

## BLISTER BEETLES IN ALFALFA

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### DESCRIPTION AND OCCURRENCE

Blister beetles are long cylindrical beetles that may be black, gray, yellow and brown striped, black with gray margins on the wing covers or black with a red head. These insects are usually found feeding in clusters on alfalfa. They can cause severe sickness and sometimes death when livestock especially horses eat the live or dead beetles. They are usually not found in alfalfa in mid-July and early August which translates to the third or fourth cutting. Blister beetles (black ones, gray margined ones, and yellow striped ones) were collected in very noticeable numbers in several central Kentucky alfalfa fields this past summer. The most commonly found species is the margined blister beetle. This insect has a black head and body with a gray margin around the wing covers. They range in size from 3/4 to 1 inch. Other species that are also found but do not seem as common include the red-headed blister beetle, the striped blister beetle and the black blister beetle.

When found in alfalfa, blister beetles are usually on the very tops of the plants and most often found feeding on the blossoms. Timely harvest, before "bloom" occurs, is useful in preventing the attraction of these beetles to the field.

### KEEPING BLISTER BEETLES OUT OF HAY

Blister beetles have a behavioral characteristic that may be useful in preventing the incorporation of these insects into harvested hay. When disturbed, blister beetles play "possum" and fall to the ground. When alfalfa is being harvested, many beetles will fall to the ground, if given half a chance, and miss being crushed.

DO NOT use a hay conditioner when harvesting blister beetle infested alfalfa. Sickle bar mowers and some of the more modern circular or rotary mowers lay the alfalfa down but do not crush it and thus do not crush the beetles. As the hay dries, the beetles will leave the windrow and seek food and moisture in or on other plants.

It is important to check fields for the presence of blister beetles before harvesting. Checking fields using a sweep net for potato leafhoppers will also reveal the presence of blister beetles. If beetles are noticeably present in the field then use the modified harvesting method described above.

If insecticidal control is required, use Sevin 80S, Sevimol, or Sevin Brand XLR.

### BIOLOGY

Female blister beetles lay clusters of eggs (some containing up to 100 eggs) in the soil in late summer. The larvae are very active when they initially hatch and seek out soil dwelling organisms especially grasshopper eggs for food. As these larvae develop they become less mobile and eventually spend the winter as a legless creature. The overwintering larvae remain inactive for about seven

months. They eventually become active in late spring, feed for a short time and finally go into the pupal stage. In this stage they change into the adult insect which emerges from the soil to feed on plants.

### BEHAVIOR

Blister beetle adults are gregarious and are found in large groups in alfalfa fields. In states like Kansas where this insect is a large problem in alfalfa these clusters of beetles may contain several thousand beetles. We have not observed these large aggregations of beetles in Kentucky alfalfa fields. This is very comforting because it lessens the possibility that large numbers of these beetles will be killed and incorporated into alfalfa grown in Kentucky.

### POISONING SYMPTOMS

Horses that are poisoned by eating blister beetles are actually affected by the chemical CANTHARIDIN which is produced by the male beetles. This chemical is very stable, remaining active even after it has dried out. Therefore horses may be poisoned by eating beetles cured with the hay.

Animals that are poisoned have gastrointestinal symptoms that include blisters and ulcerations in the area of the mouth, colic, diarrhea and blood and/or discarded intestinal tract mucosal linings in the stool. Cantharidin induced irritation to the digestive tract will often result in the development of secondary infections and bleeding.

Cantharidin is absorbed and excreted through the kidneys which may result in irritation of the kidney, ureter, bladder, and urethra. This irritation may also result in secondary infection and bleeding. In addition, calcium levels in horses may be drastically lowered and heart muscle tissues destroyed.

### HOW MUCH IS TOO MUCH ?

How many beetles does it take to kill a horse. There is no precise answer to this question. Some estimates are that as few as one beetle can cause blistering. However research has indicated that the cantharidin content of different species of beetles vary as does the content of different sexes. Male beetles produce the chemical and transfer it to the females during mating. Therefore, it is really difficult to tie the dosage necessary to kill a horse to beetle numbers. Researchers estimate that the lethal dosage of cantharidin necessary to kill a horse is 1 mg/kg body weight. The bigger the horse the more cantharidin it takes to kill him. If you assume a cantharidin content of 5 mg per beetle (that is a high amount) it would take 25 of these beetles to kill a 275 pound horse; it would take 75 of these insects to kill a 1450 pound animal.

Based on last summer's observations, it unlikely that we are going to find bales of alfalfa hay produced in Kentucky that have anywhere near this number of beetles.

Unfortunately these estimates are complicated by the secondary symptoms that may result from the irritation caused by cantharidin. Secondary infections, and the impact the chemical has on the heart may eventually cause death. If blister beetle poisoning is suspected **CALL YOUR VETERINARIAN!!**

### MANAGEMENT ALTERNATIVES FOR HORSEMEN

Horsemen can reduce the risk of feeding blister beetles to their horses by implementing the following precautions:

- 1) If possible grow your own alfalfa so that you can control all management practices and be sure the crop is beetle free.
- 2) If number one is not possible, buy from a local source and work with that producer to insure that you know what kind of management the hay has had. Develop a good working relationship with your hay producer.
- 3) Set aside or buy hay from the first cutting since it much less likely to have beetles in it. In Kentucky, remember, we see these beetles in the third and fourth cuttings.
- 4) Inspect hay that is suspected of being contaminated with beetles before it is fed.