

# TARNISHED PLANT BUG: UP CLOSE AND PERSONAL

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**Introduction** - Tarnished plant bugs are a major pest of strawberries, and are found worldwide in a variety of crops. Their ability to feed on a wide range of hosts and have multiple generations per year make them an extraordinary and resilient pest. Tarnished plant bugs can quickly migrate into a strawberry field from another crop such as an alfalfa field.

Monitoring to identify nymphs is critical to reduce damage, but nymphs can be difficult to find due to their size, colour and speed. The only key symptoms of tarnished plant bug infestation are damaged fruit.

**Description** - There are a few species of plant bug; the species that causes damage to strawberry fruit is *Lygus lineolaris* (Palisot de Beauvois). Most species have a stink gland that secretes allomones, a defense chemical with a foul smell that is released when the insect is disturbed to repel potential predators.

**Adults** - Tarnished colour appearance, ranging from black to dull brown colour (Figure 1), 6-7 mm in length and are 2.5 mm wide and oval in shape. Able to fly; the back half of the forewings are membranous and are bent on a downward angle. Distinct yellow triangle on the dorsal side

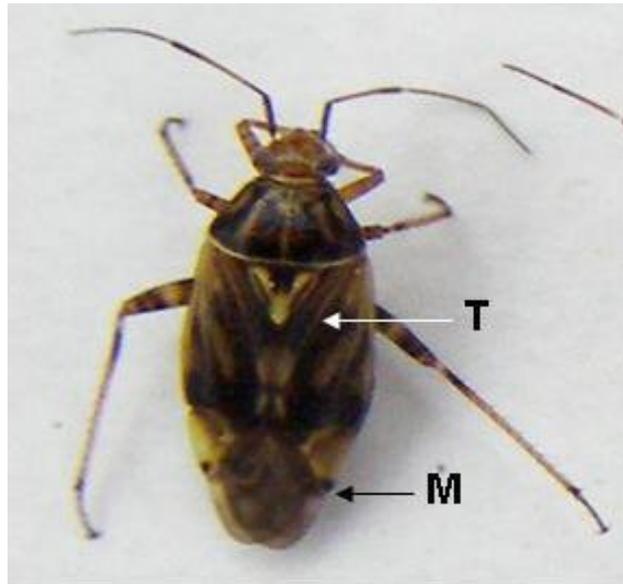


Figure 1. Tarnished plant bug adult.

M indicates the membranous tip of the forewing, T indicates the yellow triangle.

**Nymphs** - Small in size, range 1-5 mm in length depending on the instar. Green in colour and darken as they mature. Typically the third instar stage has five black dorsal spots and being to develop wing pads (Figure 5).



Figure 2. First instar.



Figure 3. Second instar.



Figure 4. Third instar  
Notice the single black spot on the back



Figure 5. Fourth instar  
Notice the five black spot pattern.



Figure 6. Fifth instar - notice the development of wing pads.



Figure 7. All life stages of tarnished plant bug.

Early tarnished plant bug instars are easily confused with aphids because of their light green appearance. Tarnished plant bug nymphs lack cornicles or "tailpipes", structures on the posterior end of the aphid; they also tend to move more quickly than aphids (Figure 8).

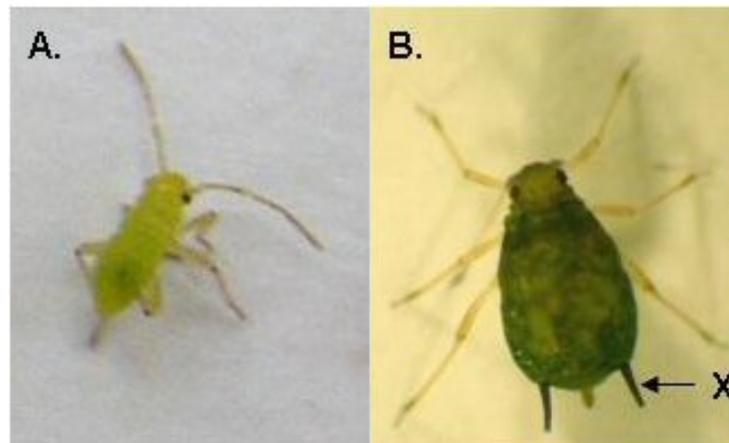


Figure 8. Comparison of tarnished plant bug and aphid morphology. Tarnished plant bug nymph, B) Adult aphid, X indicates the "tailpipe" structure. (Source: Iowa State University Extension)

**Life History** - Tarnished plant bug adults emerge in the spring, feeding on new buds and shoots and lay eggs on plant material once the temperature becomes 20oC or higher. Depending on the temperature the nymphs will hatch in 7-10 days. Nymphs are usually seen on strawberries during bloom and generally emerge in mid May, feeding on the developing fruit. Adults and nymphs can both be present in a crop at the same time as a result of overlapping generations, having between three to five generations per year. From fall to winter only adults are present as they prepare to overwinter in dead weeds, leaf litter and under tree bark. Adults emerge in the spring when the temperature reaches 8oC to start the life cycle over again.

**Damage** - Tarnished plant bugs have a wide range of hosts, including over 350 plant species. They feed on approximately 50 commercial crops including apples, celery, raspberries, tomatoes, peaches, plums, pears, cotton, alfalfa, and beans.

These pests feed on the reproductive organs of the plants, probing the tissue repeatedly causing mechanical damage. Nymphs take a test bite to determine whether the plant is a good food source, if it is suitable it will continue puncturing and release digestive enzymes into the tissue. Feeding causes a number of problems including fruit malformation, abnormal growth, cell death, abscission of fruiting structures and damage to seeds.

Both adults and nymphs feed on strawberry structures, but the nymphal stage causes the most economic damage, feeding on the achenes and tissue of the strawberry fruit.

As the fruit develops the seeds remain clustered together preventing normal development called apical seediness or cat facing (Figure 9A). Generally berries are susceptible to apical seediness before seed separation. Fruit malformation from tarnished plant bug can be confused with the symptoms of poor pollination and although they look similar, each is distinct. Tarnished plant bug damage can be identified by observing the shape of the achenes since they are of equal size while poor pollination is identified if achenes are of varying sizes in the damaged area (Figure 9).

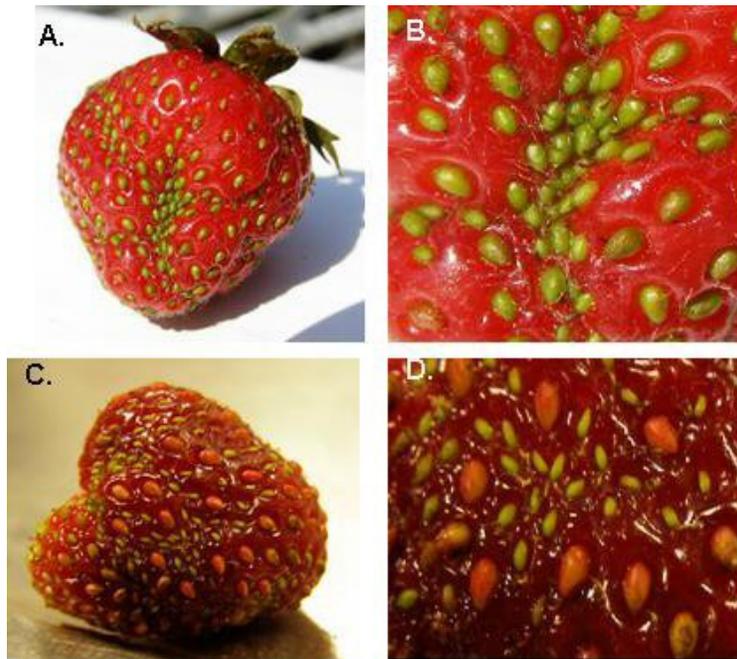


Figure 9. Fruit deformation. A) Full view of tarnished plant bug damage on strawberry fruit, B) Close up of apical seediness caused by plant bug, C) Full view of poor pollination, D) Close up of malformation caused by poor pollination.

**Control** - Many growers use strawberry scouts to monitor and estimate the population density of tarnished plant bugs in a crop. Monitoring is used with thresholds to coordinate sprays and spray timings. Monitoring begins in the spring at first bloom to find young developing nymphs and typically takes place once a week. Monitoring is completed by cultivar, since some varieties blossom early and will have high population numbers sooner than other varieties.

*(Source: Ontario Berry Grower, July 2006. Photographs taken by Cynthia Rougoor, copyright 2006.)*