

## Alfalfa Seed X

### Lygus, Alfalfa Plant Bugs

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Lygus bug



Plant Bug

**Lygus bugs**, comprised of a group of closely related species, are the primary insect pest of alfalfa seed production. Lygus bug adult and immatures feed on plant terminals, buds, flowers and the developing seeds. The general term ‘plant bug’ includes species of lygus and alfalfa plant bugs (APB), although lygus are generally found in greater numbers than APB.

#### Identification (life cycle and seasonal history)

Adult **lygus bugs** include several species of true bugs that are yellowish to reddish brown or green in color, about  $\frac{1}{4}$  inch long and have a distinctive light colored triangular mark at the base of the wings. Adults overwinter in debris in and around fields. As they emerge in early spring they feed first on weed species such as Russian thistle, sweet clover, wild mustards and others, migrating into alfalfa fields in May and June. Lygus bugs mate and females begin to lay eggs soon after becoming active in the spring. Eggs are inserted into plant tissue hatching in 1 to 3 weeks depending on temperature. Immature bugs, nymphs, have 5 instars ranging in size from  $\frac{1}{16}$  inch to  $\frac{5}{32}$  inch, with a total development time of 2 to 4 weeks. There are 2 to 3 generations in most of the Northern Great Plains. Immatures are bright green in color and can be confused with pea aphids because of their similar size and color at this stage. However, lygus nymphs are brighter in color and move more rapidly than the longer-legged and slower moving pea aphid. Other distinguishing features include; black spots that develop on the back in the third instar, becoming more pronounced in the 4<sup>th</sup> and 5<sup>th</sup> instars; wing pads that become visible by the 4<sup>th</sup> and 5<sup>th</sup> instars. Instars can be determined by the degree of external wing development and by the presence of the distinctive black spots. Both immature and adult lygus bugs have piercing-sucking mouthparts.

**Alfalfa plant bugs** are an introduced pest with 1-2 generations per year. The eggs overwinter in alfalfa stems and stubble. Immatures are light green in color with black

spots on the legs. The adult is about twice the size of adult lygus, reaching 3/8 inch in length ranging in color from yellow-green to green-brown in color. Their legs are yellow-brown speckled with black.

## **Plant Damage and Response**

Both adult and nymphs of lygus and alfalfa plant bugs feed on growing points, buds, flowers and green pods by sucking out plant juices and injecting toxic saliva. Their feeding causes plant stunting, blasted buds, shedding blooms and shriveled seed. Blossom drop and shriveled seeds are most responsible for economic losses. Lygus feeding becomes apparent as buds develop and continues until seeds begin to mature. Although plant bugs are often considered significant pests in seed production fields, recent research (University of Wisconsin) suggests forage yields may also be reduced by their direct feeding on vegetative growth. Alfalfa plant bug feeds earlier than lygus, preferring buds rather than flowers.

## **Economic Thresholds**

During bloom and seed maturation insecticide treatment is warranted when lygus bug populations (adults plus nymphs) reach 4 or more bugs per sweep (180 degree sweep) when buds or blooms are present. The presence of early instars indicates that hatch is well underway. Insecticides should not be applied before this time, as many lygus are in egg stage which are protected (within the plant) from insecticide applications. Later, as seeds mature, the threshold increases and 10-15 bugs per sweep can be tolerated. Late-season lygus bug sprays are not justified. Action thresholds resulting from the University of Wisconsin research range from 3-5 bugs/pendulum sweep (nymphs + adults of both species combined). If the alfalfa plant bug is the dominant species, the threshold should be lowered to 2-3/sweep. Four or five 10 sweep samples should be collected from each field.

## **Cultural Control**

Vegetation management is very important in reducing the damage potential of these highly mobile insects. Monitor weeds and nearby crops, especially forage alfalfa provide an indication of potential migration into seed alfalfa fields. Harvest of forage alfalfa fields can cause mobile adults to relocate, infesting nearby seed fields or causing increases in adult populations. However, harvesting of nearby fields before adults are present, results in high mortality of immatures.

## **Chemical Control**

Successful control of lygus bug hatches depended on frequent monitoring and timely insecticide sprays in addition to judicious selection of active ingredients.

## **Biological Control**

Minute pirate bugs, damsel bugs (nabids) and big eyed bugs are important lygus predators. Lygus parasitoids are also present in the region, however MSU research indicates parasitism levels are very low.

*Product List for Lygus and Alfalfa Plant Bugs: Pre-Bloom*

<b>Insecticide</b>	<b>Lbs Active Ingredient per Acre (Fl oz. or oz. product)</b>	<b>Preharvest Interval, remarks</b>
Capture 2EC <sup>R,1,2,3</sup>	3.9 – 6.4	12 hr REI. Do not apply more than 0.3 lb ai/A/season. Do not graze or hay treated hay or forage. Do not apply within 500 ft of water. All treated seed tagged “not for human or animal consumption”. <b>Extremely Hazardous to Bees!</b> Do not apply to alfalfa in bloom.
Carzol SP	½ - 1 lb	<b>21 days. 48 hr REI. Use pre-bloom only.</b> Do not apply more than 1 lb/A/season. 120 day plant back for root crops, 30 day plant back for leafy vegetables, 12 month plant back for all crops
dimethoate <sup>1</sup>	See labels	10 days (harvest, grazing). 48 hr REI. <b>Extremely Hazardous to Bees!</b> Do not apply to alfalfa in bloom. 1 application/cutting.
Dibrom 8E <sup>2</sup>	1 – 1.5 pt	48 hr REI for 1 pt. rate, 72 hr REI for 1.5 pt rate. May be toxic to bees up to 12 hrs post-treatment, apply at night before 11pm. Do not apply if conditions favor dew formation. No part of crop or residue may be used for human or animal feed.
Furadan 4F <sup>R</sup>	2 pts	28 days. 48 hr REI. Apply prior to bloom. Do not make more than 1 application per season. Do not move bees into fields within 7 days of application.
lambda cyhalothrin <sup>R,1,2</sup>	2.56-3.84	7 days for hay. 24 hr REI. <b>Extremely Hazardous to Bees!</b> Do not apply to alfalfa in bloom. Do not apply more than 0.24 pt /A per cutting. Do not apply more than 0.96 pt/A per season. Advisable to move bees during application and allow 3 (low rate) or 5 (high rate) days before re-introduction of bees
Malathion <sup>3</sup>	See labels	0 days. 12 hr REI. Not effective below 65°F. Apply to blooming alfalfa only in evening or early morning when bees are

		not working.
MSR <sup>R,1</sup>	1.5 – 2 pts	21 days. 72 hr REI (rainfall less than 25 in/yr). Chaff may be used for feed or forage but not cut green for these purposes. Do not apply more than 2 times /season.
Mustang MAX <sup>R,1</sup>	2.24– 4.0	3 days. 12 hr REI. <b>Extremely Hazardous to Bees!</b> Do not apply to alfalfa in bloom. No more than 4 oz per cutting, 12 oz per season
permethrin	See labels	1 day if less than 0.1 lb ai/A. 14 days at rates greater than 0.1 lb ai. 12 hr REI. Do not apply more than 0.2 lb ai per cutting. <b>Extremely Hazardous to Bees!</b> Do not apply to alfalfa in bloom.
Proaxis <sup>R,1</sup>	2.56-3.84	7 days for hay. 24 hr REI. <b>Extremely Hazardous to Bees!</b> Do not apply to alfalfa in bloom. Do not apply more than 0.24 pt /A per cutting. Do not apply more than 0.96 pt/A per season. Advisable to move bees during application and allow 3 (low rate) or 5 (high rate) days before re-introduction of bees
Rimon	9-12	14 days. 12 hr REI. Begin application when oviposition is initiated. Rimon will not control adults. Do not apply more than 48 oz/A/seasonore more than 4 applications/season. No part of crop or residue may be used for human or animal feed. All treated seed tagged “not for human or animal consumption”.
Supracide 2E <sup>R</sup>	2-4 pts	<b>7 days. 48 hr REI. Extremely Hazardous to Bees!</b> Do not apply to alfalfa in bloom. No part of crop or residue may be used for human or animal feed. All treated seed tagged “not for human or animal consumption”.

<sup>R</sup> Restricted Use Pesticide <sup>1</sup> Labeled for chemigation <sup>2</sup>24c labels may be available, check with State Dept of Agriculture <sup>3</sup>Several formulations Additional chemicals for which Special Labels (Section 24c or 18’s) are available include: Capture 2EC, Supracide 2E, Dibrom 8E.

*The information herein is supplied with the understanding that no discrimination is intended and that listing of commercial products, necessary to this guide, implies no endorsement by the authors or the Extension Services of Nebraska, Colorado, Wyoming or Montana. Criticism of products or equipment not listed is neither implied nor intended. Due to constantly changing labels, laws and regulations, the Extension Services can assume no liability for the suggested use of chemicals contained herein. Pesticides must be applied legally complying with all label directions and precautions on the pesticide container and any supplemental labeling and rules of state and federal pesticide regulatory agencies. State rules and regulations and special pesticide use allowances may vary from state to state: contact your State Department of Agriculture for the rules, regulations and allowances applicable in your state and locality.*

### Special Notes for Pollinator Safety:

Always read and follow label directions. Many of these products are toxic to bees when exposed to direct treatment and stipulate that applications should not be made when bees are actively visiting treatment area. Some applications may be made late in the evening or early morning to avoid direct application to pollinators. Presence of dew should be avoided.

Categories: Alfalfa Seed, Insects, Lygus, Alfalfa Plant Bugs

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