

IPM in balance

Vegetables
20.02.2017



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Achieving clean crops - free from pests and disease - can take a lot of time and effort. To achieve a clean crop you also need help from some other hard workers - I'm talking about beneficial insects. It's pleasing to see and hear, following a wet summer, that there is a strong presence of beneficial species in and around most crops. Left to their own devices and undisturbed, these beneficial species can greatly assist us in controlling many destructive pests and, best of all, they cost nothing.

Predators and parasitoids can considerably reduce pest numbers and lower the need for broad-spectrum insecticides (products that will control not only the target pest but will also have a significant impact on beneficial populations).

The most common predators, often referred to as 'general predators', feed on a wide range of insect pests at various life stages. This group covers a range of predatory species, including lacewings and ladybirds. The green lacewing is a great example. They attack a wide range of pests including aphids, moth eggs and small larvae, scales and whiteflies.

Another hard worker, one with a voracious appetite for aphids, is the spotted amber ladybird (*Hippodamia variegata*). It attacks at least 12 different aphid species and a hungry adult or mature larva can eat 50 aphids a day. Rapid spread of this ladybird has been attributed to it being well-adapted to the environment, a short lifecycle of 3 to 4 weeks, an ability to fly 20 km or more and the 300 eggs laid by each female.

A less familiar group of the ladybird is the tiny black beetle of the genus *Stethorus* spp. Renowned for destroying spider mites, these tiny beetles have a huge appetite and consume twice the amount of spider mites compared to predatory mites. They can eat 25 to 80 mites a day and both the larvae and adult beetles feed on all stages of spider mites and their eggs. They also have a short lifecycle of about 40 days.

Parasitoids are another prominent group of beneficial insects. This group includes *Trichogramma* which is an egg parasite of *Helicoverpa*. *Trichogramma carverae* are minute wasps that lay their eggs into the eggs of moths. When the wasp egg hatches, the wasp larvae feeds on the developing caterpillar inside the moth egg. A fully formed wasp then emerges from the moth egg instead of the caterpillar.

There are many beneficial predatory species and their presence and abundance in the field is affected by a range of factors such as available food, shelter, climatic conditions as well as the number, timing and type of insecticide sprays.

For a balanced Integrated Pest Management (IPM) program to work, it is important you know, not just the level of insect pests in your crop, but also which beneficial species are present, their abundance and what pests they attack. This information is critical in determining their potential effect on a given pest population, as well as the pest control measures available to you in order to maintain the current population or to allow an introduced population to flourish.

Correct identification of beneficials is important because even the 'softer' insecticides (products that will control the insect pest but not have a significant impact on certain beneficial populations) vary in their impact on different beneficial species. For example, it's well researched that PROCLAIM® has a low impact on Green Lacewing populations compared to other so-called soft insecticides.

Other techniques that conserve and enhance beneficial species activity include:

- Determining the beneficial insect-to-pest ratio before contemplating spray decisions.
- Use of refuge or cover (nursery) crops to conserve beneficial insect populations.
- Good cultural practice and farm hygiene (e.g. removal of crop material after harvest) between crops will also reduce the habitat and therefore carryover of harmful insect pests.
- Tolerating non-economic early-season damage while beneficial insect numbers build up.
- The strategic and appropriate use of insecticides.

When contemplating the use of beneficial insects remember to seek specialist advice from various industry sources and consider employing an IPM crop monitoring specialist.

TIP

The next time you inspect your crop, take time to reflect that there could be more happening and 'in the balance' than what is immediately obvious. Think about what impact your sprays will have on these hugely beneficial species. Not all insects are bad and not all insecticides are IPM friendly!

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