



PLANT HEALTH

INTRODUCTION

Growing healthy plants that are high in quality helps to achieve good sales whereas unhealthy plants can be costly to growers. When plants are attacked by pests and pathogens it results in damage and can lead to the loss of plants. Pests include insects, mites and nematodes, as well as pathogens such as fungi, bacteria and viruses.

Nurseries need to practice high standards of hygiene to prevent pests and diseases from establishing themselves. However, pests or pathogens will often be found on plants that require additional measures to maintain the quality of the plants on the nursery. This may be done through biological means by using natural enemies or bio-protectants, or by using conventional chemicals, or by an effective combination of both through Integrated Pest and Disease Management (IPDM).

Preventing the spread of pests and diseases outside the nursery to customer plants, other grower businesses, natural habitats and regions is vital. To support this, growers should understand the principles of biosecurity. Biosecurity practices include plant health standards and government legislation. To prevent spread between countries there are national import and export regulations which require phytosanitary certificates to be issued. Even for business-to-business sales within Great Britain UK Plant Passports are required.

Use this guide to find out:

- how to recognise and identify the symptoms of plant pests and diseases.
- IPDM and in-depth information on pest and disease control in specialist crops.

The principles of biosecurity and guidance on the legislation for importing and exporting plants and plant products.

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1. INTRODUCTION TO PLANT HEALTH

A knowledge of plant health is essential to growers in producing saleable, high-quality plants and for stopping the spread of pests and pathogens.

Below is a selection resources that introduce plant health, these resources are suitable for new entrants to the horticulture industry and for commercial growers wishing to extend their knowledge.

Use these resources to find out about:

- The basic terms used in the science of plant pathology;
 - The symptoms caused by pests and diseases to help in their diagnosis and the selection of control measures;
 - The concept of biosecurity and why this is essential to stopping the entry of pests into the UK and their subsequent spread;
 - The resources provided for biosecurity by the UK Government, including the UK Plant Health Risk Register.
 - A specialist webinar on the diseases of trees and shrubs.
- The following Tyfu Cymru resources are recommended:
- Plant Health Webinar: Diagnosis in Ornamental Plants and accompanying factsheet
 - Webinar: Plant Biosecurity

Additional resources provided by Tyfu Cymru can be found here:

- Plant Health Webinar: Health of Trees and Shrubs
- Pests and Diseases: Threats, Diagnosis and Reporting
- Where to find information on pests and diseases in plant health
- Current training resources for Plant Health online
- Getting to grips with the basics of plant health

2. INTEGRATED PEST AND DISEASE MANAGEMENT (IPDM)

Integrated Pest and Disease Management (IPDM) is a method of mixing cultural controls, biological controls (biocontrols) and conventional chemicals to achieve the optimum control of pests and diseases in crops. The controls may be used preventatively or curatively. Biocontrols are more environmentally sustainable and have less crop residues. Their use is increasing as effective chemicals become less available.

For the effective use of biocontrols the crop must be carefully and regularly monitored for the presence of pest or disease. Biocontrols predominantly comprise predator or parasitoids of the pest species and bioprotectants, which may be sprays such as bacterial sprays.

IPDM is not an organic farming system as, if biocontrols are insufficient, conventional chemicals may be used. However, chemical use is reduced in an IPDM system.



As many of the biocontrols are living organisms, conditions must be right for them to thrive and act. For example, there must continue to be a low level of the pest on which they can feed, and the temperature and humidity must be suitable for the biocontrols.

It is important that the IPDM system, where different control types are used, is planned at the beginning of the crop season.

The following Tyfu Cymru resources are recommended:

Webinars:

1. [Smart Utilisation of an Integrated Pest and Disease Management System](#)
2. [Integrated Pest Management for Commercial Ornamental Growers in Wales](#)
3. [IPDM Review of the Season. Ornamentals](#)
4. **Factsheet:** [Promoting beneficial insects](#)

For soft fruit growers:

Webinars:

- a. [Soft Fruit for the New Season](#)
- b. [IPDM Network Thrips in Edible crops](#)
- c. [IPDM Soft Fruit Crops: identification and management of weevils](#)
- d. [IPDM Edible Crops – Strawberry Powdery Mildew](#)
- e. **Virtual tour:** [Integrated Pest Management Case Study with Springfields Fresh Produce](#)

For ornamental growers:

Webinars:

- a. IPDM Ornamental Crops: [April and early Spring pest management](#)
- b. IPDM Ornamental Crops: [Spring/Summer disease prevention and management](#)
- c. IPDM Ornamental Crops: [Summer Pest Management](#)
- d. IPDM Ornamental Crops: [Managing crops to minimise Autumn/Winter disease risks](#)
- e. [Tyfu Cymru Ornamentals Network 2021 Spray programme for disease prevention and control: protected and outdoor ornamentals](#)
- f. **Technical Advice Sheet:** [Ornamental Plant Production](#)
- g. **Virtual tour:** [Pest and disease identification and control with Bransford Webbs](#)

Additional resources provided by Tyfu Cymru can be found here:

Webinars:

- [Plant Protection in Ornamentals; How, when, why](#)
- [IPDM update ornamentals and edibles](#)

Technical Advice Sheets

- [Strawberry April 2020](#)



- [Strawberry and Raspberry May 2020](#)
- [Soft Fruit Network- June 2020](#)
- [Soft Fruit - July](#)
- [Raspberry and Cane Fruit](#)

Factsheets:

- [Soft fruit pests](#)
- [Sucking Fruit pests](#)
- [Soft Fruit Pests Factsheet – Other Soft Fruit Pests](#)
- [Soft Fruit Pests Factsheet – Biocontrol](#)
- [Disease Management in Bush Fruit](#)
- [Disease and Weed Management in Bush Fruit](#)

3. BIOSECURITY AND IMPORT/EXPORT

Biosecurity procedures are used to stop new pests and diseases entering the country and to control the spread of pests and diseases when present on crops and in natural habitats. These measures help protect crop values, as well as natural habitats and landscapes.

Measures are used to inspect plants and plant products that are being imported and exported, to report problems when they arise, and to make sure pest and disease levels are low through good nursery and stock hygiene and control measures. Plant Passports and Phytosanitary Certificates are used to ensure plants are traceable and come from disease-free locations.

There are increasing levels of the commercial movement of plants and so the importance of good biosecurity has never been greater. Commercial growers have a crucial role to play in preventing problems and this begins by being familiar with the concepts of biosecurity, Government import/export regulations and how Plant Passports should be used.

The following Tyfu Cymru resources are recommended:

1. [Webinar: Plant Biosecurity](#)
2. [Pests and Diseases: Threats, Diagnosis and Reporting](#)
3. [Maintaining a Biosecure Site at the National Botanic Garden of Wales](#)

Additional resources provided by Tyfu Cymru can be found here:

Webinars:

- [An introduction to the Plant Health Management Standard](#)
- [Biosecurity Policy and Legislation – Panel Discussion](#)

Case study:

- [Virtual Tour of Crug Farm](#)

Factsheets:

- [Update on plant imports with high risk for Xylella fastidiosa – legislation](#)



- [Importing, Exporting and Moving plants](#)
- Latest guidance for importing and exporting 16 December 2020
- [Importing, exporting and moving plants, including plant passporting, in Wales, and importing and exporting to countries in the European Union](#)
- Importing and exporting and moving plants between GB and Northern Ireland. Ex ample guidance to finding information (January 2021)
- Importing and exporting plants including Plant Passporting in Wales
- Update on plant imports with high risks for plant health (April 2020)

4. WEEDS CONTROL AND SOIL HEALTH

The production of a healthy crop depends not only on controlling pests and diseases but also by providing good nutrition through a healthy soil and reducing competition from weeds. Resources in this section give an overview of soil health as well as recommendations for the cultural and herbicide control of weeds.

It is recommended that you begin with the webinar: [“Soil Health for field vegetable growers”](#)

Additional resources provided by Tyfu Cymru can be found here:

Webinars:

- [Tyfu Cymru: Flower Network – soil health and how to unlock nutrients for flowers](#)
- Weed control in the production of ornamentals”
- [Weed control in Pumpkin](#)

Factsheets:

- [Technical Advice Sheet: Weed control in ornamentals](#)

5. SPECIALIST CROPS

Tyfu Cymru Grower Networks have produced a series of resources specific to their crops. These cover varietal choices, cultivation, pests and disease symptoms with guides for crop walking, and appropriate control measures for these pests and diseases.

These resources for specialist crops should be read alongside the recommended resources in other sections of this guide.

PUMPKINS

Technical Advice Sheets:

- [Pumpkin Power Hour – June](#)
- [Pumpkin Power Hour – July](#)
- [Pumpkin Power Hour – November](#)
- [Pumpkin Disease Control](#)

Factsheet:

- [Managing Blossom End Rot in Pumpkin](#)
- [Vegetable Network Power Hour Technical Notes 22/04/2020](#)

ASPARAGUS

Factsheet: [Asparagus Spring Pest Control](#)

See also: Soft Fruit resources in the IPDM section

CHRISTMAS TREES

Webinar: [Christmas Trees Summer Update](#)

Technical Advice Sheets:

- [Christmas Tree Needle Diseases](#)
- [Christmas Tree – July](#)

FLOWERS

Webinar: [Daffodil Crop Production](#)

Technical Advice Sheets:

- [Growing Sunflowers](#)
- [Growing Lavender](#)

See also: Ornamentals resources in the IPDM section

6. WALES PLANT HEALTH IN HORTICULTURE 2020 CONFERENCE

Tyfu Cymru held a virtual conference covering topics in biosecurity and plant health management standards, and pest and disease diagnosis. Recordings of presentations by sector experts and virtual tours of leading nurseries are available here.

To get the full experience of the Conference you can watch the resources in the order in which they were delivered, or you can dip in and out with the topics that most interest you:

- [An introduction to the International Year of Plant Health and the Plant Health in Horticulture Conference](#)
- [The role in trade associations in raising awareness and representing members](#)
- [Maintaining a Biosecure Site at the National Botanic Garden of Wales](#)
- [Biosecurity Policy and Legislation – Panel Discussion](#)
- [An introduction to the Plant Health Management Standard](#)
- [Pests and Diseases: Threats, Diagnosis and Reporting](#)
- [A summary of the key messages from the Plant Health in Horticulture 2020 Conference](#)



Notes

Every effort has been taken to ensure the information contained within this guide is accurate and current at the time of writing. We cannot take responsibility for links to external websites.

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