



## Life History and Management of Pear Psylla

Other common/scientific names: *Cacopsylla pyricola* (Foerster)

Which tree crop does it affect? : All European & Asian pear

varieties. Symptoms of pest (key insect features & damage descriptions): There are two forms of psylla adults-- winterform and summerform. Adults are roughly 2.0 to 2.5 mm in length and appear to hop then fly away when disturbed. The winterform adults are dark reddish brown with two pair of smoky-colored wings that are held roof-like over the abdomen. The summerform adults are lighter yellowish brown in color and sport transparent wings. Psylla eggs are creamy white to burnt yellow in color, rice shaped and less than 0.5 mm long. They can be found along crevices and cracks of fruit spurs before bloom and along blossom sepals, leaf veins, petioles or stems after bloom. Young psylla nymphs are flat with an elongate body shape, translucent yellow, have characteristic red eyes and brown antennae. They are almost always associated with or found within a puddle of syrupy, sticky fluid. As they mature they become flatter, more oval in shape, develop a dark green to brown color and still possess those conspicuous red eyes.

The principle damage is in the form of cosmetic marking of pear fruit surface. Pear psylla nymphs ingest excessive amounts of plant juices that are excreted in the form of a syrupy liquid called honeydew. This honeydew will cause russetting on the pear surface. Often the honeydew is colonized by a sooty mold that marks the fruit surface with dark blotches or streaks. While the psylla nymphs feed on pear foliage, they inject a toxin that can lead symptoms of "psylla shock." Psylla shock is characterized by a blackening and burning of tree foliage similar to damage caused by mites, but typified by presence of copious honeydew on the pear leaves. Reoccurring or severe infestations by pear psylla can lead to leaf yellowing, premature leaf drop in the fall, increased fruit drop, reduced fruit set, reduced tree vigor and stunting, reduced fruit productivity and even tree death. Pest distribution and factors that influence distribution on a regional basis: Pear psylla is native to Europe and was introduced into USA back in mid 1800's. Psylla spread from East Coast to West Coast by late 1930's. Pear psylla is present in all pear-growing areas of Canada and the continental United States.

Pear psylla has a long history of developing resistance to insecticides used to control it while populations of natural enemies continue to succumb to the same insecticides. Resurgent psylla populations predominate in some pear regions. Life history (overwintering habits, generations per year) Pear psylla has three to five generations per year based on summer temperatures and duration. In the Pacific Northwest and Northern fruit producing areas, psylla overwinter as winterform adults and tend to disperse regionally to other deciduous fruit trees in the late fall. Winterform adults return to pear in the spring and begin laying eggs as the pear buds swell. Mild winter temperatures ensure psylla survivorship and warm sunny days early in the spring promote psylla dispersion to pear orchards throughout the region.

Pear psylla prefers pear trees with vigorous vegetative growth. Young non-bearing trees are particularly susceptible to psylla as are pear varieties characterized by vigorous upright growth. Smooth-skinned pear varieties are more sensitive to cosmetic fruit damage than the russeted varieties.

### **How to avoid pest problems (Proactive mgmt strategies):**

Avoid serious psylla infestations by avoiding excessive tree vigor. Do not overstimulate vegetative growth by over fertilizing or excessively pruning pear trees. Rogue out water sprouts and non-bearing sucker branches from the center of the pear canopy. This strategy will remove the tender growth psylla desire and open the canopy up for better spray coverage and air circulation. Encourage biological control agents like *deraeocoris* bugs, *campylomma* bugs, and *Trechnites* wasps. In several IPM projects in Washington State, the use of "soft" pesticides and mating disruption for codling moth has boosted psylla predator populations and reduced pesticides applied for psylla control.

**How and when) to control (Reactive strategies- both chemical and non-chemical)?** Since pear psylla is not a direct pest of pears low psylla populations can be tolerated, but field scouting practices and treatment thresholds need to be established. Population suppression needs to be emphasized in early spring, as management becomes more difficult as the growing season progresses. Dormant and delayed dormant sprays: Protect your buds by applying horticultural oils to discourage egg-laying activities. Scout for adults by beating limbs over white trays and counting adults. Recommended treatment thresholds are very low around 0.1 adult per tray. Many growers will mix in a registered pyrethroid, organophosphate or insect growth regulator with the oil to kill overwintering adults before they lay eggs. Pink to clusterbud sprays: Monitor psylla egg hatch, nymphal development by sampling and examining fruiting spurs under the aid of a field lens. Infestation rates of 5 to 10% indicate moderate to high populations. Alternatively if beat trays reveal adult densities that exceed 5 adults per 25 trays, action is recommended. Esteem and Pyramite applied by clusterbud are the leading products for psylla control. A few applications of koalin clay up to pre-bloom is a good alternative strategy. Petal fall sprays: If monitoring reveals unacceptable populations, another window of opportunity to suppress psylla populations is at petal fall. Recommended products include Agri-Mek plus oil, Provado plus oil or Pyramite. After petal fall: Not an ideal time to try to suppress psylla populations but if densities exceed 0.3 nymphs per leaf, cover sprays may be necessary and work best if applied towards the youngest nymphs. Postharvest applications: Some growers may consider applying postharvest applications of lime-sulfur plus oil or another registered sulfur product to suppress overwintering populations of pear psylla. This strategy works best on an areawide basis, as psylla will redistribute in the early spring during warm sunny days.

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