

Variegated Cutworm in New Mexico Hay

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DESCRIPTION/LIFE CYCLE

Historically, cutworms have been early season pests in New Mexico, becoming active when soil temperatures are above 40°F. Variegated cutworm (*Peridroma saucia* [Hübner]), a climbing cutworm, is one of the more common cutworms in New Mexico, and was involved in a devastating mid-season outbreak of cutworm in alfalfa in southern Eddy County in 2010. Other cutworms can also damage hay in New Mexico. In September 2015, a granulate cutworm outbreak caused damage in numerous fields of new hay in Eddy County. Adult moths cause no damage to alfalfa hay directly. The damage is done by the larval stage—smooth-skinned caterpillars that usually hide in soil, duff, or tags during the day and emerge at night to feed. All stages of the larvae are tan to mottled black in color, with distinctive light-yellow, diamond-shaped markings along the center of the back (Figure 1). Fully grown larvae are 1.5 to 2 inches long.

The adult moth lays eggs in elongated clusters of 60 to 200 eggs on stems, fence posts, and buildings. Eggs are initially white or pale yellow, but turn brown before hatching on the fifth day after laying. Larvae feed for approximately 25 days, going through 5 to 6 instars (larval stage between each molt) before pupating in the soil. The total time from egg deposition to adult is approximately 44 days.

Variegated cutworm eggs will not hatch at temperatures above 95°F. This dependence on relatively cool temperatures and the lower numbers of predators early in the season mean this species is primarily an early season pest. The 2010 infestation in Eddy County in July was extremely unusual, but it followed a number of weeks of high moisture and lower-than-average temperatures. These conditions led to a higher egg hatch than seen under typical July conditions, which are too hot and dry to support high hatch rates.

IMPACT ON ALFALFA HAY

Variegated cutworm feeds on new leaves produced in stubble and can significantly delay regrowth of new stems. Feeding reduces dry matter yields and forage quality. Most fields can only tolerate a few days of defoliation before significant economic losses accrue.



Figure 1. Variegated cutworm larva.
(Lacy L. Hyche, Auburn University, Bugwood.org)

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Very high populations of variegated cutworm can delay regrowth for a number of weeks. Alfalfa can withstand complete stubble defoliation for 3 to 5 days. In fact, each cutting represents this level of leaf area loss. A longer duration of injury, with complete defoliation for 7 to 11 days, results in delayed plant development and reduced yields, but no reduction in quality of the remaining tissue. Research has indicated that 18 larvae per square foot will completely suppress growth of stubble for 10 to 15 days; a lower population of 4.5 to 9 larvae per square foot will partially suppress growth.

Each variegated cutworm consumes 442 mg (about 0.02 oz) of foliage over its lifetime. This means an average increase of one larva per square foot results in a 42-lb yield loss per acre. With a yield of one ton per cutting, each average increase of one larva per square foot represents another 2% loss.

Variegated cutworm prefers to lay eggs in moist, low-lying areas. Eggs will not hatch at a constant temperature of 95°F or higher, and larvae reared at 95°F or above will not survive past the fourth instar larval stage. It is apparent that variegated cutworm is very susceptible to seasonal temperatures in southern New Mexico. The duration of exposure to stressful environmental conditions needed to significantly reduce populations is not known. However, the available information and experience from 2010 suggest that seasonal conditions and control from natural enemies are usually sufficient to control variegated cutworm mid-season.

MONITORING AND CONTROL

Cutworm infestations are sporadic, but when damage is evident it may be too late to treat, so scouting is important. Typically, cutworms hide in the soil or leaf litter around the crown of the plant during the day, but variegated cutworm has also been observed in southern New Mexico clinging near the top of the stem, perhaps to avoid high soil temperatures.

A quick scouting method to find cutworms is to check for cutworm larvae under duff or hay tags. A more accurate measure of the population requires digging at least 1 inch into loose soil near alfalfa crowns in a number of locations within the field.

Consider insecticidal treatment when cutworm larvae exceed two per square foot, or if severe damage is becoming apparent and larvae are still small enough to continue feeding for some time. When making insecticide applications, use as high a spray volume as possible,

at least 10 gallons per acre for ground applications and 2 to 4 gallons per acre for aerial applications. Wet soil conditions help improve insecticide efficacy. Insecticide applications for cutworm are difficult, and are much more likely to be successful if made in the late afternoon or evening when larvae are beginning to feed.

If variegated cutworms have defoliated the stubble but are already 1 1/2 inches long, an insecticide application is much less likely to be successful. At that point, larvae are nearly finished feeding and most of the damage has already been done. These larger larvae are more tolerant of insecticides. If feasible, an early flood irrigation will provide some control, both directly by drowning some larvae and indirectly by forcing them out of the soil where they are more exposed to predators and desiccation. Start irrigation early in the morning, if possible, so birds can forage for larvae all day.

Since variegated cutworm often initially develops in weeds, keeping the field and borders weed-free helps reduce populations. Flood irrigation during the day rather than night attracts many birds that prey on cutworms forced from the soil by advancing water. An experiment was conducted in the laboratory with field-collected granulate cutworm to look at the impact of flooding on mortality. None of the pupae exposed to saturated soil survived, compared to 78% survival in dry soil. This difference suggests that flood irrigation might be an option during infestations with older larvae that are not susceptible to insecticides.

Activities that help maintain populations of beneficial arthropods will aid cutworm control. If alternating cutting of hay in strips is not feasible, consider staggering cutting schedules of adjacent or nearby fields so that some refuge is always available. Staggering cutting of nearby fields will allow beneficial species to move from recently cut fields to ones with a more appropriate habitat.



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