

Managing Lygus on potatoes in the Columbia Basin: should we care?

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Lygus bugs are insects that feed on a wide range of cultivated crops including strawberry, apple, peach, nectarine, pear, legume, carrots, radish, and other crops. Although rarely a pest on potatoes, Lygus bugs abundance and distribution are causing apprehension to potato growers in the PNW, particularly those in the lower Columbia Basin, suggesting that in addition to causing direct feeding damage, Lygus bugs may vector pathogens.

Lygus bugs are insects with characteristic piercing-sucking mouthparts. Adults are about ¼ inch (6mm) long, somewhat hunchback and are recognized by the presence of a conspicuous heart

shape on the upper center of the back known as scutellum.

Immature Lygus bugs look somewhat similar to adults, except immatures are smaller, do not have wings, and do not reproduce



Figure 1. Left, Lygus adult; right, nymph. Pictures not scaled. Photos credit: Rondon's Irrigated Agricultural Entomology Program (by J.A.)

(Figure 1). Lygus

bug eggs are difficult to see with the naked eye because females insert entire eggs into plant tissues exposing only the flat cap cover of the egg (Figure 2).



Figure 2. Lygus egg in a green bean. Magnification 10X. Photo credit: Rondon's Irrigated Agricultural Entomology Program (by J.A.)

Lygus bug damage

Both adults and immatures feed on plants by inserting their piercing-sucking stylets into leaves and stems of host plants.

Lygus bugs digest their food extra-orally by secreting enzymes through saliva producing a liquefied “plant soup” before ingestion. In



Figure 3. Lygus damage caused by feeding and oviposition (A); close up of a dead leaf. Photos credit: Rondon's Irrigated Agricultural Entomology Program (by J.A.)

Lygus feeding do not grow normally (Figure 3A). Feeding usually results in leaf flagging, and

leaf deformation; also feeding injury often appears as brown lesions or dead tissue (Fig. 3B) Much of their feeding damage can be seen at the terminal region of potatoes.

Lygus bugs as potential vectors of potato pathogens

The extent to which Lygus feeding damage affects potato tuber yield is still unknown. But there are concerns that Lygus bugs could transmit potato pathogens – specifically the Beet Leafhopper Transmitted Virescence agent (BLTVA) – causal agent of potato purple top disease (Figure 4). The pathogen is transmitted to potato primarily by the beet leafhopper (BLH), *Circulifer tenellus* Baker. However, Lygus bugs have been observed in association with potato plants expressing purple top symptoms and some growers have a firm belief that Lygus vectors this pathogen. Preliminary results prove that Lygus can carry the pathogen but the efficiency of transmission is under investigation.



Figure 4. Purple top disease on potatoes. Photo credit: Rondon's Irrigated Agricultural Entomology Program.

Management of Lygus bugs

Monitoring Lygus populations on surrounding vegetation has been suggested because crops such as alfalfa can serve as a source for Lygus into potato fields. Preliminary field studies suggest that as alfalfa is harvested, Lygus bugs migrate to nearby potato fields. There are different techniques available for sampling Lygus bugs including sticky cards, insect nets or vacuums. Based on our studies, the inverted leaf blower (a.k.a. DVAC) is the most effective tool to sample this insect (see YouTube video <https://www.youtube.com/watch?v=dLpI3jkCjXQ>). Currently we recommend to use the vacuum for 5 minutes, 5-10 feet from the border of the fields. Presently, there is no economic threshold for Lygus bugs on potatoes in the PNW.

The rising numbers of Lygus bugs on potato fields in the PNW in recent years suggests that Lygus bugs are emerging pests of potato. Lygus feeding is quite significant and there are efforts ongoing to determine the consequence of such damage. Additionally, we know that Lygus bugs carry the potato pathogen, BLTVA, but the efficiency and rate of transmission is currently under investigation. There is an urgent need for more research in order to identify effective pest management programs against the insect.

