

Quick Facts

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Psyllids have a very toxic feeding secretion and cause severe damage and losses to potatoes and tomatoes.

Their injury, known as "psyllid yellows" results in the production of a large number of tubers of small size and poor quality, or reduction in yield and quality of tomatoes.

Psyllids can fly and will migrate from breeding areas from the South; they also will migrate from wild host plants to tomato and potato plants.

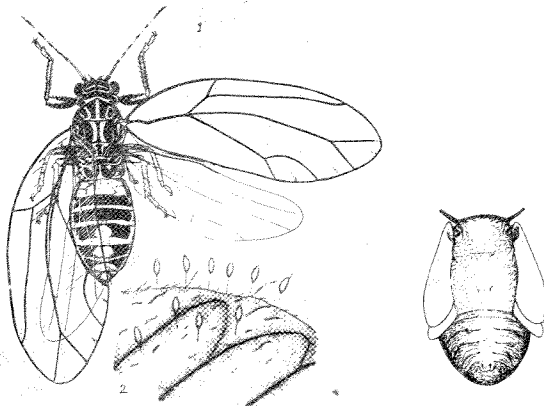


Figure 1: Tomato psyllid adult; tomato psyllid eggs on a leaf section; tomato psyllid nymph.

Psyllid Life Cycle

The psyllid passes through three distinct stages in its development—the adult, the egg and the nymph (immature stage). The adult psyllid often is called the jumping plant louse. Adults are difficult to find without the use of an insect net. If seen, they appear dark with a whitish band nearly "belt-like" across the body.

Eggs are very small, each about 1/32 inch (.8 millimeters) in length. They are orange-yellow in color and are supported on the end of slender stalks that are slightly longer than the eggs. (See Figure 1.) Eggs are most frequently deposited along the margin of the leaves, but may be placed on either surface. They hatch in six to ten days.

Newly hatched nymphs are yellowish in color, but become progressively greener through each of four moults that take place before they change to winged adults. When almost mature, they have nearly the same color as the leaves. Nymphs are flat, elliptical and scale-like in appearance. The newly-hatched nymphs are difficult to see without a hand lens, but when mature they are plainly visible.

Nymphs are more numerous on the undersides of leaves, but during cooler weather they may feed freely on the upper surfaces of shaded leaves. They are quite inactive and are seldom seen moving about. The nymph stage usually lasts from 14 to 22 days.

Overwintering

The psyllid overwinters as an adult but usually in warmer areas such as Arizona and New Mexico, as they cannot survive sub-zero temperatures. They start appearing in Colorado around mid-May and can be found on certain wild host plants. Psyllids then will migrate from wild to cultivated plants throughout the growing season.

The number of generations of psyllids per season is thought to vary from four to seven. However, there is much overlapping of the broods and all stages usually are present after infestation occurs.

Insect Injury

Adults and nymphs feed by sucking plant juices. (See Figure 2.) However, the most damaging aspect of psyllid feeding is the effect of a toxin injected into the plant by the nymphs, creating a symptom known as "psyllid yellows." The severity of injury depends on several factors including age of plant, numbers of psyllids and susceptibility of the variety to the insect toxin. If psyllids are not controlled, total crop loss can occur in several weeks. The symptoms on potato and tomato plants are quite similar. Usually the

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first abnormal condition is a slight yellowing along the midribs and the edges of the top leaves. The basal portions of these same leaves show a tendency to curl upward.

As the condition progresses the entire top changes to a yellowish-green, growth is checked, and the leaves remain small and narrow and stand upright, giving the top of a plant a feathery appearance. (See Figure 3.) In the case of tomato plants and certain varieties of potatoes, the leaf veins become purplish in color.

When the attack comes early in the development of the tomato plant, the dwarfing may be so severe that little or no fruit is set. Late attack on the tomato is inclined to cause the forming of blossoms almost to the ends of the branches with an abnormal number of fruits that never attain a desirable size or quality.

If the attack on potatoes occurs before tuber set occurs, a likely result is the formation of numerous tubers on each stolon. An attack after tubers are partially developed usually results in greatly retarded growth and irregularly shaped potatoes. Potatoes from infested plants may sprout prematurely, and are considered unfit for use as seed.

Control

The threat of severe psyllid attack on commercial crops of potatoes and tomatoes varies widely from season to season. Careful field scouting and use of insect survey information is

the best way to detect early psyllid infestations. Once the presence of psyllids is known the most practical and efficient control is to apply one of the foliage insecticides listed below. Psyllids are not necessarily difficult to control if detected early.

Psyllids also can be controlled through application of soil applied systemic insecticides at planting. If a systemic insecticide is needed for control of insects other than psyllids the cost perhaps can be justified. However, due to the year-to-year *unpredictability* of severe psyllid infestation it is unlikely that routine use of soil applied systemic insecticides for this purpose is economically feasible.

Foliage Treatments

Pydrin	0.1 pound active insecticide per acre (.1 kilogram/hectare)	Do not feed treated vines.
Thiodan	1 pound active insecticide per acre (1.1 kg/ha)	No time limitations.
Metasystox-R	½ pound active insecticide per acre (.6 kg/ha)	Do not apply within 7 days of harvest. Do not feed vines.

Planting Time Treatments

Disyston 15 G	15-23 ounces per 1000 feet of row (425-652 grams per 300-meter row)
Thimet 20 G	11.3 ounces per 1000-foot row (320 grams per 300-meter row)



Figure 2: Psyllid nymph feeding on potato leaf.



Figure 3: Psyllid feeding damage to potato plant.