



Pest e-alerts



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Blister Beetles in Alfalfa

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While we haven't received reports of major infestations, now is the time to be on the lookout for blister beetles in alfalfa. In field scouting throughout the state, I have noticed a few beetles in some of the samples. Potential foliar damage to alfalfa usually occurs in mid-summer when fields may host large aggregations that can damage blossoms and leaves.

Several species of blister beetles are common throughout eastern and southern areas of the U.S. The species found in alfalfa range from uniform black or gray in coloration to a striped pattern of alternating brown and orange colors. It is the striped blister beetle (*Epicauta occidentalis*) that most commonly forms large aggregates or "swarms" in alfalfa fields in Oklahoma.



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Blister beetles complete one generation per year, which begins during late summer as females lay eggs in cracks and cavities at the soil surface. Eggs hatch and tiny, long-legged larvae crawl over the soil surface in search of clusters of grasshopper eggs, which are also laid within 1-2 inches of the soil surface. Upon finding a site where grasshopper eggs have been laid, they tunnel into the egg "pod" and begin to feed. The larvae continues to grow and develop while consuming the grasshopper eggs, then overwinters in the soil and emerges as an adult beetle the following May and June.



This time of year blister beetles can become a major consideration to hay buyers and producers. Adult beetles are active from mid-May to October. Highest striped blister beetle concentrations are generally observed in June and July, but can continue into later parts of summer. When infesting alfalfa, blister beetles prefer to feed on blossoms. However, it is not their feeding activity that gives them pest status, but the fact that the beetles contain a chemical called "cantharidin", a blistering agent that is highly toxic and may cause illness or death in livestock, particularly horses, when consumed in forage. Cantharidin is a highly stable chemical that remains active even within the dried remains of beetles. In the case of the striped blister beetle, remains of many beetles may be found in baled hay if they are killed at the time of cutting either by crimping hay or by wheel traffic over windrows.

There is quite a variation in average cantharidin content among species, but it has been consistently higher (about 5 mg/beetle) in the striped blister beetle than in the other species (about 0.5 mg/beetle). The potential lethal dose is estimated to be between 0.5 and 1.0 mg of cantharidin per kilogram (2.2 lbs) of body weight. However, given the variance in cantharidin levels between species, within striped beetles themselves, and other variables, it is hard to pinpoint the exact number of beetles it would take to cause a lethal dose.

There is no way to "guarantee" that alfalfa hay harvested is completely free of blister beetle contamination. However, growers can significantly reduce the risk of contaminated hay by following these suggestions: If sold specifically for horse hay, growers can utilize first cutting (late April – early May) or late cutting (October) when beetles are less active, carefully monitor hay before cutting, cut at 10% bloom or less, spray infested areas and/or field borders with low residual insecticides, do not use a crimper when swathing hay and do not drive over cut hay while cutting the next swath. If the crimper is removed and the windrow is straddled by subsequent tire traffic, blister beetles are allowed to crawl away from infested hay. Unfortunately, this practice greatly increases drying time for the hay, but in the long run, may be worth the wait.

Further information can be found at: EPP-2072 *Blister Beetles and Alfalfa*,
<http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-2080/PSS-2072.pdf>

Disease and Insect Diagnostic Laboratory

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