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# The Clover Leaf Weevil in Alfalfa

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There has been a lot of concern about the clover leaf weevil in alfalfa in eastern Nebraska this year. Many farmers in the eastern one third of the state experienced problems with the regrowth of alfalfa after the first cutting in 1990, caused by the feeding of the adult of this insect. They are wondering if the larvae of this insect, which closely resembles that of the alfalfa weevil, is causing economic damage to the first cutting of alfalfa in 1991. There are important differences between the clover leaf weevil and the alfalfa weevil concerning economic damage and treatment recommendations and we will review them here.

Both the clover leaf weevil (CLW) and the alfalfa weevil (AW) larvae are similar in appearance (Figure 1). Larvae are legless, yellowish to green in color, with brown (CLW) or black (AW) heads. They have a white stripe down the back. The differences between the two insects are shown in Table 1.

There have been quite a few reports this spring of alfalfa fields with declining stands, yellowing of leaves, and leaf damage. It is not common for weevil feeding to cause leaf yellowing or other leaf discoloration. We are aware that there has been quite a lot of winterkill throughout the central part of the state and these symptoms could be related to that condition. Also frost damage, which will turn leaf margins brown and cause areas that eventually tear, has been observed in some locations and may be confused with insect feeding damage. There should be no serious effect on yield from frost damage.

**Differences in Appearance of Two Weevils**

| Alfalfa Weevil | Clover Leaf Weevil |
|---|---|
| Overwinter primarily as adults. | Overwinter primarily as larvae. |
| Adults are brown with a dark brown stripe halfway down back, snout on head, and 3/16 inch long. | Adults are dark brown, pitted light brown underneath, snouth on head, and over 1/4 inch long. |
| Larvae prefer to feed on newly emerging leaves at stem tip. | Larvae prefer to feed on lower and middle leaves. |
| Larvae remain on plant most of time. | Larvae feed on plant at night, and during the day, they rest in debris at base of plant. |
| Larvae have black heads. | Larvae have brown heads. |
| Adults leave fields in June. | Adults may remain in fields into July. |

**Table 1. Differences in Appearance of Two Weevils.**

Thus far, we have no scientific evidence that clover leaf weevil larvae cause economic loss to first cutting alfalfa. The only known replicated insecticide screening test for CLW larvae was conducted just west of Niobrara, in Northeast Nebraska last year. Three insecticides, Lorsban 4E (1.5 pints per acre formulation), Pounce 3.2EC (6 ounces per acre formulation) and Sevin XLR (2 pints per acre formulation) were applied to 6-7 inch tall alfalfa on May 2, 1990. A backpack sprayer delivering about 18 gallons per acre at 25 lb psi was used to apply the insecticides. The post-treatment larval densities in the untreated check plots were just under 30 larvae per square foot. The Lorsban (0.6 larvae/sq ft remaining after treatment) and Pounce (2.4 larvae/sq ft remaining) provided excellent control. The Sevin (25 larvae/sq ft remaining) did not adequately control the CLW larvae. Yield was taken from these plots on May 31. There was no significant difference in yields between the treated areas and the untreated check plots. The Lorsban and Pounce treated plots did yield slightly

better than the untreated check overall, but the difference in yield would not have made up for the cost of the treatment. The Lorsban and Sevin treatments did temporarily bleach the new alfalfa foliage.

Most fields in eastern Nebraska have a combination of CLW and AW this year. Clover leaf weevil larvae will be much larger early in the season. AW larvae generally are about 2 weeks behind the CLW larvae developmentally. Because of this lag in development, people who decide to treat for CLW early in the first crop growing period run the risk of having to treat again if AW populations increase after treatment.

CLW will begin to pupate in mid May in northeastern Nebraska, and pupation will continue through the end of May. Pupation will begin earlier in southern and eastern counties. Generally, the CLW will be in the pupal or adult stage when the first cutting is taken, and many AW will still be in the larval stage. Therefore, many AW will be destroyed mechanically by the harvesting process or will starve due to lack of green foliage, but because the CLW will not be in the vulnerable larval stage at the time of harvest, they will not be as susceptible to mortality. The bottom line is that many CLW adults may be present to cause problems for regrowth after harvest.

Should you consider controlling the CLW now to prevent regrowth problems? We have no good indication of how many CLW larvae must be present now to threaten the regrowth later. They are very susceptible to a fungus disease which can cause over 90 percent mortality. If rainfall and temperature conditions are favorable for the disease, they will be eliminated naturally. The only way to know what to do, of course, is to scout your fields on a regular basis. Because the CLW tend to be in the crowns and on the soil surface during the day, the only good way to get a population estimate is to get down on your hands and knees and scratch around. Use a 12-inch square made of conduit, PCV pipe or some other material to aid in making accurate counts. After first cutting, carefully examine the area around the crowns and the debris near the plants for the presence of CLW and AW adults. Look also for feeding damage on the new growth. Large numbers of CLW will also feed on stems, giving them a spotted appearance. Although no economic thresholds have been developed specifically for CLW, Table 2 will help you make a treatment decision when weevils are damaging regrowth. This table will help you calculate the number of days that complete defoliation can be tolerated before an insecticide application is justified. The number of days will vary, depending on the cost of the insecticide treatment, value of the hay, and whether the hay is cut at first bloom or on a 28-day harvest schedule.

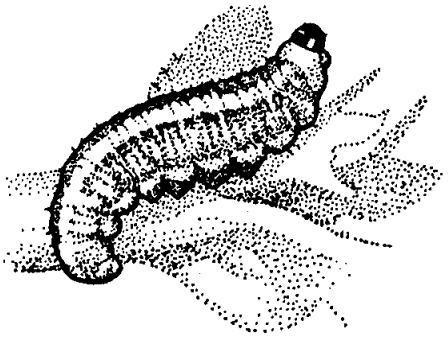

**Figure 1. Alfalfa Weevil larva.**

Although no insecticides are registered for CLW control, past experience indicates that the CLW adults can be controlled with the same insecticides registered for AW adults. Consult EC 91-1511, *1991 Insect Management Guide* available at your local Cooperative Extension office, for a list of insecticides registered for AW control in alfalfa. Refer to NebGuide G73-30 for details about the AW and its management.

**Table 2. Alfalfa Stubble Threshold Calculation Chart.**

**Alfalfa Stubble Threshold Calculation Chart**

| Factors | | Example | Your Field |
|---|---|---|---|
| A. | Insecticide plus application cost (dollars per acre) | $7.00 | _____ |
| B. | Value of hay (dollars per ton) | $100.00 | _____ |
| C. | Loss factor (1st-bloom harvest=0.0198; 28-day harvest=0.0345) | 0.0198 | _____ |
| D. | Days of **complete** defoliation that can be tolerated | 3.5 | _____ |

To estimate **D**, multiply **B** times **C** and divide into **A**. The above example is then calculated as follows: **D = A/(BxC) =** 7.00/(100x0.0198) = 7.00/1.98 = 3.5 days.

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