



Factsheet

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Integrated pest management
in avocados in South-West
Western Australia.



**South West
NRM**

What is integrated pest management?

Integrated Pest Management (IPM) is simply using a combination of compatible control methods (biological, cultural and pesticides) to deal with a set of pests, rather than just relying on pesticides alone. There are several advantages to using IPM, including minimising pesticide use, better control of insecticide- or

miticide-resistant pests, sustainable control of pests, avoiding 'flare-ups' of secondary pests, and avoiding potential problems with pesticide residues. IPM is often only considered when pests become resistant to insecticides. However, if IPM is applied earlier, pesticide resistance and a crisis in pest management could be avoided.

Pests of avocados

There are several soil-dwelling pests of young avocado trees when they are establishing, including the garden weevil, the white-fringed weevil and the African black beetle. However, once the trees are established, the main pest concern is the six-spotted mite. This pest can cause leaves to drop at key times (such as flowering) and disrupt fruit set. Snails are a potential problem, but currently not a major concern.

In the South West, avocado growers do not have to deal with pests such as fruit-spotting bugs,

which occur in northern Australia and are often controlled with broad-spectrum insecticides. These insecticides not only kill the target pests, but also non-target species that control other pests such as mites and mealybugs. This leads to a flare-up in the numbers of these secondary pests. So, growers in the South West are in a good position regarding pest management and can currently control the range of pests present without using disruptive pesticides, thereby avoiding the development of secondary pests.



Biological control options

Crop pests have natural enemies that we call biological control agents or 'beneficial insects'. These can be predators, parasites or pathogens of pests.

The main beneficial insects for the control of soil-dwelling pests of young avocado trees are predatory carabid beetles and pathogenic fungi. For the control of pest mites, the main beneficials are predatory mites and predatory ladybird beetles (*Stethorus* sp.).

Predatory mites are commercially produced and can be bought and added to the orchard. However, they are also naturally occurring, and some will eat a range of prey.

Cultural control options

Any management method that either disrupts pests or favours beneficial species is a type of cultural control. Cultural controls can be extremely important in keeping pests under control or minimising damage and often have productivity benefits. For example, maintaining healthy trees, controlling weeds that favour

Commonly occurring biological control agents also include green lacewings, hoverflies, and parasitic wasps. The lacewings and hoverflies prey on pests such as mealybugs, scale, and aphids, while parasitic wasps of different species will also attack these pests.

These beneficial species will currently be controlling several potential pests due to the absence of broad-spectrum pesticide use. Ideally, this situation will continue and the pest spectrum in the South West will remain small.

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pests, and minimising dust, are all effective cultural controls.

Other cultural controls include providing a pollen or nectar source for beneficial species. This can also benefit pollinator species such as bees and hoverflies.





Pesticides

Pesticides are not all equal in terms of their impact on beneficial species. At the extremes, some pesticides are disruptive to most beneficial species, while others are safe to most. In the middle are many products that will be toxic to some species but not toxic to others. This includes fungicides as well as insecticides and miticides.

It is important when choosing a pesticide to look at the impact on beneficial species as well as the impact on the pest or disease. If a pesticide is required, choose one that will do the job with minimal disruption to beneficials. Information on the side effects of pesticides can be found [here](#) or on the websites of biocontrol agent producers Koppert or Biobest.

Concluding remarks

An effective IPM strategy has several important aspects. Firstly, it is never fixed because the range of pests and pesticide options can change. Secondly, the degree to which growers are prepared to implement cultural control options (which may include variety, planting density, tree height and inter-row management) will change according to the individual's priorities and the availability of either biological or pesticide options.

Finally, an IPM strategy is strongest when the full set of available options is used in a compatible way. An IPM strategy should not simply consist of an alternative spray programme or a complete halt to spraying. It should consider the target pest, biological control options, cultural controls, and if chemicals are required, selecting one that will be effective on the pest while causing minimal disruption to beneficial species.