

# SHIRUDO

**T** Powered with  
**Tebufenpyrad**

Guia de identificação  
de ácaros e auxiliares



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## Introduction

Belchim Crop Protection is a company that has been in the service of agriculture for 30 years. Aware of the importance of knowledge and control of crop pests, this guide has been developed to provide the user with keys to identify the main economically harmful mites and their natural enemies.

Numerous species of phytophagous mites are known to cause damage to plants grown around the world. They are of very small size, from 0.1 to 0.5 mm. The observation, using a magnifying glass or binocular, of their shape, color, size and mobility, together with the symptoms and damage they produce to the plants on which they live, allows them to be recognized and visually identified. The mites feed on the plants thanks to a characteristic mouthpiece of the piercing-sucking type that fix to the plant tissues to extract its sap. This results in widespread discoloration or yellowing of the green parts of the plant. The numerous lesions also cause plant tissue drying and wilting. Some species inject substances that alter, sometimes very severely, the developing plant tissues resulting in intense deformation and galls in the plants organs.

Mites possess a high reproductive capacity leading to a very rapid increase of their population, which makes them potentially very destructive. They often live grouped in colonies of hundreds or thousands of mites and in favorable environmental conditions multiply very quickly causing serious damage to crops.

Some species of mites are very specific, living only on one species of plant. This is the case, for example, of eriophid mites, which can be identified up to the level of species simply because of the appearance of damage, galls or deformations, sometimes very striking, that they produce in the plants where they develop. In other cases they are extremely polyphagous, such as the red spider *Tetranychus urticae*, which has been described causing damage to hundreds of both cultivated and uncultivated plant species. Although mite populations have a high potential for multiplication under favorable conditions, in nature they are generally controlled by their numerous natural enemies. These are predatory arthropods, insects or mites, which are beneficial auxiliary fauna for farmers, as they are responsible for the biological control of phytophagous mite populations.

This guide has been made with the collaboration of Cristina Navarro-Campos, Altea Calabuig and Ferran Garcia-Marí, Researchers of the Mediterranean Agroforestry Institute (Universitat Politècnica de València), to whom we would like to express our deepest thanks for making the elaboration of this tool possible.

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## *Aceria sheldoni* - Citrus bud mite (Eriophyids)

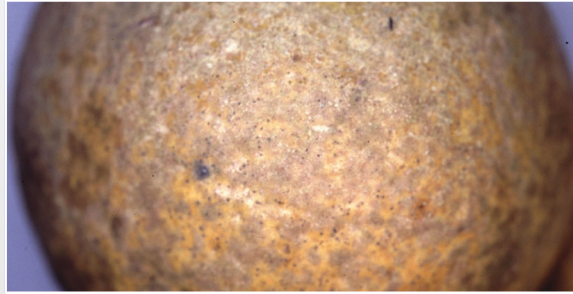


Deformation of shoots and shortening of internodes caused by citrus bud mite. Some leaves appear narrow with rounded and sunken tips.



Altered flowers evolve towards a misshapen or ribbed fruit.

## *Brevipalpus* spp. (Tenuipalpids)

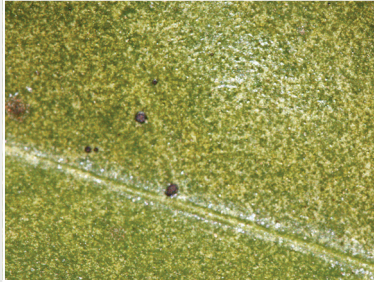


Damage to the peel of lemons and sour oranges caused by high mite populations: the epidermis becomes dry showing a cracked appearance and silvery coloration.



Symptoms of the citrus leprosis virus vectored by the mite.

## *Eutetranychus banksi* - *E. orientalis* (Tetranychids)



Diffuse discoloration of leaves and fruits. Leaves become yellow and defoliation occurs with high mite populations. On the upper side of leaves, reddish mites and white moults can be observed.



Comparison of discolored leaves (left) with a standard leaf (right).

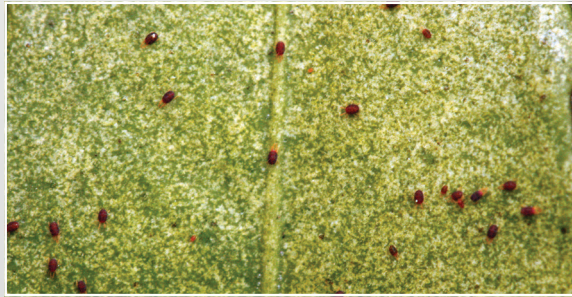


Healthy fruit between two fruits with diffuse discoloration.

## *Panonychus citri* – Citrus red mite (Tetranychids)



Whitish, matt and diffuse discoloration over the whole surface of the leaf and fruit.

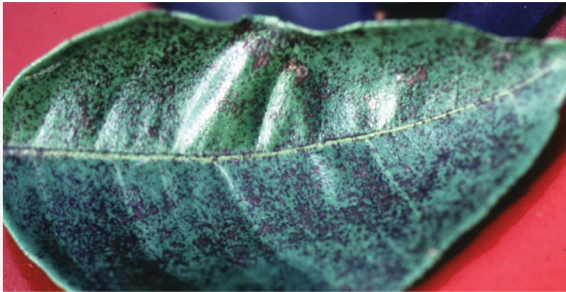


Dark red mites can be observed on discolored leaves.

## *Phyllocoptruta oleivora* – Citrus rust mite (Eriophyids)



Russeting and darkening of the fruit surface.



Necrotic injuries on the upper and back side of leaves.

## *Polyphagotarsonemus latus* – Broad mite (Tarsonemids)



Undulations of the edge of the leaves and shoot necrosis. Broad mite develops on the back side of the leaves and on young fruits.



Silvering on the fruit surface that could cover the whole fruit.

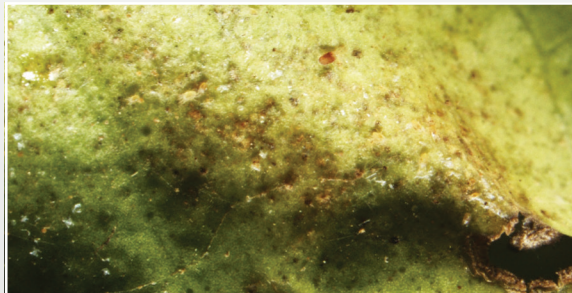


The area injured can be detached easily by pressing.

## *Tetranychus urticae* – Two-spotted spider mite (Tetranychids)



Lesions on clementine and lemon fruits.



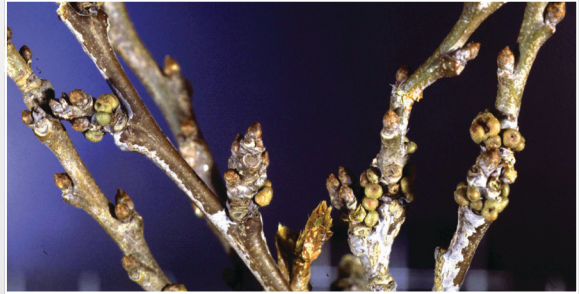
Mite colony on the back side of the leaf.



Yellow spots on the upper side of the leaves forming a slight swelling that corresponds with concave rust spots on the back side of the leaf where the mite colony develops.

## *Acalitus phloeoptes* - Plum tree bud mite (Eriophyids)

Fruits symptoms



Galls caused by mites attacking the base of the plum shoots. Consequently, affected branches do not sprout.



Spherical galls inside of which the tiny eriophyid mites live.

***Aceria oleae*** (Eriophyids)



Deformations of the edge of tender leaves and reddish coloration of the galls on the back side of the leaves.

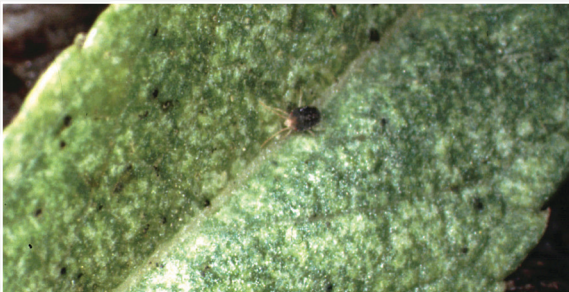
## *Aculus fockeui* (= *A. cornutus*)- Peach silver mite (Eriophyids)

Fruits symptoms

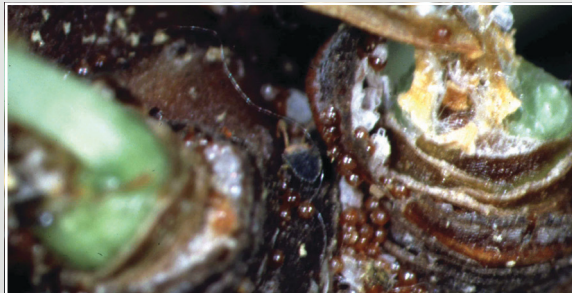


The leaves show a silvery and leaden color over the whole orchard. The symptom is more severe in the base of the branches. Not to be confused with the silver leaf fungus *Stereum purpureum*, which attacks the whole branch in isolated trees in the orchard.

## *Bryobia rubrioculus* (Tetranychids)



Discoloration of leaves and shoots and whitish spots as a consequence of feeding.



Grouping of eggs, mites and moult remains.

## *Epitrimerus pyri* - Pear rust mite (Eriophyids)

Fruits symptoms

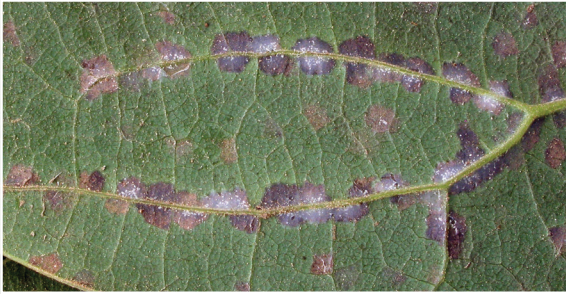


Comparison of healthy leaf (left) with russeting on a leaf (right).



Brownish roughened area on the fruit skin (russeting) in the stylar zone of apple and pear fruits, which may extend to the whole fruit. Leaves can also be affected.

## *Oligonychus perseae* - Persea mite (Tetranychids)



Discolored and brown areas or necrotic spots along the nerves of the back side of the leaves. Mite colonies are in those areas protected by a dense web.

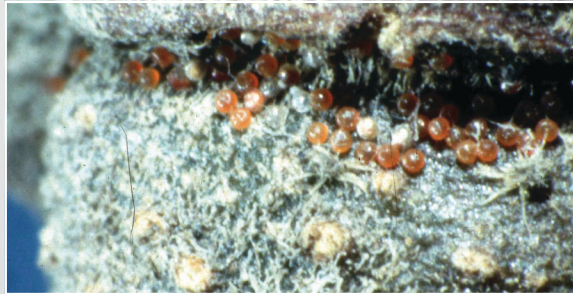


If damage is severe, the spots can be observed on the upper side of the leaf.

## *Panonychus ulmi* - European red mite (Tetranychids)



Whitish and diffused discoloration of the leaves which turn leaden and brown.



Winter eggs piled on the trunk are easy to be seen.

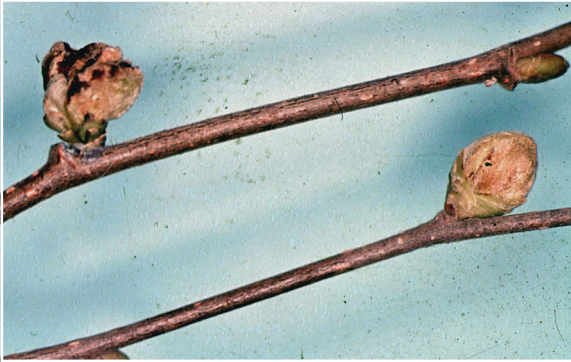
## *Phyllocoptes graniti* - Almond erineum mite (Eriophyids)



Yellow hairy areas, which turn brown over time, on the back side of the almond tree leaves. The mites present in these areas cannot be seen to the naked eye due to their small size.

## *Phytoptella avellanae* - Hazelnut gall mite (Eriophyids)

Fruits symptoms

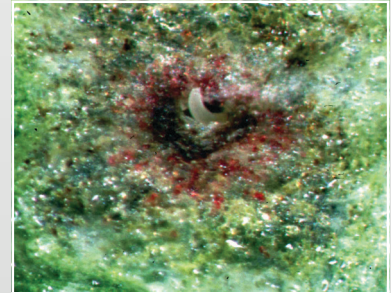


Thickened buds, which fail to develop the following spring, are the most characteristic symptoms caused by this mite. Terminal buds are the most damaged.

## *Phytoptus pyri* – Pear leaf blister mite (Eriophyids)

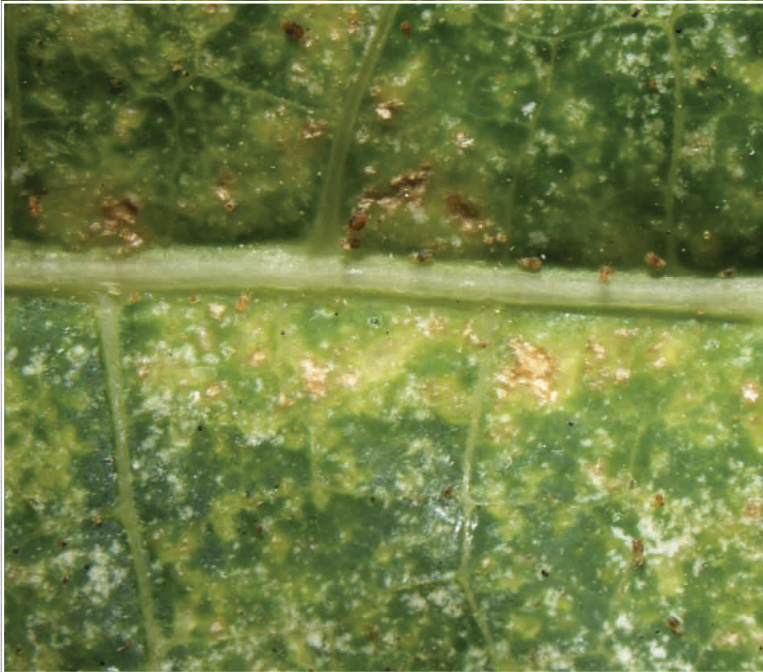


Small blisters (galls) on leaves and fruits. Galls on leaves originate on the back side, starting with a greenish coloration which turns in red and finally black. Russetting can develop on apple and pear fruit.



The elongated body of the mites can be seen using a magnifier.

## *Tetranychus urticae* – Two-spotted spider mite (Tetranychids)



White and yellow spots on the leaf which can turn necrotic.



Leaves of pear tree and papaya affected by the two-spotted spider mite. The mite attack causes yellowing and discoloration.



## *Aculops lycopersici* – Tomato russet mite (Eriophyids)



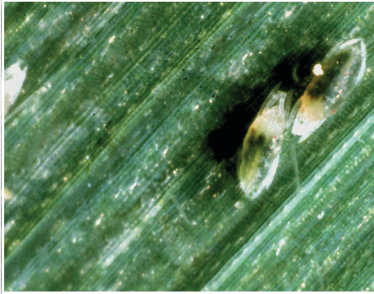
Russeting on shoots and leaves. On leaves, a yellowing process is first observed. Then leaves turn brown and dry up.



The attack starts at the plant base and extends towards the top of the plants.

## *Petrobia latens* – Brown wheat mite (Tetranychids)

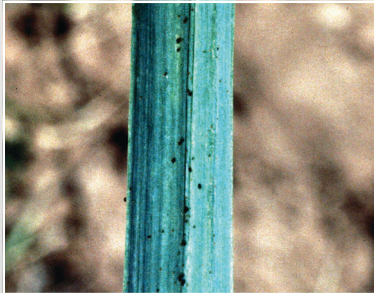
Horticultural symptoms



Leaf discoloration caused by mites feeding.



Similar symptoms to those caused by drought.



The leaves turn yellowish, brownish and start to dry from the top.

## *Polyphagotarsonemus latus* – Broad mite (Tarsonemids)



Dark areas and deformations on pepper shoots and flowers.



Nerves of the leaves deformed, with a threadlike appearance.



Leaves turn light brown, stiff and curly at the edges.



## *Steneotarsonemus pallidus* – Cyclamen mite (Tarsonemids)

Horticultural symptoms



Small leaves that are unfolded. Roughened, wrinkled upper leaf surface, with curled edges.



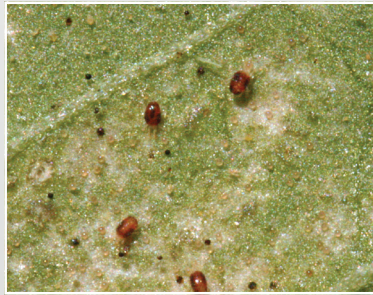
Dwarf appearance of the plant since leaf petioles fail to elongate.



## *Tetranychus urticae* – Two-spotted spider mite (Tetranychids)



Diffuse discoloration of leaves caused by mites feeding on beans, cucumber and aubergine. Mottled appearance.



*T. urticae* adults and damage on strawberry and bean leaves.

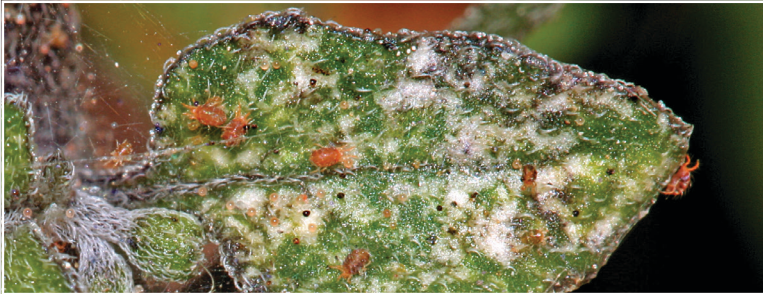
Silk threads produced by *T. urticae*.

## *Tetranychus evansi* - Tomato red spider mite (Tetranychids)

Horticultural symptoms



Yellowing or bronzing of leaves caused by feeding punctures, followed by desiccation.



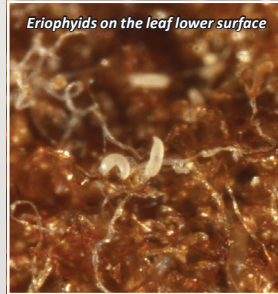
Silk threads and orange-red mites.



## *Colomerus vitis*, *Eriophyes vitis* – Grape erineum mite (Eriophyids)



Leaves show swellings on upper surface.



Corresponding areas on lower surfaces are concave and densely covered with a velvety mass of whitish plant hair, where the eriophyid mites live. The whitish hairs become brownish after some weeks.

Pictures: J.A. Ávalos

## *Eotetranychus carpini* – Yellow vine mite (Tetranychids)



Partial discoloration and yellowing or redness of leaves, which show a burnt appearance.

Lower leaf surface with mite colonies.

## *Panonychus ulmi* – Red spider mite (Tetranychids)



Discoloration and necrosis of young leaves due to the mite punctures in spring.



In summer, with higher populations, the leaves turn to a bronze color.

## *Tetranychus urticae* – Two-spotted spider mite (Tetranychids)

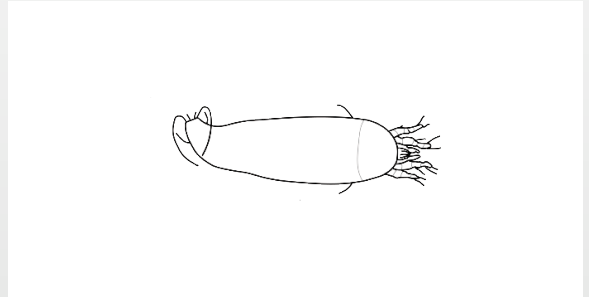
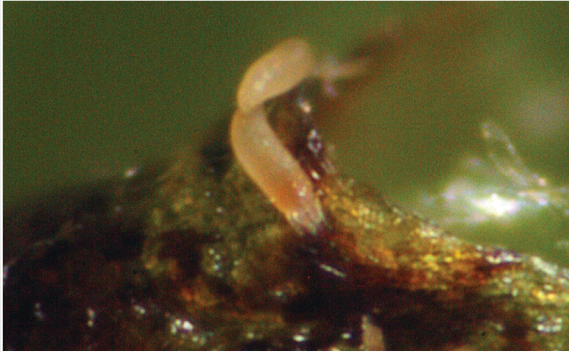


Partial discoloration and yellowing of leaves.  
Similar symptoms to those caused by drought.  
Intense defoliation can occur.

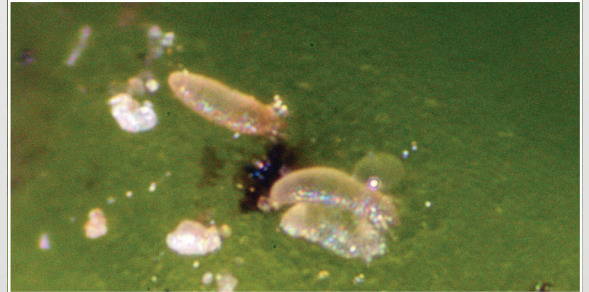
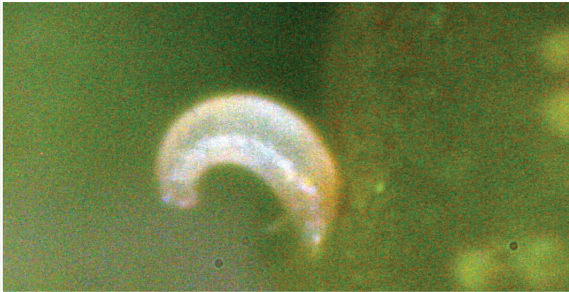


Brownish-grey coloration in affected fruits.

## *Aceria sheldoni* - Citrus bud mite (Eriophyids)



Elongated body with whitish or yellowish coloration.  
Two pairs of legs and chelicerae in the front part of the body.



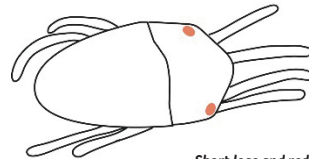
Tiny size (0.2 mm). Eriophyid mites are plant specific and cause very different symptoms, but all mites show a similar appearance of the body.

## *Brevipalpus* spp. (Tenuipalpids)

Citrus, tea and ornamentals

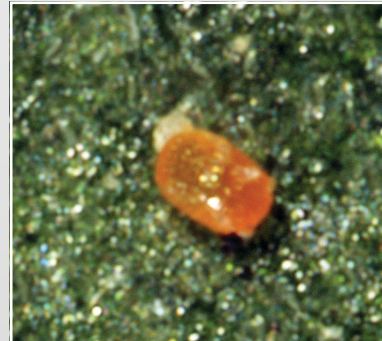


*Ogival and flat shape.*



*Short legs and reddish coloration.*

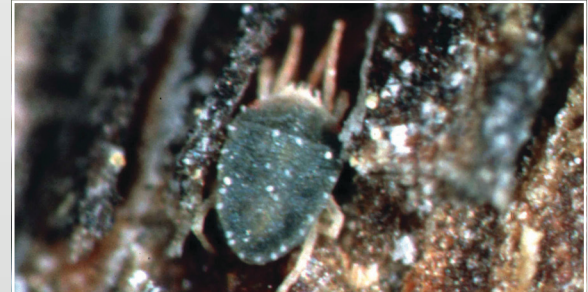
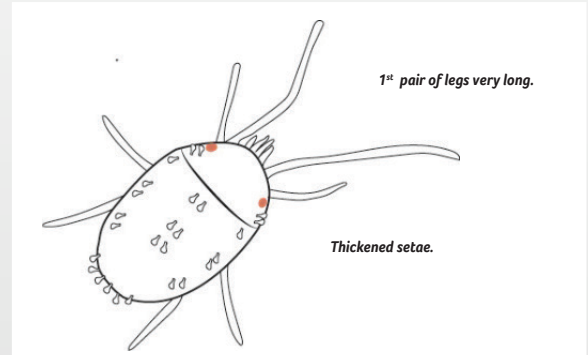
Small mites (0.3 mm). They can be distinguished from tetranychids by their smaller size, their flattened shape and their slow motion. Mites shelter along the nerves of the leaves. Elliptical and red eggs.



## *Bryobia* spp. - Clover mites (Tetranychids)



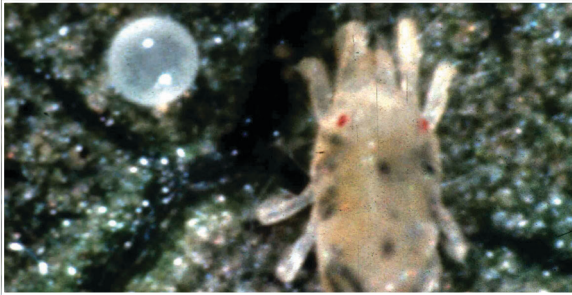
Shield shaped body with dark color.



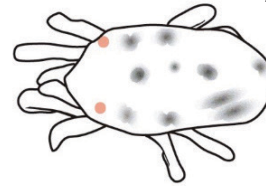
*Bryobia* shows large size (0.7 mm), brown color and flattened body. These mites normally live in the upper side of the leaves without forming colonies.

## *Eotetranychus carpini* - Yellow vine mite (Tetranychids)

Vine and hazelnut



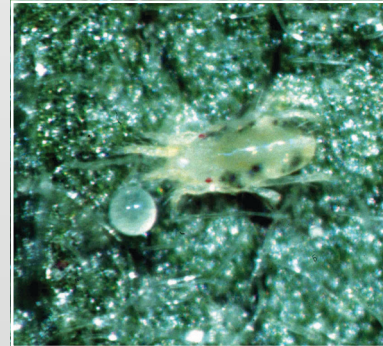
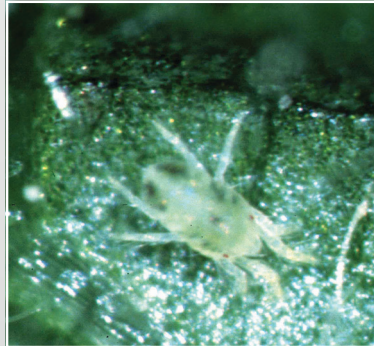
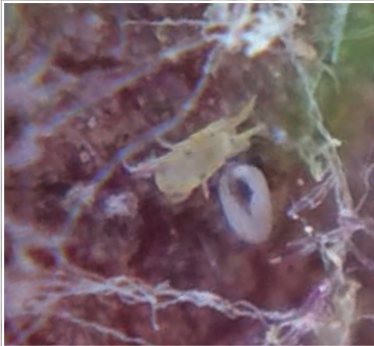
More than two dark spots  
inside the body.



Elongated body.

Ocular red spots.

Wintering females may not show the spots. The egg is spherical, clear and translucent.



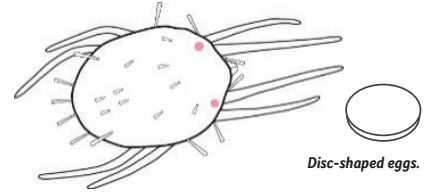
## *Eutetranychus banksi* - *E. orientalis* (Tetranychids)

Very polyphagous



Female with rounded body.

Ocular red spots.



Long legs.

Disc-shaped eggs.



Female of orange to greenish color with dark spots. Very frequent in the upper side of the leaves along the nerves. Round and flattened eggs.

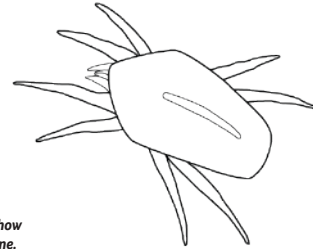
A male (smaller and pear-shaped) waiting for the female to end their moult.

## *Lorryia formosa* (Tydeids)

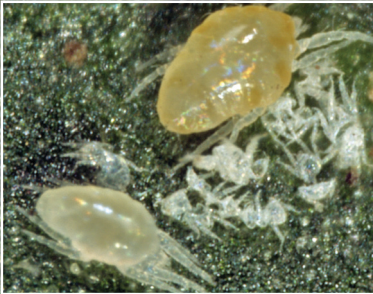
Saprophagous



*Pentagonal and yellowish white body*



*The mites frequently show a longitudinal dorsal line.*

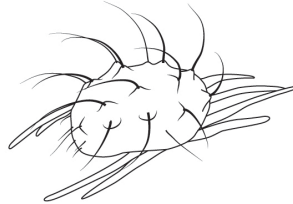


Mites with small size (0.2 to 0.5 mm). They form large colonies but without economic importance. Occasionally, tydeids can cause minor damage (hardening and flaking of the areas where mites area aggregated).

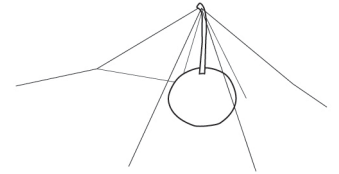
## *Panonychus citri* - Citrus red mite (Tetranychids)



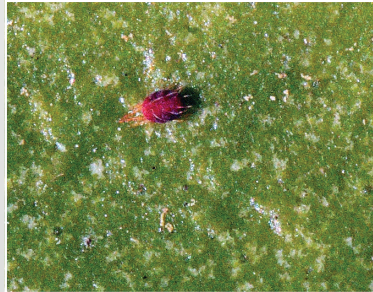
*Dark red colored and rounded female.*



*Big setae inserted on red tubercles.*



*Eggs with silk threads.*

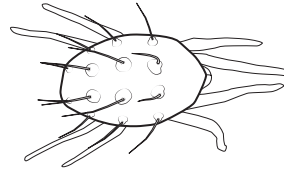


Males are smaller, with a clearer color and pear-shaped. A characteristic egg: round, red and with a vertical hair with fine silk threads emerging from its tip to the surface of the substrate.

## *Panonychus ulmi* - European red mite (Tetranychids)



*Dark red colored and round female.*



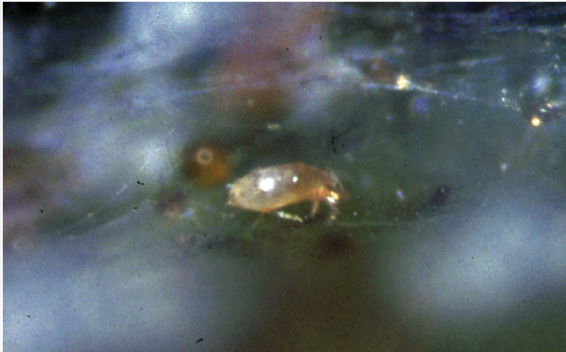
*Dorsal setae inserted on white tubercles, in contrast to *P. citri*.*



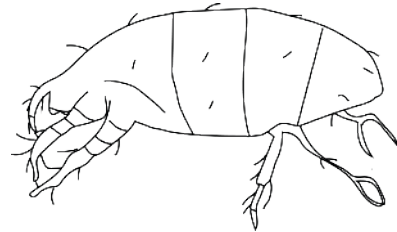
Males are smaller, elongated and pale. Eggs similar to *P. citri* but with a muted color, almost brown and without silk threads fixed to the substrate.

# *Polyphagotarsonemus latus* - Broad mite (Tarsonemids)

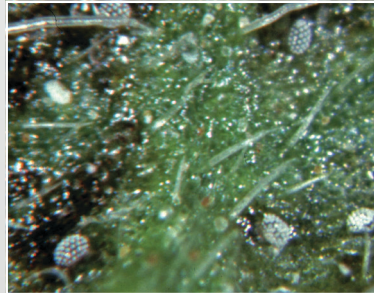
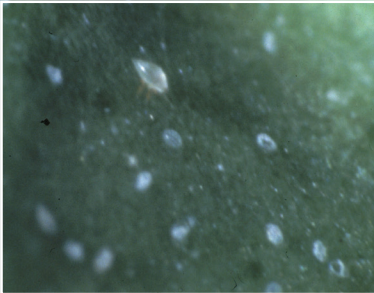
Very polyphagous



*Elongated and elliptical shape.*



*4<sup>th</sup> pair of legs slightly atrophied and with 2 long hairs at the end.*



*Round and flattened egg with white dots.*



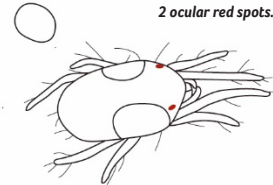
Small mite (0.2 mm), almost invisible to the naked eye. Whitish and caramel colored.

# *Tetranychus urticae* – Two-spotted spider mite (Tetranychids)

Polyphagous



Female with 2 lateral dark spots.



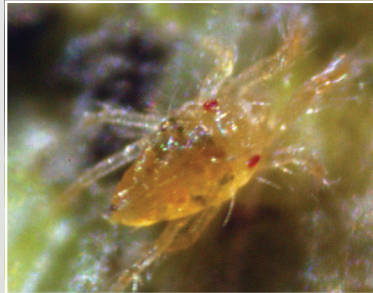
2 ocular red spots.

Very apparent hairs on the legs.

Adult female 0.5 to 0.6 mm long, variable coloration: yellowish, greenish, reddish, even brown. Males are smaller, elongated, with longer legs. Bright and spherical eggs, whitish or orange.



Female.



Male.



Male under the silk web.

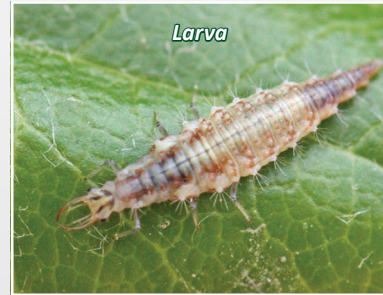
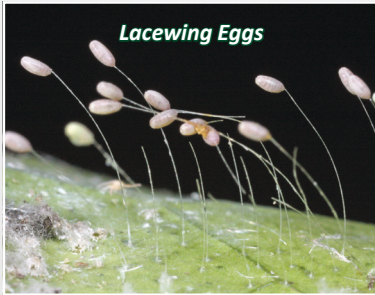
# Phytoseiids



Medium-sized mites (0.5 mm) with globular form and fast movements. The pigmentation of their digestive system is altered by feeding on their prey. The egg is ovoid and transparent.

## Lacewings: *Chrysoperla carnea* (Crisopa)

Mites beneficials



Lacewing eggs are attached to the plant by long slender stalks. The larvae are flattened and whitish with brown or reddish areas; they have strong sickle-shaped mandibles.

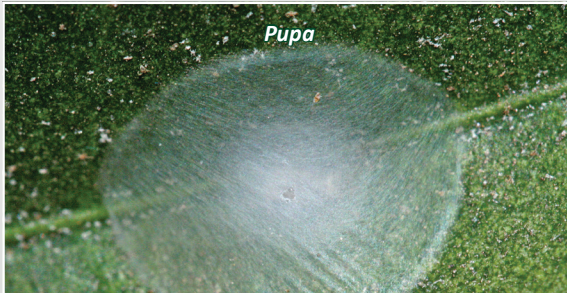


Adults 12 mm long. Green body. Wings are transparent with green veins.

## Dustwings: *Conwentzia psociformis*



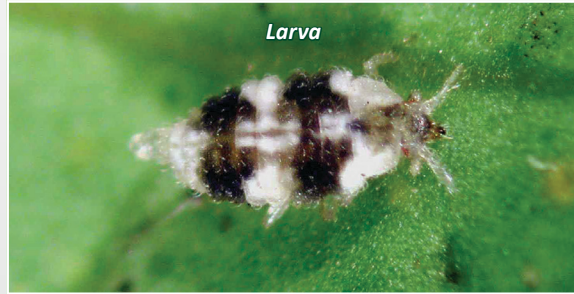
Elongated larvae, pale in color with spots varying in color from dark to red according to the prey ingested.



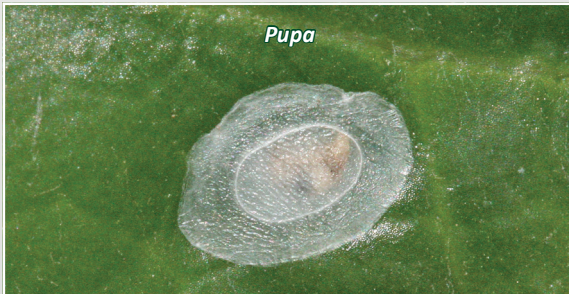
It pupates beneath a circular structure composed by a double layer of white silk. Adult shape similar to lacewing but smaller (5 mm), with whitish powder covering their wings.

## Dustwings: *Semidalis aleyrodiformis*

Mites beneficials



It is similar to *Conwentzia psociformis*, but the larva shows a wider appearance. The body is white with dark to reddish colored spots according to the prey ingested.



The pupa differs from *C. psociformis* for having both layers of silk in physical contact, at the same level. Adult slightly smaller than *C. psociformis*.

## Spider mite destroyer lady beetle: *Stethorus punctillum*

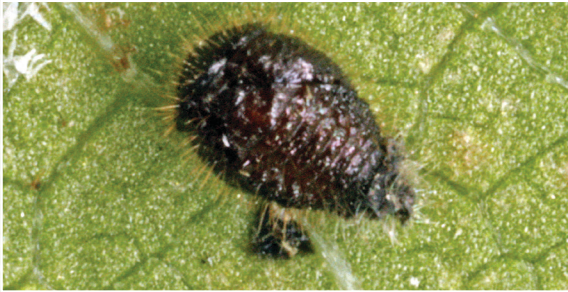
Mites beneficials



Pink larva in a spider mite colony.



Larva with whitish hairs.



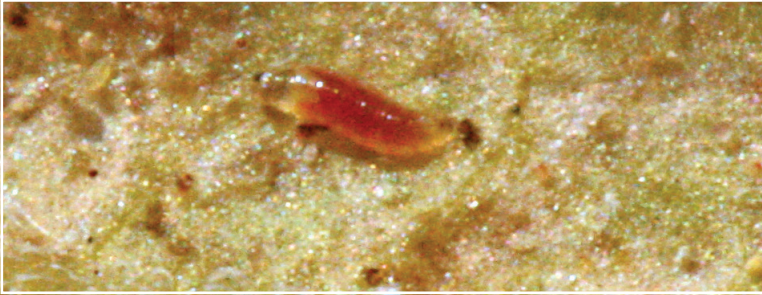
Black pupa.



Adult 1-2 mm long, black with body surface covered with white, tiny hairs.

## Predatory gall midge: *Feltiella acarisuga*

Mites beneficials



Reddish or orange larvae 1-2 mm long. Larva in a spider mite colony (left) and preying on a two-spotted spider mite (right).



Silken pup cocoon (left) and adult (right) of 2 mm with long, slender legs and mosquito-like appearance.

## Sixspotted thrips: *Scolothrips*

Mites beneficial



Pale thrips of 1-1.5 mm. It can be recognized by the six dark spots on its wings and the big reddish eyes.



*Scolothrips* preying on a tetraniquid egg.

## Minute pirate bugs: *Orius*

Mites beneficials



Yellow or orange nymph with shiny appearance. It bears a needle-like beak which is used to feed.



Adult on jasmine flower, where their small size can be appreciated.

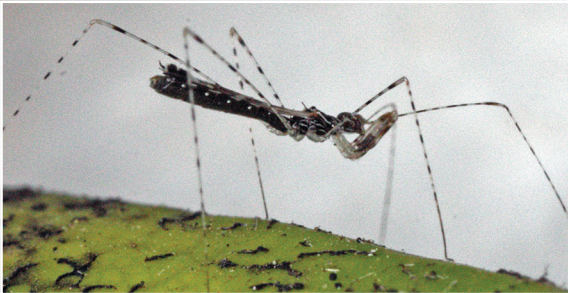


Shiny black adult 2 mm long.  
Triangular head with red ocelli and articulated antennae.

## Assassin bugs: *Ploearia*



Whitish nymph with long, zebra-like legs. The abdomen is often seen with red coloration due to the food ingested.



Adult with elongated body which can reach 11 mm long. The long and slender legs rise their body far from the leaf substrate. Legs and antennae shows a similar zebra-like appearance.

