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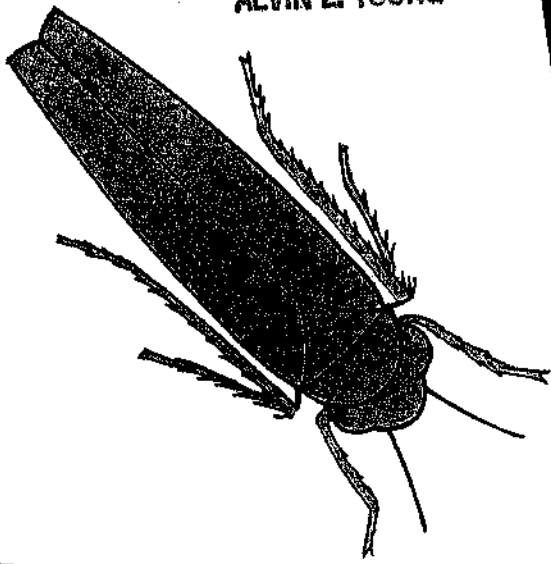
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ALVIN L. YOUNG



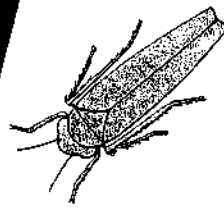
The Potato Leafhopper on Alfalfa

How To Control It

Leaflet No. 521

U.S. DEPARTMENT OF AGRICULTURE

The Potato Leafhopper on Alfalfa



How To Control It

The potato leafhopper¹ is a serious pest of alfalfa in the eastern half of the United States. It also damages other forage legumes, as well as potatoes, beans, peanuts, and other crops. It occurs throughout this country with the possible exception of the Northwest, and feeds on nearly 200 kinds of plants.

DAMAGE TO ALFALFA

Potato leafhoppers, both the young (or nymphs) and the adults, pierce the leaves and leafstems of the alfalfa plants and suck out the juices. The foliage turns yellow, and the plants become weakened or dwarfed. When leafhopper attacks are heavy, the foliage wilts severely.

You should suspect leafhopper injury if you find various shades of pink, red, and purple starting at the midrib of the leaf, and a yellowing near the veins that gradually spreads over the entire leaf. However, alfalfa may yellow from other causes, such as diseases or nutritional deficiencies, and sometimes it is difficult to distinguish such yellowing from advanced stages of leafhopper injury.

¹ *Empoasca fabae*.

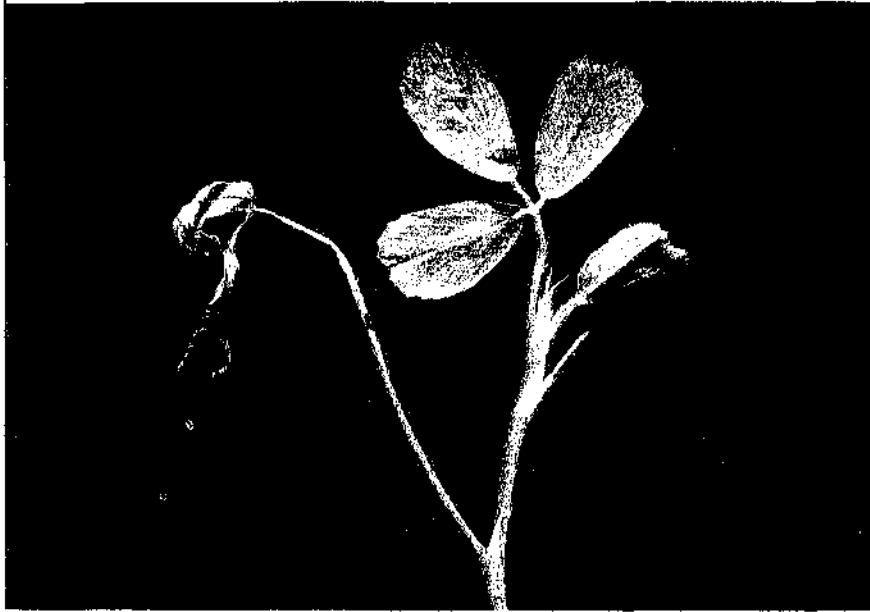
lowing from advanced stages of leafhopper injury.

Alfalfa severely injured by the potato leafhopper in one season does not recover completely by cutting time the next spring. It may be weakened so much that it cannot survive the winter. Usually the greatest damage is to the second crop in early summer, but the third crop often is seriously damaged. When young stands of alfalfa are injured, weeds and grass crowd out the alfalfa.

Hay from alfalfa injured by the potato leafhopper contains less protein and more carbohydrates than hay from normal, green alfalfa. Also, it is only about half as rich in materials from which vitamin A is produced.

DESCRIPTION AND HABITS

Adult leafhoppers are pale-green, wedge-shaped, winged insects about $\frac{1}{8}$ inch long. Within a few days after mating, the females lay eggs in the alfalfa stems and larger veins of the leaves. The eggs are tiny, slender, and white; in the summer



BN-17596

Alfalfa leaf wilted by feeding of the potato leafhopper.

they hatch in 6 to 9 days into young leafhoppers, or nymphs.

The nymphs resemble the adults, but are smaller and do not have wings. At first they are nearly white, but as they develop they change to pale green. They shed their skins five times before they become adults and have wings. In warm weather, the transition from egg to adult takes about 3 weeks.

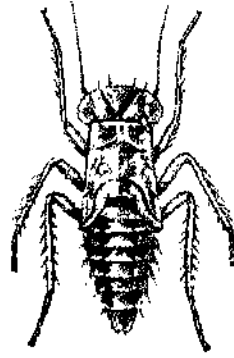
These insects are very active. The adults jump or fly when disturbed, and the nymphs jump. Both run backwards or sideways as rapidly as they move forward. When heavily infested alfalfa is being cut in July or August, the adults fly or jump up in great numbers and are annoying to workers in the field.



BN-17958

Adult potato leafhopper.

Potato leafhoppers breed on crops and weeds throughout winter in the Gulf States; they migrate northward with the warm winds in spring. When the weather is warm and damp, especially when nights are warm and plenty of food is available, they increase to enormous numbers in a short time. Several generations occur in a year, and overlap one another.



BN-17957

Potato leafhopper nymph.



BN-17580

Alfalfa taken from a field 45 days after the first cutting on July 25. At left, undamaged alfalfa; at right, alfalfa damage by leafhopper nymphs migrating from an adjacent area in the field, where the first cutting was delayed 11 days.

CONTROL WITH INSECTICIDE

When To Apply Insecticide

If it is necessary to apply an insecticide, it should be applied to the second or third cutting when the alfalfa is about half grown, or earlier if the potato leafhopper becomes abundant. It should be applied before the plant foliage has turned yellow from the insect's attack.

You can determine whether you should apply an insecticide by learning the abundance of leafhoppers in the field. Choose a warm day, when it is not windy. Obtain an insect-collecting net that has a 15-inch opening. In each of five different parts of the field, take 20 sweeps with the net; make each sweep from one side of your body to the other. If you capture an average of one potato leafhopper per sweep, apply an insecticide to prevent buildup of the insect and consequent damage to the alfalfa within the next few weeks.

What Insecticide To Apply

Spray with carbaryl, methoxychlor, or malathion. To prepare the spray, mix 2 pounds of 50-percent carbaryl wettable powder, 1 quart of a 25-percent methoxychlor concentrate ($\frac{1}{2}$ pound of active ingredient), or $1\frac{1}{4}$ pints of 57-percent malathion concentrate (12 ounces of active ingredient) in 10 to 25 gallons of water. Apply this amount to each acre.

Do not feed alfalfa treated with methoxychlor to livestock within 7 days after application. No waiting

period is required for carbaryl or malathion.

PRECAUTIONS

Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels.

Store pesticides in original containers out of the reach of children and animals and away from food and feed.

Do not apply pesticides under conditions favoring drift from the area to be treated, when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment if specified on the container.

If your hands become contaminated with a pesticide, do not eat, drink, or smoke until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly. Launder the clothing before wearing it again.

Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of herbicides from equipment, do not use the same equipment for insecticides or fungicides that you use for herbicides.

Dispose of empty pesticide containers promptly. Have them buried

at a sanitary landfill dump, or crush and bury them in a level isolated place, and where they will not contaminate water supplies.

NOTE: Some States have restrictions on the use of certain pesticides. Check your State and local regulations. Also, because registrations of pesticides are under constant review by the U.S. Department of Agriculture, consult your county agricultural agent or State extension specialist to be sure the intended use is still registered.

CONTROL BY CROP MANAGEMENT

You can reduce potato leafhopper infestations without applying insecticide by following these practices:

- Grow hardy varieties of alfalfa that are best suited to your locality. No variety is outstanding in its resistance to the potato leafhopper. Consult your county agent for specific information on this subject.

- Plant alfalfa as far as possible from large plantings of beans,

potatoes, or other host plants that are likely to be harvested at a time when the potato leafhopper would migrate from such crops to alfalfa.

- Plant a 30-foot strip of a grain or grass crop between alfalfa and other host crops to prevent immature leafhoppers from migrating.

- Regulate the time of cutting. If leafhoppers are present, delay harvesting the first crop about 10 days unless this will lower the quality of the hay. After such a delay, the adults will have laid their eggs, and the cutting will destroy large numbers of eggs and young leafhoppers that otherwise would mature to adults and infest the next alfalfa crop. Cut the entire field at one time to prevent migration of leafhoppers from cut to uncut areas.

NATURAL ENEMIES

Spiders, mites, certain predacious insects, and a common fungus sometimes destroy both nymphs and adults of the potato leafhopper. However, none of these natural enemies are sufficiently abundant to be relied on for satisfactory control.



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