The most common pests and their biological control in home gardens

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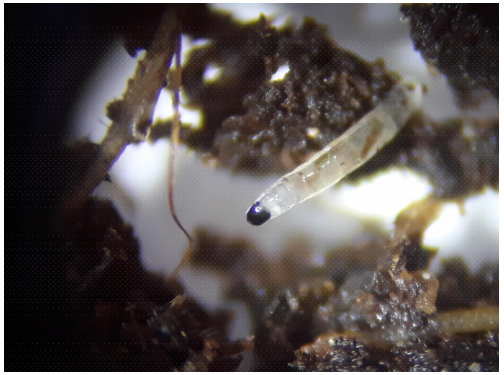

Minna Pajunen

Spider mites
are rather small (0,3-0,5 mm) pests. Spider mites are yellowish green and have black spots on both sides of the body. Webbing is also a sign of spider mites. The first mites are usually on the under side of the leaves. Eating marks, small dots, can be seen on the upper side of the leaves. *Phytoseiulus persimilis* is used for biological control of spider mites.

Thrips
are small (1-2 mm) fast-moving insects. They have two pairs of narrow fringed wings. Thrips lay their eggs inside the plant tissue which makes their control (biological and/or chemical) difficult.
Thrips are almost always found on the undersides of the leaves or in the flowers. They cause damage by sucking plant cell fluids.
Damage marks appear as silvery patches on the leaves with black spots tool points (faeces).
Thrips are controlled by *Neoseiulus cucumeris* and *Orius majusculus*.

Aphids
are pear-shaped soft-skinned insects. They have long legs and antenna. Aphids can be wingless or winged, their colour and size vary.
Aphids damage can be seen, for example, as "curling" of the growth points. Also aphid skins on the leaves are an indication of the aphids.
They reproduce very fast and spread themselves all over the plants.
Aphids excrete honeydew, which stains the leaves.
Aphids can be controlled by using **VerdaProtect** (a mix of different aphid paratisoids), *Chrysoperla carnea* and *Adalia bipunctata*.

Fungus gnat
are 3-5mm long black, slim flies. They have long legs and antenna. Larva are transparent/white and has black head. Larva can grow up to 8 mm long.
Fungus gnat larvae damages mainly the roots of young cuttings and seedlings. Due to the root damage, plant diseases can infect the plant more easily. The plant wilts and the growth slow down.
Fungus gnat larvae can be controlled by *Stratiolaelaps scimitus* and *Steinernema feltiae*.

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Phytoseiulus persimilis (0,3 mm) is a red,long legged predatory mite. Small wood chips are used as carrier material for this predator. The predators, together with the carrier material, are spread directly to the leaves of the plants.
Spread the predators on all plants, but place more predators (carrier material) on the infected plants.
You can also use small cardboard “Bio-Boxes” to spread the predatory mites (“Bio-Boxes” can be ordered separately).
The effect can be seen after about two weeks.

Jarmo Holopainen

Neoseiulus cucumeris is 0,3 mm long and yellowish-red in colour. Thrips larvae are on the menu for *N. cucumeris* – adults can be caught mechanically by blue sticky traps.
N. cucumeris are available in cardboard tubes (bran and vermiculite as carrier material) or in small sachets. The carrier material is applied directly on the leaves.
The sachets can be hung for example on the leafstalks. The predators can crawl out of the bag via the hole, don't open the bag any further.
You can also use the “Bio-Boxes” to help spreading (can be ordered separately).

Heini Koskula

Chrysoperla carnea works against most aphid species. It is an effective predator which eats also other pests in addition to aphids. *Chrysoperla* larvae are small 2- 3 mm in size and can grow up to 1cm long. Larvae can eat even hundreds of aphids in their lifetime. Buckwheat is used as carrier material for *Chrysoperla*. Spread the material straight to the leaves on the aphid colonies. You can also use the “Bio-Boxes” to help spreading (can be ordered separately).

Katrianna Leino

Stratiolaelaps scimitus lives naturally in the growth substrate (turf, soil etc) eating all kind of prey it can find. For example, fungus gnat larvae, thirps pupae and collembola. One predatory mite can eat up to 8 fungus gnat larvae in one day. Adult fungus gnat can be catched by yellow sticky traps.
Apply *S. scimitus* with the carrier (peat/vermiculite) directly on the growth substrate.

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Annaliina Hietanen

Sticky traps are a good way to observe flying pests, for example whiteflies, adult thrips and fungus gnats.
The traps have also some control effect. It is recommend to use sticky traps in combination with predatory mites/beneficials. The traps contribute to the control by catching the adult pests.
Available Cath-it sticky traps from TarhurinApu:
•Yellow and blue, one-sided 10x25cm, 10 pcs or 50 pcs perpackage.
•Yellow or blue, one-sided 20x25cm, 25 pcs per package.

Katrianna Leino

Baby-Booster alias Carbon Kick® Booster is a rapeseed oil-based product. Booster is officially approved and registered in Finland for spider mite and powdery mildew control.
It can be used in organic production.
Booster contains rapeseed oil, emulgators and triacontanol.
Carbon kick sprays interfere with biological control. Thus, first spray Booster direct on the plants. Let it try and spread predatory mites only after that. Booster is sprayed directly on the plants.

Baby booster is available as 0,5l bottle.

Annaliina Hietanen

Magnifying glass is an important tool in observing the plants for pests. For example, spider mites, thrips and aphids are often so small that it is difficult to see them with naked eye.

Most pests occur at the underside of the leaves or in the flowers.

Available from TarhurinApu:
•10x, 15x, 20x magnification
•10x with a Led light

Heini Koskula

Pheromone traps are used to observe flying pest in the gardens. Pheromone traps are available for example for the apple pests *Argyresthia conjugella* and *Cydia pomonella*.The traps are placed in the crop according to the flight times of the pest. For pests with more than 1 generation per year the pheromone capsule should be replaced during season.

Available from TarhurinApu:
•pheromones for pests of fruit trees, berry bushes and peas.

For additional information go to:
https://tarhurinapu.fi/kauppa/feromoniansat/

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PEST	BIOLOGICAL CONTROL	USAGE	NOTES
Spider mites	*Phytoseiulus persimilis* 1 000 mites/bottle 2 000 mites/bottle	20–50 mites/m^2, in severe infestation cases spread more.	Optimum temperature 20-25°C and optimum humidity over 60% re-distributions if needed
	Amblyseius califonicus 2 000 mites/bottle	same as above	Optimum temperature 20-25°C and optimum humidity over 60% re-distributions if needed
Thrips	*Neoseiulus cucumeris* 10 000 mites/cardboard tube 25 000 mites/cardboard tube	At home conditions it is good to spread predators fairly 300-500/m2	Optimum humidity above 65%
	Neoseiulus cucumeris bags 10 bags	1 bag for one plant or small plants 1 bag/m^2	Optimum humidity above 65%
	Sticky traps	1/m^2	
Aphids	VerdaProtect	1 tube/room (max 200m^2)	New tube every 2-3 weeks until the aphid situation is under control
	Chrysoperla carnea larvae 500 larvae/bottle	500 larvae/0,25l bottle. One bottle for 20m^2. Spread evenly on all plants	Young larvae are very small and hide inside the carrying material. Therefore you not necessarily notice them all when spreading them.
	Adalia bipunctata 25 pcs or 80 pcs/bottle	Light infestation spread 10/m^2 and bad contamination spread 50/m^2	Control works better in closed environment such as rooms, greenhouses or glazed balcony.
Fungus gnats	*Stratiolaelaps scimitus* 5000 mites/cardboard tube 10 000 mites/cardboard tube 25 000 mites/cardboard tube	5000 mites (0,5l): under 30 plants 10 000 mites (1l): 30-60 plants 25 000 mites(1l): over 60 plants	Larger units are recommended when there are a lot of fungus gnats. *S.scimitus* dies when temperature is under 8°C.
	Steinernema feltiae 10 milj./bag 50 milj./bag	10 milj.: for approx. 10 m2(home conditions 1milj./m2) 50 milj.: for 50m2	The nematodes are mixed in water. The mixture should be used immediately. It can't be stored.

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