Alfalfa X

Blister Beetle

Sue Blodgett, revision

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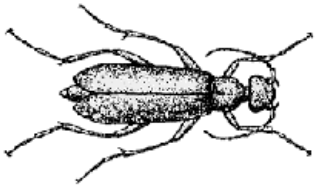

Blister beetle adult.

Introduction

Most species of blister beetles have one generation per year. Adults emerge from the soil throughout the growing season (May through September), but periods of peak activity vary with the species. Most species are more abundant in July and August. After emergence, adult blister beetles are strongly attracted to alfalfa and other blooming hosts. Adult feeding generally is not significant enough to warrant intervention. However, the presence of blister beetles in fields at harvest, particularly those species that aggregate, is a concern for producers.

The Threat to Horses

Blister beetles are a serious concern for hay producers and livestock owners because they produce a defense chemical called cantharidin that is toxic to livestock. Although most deaths associated with cantharidin consumption are reported in horses, cattle and sheep also are susceptible. Symptoms of cantharidiasis include blisters on the tongue and in the mouth, colic, diarrhea, blood or intestinal lining discharge in stools, and problems with urination or bloody discharge in urine. If blister beetle poisoning is suspected, contact a veterinarian immediately.

The cantharidin content of blister beetle species varies and thus the risk of livestock losses varies with the type of blister beetle and the size of the animal (*Table X_5*). Moreover, male blister beetles have a higher concentration of cantharidin than females. Modern hay harvesting practices (e.g., hay conditioners) are believed to have increased blister beetle mortality and to trap blister beetles in hay. In addition, cantharidin oil is released when adults are crushed and can contaminate hay even if the adult blister beetles are not present. Wheel traffic over mowed forage, crimping and cutting activity are the primary factors responsible for blister beetle mortality at harvest, whereas raking and baling have been shown to dislodge dead beetles from hay. Visual inspection of baled hay to detect blister beetles is difficult and will not reveal the presence of cantharidin oil.

Management

Blister beetles are a concern to alfalfa producers throughout eastern Colorado and to a lesser degree in eastern Wyoming and western Nebraska. The most important species, the three-striped blister beetle, tends to be a localized problem in the southeastern Arkansas Valley. This blister beetle is of most concern because of its relative toxicity and because of its swarming habit that can result in a large number of beetles becoming concentrated in a relatively small amount of hay. Other common blister beetle species, such as the spotted and black blister beetles are more widespread, but are not as toxic and are not known to swarm.

Because the larvae of most blister beetle species associated with alfalfa prey exclusively on grasshopper egg pods, they are frequently associated with grasshopper outbreaks. Consequently, alfalfa grown near rangeland has a greater likelihood of blister beetle infestation.

Blister beetles are especially attracted to alfalfa and weeds (e.g., goldenrod) during bloom. Consequently, reducing weedy host plants and harvesting prior to bloom are sound management tactics. First cutting hay and later cuttings of hay (fourth or after the first frost) often escape contamination by blister beetles since they are produced before and after peak periods of beetle activity. If blister beetles are present at harvest, it is important to use harvest equipment that gives the beetles the best chance of survival. Research at Kansas State University has shown that self-propelled swathers without conditioning rollers but with windrowing attachments are safer than mower conditioners and sicklebar mowers. Even with the conditionerless swather avoid hay from the ends of the fields where the machinery is turned around as beetles may be crushed by the tires. The use of equipment without hay conditioners may help reduce beetle mortality and allow beetle dispersal prior to baling. These techniques may be of limited use in semi-arid alfalfa growing regions.

Treatment thresholds are not available for blister beetles. However, horses are most susceptible to blister beetle poisoning and therefore producers that market baled forage for horses should consider monitoring fields immediately before harvest and treating or modifying harvest practices as needed to reduce risk of blister beetle incorporation into baled hay. Since blister beetles may move into the crop at any time, the residual activity of registered insecticides may not be sufficient to control blister beetles up to harvest. Sampling the crop immediately prior to harvest will provide the best information for blister beetle management.

Table X-5. Relative toxicity to horses of three common blister beetle species. Number of blister beetles expected to kill a horse weighing:

	Horse Weight		
Blister beetle species	275 lbs	550 lbs	825 lbs
Black blister beetle	550	1100	1700

Spotted blister beetle	175	345	520
Threestriped blister beetle	40	80	120

Adapted from Capinera et al. 1985. J. Econ. Entomol. 78:1052-55.

Product List for Alfalfa Weevil:

Insecticide	**Product (Fl oz. or oz. product per acre)**	**Preharvest Interval, remarks**
carbaryl[1,2]	See labels	7 days. 12 hr REI. Most formulations **are Extremely Hazardous to Bees!** Do not apply to alfalfa in bloom. Sevin XLR+ is safe for bees if applied at <1.5 lbs ai/acre when no bees are in the field. Do not apply more than once per cutting
lambda cyhalothrin[R,1,2]	2.56-3.84	7 days for hay. 24 hr REI. **Extremely Hazardous to Bees!** Do not apply to alfalfa in bloom. Do not apply more than 0.24 pt /A per cutting. Do not apply more than 0.96 pt/A per season. Advisable to move bees during application and allow 3 (low rate) or 5 (high rate) days before re-introduction of bees
Proaxis[R,1]	2.56-3.84	7 days for hay. 24 hr REI. ***Extremely* Hazardous to Bees!** Do not apply to alfalfa in bloom. Do not apply more than 0.24 pt /A per cutting. Do not apply more than 0.96 pt/A per season. Advisable to move bees during application and allow 3 (low rate) or 5 (high rate) days before re-introduction of bees

[R]Restricted use pesticide [1] Labeled for chemigation [2] Generic active ingredient, several formulations

Categories: Alfalfa, Insects, Blister beetles

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