Potato Leafhopper Management in Alfalfa

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Potato Leafhopper Management in Alfalfa

Abstract
There have been some reports of potato leafhopper activity and plant injury in Iowa alfalfa this season. Some fields experienced winter injury and the cooler spring provided a slow start to plant growth in 2019. It is time to think about assessing alfalfa stands. Potato leafhoppers (Photo 1) do not overwinter in Iowa, but they are persistent alfalfa pests every growing season. Storms along the Gulf of Mexico bring adult potato leafhoppers north and drop them into fields every spring. Heat or drought stress can make alfalfa more susceptible to injury, and plants are more likely to experience injury after the first cutting. Current climate conditions and harvest activities in Iowa align with these factors, making scouting critical to ensure yield protection.

Disciplines
Agricultural Science | Agriculture

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Potato Leafhopper Management in Alfalfa

July 23, 2019

There have been some reports of potato leafhopper activity and plant injury in Iowa alfalfa this season. Some fields experienced winter injury and the cooler spring provided a slow start to plant growth in 2019. It is time to think about assessing alfalfa stands. Potato leafhoppers (Photo 1) do not overwinter in Iowa, but they are persistent alfalfa pests every growing season. Storms along the Gulf of Mexico bring adult potato leafhoppers north and drop them into fields every spring. Heat or drought stress can make alfalfa more susceptible to injury, and plants are more likely to experience injury after the first cutting. Current climate conditions and harvest activities in Iowa align with these factors, making scouting critical to ensure yield protection.

Photo 1. Potato leafhopper adult and nymph. Photo by Penn State College.
Mated females begin to deposit two to three eggs per day in alfalfa stems as soon as they land. Pale, green nymphs emerge in 7-10 days depending on the temperature; the fastest development occurs at 86°F. They go through five instars in about two weeks. Therefore, a large population could develop three weeks after the northern migration. The extended egg-laying period can result in at least two overlapping generations in Iowa every year.

**Plant Injury**

Potato leafhopper nymph and adults have piercing-sucking stylets. They cause physical injury when probing to feed and also inject saliva that plugs vascular tissue. Initially, alfalfa leaf tips will turn yellow, which is commonly referred to as "hopperburn" (Photo 2). Heavily infested plants will be stunted, and new stands and regrowth after cutting are particularly affected. In some cases large leafhopper populations can significantly reduce tonnage of the current crop, as well as the following crop.

![Photo 2. Typical hopperburn caused by potato leafhopper feeding. Note the v-shaped yellowing pattern characteristic of this injury. Photo by Rebecca Vittetoe.](https://crops.extension.iastate.edu/cropnews/2019/07/potato-leafhopper-management-alfalfa)

**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 potato leafhoppers because adults and nymphs are very active and easily disturbed. Adults will jump or fly away while nymphs...
quickly move sideways and backwards. A detailed description on how to make and use a sweep net is available here.

Fields should be sampled during calm conditions and when dry. Sweep vigorously through foliage, using a 180-degree motion for one sweep. For each field, stop at four to five 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. Typically, 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 some potato leafhopper (and other insect) feeding. Protecting alfalfa from potato leafhopper usually involves a three-pronged approach:

1. The use of glandular-haired alfalfa varieties can significantly reduce yield losses (Photo 3). More than 70% of alfalfa is now resistant to potato leafhopper. Adults are repelled by plant hairs, and nymphs get caught in the sticky hairs and starve. Newly planted resistant fields may not show resistance immediately, but should develop sticky hairs after becoming established. Glandular-haired alfalfa is not the same as non-yellowing varieties. These tolerant plants only hide leafhopper feeding and do not prevent yield loss.
2. The cultural control tactic of cutting stands can disrupt potato leafhopper populations as they develop in alfalfa. Delaying harvest will allow nymphs enough time to become adults and start reproducing. Timely cutting will destroy or starve young nymphs before regrowth occurs and force adults to move to nearby crops, but they often move back into a field as it regrows. It is important to start scouting 7-10 days after each cutting to monitor for possible reinfestations.

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

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<th>Hay value ($/ton)</th>
<th>Plants 0-4 inches AND Control costs ($/acre)</th>
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Table 1. Economic threshold of potato leafhopper, based on the average number of leafhoppers per sweep (originally published by John Tooker, Penn State Extension).

Category: Crop Production  Insects and Mites

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Crop:
Biomass and Forage

Tags: insect pest IPM scouting

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