

Alfalfa

Potato Leafhopper

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Scouting for Potato Leafhopper

Scouting for potato leafhoppers is an easy, reliable way to prevent serious yield loss. Scouting should begin after first harvest and continue until leafhopper populations decline in late August/early September.

- Use a 15-inch diameter sweep net to estimate the density of leafhoppers in a field.
- Swing the net in front of you as you walk through the alfalfa (a swing that provides about 7 feet of contact with the canopy). Figure 1.



Figure 1. Using a Sweep Net. *Photo from Virginia Tech*

- Sweep the net deep into the alfalfa canopy, and stop after 10 sweeps.
- Count all of the adults and nymphs in the net (Figure 2). This estimates leafhoppers per 10 sweeps.
- Repeat this procedure in 4 more areas of the field.
- Estimate the height (inches) of the alfalfa stand.
- Compare estimated leafhopper counts and stand height to economic thresholds in Tables 1 or 2.



Figure 2. Potato leafhopper nymph (yellow, wingless, 1/16-inch long) and adult (light green, winged, 1/8-inch long).

Leafhopper Tolerant versus Traditional Alfalfa

Research has shown that an established stand of tolerant alfalfa can produce about 1 ton per acre more alfalfa per year than susceptible alfalfa when the leaf-hopper population is high and alfalfa is left unsprayed. However,

- the benefit of leafhopper-tolerant alfalfa is minimal during low leafhopper populations.
- the first growth interval of the seeding year leafhopper tolerant alfalfa provides minimal protection. Plant tolerance to leafhoppers increase greatly after this initial growth period.
- tolerant alfalfa may still suffer yield loss from leafhoppers if populations are exceptionally high.
- fields scouted and treated with an insecticide when recommended tend to yield better than untreated leafhopper-tolerant alfalfas.

Economic Threshold

An economic threshold is a pest density such that if the alfalfa is left unsprayed, the pest is predicted to continue to increase in population and cause yield loss greater than the cost of the insecticide. Thus, the gain in yield from spraying an insecticide is greater than the cost of the insecticide treatment. There are 4 factors to consider when determining the economic threshold and the decision on whether or not to use an insecticide.

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Factors to consider when determining economic thresholds for Potato leafhopper:

1. Are you scouting traditional “susceptible” alfalfa or leafhopper-tolerant alfalfa? Economic thresholds are about 10 times higher for leafhopper-tolerant alfalfas than for traditional alfalfas (Tables 1 and 2).
2. Estimate the height of the alfalfa when scouting for Potato leafhoppers. Taller alfalfa is damaged less by leafhoppers than for shorter alfalfa earlier in the regrowth phase.
3. Estimate the cost per acre of an insecticide.
4. Consider how soon until the next harvest. If planning to harvest the field within 7-10 days, it is often difficult to justify treatment costs.

Other Factors in Managing Potato Leafhoppers

- Harvesting alfalfa can eliminate leafhopper eggs already laid in stems, suppress the nymphal

population by killing or removing them from the field, and displace adult leaf-hoppers to adjacent sources of food, such as neighboring alfalfa fields. However, these factors are unpredictable, so begin scouting for the pest within a week after harvest.

- Alfalfa-grass forage mixtures suppress leafhopper populations. Grass is a poor food source for leafhoppers, however, it also lowers overall forage quality.
- Leaving uncut alfalfa strips along field borders can delay leafhopper migration back into the rest of the field. These strips could be treated with an insecticide, rather than the entire field. However, this method has proved ineffective under large leafhopper infestations.
- Applying an insecticide is the most reliable way to suppress a Potato leafhopper population (Table 3). The use of an insecticide is justified only when leafhopper density exceeds its economic threshold.

Table 1. Economic Thresholds for Traditional Alfalfa (leafhoppers per 10 sweeps).

Alfalfa height (inches)	Cost of insecticide treatment (\$/A)				
	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. Economic Thresholds for Tolerant Alfalfa (leafhoppers per 10 sweeps).

Alfalfa height (inches)	Cost of insecticide treatment (\$/A)				
	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

Important: Use the threshold for traditional alfalfa when scouting tolerant alfalfa during the initial growth of the seeding year.

Table 3. Common Insecticides Labeled for Potato leafhopper Control.

Product	Rate per acre**	Preharvest interval
Ambush*	3.2 ounces	0 days
Baythroid*	0.8 ounces	7 days
Furadan 4F*	1.0 pint	14 days
Lorsban 4E	0.5 pint	7 days
Penncap-M*	2.0 pints	15 days
Pounce 3.2 EC*	4.0 ounces	0 days
Sevin XRL Plus	2.0 pints	7 days
Warrior T or 1E*	1.92 ounces	7 days

*Restricted use pesticide.

**Minimum manufacturer labeled rates