

## **CURRENT PRODUCTS PROMOTED FOR BOX TREE MOTH CONTROL**

### ***PHEROMONE TRAPS***

Mode of Action: Pheromone traps use a chemical substance that attracts male moths into a trap.

Potential Problems: Pheromone traps do not attract the egg laying female moths, which might have already mated. The pheromones may also attract problematic moths into a location where they have not previously been found.

### ***NEMATODES***

Mode of Action: Nematodes are natural soil dwelling parasites that enter a host to live within its body. The nematodes release a bacterium that kills the host, enabling the nematodes to feed and reproduce within the cadaver.

Potential Problems: Nematodes sprayed onto a Box tree will have to survive outside of their natural moist soil environment whilst they search for a caterpillar to enter. This would require high levels of humidity which will be difficult to maintain on and amongst the Box tree leaves in an outdoor situation.

### ***PYRETHRUM-BASED INSECTICIDES***

Mode of Action: Pyrethrum is extracted from Chrysanthemum flowers and has, for hundreds of years, been known for its insecticidal properties. Pyrethrum kills a wide range of insects by destroying their nervous systems.

Potential Problems: Pyrethrum is a broad-spectrum insecticide that in addition to killing plant pests, will kill bees, butterflies, beetles and many other beneficial invertebrates.

### ***PYRETHROID BASED INSECTICIDES***

Mode of Action: Pyrethroids are synthetic chemicals that mimic the action of Pyrethrum. They also attack the nervous system of a wide range of insects but are more persistent than Pyrethrum.

Potential Problems: Pyrethroids are broad spectrum, synthetic insecticides that, besides killing plant pests, will kill bees, butterflies, beetles and many other beneficial invertebrates. When applied to plants, Pyrethroids remain active for longer than Pyrethrum.

## **NEONICOTINOID BASED INSECTICIDES**

Mode of Action: Neonicotinoids are a family of systemic synthetic insecticides that disrupt the nervous systems of a broad range of insects and cause paralysis and death. Neonicotinoids include Imidacloprid, Acetamiprid, Clothianidin, Thiacloprid and Thiamethoxam

Potential Problems: Neonicotinoids are systemic and long-lasting insecticides that can remain active within soil for many years, moving through ground water and potentially contaminating wild flowering plants on the margins of treated crops. Neonicotinoids are taken up by the roots and absorbed through the leaves, moving within the sap to all parts of the plant and turn the plant toxic to insects. Neonicotinoids can remain active within a treated plant for two years and also have sub-lethal yet adverse effects on non-pest wildlife species.

## **BACILLUS THURINGIENSIS BASED INSECTICIDES**

Mode of Action: *Bacillus thuringiensis*, commonly referred to as BT, is a natural bacterium that when ingested by certain insects will release toxins that break down the insect's gut and cause death.

Potential Problems: *Bacillus thuringiensis* is no longer allowed to be used by gardeners within the UK and it is only available to professional growers that have been trained in its use. Its use is carefully regulated since this bacterium can kill many non-pest species of insects and would cause serious problems within conservation areas where 'at risk' species are being protected.

## **NEEM OIL BASED INSECTICIDES**

Mode of Action: Neem oil is extracted from the tree *Azadirachta indica*, which is native to South Asia and India. Neem oil contains Azadirachtin which has been used for many years in these parts of the world for insecticidal purposes. When ingested by insects, it is reported to inhibit their ability to feed, mature and to mate.

Potential Problems: Despite their availability through some online retailers, it is unlawful to market Neem-based products containing the active ingredient Azadirachtin in the UK and they are also banned from use.