

INTEGRATED PEST MANAGEMENT (IPM) IN HORTICULTURE

— AN INTRODUCTION

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Introduction

Integrated pest management (IPM) is a coordinated system of controlling pests. IPM uses information about the biology of the pest to optimise control measures. IPM focuses on cultural and biological control methods as the first line of defence. This means that the need for chemical pesticides is reduced.

Different control and management practices are utilised in IPM with the objective of achieving long term results. There are four principal steps:

1. Identification of **threshold pest level** at which action needs to be taken
2. **Monitoring** and identification of pests
3. **Prevention** – the use of management practices to reduce the likelihood of pests
4. **Control** – once the pest has been correctly identified, monitoring has shown it has reached a threshold level, and preventative measures are no longer appropriate, control measures will be used. Measures with the lowest associated risk are used first.

A pest is any organism which has a deleterious effect on crops. In horticulture it is most commonly, but not exclusively, used to describe arthropods (insects, arachnids and crustaceans).

Threshold pest levels are based on a combination of the likelihood of damage; the costs / consequences of damage; and the costs / consequences of control measures. Sometimes a low level infestation by a pest likely to cause minor damage with no significant loss to either crop quality or quantity close to the time of harvest might not warrant any further action. At a different stage in the production cycle, for example when the crop is further away from being harvested, the same infestation might require action. Consideration also has to be given to neighbouring and following crops: is either the pest, or the remedial action going to have a consequence for the following crop?

Monitoring of pests is done by regular crop walking and inspection, sticky traps are often used to monitor flying insects. The correct identification of pests is crucial and is not always easy.

Cultural control measures include things like crop rotations to prevent the build up or carry over of problems; removal of infected / damaged plants; companion planting to either deter pests or as sacrificial crops to attract pests away from the commercial crop.

Biological control measures include the use of:

- predatory mites which feed on the pest but do not damage the crop – e.g. the use of *Phytoseiulus persimilis* to control red spider mite;



Cronfa Amaethyddol Ewrop ar gyfer Datblygu
Gwledig: Ewrop yn Buddsoddi
mewn Ardaloedd Gwledig
The European Agricultural Fund for
Rural Development: Europe Investing in
Rural Areas



Centre for Alternative Land Use
Canolfan Ddefnydd Tir Amgen



Llywodraeth Cynulliad Cymru
Welsh Assembly Government

- parasitising wasps which lay their eggs in the pest – e.g. the use of *Encarsia formosa* to control whitefly;
- nematodes which parasitise slugs – e.g. the use of *Phasmarhabditis hermaphrodita* to control slugs ('Nemaslug');
- pheromone traps to attract and then trap pests;
- bacteria which infect and destroy the pest – e.g. the use of *Bacillus thuringiensis* to control caterpillars

Control measures rely on an in-depth knowledge of the life cycle of the pest to ensure that appropriate control measures are used to differing stages of the pests life cycle.

The use of resistant varieties forms part of the preventative approach of IPM.

Why use IPM?

IPM aims to ensure the most efficient use of control methods to: minimise crop damage and losses; costs of control measures; and negative environmental impacts. IPM makes good business sense. IPM is not the routine use of chemical control measures that is seen in many commercial crop production protocols.

IPM is particularly suited to protected cropping systems as the structures (glasshouses, polytunnels) provide a finite boundary to both the pest and the control measures. They also allow the environment to be manipulated, e.g. by raising temperatures, increasing or decreasing humidity, etc. to create optimal conditions for control.

Field scale IPM systems are also possible, but are more complicated, and probably less reliable at this stage.

Suppliers of biological control agents

Several UK companies produce biological control agents, numerous other suppliers are able to source them for you. Companies that CALU has experience working with and which have representatives covering Wales are:

Certis – www.bpcertis.co.uk, 01233 667080

Fargro – www.fargro.co.uk, 01903 721591

Kopperts – www.koppert.com, 01440 704488

The websites of these companies all contain a wealth of useful information on the topic of biological controls and IPM and their staff are knowledgeable and able to provide guidance and advice.