Know your ABCs—
Alfalfa, Blister Beetles and Cantharidin

Everything you wanted to know about this poisonous insect and the threat it poses to your horse.

By Lauren Sciba

How many times have you thrown hay to your horse without thinking twice? A few flakes of alfalfa over the fence, and dinner is served. But what many horse owners are unaware of is a dangerous type of beetle that can kill a healthy horse in less than 24 hours.

As part of the Meloidae family, blister beetles contain an extremely toxic liquid called cantharidin. There are more than 300 species in this family in the United States and more than 2,500 worldwide. Often found in alfalfa and soybean crops, the blister beetle poses a serious health threat to livestock; however, horses are particularly sensitive to the cantharidin toxin.

What Is a Blister Beetle?

Adult blister beetles range in size from 1/2 to 1 1/2 inches in length.

They are elongated and cylindrical with relatively soft bodies and wing covers. Though they vary in size and color, blister beetles can be identified by their broad necks. The striped blister beetle is the species most commonly associated with equine cantharidin toxicosis.

Other species of the blister beetle tend to be less of a threat than the striped. Size, fewer tendencies to aggregate and lower cantharidin content make other types of blister beetles less of a risk; however, there have been reports of other species being a problem.

According to the Oklahoma State University Cooperative Extension Service, Washington, Oregon, California, Nevada, Idaho, Montana, North Dakota, Wyoming, Utah, Maine, Vermont and New Hampshire have no reports of striped blister beetles. Though the striped blister beetle might not be present, there are other species spread throughout the country that should still be considered a risk.

“As far as I know, there is no place in the United States where you can grow alfalfa and be guaranteed blister beetle-free,” says David Buntin, a professor of entomology at the University of Georgia. “They’re pretty much everywhere. Montana and some of the northwestern or north-central states maybe don’t have a couple of the species, but there are more than one. There are some smaller species — margined and...
black, that are kind of a gray color – they’re out there and may potentially cause a problem, too.”

Male blister beetles produce the liquid toxin. During mating, males pass this toxin to the females who then use it as a defense mechanism, expelling the liquid around the eggs when they are laid. This toxin causes blisters upon contact with human or animal skin and internal body surfaces.

Alfalfa, soybean and other plants make up the adult blister beetles’ diet. As larvae, the species feeds on grasshopper egg pods. Because of this, large blister beetle populations are sometimes associated with a proportional grasshopper population in the year before. Though seasons vary throughout the United States, the poisonous beetles are frequently present during the warmer part of the summer.

How Alfalfa Is Poisoned

THE BLISTER BEETLE PRODUCES AN AGGREGATION PHEROMONE that results in large swarms in small areas of alfalfa fields.

Aggregations of the striped blister beetle, a type that is more prone to this behavior, have been reported as large as 60,000 in small areas of fields.

During the haying process, beetles can be crushed by a crimper, swather or even tractor tires. The beetles secrete cantharidin into the hay as their bodies are crushed. Though beetle fragments might not be visible in the hay after baling, the liquid toxin remains. This presents the problem of deciphering which bales are poisoned.

“When they get into a field near the edge or around weeds, that aggregation pheromone kicks in, and there will be a huge aggregation in an area that’s maybe 10 by 10 feet within the field,” David says. “If those beetles were randomly distributed throughout the field and randomly distributed throughout the hay bales, you probably wouldn’t have enough to kill a horse.”

While some hay producers think cycle-bar mowers reduce the risk of crushing, extensive research at Kansas State University has shown that is not the case.

“If you drive over the hay with the tires, that crushes the beetles just as effectively,” David says. “Ideally, what you want is to keep the beetles alive through the haymaking process so that they disperse on their own. That is the objective – it’s very difficult to do.”

There are many opinions on insecticides to eliminate the beetles. While the chemicals might kill the blister beetle, the problem lies in that the beetles will still be present in the hay. The only real solution is to keep the beetles alive and let them vacate on their own.

The Dangers

THOUGH SHEEP AND CATTLE CAN BE AFFECTED BY THE DANGEROUS poison, horses are most susceptible. Symptoms include colic, diarrhea, bloody stool and urine, and even shedding of the intestinal lining.

“It’s a blistering agent. It basically rots through the tissue,” David explains.

Sometimes a horse poisoned by cantharidin will soak or splash its muzzle in water without drinking, and act anxious or depressed. Shock, lowered calcium levels resulting in body tremors and periodic jerking contractions of the diaphragm can also be indications of poisoning. There also can be frequent discharge of small amounts of blood-tinted urine.

Poisoned horses may also suffer from increased pulse rate,
dehydrated and vigilant. Buy hay from a reputable dealer or grower and build a working relationship with that dealer. If possible, try to obtain bales of alfalfa that come from fields that are scouted for blister beetles before the haymaking process begins.

Many hay producers nationwide attempt to make the first spring cut of alfalfa blister beetle-free. While seasons and harvest times vary, early cuts are often less likely to have blister beetles in them – there is no guarantee, though.

“The question I always get is, ‘How do I produce certified blister beetle-free hay?’” David says. “Well, the answer is, ‘You can’t.’ You can reduce the risk, but you can’t totally eliminate it.”

When horse owners flake hay, they should inspect it for blister beetles. Haying equipment can crush the insects into fragmented pieces. Inspection might seem like looking for the proverbial needle in a haystack, but it could reduce the danger of poisoning. If infested hay is discovered, destroy it by burning or burying it.

Resources are available to keep yourself informed. Talk to your hay provider. Find out what types of beetles are in your area and when they are most prevalent. Most importantly, watch your horse. If you suspect cantharidin ingestion, contact your veterinarian immediately.

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