

Integrated pest management in ornamentals information kit

Reprint – information current in 2000



REPRINT INFORMATION – PLEASE READ!

For updated information please call 13 25 23 or visit the website www.deedi.qld.gov.au

This publication has been reprinted as a digital book without any changes to the content published in 2000. We advise readers to take particular note of the areas most likely to be out-of-date and so requiring further research:

- Chemical recommendations—check with an agronomist or Infopest www.infopest.qld.gov.au
- Financial information—costs and returns listed in this publication are out of date. Please contact an adviser or industry body to assist with identifying more current figures.
- Varieties—new varieties are likely to be available and some older varieties may no longer be recommended. Check with an agronomist, call the Business Information Centre on 13 25 23, visit our website www.deedi.qld.gov.au or contact the industry body.
- Contacts—many of the contact details may have changed and there could be several new contacts available. The industry organisation may be able to assist you to find the information or services you require.
- Organisation names—most government agencies referred to in this publication have had name changes. Contact the Business Information Centre on 13 25 23 or the industry organisation to find out the current name and contact details for these agencies.
- Additional information—many other sources of information are now available for each crop. Contact an agronomist, Business Information Centre on 13 25 23 or the industry organisation for other suggested reading.

Even with these limitations we believe this information kit provides important and valuable information for intending and existing growers.

This publication was last revised in 2000. The information is not current and the accuracy of the information cannot be guaranteed by the State of Queensland.

This information has been made available to assist users to identify issues involved in ornamental horticulture. This information is not to be used or relied upon by users for any purpose which may expose the user or any other person to loss or damage. Users should conduct their own inquiries and rely on their own independent professional advice.

While every care has been taken in preparing this publication, the State of Queensland accepts no responsibility for decisions or actions taken as a result of any data, information, statement or advice, expressed or implied, contained in this publication.



What is **IPM ?**

What can you expect to learn from this section?

A brief look at why IPM is a good idea for all ornamentals producers.

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Brief description

Integrated Pest Management (or IPM) is an often-used term these days but what does it really mean?

One definition of IPM is:

Integrated pest management is an approach to pest and disease control that uses regular monitoring to determine if and when treatments are needed. It employs a combination of physical, chemical, cultural and biological strategies to keep pest numbers low enough to prevent economic plant damage from occurring.

IPM is not:

- new (though the scientific basis is only 20 to 30 years old)
- implemented overnight
- organic farming
- the replacement of chemicals with biocontrol agents
- a magic formula to eliminate pesticides.

IPM does mean:

- you must monitor your crops regularly
- you must keep good records of your monitoring information, and chemical and biocontrol usage
- you may be able to use biocontrol agents against your key pests
- you should hope to reduce your chemical usage, either through fewer sprays or by spot spraying where appropriate
- involving all staff and training someone to co-ordinate their efforts
- starting with pest-free and disease-free plants
- keeping the crop production area clean
- modifying your production area to best suit conditions suitable for managing pests and diseases
- staff and plants will be healthier.

IPM is mostly just common sense, and a practical and flexible way to control insect, mite, disease and weed pests. It can be implemented in any ornamental plant operation. IPM programs can be readily adapted to fit the production schedule of outdoor, shadehouse and greenhouse areas, and growing conditions and individual crop problems at any site. In addition, IPM will help ornamentals producers to attain accreditation with the Nursery Industry Accreditation Scheme, Australia (NIASA).

Plant health management

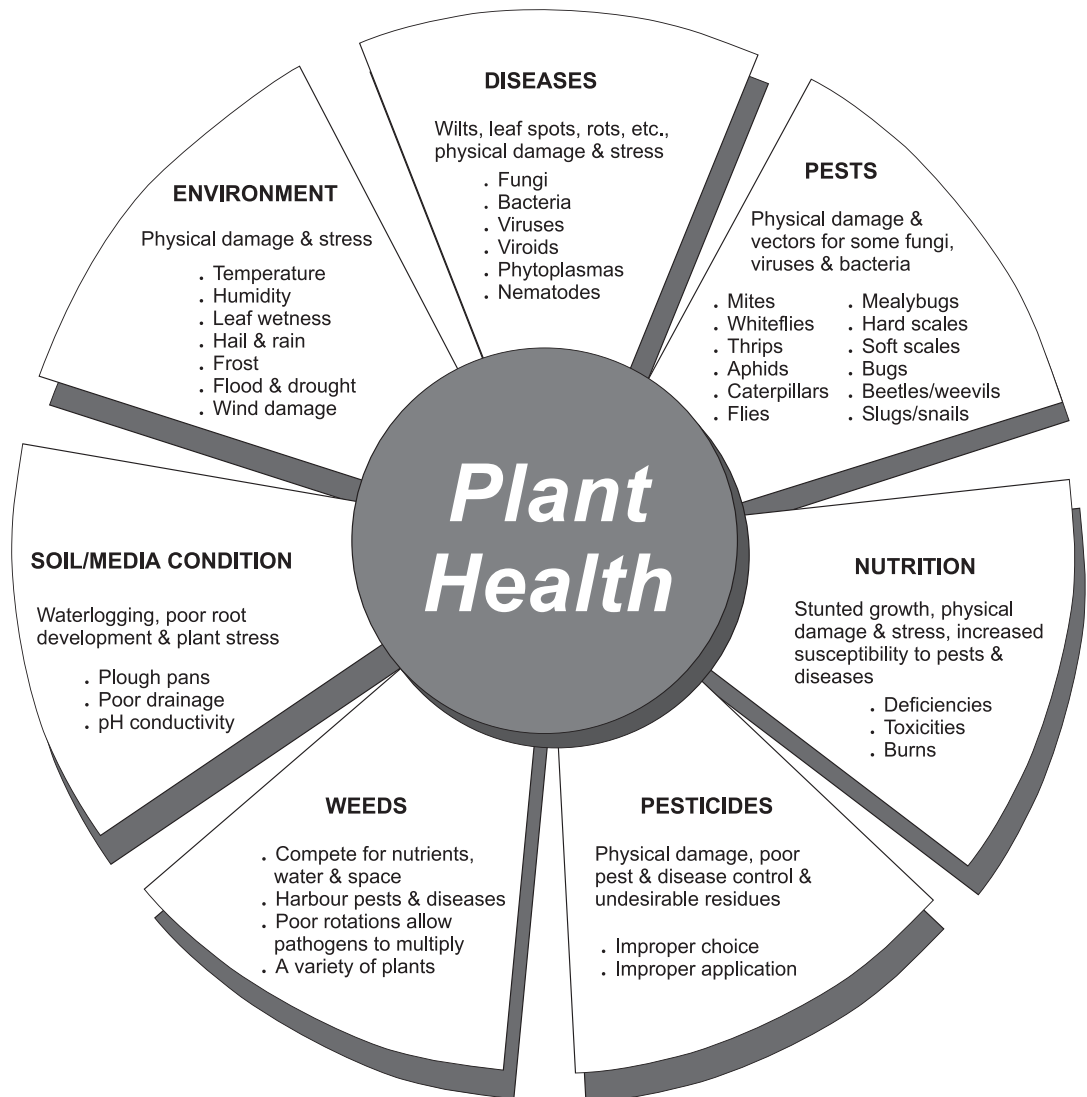
Plant health management involves the provision of the best possible conditions for plant growth through appropriate use of nutrients/fertilisers, irrigation and crop protection. The seven sectors of plant health (see figure) show some of the factors that can contribute to poor plant health. Improper use of pesticides, for example, can lead to physical damage, poor pest and disease management and undesirable chemical residues.

Ian Collins from Colourwise Nursery in NSW, who has been practising IPM for six years, lists the benefits of using IPM.

“IPM means less hazards for employees and less liability, cost savings and faster access to crops after they have been treated. IPM is also better for our local environment.”



Nursery Industry Association
of Australia web site
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The seven sectors of plant health

It is important to understand the role IPM plays in relation to the whole cropping system, otherwise it may be reduced to a constant series of minor corrective modifications. These ultimately fail to address the real problems and provide no sustainable solutions.

What are pests?

A pest can be defined as *an organism that has the capacity or potential to cause economic harm*. Originally IPM referred to insect pests but as integrated approaches to pest and disease management have developed, it now refers to any kind of pest, for example insect, disease, weed, bird, mice, etc.

What are the benefits of IPM?

A proactive approach

IPM is a proactive rather than reactive approach to pest management. It gives growers more options for pest management; it is less disruptive to day-to-day operations than the conventional blanket or calendar spray approach; and it can be more cost effective.

Reduced chemical use

Implementing an IPM program will result in less frequent use of chemical sprays and more effective use of the sprays that are applied. This has flow-on benefits such as a reduction in the amount of time staff spend spraying and fewer occupational health and safety issues. Better management of chemicals reduces the risk of pesticide resistance developing, which gives the grower more options in the long term.

Staff benefits

Staff also benefit from an IPM program. Staff members generally do not like using chemicals as it creates an unpleasant working environment. IPM means fewer interruptions to work from spraying (and shorter re-entry times to the crop), and the reduced use of chemicals results in improved staff safety, comfort and attitude. IPM promotes a team approach to production and allows staff to develop their skills in pest management.

Good for the environment

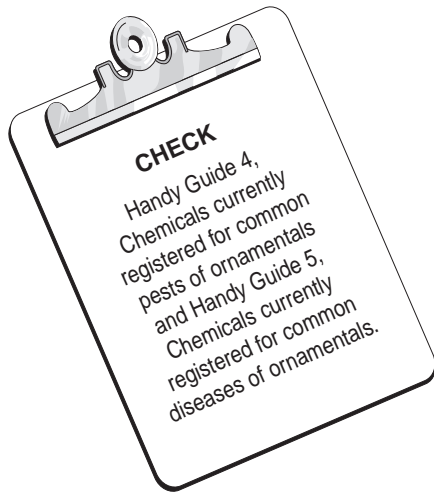
The reduction in pesticide use also results in fewer environmental concerns, for example groundwater contamination, public ordinance problems and runoff onto neighbouring properties. This is becoming increasingly important with the encroachment of suburban residential areas on plant production areas.

Improved knowledge

Time spent monitoring the crop can lead to improved pest knowledge and recognition, and better crop management and awareness. IPM also gives the grower more management options rather than just settling for the most convenient spray each time. These factors are all essential aspects for introducing a quality assurance scheme. Overall, an IPM system may require more management by the grower, but it pays off in a better understanding of the crop and in providing better and more numerous management options.

Market edge

Customers, too, will appreciate the change to an IPM system. Improved customer awareness about pesticides used means growers who adopt an IPM system may gain a potential market edge. Some customer education about biocontrol may also be needed to answer questions like “Why are you putting bugs on the plants?”



Healthier crops

Pesticides can cause subtle phytotoxic effects such as brittle leaves or reduced growth. Healthier plants are more resistant to diseases.

Reduced costs

Traditional chemical spray programs can be costly, particularly for labour. The chemicals and the cost of buying and maintaining proper equipment are increasingly expensive. In IPM, benefits are obtained by spraying less often, using less chemical and spraying more effectively.

Chemical availability

Although new chemicals are coming onto the market all the time, not all of these find their way to Australia. Of those that do, not all chemicals will become available for use in ornamentals due to the small size of the market. In Australia, the National Registration Authority is reviewing the use of many chemicals and some of these will be withdrawn from use, while others, such as endosulfan, will have their use severely restricted.

There is increasing interest in chemicals with lower human toxicity and which are safer to use with biocontrol agents. These are sometimes termed biorational chemicals. Smaller companies, not in the more familiar mainstream pesticide industry, are developing some biorational chemicals for niche markets.

Pest resistance

Traditional management systems and fewer chemicals on the market increase the risk of chemical resistance developing. Resistance is the ability of a strain of a pest to tolerate doses of pesticide that would normally be lethal. Pests such as western flower thrips, which show resistance to many pesticides, are a strong incentive to move towards an IPM system.

Lack of knowledge about the life cycles of pests can contribute to resistance problems. Calendar spraying, for example, may not be targeting the most susceptible stage of the pest. Targeted sprays result in better control with a lower chance of resistance developing. An understanding of the pest enables identification of the best stage to target. Monitoring ensures chemical is applied only when and where it is needed.

Calendar spraying can contribute to pesticide residues. In Australia, consumer groups are moving to encourage minimal pesticide usage on many food crops. This drive for 'clean' produce will be slower in ornamental crops, though this will change as public awareness and concern increases.

Some pesticides leave residues on plants, equipment or greenhouse structures that will interfere with any biocontrol element of an IPM system. Where biocontrol agents are being used, it is important to use 'friendly' pesticides before and during an IPM program. If you don't propagate your own stock, it is particularly important to ensure your propagator is not using too many chemicals or those that will leave harmful residues.



The presence of weeds in the greenhouse is asking for trouble

Potential problems

Availability of biocontrol agents

The production of biocontrol agents is a small industry in Australia compared with overseas. Several biocontrol agents are not yet available in Australia and constancy of supply and quality assurance are still developing. Forward planning and consultation with the relevant companies is needed to ensure timely supply and optimum use of those biocontrol agents that are available and to identify future needs.

Time

Staff need to be familiar with a wide range of pest and disease symptoms before beginning monitoring and may require training to improve their skills. Monitoring takes time, particularly when first starting.

Trial and error

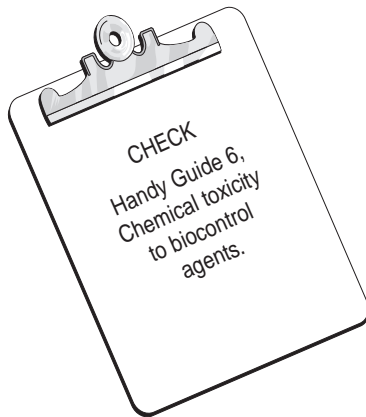
Unexpected problems can occur during the change to any new system. Persistence and patience are needed while a program that suits *your* property is being developed.

Greenhouse structures

Many current greenhouse structures are inadequate for optimal crop health. Use of biocontrol agents may be restricted to certain seasons or not feasible because of temperature extremes. Some capital costs may be involved in improving structures to a suitable standard.



Preparing for IPM:
property & staff
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Lack of chemicals

There is a lack of IPM friendly and biocontrol compatible chemicals in Australia at present. The limited range of 'friendly' chemicals available to Australian growers also makes it difficult to manage resistance.

Challenges

IPM requires a different mindset to traditional control methods. Growers need to want to learn about the IPM approach. The benefits of adopting IPM outweigh any potential negatives.

IPM requires:

- **a commitment to training** of staff and management
- **time** to develop a working system, including allowing time for mistakes and unsuccessful attempts
- **skills**, which are not acquired overnight, but involve a gradual building of knowledge about your crops
- **an understanding** of the integration of roles and communication between grower, staff and consultants
- **an understanding of benefit compared with cost.** When adopting IPM the cost of implementation should be considered in conjunction with occupational health, safety and environmental factors.



Footbaths prevent spread of soil-borne diseases

