

Integrated Pest Management (IPM) is for Plant Propagators Too

to be included in IP

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INTRODUCTION

There is an international trend towards growing plants in ways that are more environmentally friendly. This covers all aspects from energy use, fertiliser, recycling of materials, and plant protection, especially the use of pesticides. These growing systems are sometimes termed integrated plant production and can be linked to the trend to sustainable agriculture and sustainable land management. *Integrated pest management (IPM), is the plant protection contribution to more environmentally friendly plant production.* This paper will define IPM, outline the pesticide-resistance problems now facing growers, and the use of IPM in practice. Also included are my thoughts on why plant propagators in Europe are changing to IPM and how it works for them.

WHAT IS IPM?

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Integrated pest management is defined as “the control of pests by employing all methods consistent with economic, ecological, and toxicological requirements while giving priority to natural limiting factors and economic thresholds” (Brader, 1974). IPM has certain key features:

- Pest and disease control must be effective.
- Selecting from the full range of control techniques available.
- Pest and disease monitoring is an essential ingredient.
- To be successful, IPM must supply produce that meets the standards of the intended market.
- Additional benefits are produce with nil or minimal pesticide residues.
- It can be claimed IPM is not only good for people but for the environment.

All these topics are covered in detail in a Crop & Food Research leaflet (see below under ‘More Information’).

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PESTICIDE RESISTANCE IN PESTS AND PLANT PATHOGENS

An increasing problem for conventional pest control is that pests and plant pathogens have become resistant to many pesticides. This usually shows up when a pesticide no longer works as well as before. A common response is to increase the quantity of pesticide applied and apply it more frequently until the next product becomes available. Pesticide resistance is particularly severe in the ornamental and plant propagation industries because the belief that no pests must be present has led to high frequency preventative applications of pesticides. In New Zealand several pests and plant pathogens relevant to your industry are resistant to pesticides. Pesticide resistance prevention and management strategies for these organisms were published this year (Bourdot and

Suckling, 1996). These strategies are also incorporated into Crop & Food Research's IPM programmes.

PEST AND DISEASE CONTROL IN IPM

For greenhouse crops, techniques available for pest and disease control include: quarantine and screening to keep pests out of crops, manipulating the greenhouse environment to make the environment less favourable for diseases and more suitable for natural enemies of pests, plant resistance to pests and plant pathogens, selective use of pesticides, and biological control. The combination of techniques used depends upon the crop, the kind of greenhouse, the local environment and pest and disease complex, and the market for the plants or produce.

BIOLOGICAL CONTROL

Biological control, that is using natural enemies to control pests, is not an essential element in IPM programmes, though it is a widely used and powerful technique. Growers of ornamental plants and cut flowers are always concerned about using biological control, because the method implies that some pests must be present. In general, there will be a few pests in the crop when biological control is used. However, careful searches also show that pests are present even when only pesticides are used. When biological control is working properly, the numbers of pests in a crop and damage from the pests is less than when pesticides alone are used. Whichever method of pest control is used, pests must be kept below the economic threshold for the crop and market. IPM with biological control can achieve this.

Biological control does require a different attitude to pest and disease control. It is slower acting than pesticides and so requires forward planning. A scheme for crop monitoring is essential so that the manager knows what is happening and that problems are detected at an early stage. It is important that the whole organisation, from the boss to the greenhouse hand, is behind the programme and is properly trained

Before starting, it is also important that a comprehensive pest and disease control programme is worked out so that it is integrated with biological control. This means that you know how to control all (most!) problems without upsetting the biological control. Most growers find it is useful to have regular visits from an advisor during the first few years of using IPM

ADVANTAGES OF BIOLOGICAL CONTROL AND IPM

Several European plant propagators and ornamental plant growers told me why they used biological control. Reasons include:

- Pests resistant to pesticides
- Pesticide residues on produce for export
- Market requirement
- Biological control works
- Philosophical reasons and health

Difficulties controlling pests which are resistant to pesticides has been a major stimulus towards biological control. An increasing number of European growers now seem to be changing because their customer, the supermarket, is demanding alternative growing methods

Once they have made the change growers find other benefits including.

- No withholding period for staff to go in the crop, less disruptive to work schedules
- More convenient, staff like it. No protective clothing required
- Less skill required to dispense natural enemies, whereas special training required for pesticide application
- Plants look and grow better when not sprayed with pesticide
- Plants less prone to pathogens so less fungicide required

When pest numbers are very low, I was told only very susceptible crops are affected, not all plants in the glasshouse.

IPM FOR ORNAMENTAL CROPS IN NEW ZEALAND

Crop & Food Research have developed IPM programmes for cymbidium orchids and glasshouse roses. Full details are available in IPM Manuals Nos 4 and 8, respectively.

Development of IPM for more ornamental crops and for plant propagators depends on three factors. Firstly, a wider selection of biological control agents needs to be commercially available. This is dependent on the private companies producing natural enemies of New Zealand's ornamental crop pests. Secondly, plant propagators must want to use IPM. And thirdly, a specialist advisor on IPM for ornamental plants would improve chances of success.

MORE INFORMATION

Full details about the general principles and advantages of IPM can be seen in a Crop & Food Research leaflet, "What is Integrated Pest Management (IPM)?" Broadsheet No 2 (Feb 1996) It comes with a list of contact people and is available from:

The Publications Coordinator, Crop & Food Research, Private Bag 4704, Christchurch (fax: 0-3-325 2074).

Other leaflets available are:

"Greenhouse technology: a step by step approach". Broadsheet No. 1.

"Western flower thrips. 1. Biology, identification and life cycle". Broadsheet No. 35

"Western flower thrips. 2. How to reduce your risk from the pest and how to control it". Broadsheet No. 36.

"Tomato spotted wilt and Impatiens necrotic spot - viruses spread by thrips". Broadsheet No.59.

LITERATURE CITED

Brader, L. 1974 Present status of integrated control of pests Mededelingen Faculteit landbouwwetenschappen 533: 245-265

Bourdot, G.W. and D.M. Suckling, (Eds) 1996 Pesticide resistance Prevention and management New Zealand Plant Protection Society, Lincoln, Canterbury Pages, 225