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alfalfa and clover PESTS IN IDAHO

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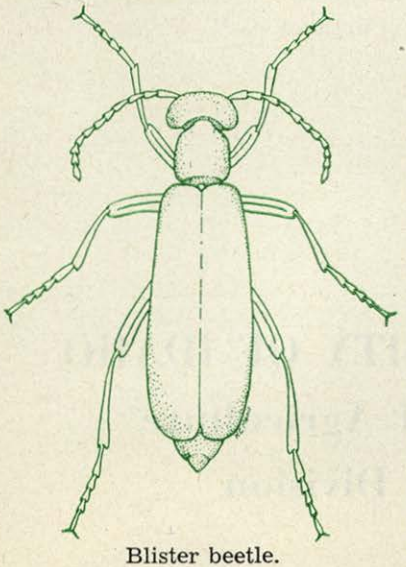
The importance of alfalfa and clover to Idaho's agriculture cannot be over emphasized. They are essential to all types of farming and constitute the most important source of hay, valuable seed crops and soil enrichers. Crops that follow alfalfa or clover generally produce increased yields.

Insects may reduce the hay and seed yields of alfalfa and the clovers. Recognizing and understanding the habits of these pests will lead to more effective control.

Alfalfa Pests

Alfalfa Weevil: The adult is about 3/16 inch long and is brown in color, with a dark stripe on its back. A moderately long, curved snout or beak points downward from the front of the head. Fully grown larvae are about ¼ inch long. The color of the larvae varies from dingy yellow, when very young, to light green when mature. Alfalfa weevil larvae are readily recognized by a faint white stripe down the middle of the back and a black head. They destroy the tips of first crop alfalfa and heavy infestations defoliate the plants and retard growth of the second crop. Little damage is caused by adult feeding.



Blister beetle.

Blister Beetles: Four species are sometimes injurious to both hay and seed crops. Damage is most likely to occur near margins of fields. At times the beetles will strip the blossoms from plants. The spotted blister beetle is the most common. It is from ½ to ¾ inch long, of general gray color with small black spots. The ash-gray blister beetle, somewhat smaller than the spotted blister beetle, is uniformly gray in color. The black punctured blister beetle is about the same size and entirely black in color. Nuttall's blister beetle is green or purplish blue, varying from ⅝ to 1⅛ inches long. Blister beetle larvae live in the ground where some species feed on grasshopper egg masses. Infestations

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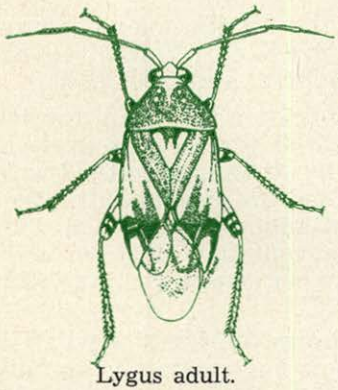
usually occur in areas where grasshoppers have been numerous.

Clover Leaf Weevil: The adult weevil is about ¼ inch long or about twice the size of the alfalfa weevil. It is chocolate brown in color and has a prominent broad snout projecting downward from the front end of the head. In autumn the adults lay their eggs in punctures made in the stems. Larvae are green, shading to pink at the rear end and have a white line extending down the middle of the back. The head is brown. Mature larvae are about ½ inch long and are more robust than the alfalfa weevil larvae. Hibernation takes place in both the larval and adult stages. There is one generation annually. Adults and larvae eat notches in the margins of leaves or at times cut off the entire leaf. The damage is most apparent in alfalfa and clover fields during early spring when the weather is cool and dry. The weevil may completely retard plant growth. This insect is never important in years with wet springs.

Grasshoppers: Grasshoppers eat foliage, blossoms and seeds. All the economically important species have similar life habits and are controlled by the same methods. Eggs are laid in the ground in pods containing from 15 to 100 eggs each. They are most often laid in firm ground or sod among banks, roadsides, fence rows and waste places. The pods are found to a depth of 3 inches in the soil and are not greatly influenced by climatic conditions. As soon as the soil becomes warm in the spring the eggs hatch.

Lygus Bugs: Three species are common pests in Idaho. Their feeding causes blossom drop and decreased yields of hay and seed. They attack many crops. The adult is about ¼ inch long and is generally angular in shape. There is a small blackish or yellowish triangular area on its back between the base of the wings. Usually a greenish or yellowish V-shaped marking is found on this triangular area. Adults are quite active and will fly from recently cut hay to adjoining fields. The young or nymphs are smaller and vary in size. They are characterized by having green bodies with black legs and antennae, and by moving rapidly when disturbed.



Lygus adult.

Pea Aphid: This plant louse occasionally becomes very numerous on first-crop alfalfa prior to its migration to peas. Due to their sucking of plant juices, foliage and blossoms wilt and shrivel. They resemble lygus nymphs by their shape and coloration but can be distinguished by their sluggish movements. Some adults have wings. These wings are clear and held roof-like over the body.

Common Red Spiders or Two-Spotted Mites: The common red spider includes several species. In color the mites vary from yel-

low to a yellowish green. During the hibernation period the mites become red or orange. The adults spend the winter in the soil and in trash on the ground and migrate to growing plants in early spring. They spin a dense web on the undersides of the leaves and feed beneath the webbing which also protects their eggs and young. They are also found on the seed curls. There are several generations each year. Infested leaves and seed curls become dry and leathery and turn brown in color. The seed may fail to fill. Severe damage can occur in a short time.

Other insects may attack alfalfa but are more serious pests on clovers. Information about these can be found in the section on clover pests.

Alfalfa Pest Control Schedule

Alfalfa Weevil: When alfalfa first starts to grow in the spring, apply 1 pound of actual chlordane or ¼ pound of actual dieldrin in 30 to 50 gallons of water per acre using at least 100 pounds pressure; **or** apply 20 pounds of 5 percent chlordane or 1½ percent dieldrin dust per acre. This control practice will kill the adults before they are able to lay eggs.

Where early control has not been followed, kill the larvae by treating the stubble just as soon as the first crop has been removed. Use DDT or chlordane at 1 pound of actual material per acre as a spray **or** 20 pounds of 5 percent dust per acre.

When the hay is treated to control the alfalfa weevil larvae, DO NOT FEED IT TO PRODUCING MILK COWS OR THOSE BEEF ANIMALS BEING FATTENED FOR SLAUGHTER.

Lygus Bugs: Timing the insecticide application with plant growth and lygus population is absolutely essential for seed production. The lygus population can be determined by sweeping the field with a standard, 15-inch, insect sweep net. When the population reaches an average of **four** lygus bugs (adults and nymphs) in a 180° sweep of the net, apply 30 pounds of 5 percent DDT dust per acre. The lygus population usually reaches four per sweep when the first scattered blooms appear.

Regularly check the field for determining the lygus population after the first treatment because the lygus bugs may migrate into seed fields, especially after neighboring hay fields have been cut. Whenever the population again reaches **four** lygus per sweep, repeat the DDT application.

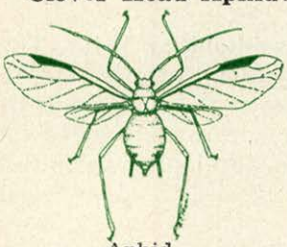
Common Red Spider or Two-Spotted Mites: Where two-spotted mite has been troublesome, combine control for this pest with lygus bug treatment. Use 5 percent DDT dust containing 50 to 70 percent sulfur in place of the DDT dust suggested for lygus control. This combination dust may be used for all lygus control applications.

Where two-spotted mite injury develops and sulfur was not applied with the DDT for lygus control, apply 25 pounds of dusting sulfur per acre. This application must be made as soon as the first evidence of injury occurs. Many new materials give excellent control of mites. Follow the manufacturer's recommendations when using any of these new miticides.

Other Controls: Blister beetles can be controlled by using 5 percent DDT dust at the rate of 20 pounds per acre. The clover leaf weevil can be controlled by applying 5 percent DDT dust at the rate of 20 pounds per acre. When first-crop alfalfa is severely attacked by the pea aphid clip it closely and remove the hay just as soon as cured. Keep the field dry until after the new growth starts in order to discourage aphid development. Many aphids will die because of the hot sun and absence of food. A dust containing 5 percent DDT and 50 to 70 percent sulfur or 1 to 2 percent oil applied at the rate of 40 pounds per acre will be effective in the control of the pea aphid on second-crop alfalfa. Where grasshoppers are feeding on alfalfa and lygus are a problem, substitute 5 percent chlordane for DDT or use a 10 percent toxaphene dust at 20 pounds per acre. Aldrin is very effective in controlling grasshoppers but should not be used when pollinating insects are working the blossoms.

Red Clover Pests

Clover Head Aphid: These small greenish or pinkish plant lice are found beneath and in clover blossoms and on the main stems of the plant. They secrete a sticky honey-dew. When very abundant their feeding results in a lower quality and yield of seed. The large amount of honey-dew produced often makes threshing impossible.



Aphid.

Clover Leaf Weevil: The feeding of the adults and larvae retards growth during cool, dry spring weather. See Alfalfa.

Clover Root Borer: These tiny brown stubby beetles and small cream-colored grubs bore into the roots of red clover and make tunnels. This boring may kill plants and open the way for entrance of disease organisms.

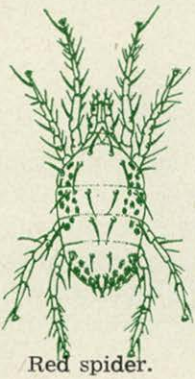
Clover Root Curculio: This beetle somewhat resembles the alfalfa weevil but is smaller and has a shorter, broader snout. Its color varies from yellowish gray to a brownish black. In summertime adults are frequently found on the foliage. In early spring the adults and larvae engrave the root and crown surface, and often girdle the root. The larvae are grayish-white, legless, brown-head-

ed grubs about 1/6 inch long. This pest may be found attacking red, white Dutch and alsike clovers and alfalfa.

Clover Seed Chalcid: These very active little wasps are shiny black in color, about 1/15 inch in length. They emerge in spring at blossom time and lay their eggs inside the seeds before the seeds reach the "dough" stage. Damage is caused by the larvae which eat out the interiors of the developing seeds. Infested seeds are generally blown out with the chaff at threshing time. The larvae complete their growth in 2 to 3 weeks. There are usually two generations annually.

Clover Seed Midge: This is a very delicate insect resembling a mosquito. It deposits its eggs in the young alfalfa and clover buds. The larvae are pink in color and feed inside the individual florets causing them to "blast" before the seed is formed. At times the loss to clover seed producers in some of the warmer areas of Idaho is heavy.

Lesser Clover Leaf Weevil: Hibernating adults are greenish or blue-green in color with shiny black heads and beaks. Newly emerged summer adults are brownish or tan in color. The eggs are deposited in small slits on the plants. The newly hatched larvae are whitish in color but soon change to a brownish white. Their feeding may destroy part or all the blossoms. They may tunnel in the stems, causing the ends to wilt and die. Cocoons can be found on the ground or in the clover head. There is one generation annually.


Red spider.

Common Red Spider or Two-Spotted Mite: The injury by these pests is twofold. In addition to feeding on and spinning webs on the under side of leaves, the terminal leaves and flowers are fed on and enclosed in a web, and the developing seeds fail to fill. Heavy infestations greatly reduce seed yields. See Alfalfa.

Red Clover Pest Control Schedule

Clover Head Aphid: There is no satisfactory chemical control for the clover head aphid at present. Parathion and TEPP, although effective aphidicides, destroy practically all the parasites and the predators of the aphids. As a result, the aphids that remain after these materials have been used multiply rapidly and cause more seed to shrivel than if no treatment had been applied.

On first-crop seed production, allow the plants to ripen after the first set of blossoms have produced seed. This will retard aphid development and allow the parasites and predators to hold

the aphids in check. Seed produced by second- and third-crop red clover under irrigated conditions is seldom damaged by the aphids because of the normally high populations of predators and parasites.

Clover Seed Chalcid and Clover Seed Midge: When producing seed from the first crop, delay the blooming two weeks by clipping the early growth. Two applications of 5 percent DDT at 30 pounds per acre applied at the time of full bloom and again 14 days later will prevent excessive injury. Seed grown from second crop is seldom attacked.

Where combines have been used in harvesting seed fields infested with the clover seed chalcid, fall disking will bury most of the seed and by the following spring the insects in the buried seed will be dead. It must be emphasized that the cooperation of everyone growing seed in the community is necessary in order to obtain satisfactory control.

Lesser Clover Leaf Weevil: Clover grown on well-watered fertile soil is seldom injured. When infestations develop, apply 20 pounds of 5 percent DDT dust per acre as soon as injury is noted.

Common Red Spider or Two-Spotted Mite: Seed produced from first- and second-crop clover may be severely injured by red spider. Use 25 pounds of dusting sulfur to the acre or one of the new miticides; Sulphenone, Ovotran or Aramite, at the manufacturer's recommendations as soon as injury is noticed. A second application may be necessary.

Clover Root Borer and Clover Root Curculio: These insects have been of little importance in Idaho, probably because of crop rotation and irrigation systems followed.

Lygus Bugs: It is questionable whether or not lygus reduce red clover seed yields. Therefore, their control is not recommended at present.

Small-Seeded-Clover Pests

Clover Bud Caterpillar: The adults are moths about ¼ inch long and are dark brown in color. A crescent-shaped patch of silver scales is quite noticeable on the wings when folded. The larva or caterpillar is about 5/16 inch long when fully grown. It ranges in color from white to green and has a buff-colored head. It feeds in webbed leaf buds and florets of alsike, ladino, white Dutch and occasionally red clover destroying the leaves, blossoms and developing seed pods. It is a native insect, which lives on some of the wild clovers and occasionally builds up in large numbers which result in scattered infestations in commercially grown small-seeded-clover fields. It prefers alsike to the other varieties but does not feed on alfalfa or sweet clover. Damage has been confined to

the clover seed producing areas of the Clearwater River drainage in northern Idaho.

Clover Seed Weevil: This elongate-oval beetle, about 1/10 inch in length, is dark gray in color. It has a long slender beak. The adults hibernate in and around clover fields. This insect prefers to feed on alsike and white Dutch clovers but also will infest ladino clover. Damage is caused by the feeding of the minute larvae or grubs on the developing seeds within the pods. There is but one generation annually. In Idaho populations causing economic damage have been found only in the Clearwater River drainage, northward.

Small-Seeded-Clover Pest Control Schedule

Clover Bud Caterpillar: The web protects the insect and no satisfactory control is known. Heavy applications of 5 percent DDT dust show some promise in the control of the larvae when applied as the eggs hatch in early spring.

Clover Seed Weevil: Effective control can be obtained by applying a dust containing 5 percent DDT, 5 percent chlordane or 1 percent dieldrin at 20 pounds per acre when the first early blossoms have turned brown. Sprays containing these materials also show promise.

Remember

1. Time the dust or spray application by carefully checking the insect population, plant growth and injury.
2. See that your sprayer or duster does not travel faster than 3 miles per hour.
3. Equip your duster with a 20-foot canvas drag or trailer.
4. Dust or spray only under calm conditions.
5. Apply insecticides in the early morning, late evening or at night when pollinating insects are not working in the field.
6. Do not use TEPP or parathion. They are very toxic to the beneficial and pollinating insects.
7. Dusting sulfur used alone is highly inflammable and irritating to the skin.