Integrated Pest Management of new and old foes

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The Crop Protection Specialists

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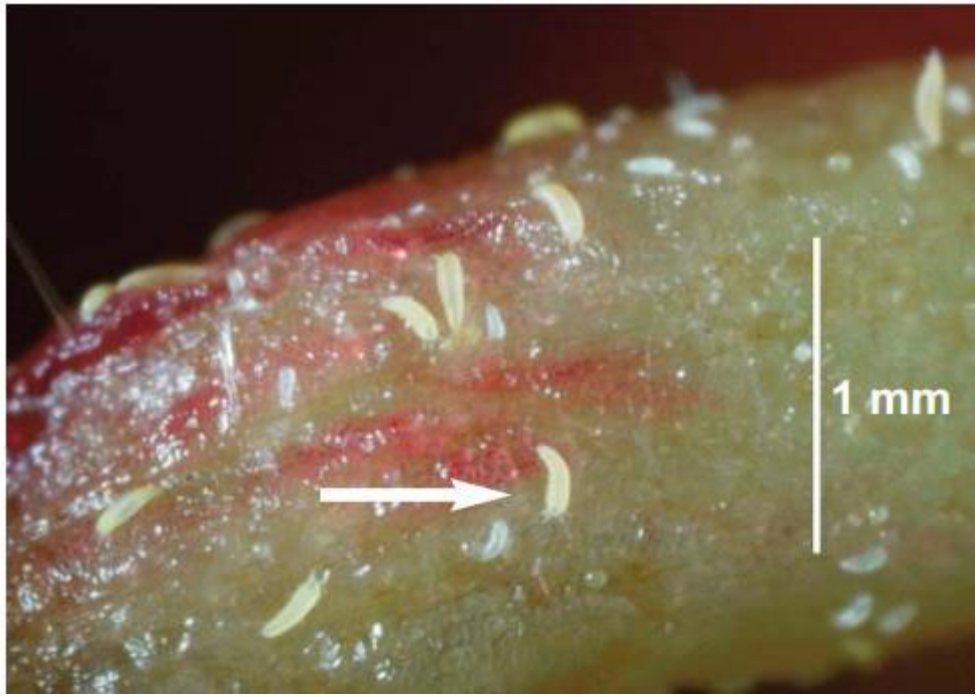
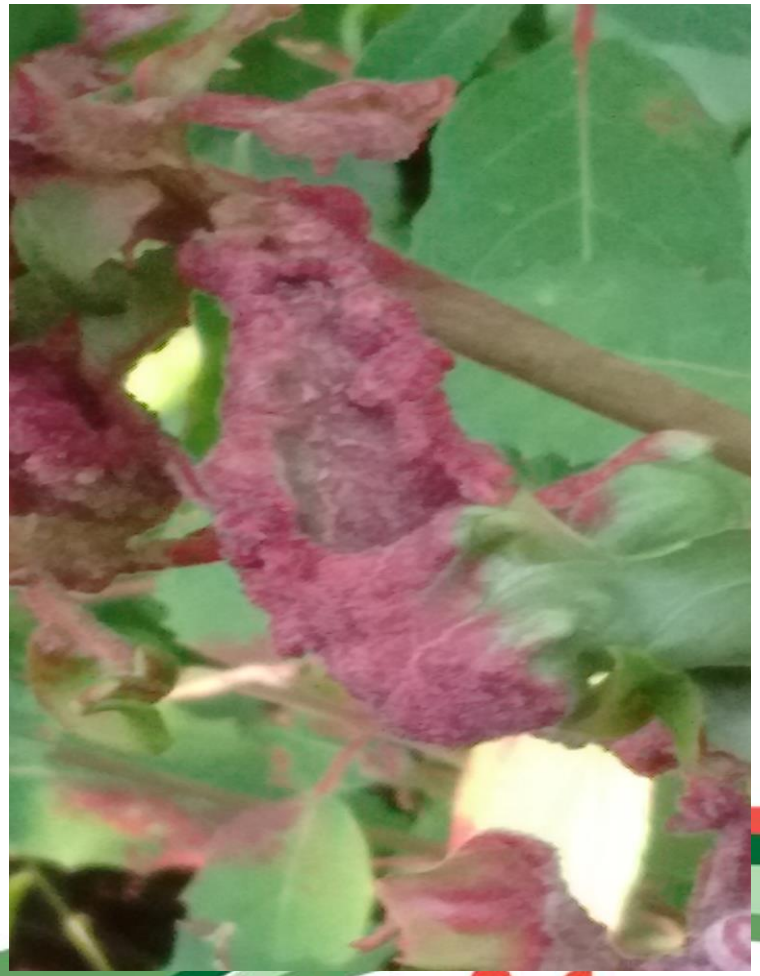
Fuchsia Gall Mite (Aculops fuchsiae)

- Eriophyoid mite.
- Found in Europe in 2003 and in England in 2007, most likely came via Jersey.
- Known to attack at least 3 species of Fuchsia and more than 30 cultivars.
- Worm like body, about a ¼ mm in length, pale yellow to white colour.
- At 18C the female lays 50 eggs which take 4 to 7 days to hatch. The lifecycle is 21 days.
- Causes reddening of foliage and later deformed growth and galls.

Fuchsia gall mite – *Aculops fuchsiae*



Fuchsia gall mite – *Aculops fuchsiae*

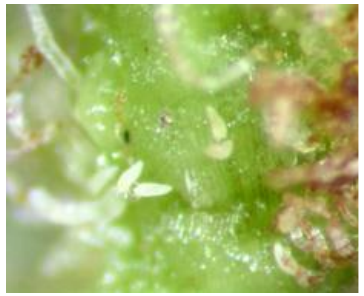


Fuchsia gall mite – cultural control

- Only purchase from reputable suppliers.
- Inspect and quarantine bought in plants.
- Trim infected growth off well below the distorted area.
- Burn infected material.

Fuchsia gall Mite control with predators

- ***Amblyseius andersoni***
- UK origin found in most of Europe.
- Wide host plant range: vines orchard fruit, ornamental deciduous trees & shrubs, coniferous trees, herbaceous plants, soft fruit etc.
- TSSM, FTSM, CSM, pollen, thrips, rust mites, gall mites, tarsonemid mites.



A. andersoni food sources

- Spidermites: *Tetranychus urticae, Panonychus ulmi, P. citri, Neotetranychus rubi,* (raspberry spidermite)
- Fungal spores plant sap (in complete absence of prey) and pollen
- Cyclamen mite
- Eriophyoid mites: Rust mites, Tomato russet mite, Gall mites
- Thrips (eggs and larvae).

Pesticides

- Naturalis-L (Beauveria bassiana)
- Masai (tebufenpyrad)
- Dynamec (abamectin)

Box tree caterpillar (Cydalima perspectalis)

Box tree caterpillar

- Pale yellow eggs, sheet-like, overlapping each other on the underside of box leaves, similar to Tortrix moth eggs.
- Caterpillars reach up to 4cm in length. Greenish-yellow with older ones having black and thin white stripes.
- The pupae are wrapped in webbing spun among leaves and twigs.
- Adult moth usually has white wings with a faintly iridescent brown border, can be completely brown or clear, wingspan about 4cm.
- The caterpillars eat box leaves and produce webbing over their feeding area. Overwinters as a larvae in leaves held together by silk. Plants may show patches of dieback.

Box tree caterpillar

- Pheromone lures to trap adult male moths.
- Indicate when to apply controls and reduce numbers.
- Lasts up to 5 to 6 weeks when activated.
- Use at 4 traps per hectare and at a height of 1 – 2m.

Biological control

- Trichogramma and nematodes have been effective in the laboratory but not yet in the field.
- Wasps may feed on caterpillars.

Box tree caterpillar control

- Lepinox Plus (*Bacillus thuringiensis*)
- Decis (deltamethrin)
- Pyrethrum 5EC (natural pyrethrum)
- Conserve (spinosad)
- Steward (indoxacarb)

Appetent: Improving pest control

Liquid fructose and glucose sugars.

Use with sprays against caterpillar, spider mites, thrips and adullt vine weevil

Box Blight: *Cylindrocladium buxicola* (syn. Calonectria pseudonaviculate)

- Fungal disease of Buxus. Certain varieties more susceptible.
- Two genetic types – differ in sensitivity to triazoles.
- Survive as resting spores or mycelium for up to 6 years. Spores are spread by infected plants, animals and birds, water or tools.
- Leaves turn brown and fall, black streaks on stems and die back. White spore masses on the underside of leaves in favourable conditions.

Box Blight: *Cylindrocladium buxicola.*

Box Blight: Cultural control.

- Avoid planting Box or use less susceptible types.
- Reduce frequency of trimming or clipping.
- Prune only in dry conditions and avoid a flat top to hedges.
- Mulch hedges.
- Clean up dead or infected material.
- Disinfect tools etc.

Chemical control

- Signum (boscalid + pyraclostrobin)
- Switch (cyprodinil + fludioxonil)
- Seranade ASO (Bacillis subtilis)

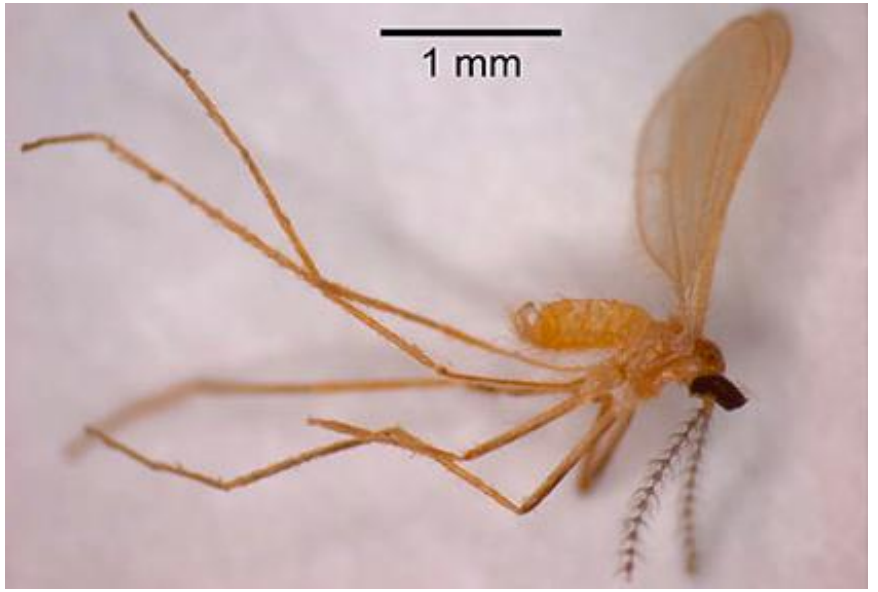
- Topbuxus mainly for the amenity and amateur market.

Agapanthus Gall Midge (Enigmadiplosis agapanthii)

- Discovered in the UK in 2014.
- Causes flower buds to be disformed and discoloured – browning.
- Flower head may collapse.
- Creamy yellow to orange maggots, up to 3mm in length, found in affected buds.
- Larvae pupate in soil, usually takes about 10 days. They over winter as pupa in soil and emerge from mid June usually.
- Projects ongoing as to control options.

Agapanthus Gall Midge

Agapanthus Gall Midge

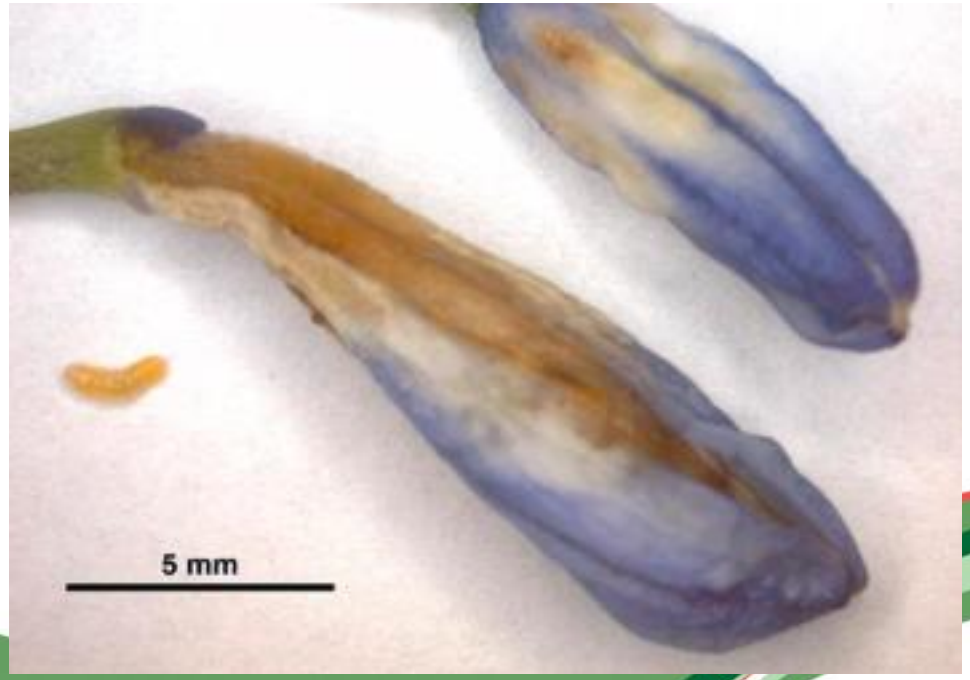


Adult: creamy brown, 1.5 mm, wings 2.5 mm, delicate body with long legs.

Larvae: hidden within flower buds.

Pupae: in ground below infected plants.

Multiple generations each year, over-winter as larvae / pupae below infected plants in dead buds and soil.



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Potential control options.

- Movento (spirotetramat)
- Calypso drenches (thiacloprid)
- Met 52 (Metarhizium anisopliae)
- Nematodes
- Atheta
- Hypoaspis

Metarhizium anisopliae Met52– target pests

Lawn and Landscape

Nursery and Ornamentals

Protected crops

Apiculture

Agriculture

Forestry

Met 52 – target pests

	Black Vine Weevil	Thrips
Susceptibility	Larvae	All stages, esp. pupae
Application	In containers and in soil	In container or soil
Environment	< 14°C slows activity	> 32°C slows activity
Speed	Slow but minor root feeding acceptable	Fast, so early scouting is essential, virus concerns
Resistance	Extremely unlikely	Extremely unlikely
Life Cycle of pest	Long, high fecundity	Short, high fecundity
Persistence of *Metarhizium*	High in soil – 18 months to 2 years	High in soil, greenhouse > outdoor

Leaf and bud nematodes (Aphelenoides spp.)

- 0.4 to 1.2mm in length, transparent eelworms.
- Cause leaf/tip distortion or discoloured areas on leaves.
- Areas in the leaves usually bounded by veins.
- Feed internally in leaf, or externally causing distortion.
- Need a film of water to move and then enter the leaf through stomata or wounds.

Nematodes

Leaf and bud nematode

(Aphelenchoides species.)

Nematodes – a simple check.

- Remove suspected leaves and shoots.
- Rinse and break up leaf/shoots into a petri dish with water in.
- Leave for 30 minutes to one hour.
- Use a microscope to examine the dish.
- Alternatively stir the solution and transfer a small amount to another dish and check with a hand lens.
- Use of a light or torch aids spotting the nematodes.

Nematodes cultural control

- Only buy plants from reputable suppliers.
- Monitor crops as the arrive and quarantine susceptible plants.
- Avoid growing susceptible plants, if you can.
- Control weeds on the nursery.
- Avoid over head watering.
- Do not propagate from infected stock.
- Remove crop debris and sterilise beds before potting.
- Sterilise/wash equipment.
- Hot water treatments.

Nematodes - Pesticides.

- Movento (spirotetramat)
- Dynamec (abamectin)

The future?