



## Lygus bug in alfalfa seed

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### What You Should Know

- Lygus bug is the primary pest of alfalfa grown for seed in Utah. When in high numbers, lygus bug can prevent seed production or severely reduce yield potential.
- Early scouting can help make management decisions.
- Lygus bug management often overlaps with flower pollination, and so products should be carefully applied to avoid bee kill.

Lygus bug, *Lygus lineolaris*, is a true plant bug in the family Miridae (Fig. 1). Sometimes this insect is also called tarnished plant bug. Lygus bug is native to North America and is distributed throughout Mexico, United States and Canada. Western tarnished plant bug, *L. herperus*, is closely related to the lygus bug and has overlapping distributions in the western United States. Lygus bug has a wide host range of more than 350 plants and is considered damaging wherever it occurs. In general, lygus bug prefers crops, vegetables, and weeds near crops. In Utah, lygus bug is considered the main pest of alfalfa seed production. Heavy feeding on all the growing points (e.g., buds, flowers, pods) can severely reduce seed yield potential.



Fig. 1. Adult lygus bug or tarnished plant bug.<sup>1</sup>



Fig. 2. Lygus bug nymph.<sup>2</sup>

### Description and Life Cycle

There are 2-3 generations of lygus bug in Utah. As with all true bugs, lygus bug nymphs and adults have piercing sucking mouthparts. Adults seek shelter in the fall to overwinter and become active again in early spring.

**Egg:** Lygus bug eggs are whitish, slightly curved, and about 1.7 mm long and 0.5 mm wide. Eggs are individually inserted into plant tissue or at the base of leaf blades. The top of the egg is flattened and is where the hatching nymph escapes. Eggs incubate for 6-14 days depending on temperature.

**Nymph:** Lygus bugs go through five instars before becoming adults. Young nymphs are greenish with red antennae, and can be misidentified as aphids (Fig. 2). As the nymphs mature, they develop four wing pads and five black spots on the thorax and abdomen. Total development time for all five instars ranges from 15-30 days.

**Adult:** Fully developed adults reach 4-6 mm in length, have dark, slender antennae and obvious eyes (Fig. 1). Body coloration is variable, but in general is pale green or yellow with brown or black markings on the legs, wings and head. Overwintering adults are darker than spring adults. Adults readily move from plants if disturbed.

## Damage Symptoms

When lygus bugs are present in high numbers, seed set and maturation may be reduced by nearly 100%. Nymphs and adults are fluid feeders that attack stems and reproductive plant parts (Fig. 3). While feeding, lygus bugs can inject a toxic saliva into the plant and cause seed structures to die and drop from the plant. Even moderate feeding can cause premature bud shed, deformed seeds and reduced seed viability. Nymphs and adults will also feed on immature seed pods. Injured seeds will turn brown or black and will not germinate. Often fields with premature bud shed are attributed to dry weather, but may be caused by heavy lygus bug feeding.



Fig. 3. Lygus bug feeding on a canola flower.<sup>3</sup>



Fig. 4. Parasitic wasp attacking a lygus bug nymph.<sup>4</sup>

<sup>1</sup> Image courtesy of Scott Bauer, USDA-ARS ([www.ipmimages.org](http://www.ipmimages.org)).

<sup>2</sup> Image courtesy of Allen Cohen, USDA-ARS ([www.ipmimages.org](http://www.ipmimages.org)).

<sup>3</sup> Image courtesy of Ronald Smith, Auburn University ([www.ipmimages.org](http://www.ipmimages.org)).

<sup>4</sup> Image courtesy of Agriculture and Agri-Food Canada ([http://esask.uregina.ca/entry/bugs\\_hemiptera.html](http://esask.uregina.ca/entry/bugs_hemiptera.html)).

## Management Options

**Scouting:** Monitoring for lygus bugs should begin prior to the first bloom so initial treatment decisions can be made prior to the pollinator release in the field. Periodic scouting for lygus bugs is recommended because the adults are capable of migrating in large numbers to new fields within a short time span. It is advised that growers sweep their fields weekly for lygus bugs once the flowering period has started. At least five samples of five sweeps each should be taken for every 20 acres of alfalfa seed. Scout the entire seed area by walking through the field in a "W" or "N" pattern to ensure coverage. Each sweep should cover a 180° arc and include the top 8-10" of the alfalfa plants. Successful management of lygus bugs also includes minimizing weed in the field and along the field borders, and timing insecticide sprays to minimize seed damage.

**Thresholds:** Economic thresholds serve as a general guideline for lygus bug control in alfalfa. Insecticides for lygus bug should be considered when 4-6 bugs per sweep are collected before pollinator release. During bloom and seed set, the treatment threshold increases to 8-10 per sweep. Once alfalfa seed is successfully set and maturing, 10-15 lygus bugs per sweep can be tolerated.

**Insecticides:** Treatment decisions should be based on sweep net counts. Applications should be delayed until egg hatch is complete but before the nymphs reach the 4<sup>th</sup>-5<sup>th</sup> instar (e.g., large wing pads are visible). Broad spectrum insecticides will reduce or eliminate pollinators and beneficial insects such as predatory bugs, parasitic wasps (Fig. 4), and spiders. If sweep net counts have exceeded the treatment threshold after bloom, natural enemies may not be able to suppress damaging populations. Insecticidal sprays should be applied in the late evening or early morning when alfalfa seed pollinators are not active. Several products are registered for lygus bug control in Utah alfalfa: beta-cyfluthrin, carbaryl, dimethoate, gamma-cyhalothrin, lambda-cyhalothrin, malathion, methidathion, tralomethrin, zeta-cypermethrin.

**Precautionary Statement:** All pesticides have benefits and risks, however following the label will maximize the benefits and reduce risks. Pay attention to the directions for use and follow precautionary statements. Pesticide labels are considered legal documents containing instructions and limitations. Inconsistent use of the product or disregarding the label is a violation of both federal and state laws. The pesticide applicator is legally responsible for proper use.

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