although similar in wing pattern and color, male moths (Figure 8) are smaller than female moths, with wingspans ranging from ¾ to 1½ inches. After mating, females deposit egg masses throughout summer, fall, and winter.

Hosts. Eastern tent caterpillars have a a wide host range but are usually associated with native plant species in the genus Prunus (sandhill plum and chokecherry) and ornamental and orchard trees in the genus Malus (flowering crab and apple).

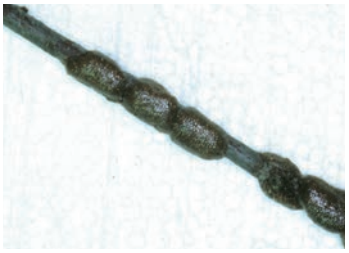

Figure 1. Egg masses

Figure 2. Nest

Figure 3. Larvae cluster

Figure 4. Larvae on foliage

Figure 5. Mature larva

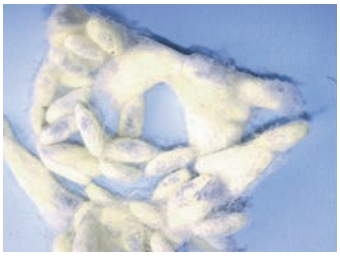

Figure 6. Silken cocoons

Figure 7. Larvae cluster

Figure 8. Moth

Damage. Eastern tent caterpillar infestations in wild trees do not capture much attention, but feeding on landscapes and orchards raises concern. Caterpillar feeding stops by mid May as foliage begins to grow rapidly. Defoliated trees and branches (Figure 9) produce a flush of new growth in less than three weeks (Figure 10), restoring their appearance.

Control. If detected early, tent caterpillars can be eliminated by removing web nests with fingers or a stick. Another option is to apply a registered insecticide. To treat the nest, thrust the sprayer nozzle through the webbing so insecticide makes direct contact with larvae, or treat foliage closest to the nest, which caterpillars will consume next.

Figure 9. Defoliated tree

Figure 10. Regrowth

Eastern tent caterpillars often go unnoticed until large larvae are near the end of their feeding cycle. By this time, additional damage is unlikely, and spraying is not recommended because trees will replace missing leaves.

Fall Webworm

Fall webworm is the most recognizable web-making defoliator of shade trees and woody ornamentals. Eastern tent caterpillars appear briefly in early spring. Fall webworms persist throughout summer and fall.

Two races of fall webworms are present in Kansas. Although larvae vary in color, blackheaded webworms are characterized by black head capsules and bumps (tubercles) (Figure 11). Redheaded larvae possess reddish to orangish head capsules and tubercles (Figure 12). Both races are hairy, possessing abundant long body hairs (setae).

Seasonal life history. In Kansas, four generations of fall webworms occur per year, two for each race. Initial generations for each race are staggered and distinct (Figure 13). As the season progresses and moth activities overlap, it becomes difficult

Figure 11. Blackheaded larva

Figure 12. Redheaded larva

to distinguish one generation from another. Fall webworms overwinter as pupae (OWP) in loose, silken cocoons beneath soil debris or just beneath the soil surface (Figure 14).

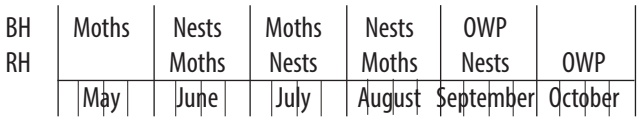

Figure 13. Seasonal cycles of blackheaded (BH) and redheaded (RH) races of fall webworm in Kansas.

Moths. Moths that produce the first generation of the blackheaded race emerge in mid May. They have white wings mottled with black, gray, or brown spots (Figure 15). Moths that produce the first generation of the redheaded race emerge about a month later. Wings are snowy white without spots (Figure 16). Eggs of both races are deposited in masses on the undersides of leaves and covered with white body hairs (Figure 17).

Unlike moths that produce the first generation of blackheaded larvae, moths that deposit eggs for the second generation of blackheaded larvae are snow white. They emerge around the second week of July. About a month later, they deposit eggs for the second generation of redheaded larvae.

Nests and larvae. Eastern tent caterpillar larvae leave nests to forage on plant foliage, but fall webworm larvae remain within the web mass to develop. As they eat leaves within the web mass, webworms expand their silken home to enclose new foliage for consumption. Web masses enlarge rapidly as growing larvae acquire greater amounts of foliage to satisfy their ravenous appetites.

The extent of webbing depends on the number of egg masses deposited by moths. Webbing ranges from minimal (Figure 18) to extensive (Figure 19). When nearly developed, larvae leave nests to feed. They seek shelter in the soil or under plant debris, then spin loose silken cocoons in which to pupate.

Hosts. Fall webworms feed on a variety of deciduous species. The table below lists hosts recorded in a survey of infested trees in the area around Manhattan, Kansas. Although each of the webworm races shows definite host preferences, some hosts appear equally acceptable to both races.

Figure 14. Overwintering pupa

Figure 15. Moth (spotted)

Figure 16. Moth (white form)

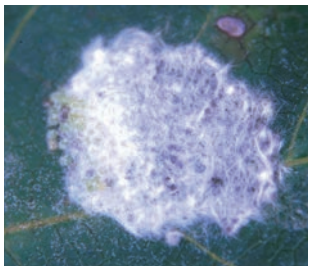

Figure 17. Egg mass

Figure 18. Minimal webbing

Figure 19. Extensive webbing

Fall Webworm Host Trees

Tree Species	Number of Trees with Nests	
	Blackheaded	Redheaded
Apple	2	1
Ash (Green)	1	0
Birch (European White)	0	1
Birch (River)	0	2
Elm	20	0
Flowering Crab	0	12
Hickory (Bitternut)	0	3
Hickory (9-leaf)	0	1
Hickory (Shagbark)	0	1
Larch	1	0
Mulberry	21	8
Osage-Orange	8	0
Pecan	0	4
Pin Oak	1	1
Redbud	8	6
Sweetgum	0	3
Sycamore	0	2
Walnut	0	25

Damage. As with all foliar-feeding insects, fall webworms affect the appearance of shade trees. Web masses may be even more objectionable because they contain larvae, cast skins, and fecal pellets. Fall webworms do not threaten the overall health of established trees. Although foliage may be consumed or destroyed, auxiliary buds are not damaged. Trees will leaf out again in the same year if damage occurs early, or the following spring if defoliation occurs later in the season.

Control. The nests of small fall webworms go unnoticed because of their small size and camouflage by surrounding foliage. Only when larvae and nests become larger do people become aware of their presence.

Depending on tree size and the extent of web masses, fall webworms can be handled in a number of ways. Because larvae remain in the nests, removing web masses should eliminate most larvae. Fingers are efficient tools for stripping web masses from branches, but a pole with a nail driven through the end or one with a bristled toilet brush attached can be used to avoid touching the nest.

Another tactic for eliminating fall webworms is to prune webbed branches. Extreme pruning can leave a bare spot in the tree canopy where the branch was removed. Other options are to leave the webbing in place or remove the webbing and accept the bare branch for the rest of the season knowing it will bear leaves the following spring.

Insecticide treatments can be used to eliminate webworms, but spraying web masses will not kill larvae enclosed in protective webs. Sprayer nozzles must penetrate webbing so spray reaches larvae. If this is not possible, spray foliage immediately in front of the web mass, which will be consumed once it has been incorporated into the nest. It is not necessary to spray the whole tree if there are only one or two nests. After larvae have been killed, the web mass will remain and may be removed if objectionable.

Insecticides are chemical products that, when applied to targeted pests, disrupt normal physiological processes, causing death. The active ingredient is the killing agent contained in an insecticide product. Companies may use the same active ingredient when formulating a product or product line. Further complicating product selection is the fact that an individual manufacturer may utilize a single active ingredient in various formulations such as dusts, granules, baits, emulsifiable concentrates, RTUs (ready-to-use products) or hose-end applicators. Not all products are marketed at all retail outlets. Users may have to search for specific products registered for use against foliar feeding caterpillars.

The multitude of insecticidal products makes it impractical to list every product registered for use in Kansas. For instance, recent history has shown that one particular active ingredient was contained in 675 different products registered with the Kansas Department of Agriculture. **The end-user must read individual product labels to ensure safe and proper use against the intended pest.**

Although not all pests may be specifically listed on a product label, under Kansas Administrative Regulation 4-13-28 of the Kansas Pesticide Law, any pesticide may be applied for the purpose of controlling a pest not specified on the pesticide's label or labeling provided that: (a)(1) the pesticide's label or labeling authorizes application of the pesticide to the same crop, animal, or site requiring application; (2) the pest to be controlled belongs to the same general group of pests intended to be controlled by the pesticide to be applied; (3) the pesticide's label or labeling does not specifically prohibit its application to the target pest to be controlled, or to the crop, animal, or site to which the pesticide is to be applied; and (4) the application of the pesticide to the target pest, or to the crop, animal, or site, has not been prohibited by rules and regulations promulgated by the secretary. (b) Each pesticide applied in accordance with the provisions of the abovementioned subsection (a) of this regulation shall be deemed not to cause any unreasonable adverse effects on the environment, nor to endanger the health, safety or welfare of the citizens of this state.

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