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Don't Let Potato Leafhoppers Burn Hay

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Abstract

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Don't Let Potato Leafhoppers Burn Hay

By Erin Hodgson, Department of Entomology

There have been recent reports of potato leafhopper in Iowa alfalfa, and it's time to think about sampling again. Potato leafhoppers do not overwinter in Iowa, but adults migrate here every spring.

Females deposit 2-3 eggs per day in plant stems. Pale, green nymphs emerge in 7-10 days depending on the temperature; the fastest development occurs at 86 degrees F. Nymphs look similar to adults except they are smaller and are wingless. They go through five instars in about 2 weeks. Adults are lime green, one-eighth inch long, and have a broad, wedge-like head. Adults live for 4-7 weeks.

As a result of the extended egg-laying period, at least two overlapping generations occur in Iowa every year. Potato leafhoppers are very active and easily disturbed – adults jump or fly away while nymphs quickly move sideways and backwards.



Nymph and adult potato leafhopper.

Damage

Potato leafhoppers have a piercing-sucking stylet mouthpart. They cause physical damage when probing to feed and also inject saliva that plugs vascular tissue. Initially, alfalfa leaf tips will turn yellow, commonly referred to as "hopperburn." Heavily infested plants will be stunted, particularly new stands and regrowth after cutting. In some cases, large leafhopper populations can significantly reduce tonnage of the current crop, as well as the following crop.

Scouting

Potato leafhoppers do not typically build up to damaging levels during the first

crop in Iowa. Fields should be monitored weekly after the first cutting until the end of the season. A sweep net is the most effective way to sample for nymphs and adults.

Fields should be sampled when dry and in calm conditions. Sweep vigorously through foliage, using a 180-degree motion for one sweep. For each field, stop at 4-5 locations and take 25 sweeps per location. Count the number of nymphs and adults at each location and estimate the number of potato leafhoppers per sweep for each field. Keep in mind nymphs will be near the sweep net ring and adults will be at the bottom of the net.

Management

Remember, healthy and vigorous stands are able to tolerate potato leafhopper (and other insects) feeding. Heat or drought-stress can make alfalfa more susceptible to insect feeding. Protecting alfalfa from potato leafhopper usually involves a three-pronged approach.

1. The use of glandular-haired, potato leafhopper-resistant alfalfa varieties can significantly reduce yield losses. Using resistant varieties does not mean fields will be hopper-free, but plants should be able to tolerate moderate populations compared to conventional varieties. Newly-planted resistant fields may not show tolerance immediately, but should express tolerance after becoming established. Consider using potato leafhopper-resistant varieties if the local area is consistently infested.

2. The cultural control tactic of cutting management can disrupt potato leafhopper populations as they develop in alfalfa. Delaying harvest will allow nymphs enough time to become adults and start reproducing. Young nymphs will be destroyed or starve before regrowth occurs. Timely cutting will force adults to move to nearby crops, but they often move back into a field after regrowth. It is important to start scouting 7-10 days after each cutting to monitor for reinfestations.

3. Insecticide applications can protect alfalfa yield from potato leafhoppers, and are economically justified with regular scouting and the use of action thresholds. The fluctuating values of hay and control costs are important considerations for making a treatment decision. Tables 1 and 2 offer a dynamic action threshold for potato leafhopper based on conventional and tolerant alfalfa. There are several products registered in Iowa for potato leafhopper control in alfalfa (Table 3). Follow label directions and pay attention to preharvest interval guidelines.

Table 1. Action thresholds for potato leafhopper (# per 10 sweeps) on conventional alfalfa.

Alfalfa height (inches)	Control Costs (\$)				
	10	12	14	16	18
4	2	3	4	5	6
6	3	5	6	8	9
8	4	6	8	10	12
10	5	8	10	13	15
>10	10	16	20	26	30

Table 2. Action thresholds for potato leafhopper (# per 10 sweeps) on tolerant alfalfa.

Alfalfa height (inches)	Control Costs (\$)				
	10	12	14	16	18
4	21	30	41	50	60
6	32	46	62	76	90
8	42	61	82	101	120
10	53	76	103	126	150
>10	106	152	206	252	300

Table 3. Insecticides registered for potato leafhopper control in Iowa.

Product (active ingredient)	Rate per acre	Preharvest interval
Ambush* (permethrin)	3.2-12.8 oz	14 days
Baythroid XL* (beta-cyfluthrin)	0.8-1.6 oz	7 days
Pounce 25 WP* (permethrin)	6.4-12.8 oz	14 days
Mustang Max* (zeta-cypermethrin)	2.24-4.0 oz	3 days
Sevin XRL Plus (carbaryl)	1.0 quart	7 days

Erin Hodgson is an assistant professor of entomology with extension and research responsibilities. She can be contacted by email at ewh@iastate.edu or phone (515) 294-2847.

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