

NSW Cut Flower Industry

Managing pests and diseases using an IPDM approach

Purpose

Maintaining the quality and marketability of your flowers can be challenging when you are faced with significant pest and disease pressure. This factsheet introduces how to integrate your approach to managing insect pests and disease. It includes information on:

- The principles of Integrated Pest and Disease Management (IPDM)
- Why you should try it
- The management options available.

Integrated pest and disease management (IPDM)

IPDM is a holistic approach that integrates multiple control strategies to manage pest and disease pressures effectively. The goal is to minimise economic loss while protecting the environment and ensuring long-term sustainability.

Why adopt IPDM

The IPDM approach provides practical alternatives to conventional plant pest control – this means proactive monitoring and management of your crop rather than reliance on synthetic chemical application on a calendar basis. Producers have reported that adopting IPDM strategies has allowed them to:

- Regain control over chemical-resistant pests
- Minimise worker and environmental impacts
- Minimise use of broad-spectrum pesticides and their impact on natural enemies (arthropod predators/parasites of the pests)
- Reduce costs.

Implementation of the basic principles of IPDM with the assistance of IPDM experts is your best starting point. Embedding the principles into your practices will maximise the benefits.

What is 'integration'?

Integration means combining two or more management practices that are compatible, i.e. practices that work well together, not against each other.

For example, an effective IPDM system might include cultural measures like changing varieties or planting times, the release of beneficial organisms and the use of 'soft' pesticides. The aim is not zero pests, but rather sustainable pest management.

→ Key Messages

- **EXPLORE IPDM:** Integrated Pest and Disease Management (IPDM) is a holistic approach that can enhance your cut flower production. By blending chemical, cultural, and biological methods, you can manage pests more effectively and sustainably.
- **START EARLY:** Being proactive is key! Focus on preventing pests and diseases before they become an issue. Early action helps protect your crops and maintain their quality.
- **ROTATE YOUR CHOICES:** To keep your pest control effective, try rotating chemicals with different modes of action. This simple step can help prevent resistance and keep your plants healthy.
- **KEEP AN EYE ON YOUR CROPS:** Regular monitoring is essential. By watching for early signs of pests and diseases, you can take action before problems escalate, saving time and resources.
- **EMBRACE NATURE'S HELPERS:** Consider using natural predators and beneficial insects in your pest management plan. They offer a gentle, environmentally friendly way to keep pests in check.
- **CHOOSE WISELY:** When using pesticides, opt for those that are safe for the environment and non-target species. Careful selection ensures that you're protecting both your crops and the surrounding ecosystem.
- **SEEK GUIDANCE:** Seek out trusted advice! Reach out to experts and advisers who can provide valuable insights and support as you implement IPDM. Continuous learning and collaboration will help you achieve the best result.

Using an expert to get you started

The most appropriate and effective crop protection programs are developed by teams that include producers, researchers and/or consultants experienced in IPDM. They have specific knowledge and understanding of the plants, key threats, impact of environmental conditions and options available for protecting a crop from adverse events and organisms.

IPDM programs are unique to each season, each crop and each region. You and your advisers will become skilled in evaluating the relative importance of plant pest variations year-to-year on your property, and what strategic adjustments are required to ensure continued improvement and timely responses.



Figure 1. Using a magnifying lens to identify insects

The key components of an IPDM program



Knowledge: Learn about the key plant pests, their natural enemies and how they enter, establish, spread, survive and affect your crop, in your growing environment.



Prevention and minimisation: Learn about the other factors that affect the relationship between the plant pests and the crop (planting time and location, cultivar planted, crop rotations, and irrigation and nutrient management). Make decisions that reduce the potential impact of the plant pest, while promoting the crop's chance to avoid, tolerate or resist it, and economic levels of damage.

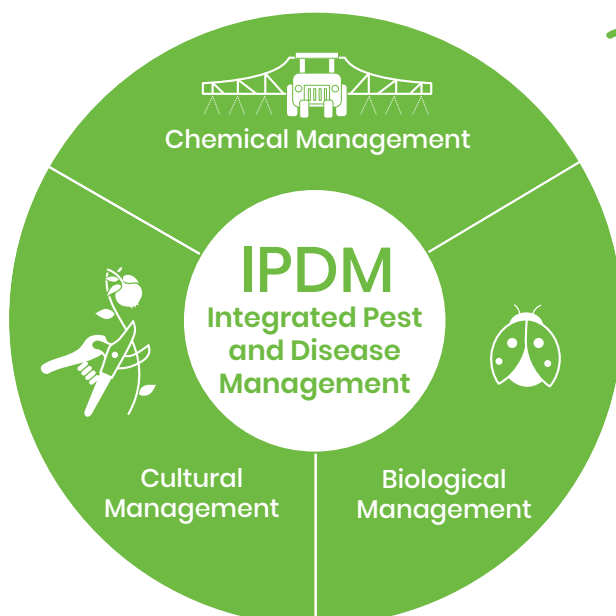


Monitor and observe: Look at your crop often and learn how, when and where to look for signs of the plant pest and symptoms, or insect pests and their natural enemies. Using a magnifying lens for pests can help with identification (Figure 1), and the use of diagnostic tools and expertise help to avoid misidentification.



Respond: Keep records of what you observe and learn how to interpret them. Know the relevant response options (including synthetic and soft chemical treatments), the treatment thresholds (i.e. conditions or potential damage levels that indicate a treatment is required) and the critical timing of the responses.

Management Options



Cultural, physical or mechanical options

These options assist plants in avoiding, resisting or delaying interaction with the plant pest. They include:

- Use of resistant varieties
- Rogueing (removing sick/dying plants)
- Practicing good crop hygiene by removing and destroying all waste (cuttings)
- Installing insect screens
- Removing insect pest habitats such as weeds
- Restricting the movement of people and equipment through crops
- Resting plant beds, rotating crops and/or planting green manure crops to improve soil health
- Maintaining plant health through optimal nutrition and irrigation
- Ensuring proper plant spacing to enhance air circulation.



Biological options

These options rely on natural enemies or introduced organisms that limit the impact of a plant pest. Introduction of biological control agents also requires the integration of IPDM practices that boost or extend the habitats and populations of beneficials, parasitoids, antagonists and predators.

Beneficials include all predatory insects, mites and spiders; parasitic wasps, nematodes and flies; and fungi or bacteria that attack pests or outcompete them for potential infection sites. Beneficials that can be used on insect pests of flowers include: ladybird beetles (Figure 2), predatory mites, parasitoid wasps, lacewings and pirate bug *Orius tantalis*. These beneficials all play a significant role in IPDM.

There is a range of commercial suppliers of biological control agents and/or providers of IPDM advice. These include (but are not limited to):

- Bugs for Bugs www.bugsforbugs.com.au
- Biological Services www.biologicalservices.com.au
- BioResources www.bioresources.com.au
- IPM Technologies www.ipmtechnologies.com.au

Establishing refuges for beneficials such as 'banker plants' can support beneficial populations by acting as a refuge and a source of food (like pollen or alternative prey) when pest populations are low.



Image: lotusblute17

Figure 2. Ladybird beetles can be used as beneficials



Image: Catherine Eckert

Figure 3. Magnifying lens for pest identification



Chemical options

These options involve using natural, biological, 'soft' or targeted chemicals to alter insect pest behaviour, to attract pests for early warning and predictive purposes, to reduce the presence or impact of pests and/or to change the attractiveness of the host crop. 'Chemical' options suited to IPDM include pheromones, *Bacillus thuringiensis* (Bt) and biofumigation.

Further information on how to manage specific insect pests and diseases in cut flowers can be found at:
https://www.rmccg.com.au/case_study/reducing-plastics-and-chemicals-in-nsws-cut-flower-industry

This fact sheet has been developed by RMCG as part of a Storm and Flood Industry Recovery project to reduce chemical use in the NSW cut flower industry.



This Storm and Flood Industry Recovery project is jointly funded by the Australian and NSW governments under Disaster Recovery Funding Arrangements



Australian Government



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