

Tyfu Cymru Fact Sheet: Soft Fruit Biocontrol



Below are some of the common forms of biocontrol available in soft fruit crops, to use effectively you should consult a BASIS trained advisor on how to proceed.

Once received bio control products are best applied immediately, do not delay application. Store in a cool place according to the label. Most packets need to be kept horizontally keep them well mixed.

Orius

Orius is a generalist predator that feeds on a wide range of pests, it is one of the few bio-controls that will feed on adult thrips. It can establish well on pollen rich crops and can take 4-8 weeks to establish a population.



Adult Orius feeding on thrips



Orius carrier mix that comes in most packets

Size: **2-3mm**

Feeds on: **Pollen, thrips (main pest preference), Two spotted spider mite, whitefly, moth eggs and lygus nymphs.**

Optimum temperature: **18-25°C (minimum 15°C)**

Optimum humidity: **70%**

Lifespan: **3-4 weeks**

Preventative rates: **0.5 per m²**

Curative rates (Light/ Heavy): **3.5 per m²/ 5-10 per m²**

- Apply in clumps of 70- 100 individuals as it will encourage breeding and a population build up, it is best to not disturb the introduction areas for a few days after introduction.
- Orius lays most of its eggs on side shoots, it is best to apply after side shoots have been removed from the crop.
- Preventative applications shouldn't be done before first flowers are open as without prey they need pollen to survive.
- Apply in a cool morning or early evening avoiding bright sunlight.

Predatory mites – *Amblyseius (Neoseiulus) cucumeris*

Amblyseius cucumeris (scientifically known as *Neoseiulus cucumeris*) is a generalist predator that can survive on pollen, it is very good at attacking eggs, mites as well as larval thrips.



Amblyseius cucumeris on a leaf (Photo @Bioline)



Example sachet dispersal method

Size: **0.3mm**

Feeds on: **Thrips larvae, Two spotted spider mite, Broad mite, cyclamen mite.**

Optimum temperature: **18- 31°C**

Optimum humidity: **65-75%**

Preventative rates: **50 per m²**

Curative rates (Light/ Heavy): **250 – 500 per m²/ 250-500 per m²**

Predatory mites target a wide range of thrips species but it should be noted that they only target eggs and larvae, not adults. Disperses through the crop by leaves/ stems that are touching. The mites can feed on pollen as well as pests to allow for a preventative approach in the absence of pests.

Sachets of predatory mites act as breeding units which have a food source and release a steady stream of mites over a few weeks.

Parasitoid wasps.

Parasitoid wasps (known as parasitoids) lay an egg inside aphids, when it hatches it feeds on the aphid leaving a mummy on the leaf. It pupates and then emerges ready to parasitise more aphids.



Aphidius species of parasitoid near an aphid

Mummy (golden colour) on a leaf.

Size: **2-4mm**

Feeds on: **Nectar**

Optimum temperature: **Less than 28°C**

Preventative rates: **0.25 per m²**

Curative rates (Light/ Heavy): **1 per m²/ 2 per m²**

- Parasitoid species only target certain species of aphids so it is important to know what aphid species you are facing.
- A lot of products are a mix of parasitoid species to help cover different aphid species but take care reading the coverage.
- As they can fly the wasps are able to move through the crop easily focusing on pheromones released by the plant under attack by aphids.
- For the best preventative approach smaller weekly applications should be made at peak aphid abundance.

Nematodes spp.- *Steinernema feltiae* or *Steinernema kraussei*

These nematodes are parasitic that actively move through the soil zone and infect prey, they are harmless to crops only attacking their chosen pests.



Example of nematodes in suspension

Example of dehydrated nematodes from a packet

Size: **<0.1mm**

Feeds on:

***Steinernema feltiae*- Sciarid flies, thrips larvae.**

***Steinernema kraussei*-Black vine weevil**

Optimum temperature: **14-28°C**

Optimum humidity: **High humidity.**

- It is important to make sure that nematodes are well mixed in the tank to ensure that they are distributed through the crop evenly.
- The nematodes travel through the soil via the soil moisture, if the soil is too dry then efficacy will drop as the nematodes struggle to operate.
- The nematodes locate prey by their waste products and infect through body openings.

For more information please see the Bioline, Biobest or Koppert websites:

<https://www.biobestgroup.com/> <https://www.biolineagrosciences.com/>,

<https://www.koppert.co.uk/>