

Pomegranate Pest Management In the San Joaquin Valley

Revised 2010

Author: Devin Carroll

Contributors: Walt Bentley, Andrea Gjerde, Brad Higbee, Octavio Magallenes, Bernard Puget, Matt Quist, Richard Rice, Norman Smith, and Ken Schneider.

When this article was first posted in 2006, the UCIPM website did not include a section on pomegranates. UCIPM guidelines are now almost finished, and should be posted within a few months. Even so, I think this article will still be useful, so I have made this revision. It can be viewed as an expression of my own experience and opinions, with considerable input from other pest management professionals.

Literature on pomegranates in California is not extensive. James LaRue, a Tulare County Farm Advisor, authored a pomegranate fact sheet in 1980, but it does not cover all of the pests.⁵

The toolbox of pesticides available for use on pomegranates is expanding. Applaud has recently been registered for control of mealybugs, soft scale, and whiteflies. Altacor, Delegate and Entrust are now available for controlling worms and katydids. Intrepid can also be used for worms. Imidacloprid (Admire and Provado) is registered for aphids and whiteflies, but severe bee restrictions prohibit use from budbreak through August (prebloom and bloom). Lannate can be used if needed.

Several chemicals with reduced-risk or tolerance-exempt status have labels allowing use on any crop or most crops, making them legal on pomegranates. Some examples are most B.t. sprays, neem products, soaps such as Green Valley Plant Wash, pyrethrin (PyGanic, Evergreen), and specialty plant oils such as Ecotrol or CedarGard. Purespray Green petroleum oil can be used during dormant or in the growing season. OLR pheromone disruption is also registered.



Cotton aphids, syrphid maggots, and grey field ants.

Cotton Aphid

Aphids are among the most serious and widespread pests in pomegranate orchards, but they are often sufficiently controlled by natural enemies.

The cotton aphid, *Aphis gossypii*, has two phases, one small and one larger. The phase appears to depend on nutrition. The two phases cause distinctly different kinds of damage, and have different levels of biological control.

Cotton aphids probably overwinter on pomegranates and nearby weeds. In spring, large phase aphids build up on rapidly growing shoots and on flowers and young fruit. Damage is usually not major even if spring populations are high,



Aphidiid parasite mummies on flower.

although heavy populations lasting more than three weeks might stunt young or weak trees. Dense colonies on young fruit cause no visible damage. Usually biological control cleans up these spring populations before they cause significant damage (see below).

Small phase aphids are more persistent. They feed on mature leaves, clustering along the midrib. They seem to be less attractive to predators and parasites, and may persist for most of the season if not treated. They produce honeydew deposits on leaves and fruit, which serve as substrate for sooty mold. This

sooty mold is a serious problem for growers who pack in the field. It is not so serious for growers using a packing shed, because it washes off easily.

Periodically during the season, large phase aphids may develop on sucker growth or on fruit. Generally, the fruit is not damaged, and not much honeydew is deposited for sooty mold. The end result may be a fruit covered with parasitized aphids, easily wiped off. However, if honeydew accumulates between two touching fruit, a rotten spot may develop, causing a cull.



Small phase aphids on leaf midrib.

The most effective biological control of large phase cotton aphids is provided by large lady beetles (Coccinellidae, most often *Hippodamia convergens*, *Coccinella novemnotata*, or *C. septempunctata*), and parasites in the family Aphidiidae. Other important predators include hover flies (Syrphidae), green lacewings (Chrysopidae), predaceous gall midges (Cecidomyiidae: *Aphidoletes*), and small lady beetles (*Scymnus* sp.).

In Fresno and Tulare Counties I have found lady beetles are more

dependable in the spring, but they are found throughout the year. Biological control is typically slower in summer and fall, but even then, most of the large aphids will eventually be parasitized. In Kern County, observers report more parasites in the spring, with more lady beetles and lacewings (Chrysopidae) mid- to late season.

Biocontrol is usually not sufficient to clean up small phase aphids, so they may persist all summer. Lady beetles do not seem to like them, and aphidiid parasitism is infrequent. *Aphelinus* sp., a parasite which forms a small black mummy, is common but does not control the aphid. Lacewings are helpful.



Lady beetle larvae.

Sometimes large numbers of small phase aphids die from what appears to be a fungal disease. This suggests that experiments with *Beauvaria* might be warranted.

My observations near Mendota in 2006, an unusually heavy year, suggested that pomegranates can tolerate at least three weeks of extreme spring populations (May, during bloom time) without evident damage to the fruit or to the vigor of the

trees. This was during the period of red flower buds to young fruit, and at their peak the aphids covered the buds so thickly that the buds were hard to find. Lady beetles cleaned up most areas of the orchard. Honeydew and sooty mold were not a problem (one rainstorm helped clean up).

In a few areas with weak trees, lady beetle predation was not enough, and heavy populations persisted for up to four more weeks. At the fifth week of the infestation (June 5), the trees appeared to be suffering. A week later some flowers were falling, although some of this is normal. Lannate was applied to the worst areas, and parasites eventually cleaned up the others.

Chemical control of aphids is challenging. The most effective registered material is imidacloprid (Admire through drip or Provado as a foliar). Unfortunately bee restrictions prohibit use before or during bloom, which has been interpreted as budbreak through August. Lannate is effective, but also has bee restrictions that prohibit daytime use when bees are present. Growers are reluctant to spray by ground during peak bloom period because the blower may knock off flowers. Night sprays by air with Lannate are not very effective due to poor coverage and lack of fuming. One of my growers tried it, and it eliminated the lady beetles but left many aphids. Fortunately, some parasites survived and controlled the aphids after a couple more weeks.

Among organic treatments, pyrethrum is fairly effective. Ecotrol, soap sprays, neem, and other tolerance-exempt products might also help. Two or more applications may be necessary.



Small spot of rot on rind, caused by cotton aphids late in season.

Grape Mealybug

Pseudococcus maritimus

Grape mealybug is common on pomegranates. Comstock mealybug, *Pseudococcus comstocki*, has also been observed.⁵

Grape mealybug has two generations, as in grapes. Most of the mealybugs overwinter as egg masses or as hatched crawlers. They finish hatching in late winter, and the crawlers move out to the young shoots soon after budbreak in March. The young nymphs can be found nestled between the leaf petioles and the shoots.

After several weeks, the growing nymphs return to under the bark, where they mature and deposit egg masses around May. The new crawlers spread out after hatching in June and July. Many can be found on sucker growth at the base of trees. They seem to favor leaves covered with small spider webs made by *Mallos pallidus* (Dictynidae).



Acerophagus and other small Encyrtidae make mummies with multiple exit holes when parasitizing larger mealybugs.

The mealybugs continue to grow and move and many eventually settle on fruit. They do not produce a lot of wet honeydew. Instead, they deposit piles of solid sugar which are easily brushed off. One or two mealybugs on a fruit are not serious, but when many cluster in the flower ends, or between fruit, they may lead to rot. (See photograph of similar rind rot in aphid section.)

Mealybugs have good biocontrol in pomegranates, from parasites and predators. Often the natural enemies keep the mealybugs below damaging levels..

Acerophagus notativentris and other small encyrtid parasites that help control mealybugs in grapes also play a key role in pomegranates. They have

about five generations for each mealybug generation, sometimes finishing up in mealybugs which have already deposited half of an egg mass.

A larger encyrtid parasite, *Chrysoplatycerus splendens* (or a closely related species) is a key to control in some orchards near Mendota. It only attacks large mealybugs under the bark, so it appears late in each generation. Only one parasite emerges from each mealybug.

In Tulare County where pomegranates are surrounded by grapes, the predaceous gall midge, *Dicrodiplosis californica*, is a key predator of mealybugs under bark.

The “little brown mealybug destroyer”, *Scymnobius sordidus*, a tiny lady beetle, is another excellent predator. The waxy larvae resemble mealybugs.

Biological control is effective unless disrupted by Lannate or by heavy ant populations. Unfortunately we have no effective methods of ant control. The main culprit is the grey field ant, *Formica aerata*.



Chrysoplatycerus has bulky antennae.



Only one *Chrysoplatycerus* develops in a mature mealybug mummy, shown here with mealybug egg masses.

The best available chemical control of mealybugs is Applaud. June is good timing, when the crawlers begin moving from the egg masses. Applaud has good residual action and is not harmful to the parasites or midge maggots.

Another possible timing for Applaud is after budbreak when most crawlers are at the base of leaves. However, June has the advantage of also being good timing for soft scales.

Control using Lannate is difficult because it has very little residual action, and there is no time when all of the mealybugs are exposed. By the time the last mealybugs have left their egg masses under the bark, the first to leave have already arrived at the fruit. Lannate is also disruptive to the parasites, and has resulted in a chemical treadmill where sprays are needed every year.

Biological control is usually sufficient in organic orchards. However sulfur dust used to control flat mites is also disruptive to parasites, and may lead to mealybug problems.

Whitefly

Both the greenhouse whitefly, *Trialeurodes vaporariorum*, and the ash whitefly, *Siphoninus phillyreae*, occur on pomegranates in California. They sometimes reach nuisance levels, depositing some honeydew on leaves and fruit. The ash whitefly is most often the pest in California. *Encarsia inaron* parasites usually provide good biological control.

If orchards border cotton, such as in Kern County, whiteflies may migrate into pomegranates in July and August in such large numbers that severe damage may result from honeydew and sooty mold. Cotton defoliation may lead to especially heavy migration.

Whiteflies can be controlled with Applaud, with imidacloprid, with Lannate, or with soft chemicals.



Cherry leafhopper.

Photo by Jack Kelly Clark - UCIPM website

Cherry leafhopper

The cherry leafhopper, *Fieberiella florii*, has been observed as a perennial minor pest in a pomegranate orchard in the foothills near Dinuba. This orchard is adjacent to a Cherry orchard.

Nymphs were observed developing in April, with adults appearing by the end of April. The larger nymphs and adults deposit white frass that resembles salt granules, which easily wash off. Most of the deposition occurs from April to June.

Soft Scales

At least three soft scales are common on pomegranates in the San Joaquin Valley: citricola scale, black scale, and soft brown scale.^{2,5} (IDs not verified by taxonomists.) European fruit lecanium scale, *Parthenolecanium corni*, has also been reported.

It is important, albeit difficult, to distinguish between the soft scale species, because they differ in their potential to cause damage, and in the effectiveness of their biological control. See below for an Identification Guide with a key and pictures of various stages.

The damage caused by soft scales in pomegranates differs sharply from the damage they cause in other crops such as citrus or olives. Instead of spreading copious amounts of juicy honeydew that supports sooty mold, on pomegranates the soft scales (and mealybugs) produce compact piles of solidified sugar, which are easily brushed off during packing. Occasionally, sugar may build up where two fruits touch, and lead to rot. No sooty mold is produced. Sooty mold on pomegranates is caused by aphids or whiteflies.

The most important damage by soft scales on pomegranates is the pale spot left when the scale is removed from red fruit, where the protection from sunlight has prevented coloring. If there are many such spots, the fruit is down-graded. One or a few scales leaving spots is usually not a problem.

Ants will exacerbate soft scale populations by protecting the scale from parasites. The ants like the sugar produced by the scale.

All of the soft scales can be controlled in late June when their populations are mainly small nymphs. The best available material is Applaud. Lannate also works, but it disrupts the parasites and perpetuates the problems. Applaud in late February has controlled soft brown scale, and would probably control citricola scale. Black scale is hidden deep under bark until the spring generation in May-June.

Black Scale

Saissetia oleae

Black scale has at least two generations on SJV pomegranates. Partially grown nymphs overwinter on trunks under bark and reach the egg sac stage there from mid-May through June. Hatch begins in early June, with the eggs in each sac hatching simultaneously. The nymphs gradually move out to young wood and often end up on the stems close to fruit. Only occasionally do they move to the fruit itself. For this reason, even high populations cause relatively little damage to the fruit.

The new scales mature into egg sacs beginning in mid to late July, and hatching begins soon after. A few of the new crawlers may move to fruit, occasionally enough for a cull, but most remain on twigs and stems. Unhatched eggs are present continuously into late September, which seems to allow enough time for an additional generation. Sometime in late summer or early fall, the nymphs move back to their overwintering site under bark.

It is not clear what prevents black scale from increasing to very high levels. The parasites *Metaphycus helvolus* and *Scutellista cyanea* help control black scale in other crops, but only low levels of these parasites have been seen in pomegranates.

Citricola Scale

Coccus pseudomagnoliarum

Citricola scale is often the most abundant soft scale on pomegranates, but it causes little damage because it usually settles on leaves and young wood rather than on fruit.

Citricola scale has one and a half generations on SJV pomegranates. Partially grown nymphs overwinter on wood. Most are probably on young wood, but some might be under bark on the trunk. They mature on twigs about 1-3 years old, and start producing live crawlers in mid to late April. Each female will continue to produce crawlers for 1-2 months. Most crawlers settle on leaves, but some stay on twigs, and a few find the fruit. Nymphs may continue to move throughout their life cycle.

Nymphs on twigs and fruit tend to grow more quickly than those on leaves. A few new females are mature by late July, and start producing new crawlers. Gradually more are mature, even on leaves, but many remain immature to the end of the year, as they all do on citrus.

Citricola scale suffers heavy mortality during hot months, particularly on leaves. Biocontrol is only moderately effective. Parasites are probably the same as in citrus, where *Metaphycus luteolus*, *M. stanleyi*, *M. nietneri*, *M. helvolus*, and *Coccophagus* spp. attack this scale. Some of the parasites attack young nymphs, which turn black. Others attack when the scale is near mature, producing multiple progeny per scale. Some of these parasites also attack soft brown scale, and citricola scale may have better biocontrol where both scales are present.

Soft Brown Scale

Coccus hesperidum

Unlike citricola and black scales, soft brown scale often settles on fruit. Usually when a fruit has dozens of scale, this is the culprit. Fortunately, parasites are very effective in controlling soft brown scale. If left alone, serious infestations will usually disappear by the following year. Treatment with disruptive chemicals such as Lannate will perpetuate the problem. Applaud, which is not disruptive to the parasites, is a much better choice.

Soft brown scale nymphs probably overwinter mainly on 1-3 year old twigs, but might also be under bark. They mature some time around late April or May. This is when populations should be assessed to determine if treatment will be needed in June. Both nymphs and adults are easily confused with citricola scale, which is usually more abundant. (See key below). If soft brown scale can be found in May, a June application of Applaud should be considered, depending on the tolerance level of the grower.

Crawlers are born live, with no eggs. Some may settle first on twigs or leaves, but they continue moving, and fruit seems to be preferred. New females start maturing in late July, and the crawlers from one female on a fruit can result in a heavy infestation. Later in the season all stages may be present on a fruit. There might be a third generation.

If no disruptive sprays are applied, parasites will usually kill most of the brown soft scales before the overwintering generation. *Metaphycus angustifrons* is the most common parasite on citrus.

Soft Scale Identification Guide For Pomegranates

By Devin Carroll
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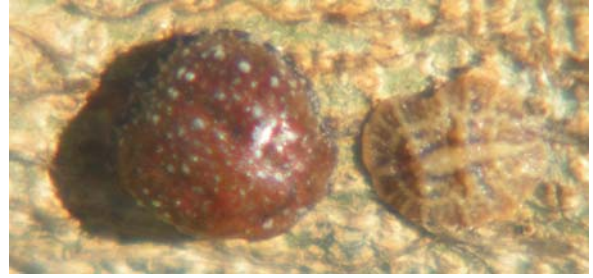
Key to Soft Scale Reported from Pomegranate

- 1a. Mature egg sacs circular and tall, like tortoise shells. Eggs hatch simultaneously. Older nymphs circular, with ridges forming. The youngest nymphs are oval... 2
- 1b. Mature females flatter and usually elongate-oval. Crawlers born live over an extended period. Nymphs elongate-oval... 3
- 2a. Mature egg sacs black or dark brown. Eggs pink. Immatures with ridges outlined in dark... black scale.
- 2b. Mature egg sacs dark brown. Eggs white. Immatures with dark lines. Ridges not so distinct... European fruit lecanium scale.
- 3a. Adult females with a dark spot developing into a dark midline. Nymphs in each stage develop distinct lines radiating around the perimeter, followed by a dark midline...
...soft brown scale
- 3b. Adult females and nymphs with a light midline. In nymphs and adults, darker areas develop first near the middle, and finish at the perimeter, which has a webbed pattern...
...citricola scale.

Black Scale on Pomegranate



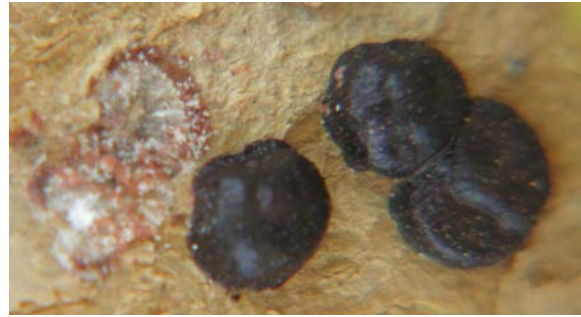
Adult (egg sac) and two sizes of nymphs on trunk. Note distinct grey pattern on nymphs.



Adult and nymph on twig.



Clustered on favorite spot, stem next to fruit.



3 adults next to blurry pink eggs, which hatch all at once.

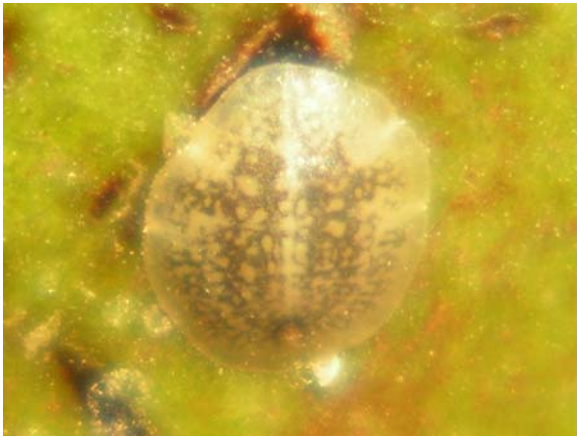


Sometimes nymphs spread to fruit, the worst scenario.



Typical sugar blobs. No sooty mold.

Citricola Scale on Pomegranate



Adult on fruit. Midline light colored.
Nymphs born free over many weeks.



More mature adult on twig.
Perimeter has webbed pattern.



Large nymph on twig.



Two nymphs, one parasitized.



Small nymph. Middle darkens first.

Brown Soft Scale on Pomegranate



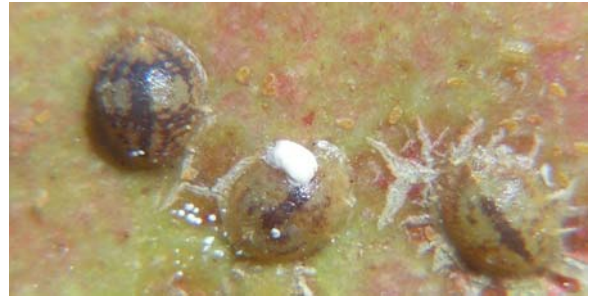
Young adults with black spots.



Two nymphs on leaf.



Nymphs. Distinct lines start darkening first around perimeter. Midline dark.



Maturing adults. Midline dark.
Nymphs free born over many weeks.



Large nymph on stem.



With multiple parasites.

European Fruit Lecanium Scale on Grape



Adults on grape cane. The white eggs hatch all at once.



Large nymph on berry.



Two nymphs on leaf midrib.



Two nymphs on spur, next to grape mealybug crawlers, before budbreak.

Omnivorous leafroller (OLR)

Platynota stultana

OLR is a pest of many crops in the San Joaquin Valley. On pomegranates, the caterpillars typically carve surface grooves where two fruit touch, or where the caterpillar has tied a leaf to the fruit surface. Often, the caterpillar will tunnel into the fruit. If skin penetration has occurred, even small openings, pathogens become established internally and grow on the arils. If the fruit is not culled before juicing, the product may be ruined.

Usually, even if no control measures are taken, only a low number of fruit will be damaged, but in some locations damage may reach 20% or more. Even a 1-2% loss is worth taking control measures.

OLR can be monitored using pheromone traps. The biofix is the first consistent moth catch, usually in the second half of February. The second flight begins about 1200 degree days (min 48 max 87) after the first, in late June. At this time, larvae begin appearing on shoot tips.⁵

The first flight oviposits on weed hosts near the orchard, so weed control in the early season will minimize the second flight that may attack the pomegranates. This behavior may also be manipulated by using a trap crop system to target the first flight.

Control measures should be aimed at the second OLR flight. Two options are available. OLR pheromone disruption can be applied in late June just before the flight begins. Pheromone brands include Checkmate OLR and Isomate OmLR, which are OMRI approved, and Checkmate OLR flowable and NoMate OLR spiral, which are not.

The second option is a worm spray. Long-residual materials including Altacor, Delegate are best. Lannate is a less desirable option because it is disruptive. Organic treatments include Entrust and B. t. sprays such as Dipel or Deliver. B.t. should be applied at least twice, about 700 degrees after the second flight begins, and 7-10 days later. B.t. is less disruptive to parasites than Entrust.

The third generation causes most of the damage, in late summer. If moth catches or fruit inspection indicate a continuing problem, more sprays can be aimed at the third moth flight.



Damage from a small carob moth larva, where two fruit were touching.

Navel orangeworm

Amyelois transitella

Navel orangeworms can occasionally be found tunneling into pomegranates. They almost never cause primary damage. Usually they enter through wounds, holes made by other worms, or in rotten spots. Treatment is not worthwhile.

Carob moth

Ectomyelois ceratoniae

Carob moth looks almost identical to NOW and causes similar damage, but it is more likely to cause a primary wound. The wound may look like OLR damage, but without webbing. So far carob moth has not

been common enough to warrant treatment.

Filbertworm

Cydia latiferreana

Filbertworm, a close relative of codling moth, can be a serious pest of pomegranates located near oak trees. It can also attack walnuts. The worm bores deep into fruit and opens the fruit to rot organisms.

On hazelnuts in Oregon and Washington, where filbertworm is the most serious pest, growers use pheromone traps to monitor. "Sprays for filbertworm are applied when the action level of five moths in a pheromone trap has been accumulated or when the traps have caught an average of 2-3 moths."³

Filbertworm pupates in silk cocoons in fallen leaf debris or cracks and crevices in the ground. Some may be 1-2 inches below the surface.³

Dr. Richard Rice trapped filbertworm moths coming from oaks along the Kings River near Sanger and Kingsburg in 2005 (pers. comm.). The largest moth peak came from emergence from overwintering pupae in the first half of May. Moth catch continued at a low level all summer, with a second smaller peak in early October, from larvae that developed in new crop acorns.

Filbertworm is best controlled using long-residual materials such as Altacor, Delegate, or Entrust.



Filbertworm moth. Color variable.

Photo by Jo Ann Poe-McGavin

Leaf-footed plant bugs

Leaf-footed plant bug (LPB) (*Leptoglossus clypealis* and perhaps *L. occidentalis*), was identified as a pest of pomegranates by Quayle.⁷

LPB can build up to very large populations in pomegranate orchards, and can be found in “herds” with more than 100 nymphs on a single piece of fruit. They feed through piercing/sucking mouthparts that penetrate the thick skin of the pomegranate fruit to the arils, where feeding causes withering of stung arils. They especially like fruit already split. They can be found in pomegranates all year, but damage has not been observed until late in the season.

Occasionally diseases are introduced into regions of the fruit that have been fed upon, but it is not certain whether the insect vectors the pathogen directly, or fungal spores in the environment are able to enter through damaged feeding sites.

Feeding damage is not easy to see on the outside of the fruit. But high populations of feeding insects leads to thick layers of insect scat on fruit surfaces, which aggravates disease pressures.

Cold winters are hard on LPB, so bad years typically follow several warm winters.¹ Split pomegranates are a favored overwintering site. Removal of old fruit is an effective cultural practice.

LPB often migrate from pomegranates to other crops. But they may also migrate in from pistachios, almonds, pecans, or urban yards. Other known food plants include oranges, limes, guava, avocado, peach, plum, loquat, pear, apple, persimmon, melons, cotton, sorghum, corn, tomato, potato, cucurbits, eggplant, sunflower, bean, bell pepper, okra, cucurbits, sorghum, blueberry, Chinese tallow, juniper, arbor vitae and “to a lesser extent” rye, barley, wheat, and soybean.^{4,6}

A scelionid egg parasite, *Gryon pennsylvanicum*, can have a large impact on LPB populations.¹

Low populations of leaf-footed populations may not cause much damage, but they should not be allowed to build up. Lannate is the best available treatment.



Leptoglossus clypealis.



Adult, large and small nymphs.
photo by Matt Quist

Organic growers might try pyrethrin or Ecotrol on young stages. Removal of all fruit from the trees, including split fruit, might reduce the overwintering population.



Aril damage by leaffooted plant bug
– photo by Matt Quist



Resulting soft rot. photo by Matt Quist

False Chinch Bug

False chinch bug, *Nysius raphanus*, is a threat to young pomegranate trees. Dense masses of nymphs can kill infested shoots in less than a day. Adults are less damaging, even when swarming.

These bugs build up on many weed species, especially London rocket. When their food source is mowed or dries up, the nymphs march over the ground in extended swarms. They are not likely to climb trees above the first 1-2 feet. Sucker grow at the base of trees may be attacked.

To prevent attacks, weeds should be kept controlled in the first 1-2 years after planting pomegranates. If weeds are present, monitor for developing infestations. If necessary, treat the weeds, ground and infested trees with Lannate. Organic growers can try pyrethrin or Ecotrol.

Forktailed bush katydid

Scudderia furcata

Angularwinged katydid

Microcentrum retinerve

Katydid sometimes nibble holes in the rinds of pomegranates. They can be a problem in orchards bordered by favored host plants, such as citrus or stonefruit. Weeds such as mallow can also host katydids.

FTBK have two hatches per year, in March-April and in July-August. Maturation takes about 2 months.⁹ AWK has one hatch, in April-May.⁹ The damage to pomegranates seems to occur most as the pomegranates approach ripening.

Katydid may be controlled with Delegate, Entrust, Altacor, or Lannate. The most effective control is when nymphs are small.



Katydid damage.
Photo by Andrea Gjerde.

Thrips

Citrus thrips and greenhouse thrips both occur on pomegranate, but have not been observed causing significant damage.² A more serious threat, chilli thrips (*Scirtothrips dorsalis*), has been found in Texas and many foreign countries.⁶

Alfalfa weevil

The alfalfa weevil, *Hypera postica*, has been found hiding in the calyx of pomegranates during the summer. This is a potential quarantine problem, because some countries such as Japan forbid importing fruit carrying this pest.

Flat mite

Flat mite, *Brevipalpus lewisi*, causes leathering or “alligator skin” damage to pomegranate rinds, similar to their damage in citrus and pistachios.^{2,5} Occasionally, this damage can be quite serious. Flat mites are very tiny and difficult to monitor.

Similar damage by an unknown cause may be confused with flat mite damage.² Flat mite damage starts at the stem end, and the brown discoloration extends further than the cracking. The mites and their cast skins may be found in the cracks. The other blemish occurs anywhere on the fruit, and has no extra discoloration beyond the cracked area.

Flat mites overwinter under flakes of bark on large branches.⁵ They move to leaves and fruit in summer.

Many pomegranate farmers routinely use one to three applications of sulfur dust as a prophylactic against flat mite.^{2,5} Wettable sulfur also works. The applications start in late June, and may be repeated about once a month until August.



Flat mite damage starts at the stem end.



Not flat mite damage.

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