

# Biological control in the home garden.

Biological control is the use of natural enemies to manage unwanted organisms. In the home garden this usually involves introducing predators or pathogenic nematodes.

Biological control can give effective management for some plant damaging garden invertebrates. The biological controls available to home gardeners are either predators or pathogenic nematodes.

Biological controls can have advantages over pesticides which are usually broad spectrum and can kill a wide range of invertebrates:

Biological controls cause no damage to plants and do not leave residues

Once established natural enemies can breed and increase in numbers until the damaging invertebrates have been reduced to an acceptable level.

The parasitoids are usually specific to certain prey species and will not become a nuisance or cause harm to non-target creatures

Some of the predatory mites, bugs and beetles are generalist predators and so should be used with care.

Nematode biological controls are usually either insect or mollusc specific. They therefore have the potential to infect non-target animals and so should be used in a targeted manner.

The presence of biological controls should not interfere with normal gardening activities such as ventilating glasshouses and watering, although it is necessary to avoid the use of pesticides.

## **Predators**

To get the best results it is important to know how biological controls behave. Many of the predators used for biological control are more accurately termed parasitoids as they kill the host whereas a true parasite does not; these animals lay eggs in a host, the grub grows and feeds inside its prey, only killing the host when it completes its development.

## **Using them correctly**

Predatory and parasitoid biological controls rarely give instant reductions in prey populations; they need time to multiply. It is therefore necessary to introduce them before large populations of the target invertebrates have developed. Conversely, there is no point in introducing the biological control before the prey becomes active, since they can only breed when their prey is present.

The effective season for biological control with predators and parasitoids in glasshouses is late March/April to September. Glasshouse predators and parasites, just like the animals they control, require warm conditions, if they are to thrive and breed rapidly. They generally require daytime temperatures of at least 21°C (70°F) and high light intensity to stimulate breeding, although they can usually survive at temperatures of 13°C (55°F). Glasshouse biological controls will often die out during the winter and reintroduction may be necessary

## **Nematodes**

Nematodes (phylum Nematoda) are a very diverse group of animals. There are more than 25,000 described species, and they are found in almost every habitat. Most are microscopic and they are important components of soil and marine ecosystems. Many nematodes are free living, but more than half of described species are parasitic on plants or animals

### **Invertebrate pathogenic nematodes**

Some of the nematode species that infect insects and molluscs have been developed as biological control. These species pose no risk to plants or vertebrates. They work by entering the invertebrate's body and releasing bacteria. This results in an infection causing the death of the invertebrate, the nematodes then feed and multiply on the decomposing body.

### **Using nematodes correctly**

Biological control nematodes come in packs that are mixed with water and watered onto affected plants and soil. They are available via mail order and some are formulated with a longer shelf life and supplied via garden centres. There are conditions which must be understood if they are to work well. Being living organisms they should be used as soon as possible after they are purchased or received and all manufacturers' instructions followed. In general these nematodes require moist conditions and so are best applied in cool and damp conditions. Temperature is also important with different species requiring temperatures above 5°C (41°F) or 12°C (54 °F). Whilst the nematode biological controls are usually either insect or mollusc specific, they therefore have the potential to infect non-target animals within those groups. They should therefore be used with care and only when there is a specific problem to treat.

