



Quick Facts

Blister beetles contain a self-defense chemical called *cantharidin*, which is highly toxic to many animals, especially horses.

Modern alfalfa harvesting methods can trap groups of these beetles in bales of hay posing an occasional, but serious, threat to horses.

Where the presence of blister beetles is suspected, control options include cutting alfalfa before the bloom stage, not conditioning the alfalfa during the bloom stage and applying insecticide just before harvest.

There are about 335 species of blister beetles of the Meloidae family in the United States. Most occur in the southwest and other areas of low humidity including Colorado, which is known to have about 1/3 of the different species.

The largest genus, *Epicauta*, is unusual in that the larvae are beneficial because they feed on grasshopper eggs, while the adults often are considered pests because they feed on the flowers of several crops, including alfalfa. Because they feed on grasshoppers, more beetles can be expected when grasshopper populations are high.

Threat to Animals

Another unusual feature of these insects is that they produce a highly toxic, self-defense chemical called *cantharidin*. The chemical will raise blisters on human skin, hence the name blister beetle. If swallowed, *cantharidin* causes irritating effects to the gastrointestinal and urinary tracts of a number of mammals, often proving fatal. Among the most susceptible species is the horse. Studies in Oklahoma have shown that as little as 1/5 ounce (6 grams) of dried beetles can be fatal. Sheep also have been shown, experimentally, to be susceptible but there are no reports of serious problems with cattle.

Blister beetle behavior and modern alfalfa harvesting practices have combined to produce an occasional, but serious, threat of horse poisoning. The beetles tend to feed in groups or swarms. Alfalfa harvesting now commonly combines cutting and crimping in one operation, which occasionally causes the conditioner rollers to crush or trap a number of beetles in a single bale of hay.

It is these high concentrations of beetles that are dangerous to horses. In one instance, about 5 ounces (142 g) of dried beetles were found in a 5-pound (2.3 kilogram) flake of alfalfa hay. The biology of these insects is such that the first cutting of alfalfa is unlikely to be contaminated, while the second and third cuttings are at risk. Also, grass hays will not be a problem.

The signs of blister beetle poisoning vary with the number of beetles ingested. Ingestion of large numbers results in severe colic, shock and death within a few hours. Lesser doses may be evidenced by abdominal discomfort and tension, uneasiness, and frequent lying down and rising. Many poisoned horses repeatedly immerse their muzzles in water without drinking. If this procedure is noticed, the horse's alfalfa hay should be examined for blister beetles. Although there is no known antidote for cantharidin poisoning, knowing that blister beetles are involved will help the veterinarian prescribe emergency supportive measures.

The most common species of blister beetle in Colorado alfalfa fields is coal-black in color, 1/2 inch in length, with a broad head held vertically, a pronounced neck, and soft, flexible wing covers. This and other Colorado species are shown in Figure 1.

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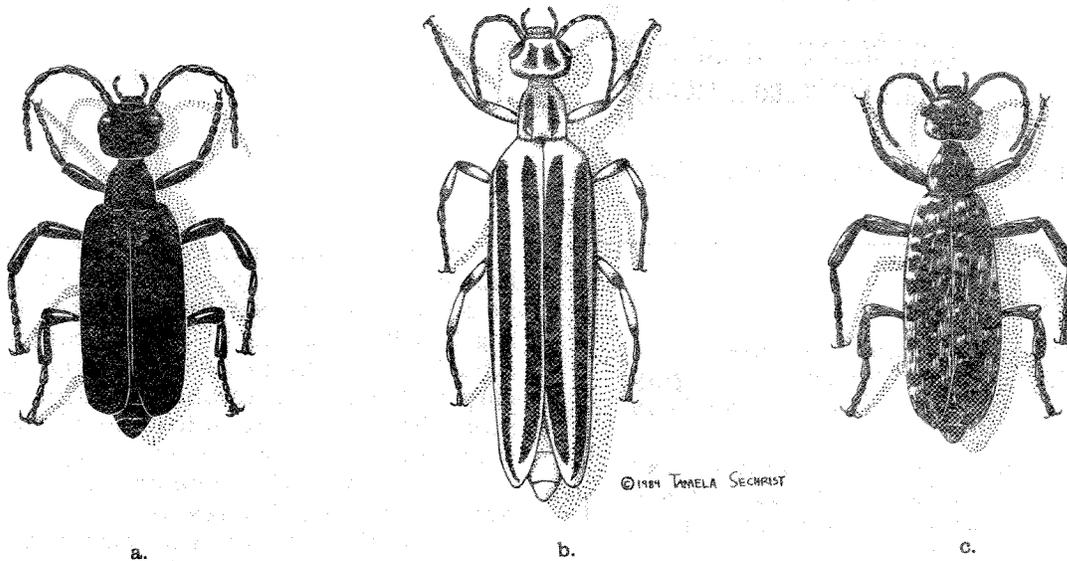


Figure 1: Blister beetles commonly found in Colorado alfalfa fields: a) the black blister beetle, *Epicauta pennsylvanica*; b) the 3-striped blister beetle, *Epicauta lemniscata*; c) the spotted blister beetle, *Epicauta maculata*.

Beetle Control

Where the presence of blister beetles is suspected, control options include the following.

- Cut alfalfa before the bloom stage. Blister beetles are attracted to alfalfa flowers, so pre-bloom cutting will avoid high beetle numbers.

- Do not condition the alfalfa after the bloom stage, as this crushes and traps the beetles. Cutting alfalfa with a sickle bar will allow beetles to disperse before baling.

- If beetles are observed in a field prior to cutting, the field may be treated with an insecticide. The only chemicals with no waiting period between application and harvest are carbaryl (Sevin), malathion and trichlorfon (Dylox). Consult the product label for application instructions.

- If you have reason to suspect the presence of blister beetles, inspect the hay before any is fed to horses.