Training Workshop on Plant Health

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Pest Management Strategy Under Emergency Situation, Principles and Practice

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Dealing with an outbreak

What is an 'outbreak'?

An isolated **pest** population, recently detected and expected to survive for the immediate future

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What do we consider a 'pest' as?

Any species, strain or biotype of plant, animal, or pathogenic agent, injurious to **plants** or **plant products**

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What is a quarantine pest?

A **pest** of potential economic importance to the **area endangered** thereby and not yet present there, or present but not widely distributed and being **officially controlled**

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What is an endangered area?

An **area** where ecological factors favour the **establishment** of a **pest** whose presence in the **area** will result in economically important loss

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Control Measures

- Destruction of infected plants and nearby susceptible plants and debris
- Restrictions on plant movements
- Hygiene/biosecurity measures
  - Cleaning/disinfection footwear and equipment
  - Access restrictions
- Inspection regime
  - During and post-eradication
  - Trace-back and trace-forward of related plant material

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Action in response to a finding of quarantine pest at a place of production

- Prevent movement of all planting material of all kinds within and from the place of production
  - 'place of production' will either be the premises as a whole, or specific production sites (glasshouses) depending on risk of spread and status of the rest of the site

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Action cont.

- Owner must provide a full list of customers who may have been put at risk from the delivery of infested planting material. Trace-back and trace-forward.

- All crop debris (including infested plants and associated growing media) are collected in sealed bags. This material is then disposed of by incineration or deep burial.

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Action cont.

- Treatment of all remaining plants in the infested houses with a full chemical treatment programme, e.g. space treatments and foliar sprays

- Additional sticky traps in areas such as near entrances, heating pipes, above favoured hosts and newly imported material etc.

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Action cont.

- Destruction and removal of any weeds in or around the site by herbicide or physical means, prioritising the outbreak area.
- Repair of all broken glass/ripped polythene in all houses on the site, again prioritising the outbreak area.
- Protection of mother plants and other plants being propagated in other houses on the nursery, by appropriate means e.g. pesticide treatment programme and other physical/ cultural methods.

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Action cont.

- Nursery staff and visitors to minimise their movement from infested to non-infested areas of the nursery and to other nurseries.

- Require notices to be displayed on each of the entrance doors to the infested glasshouses stating "Quarantine Area - No entry except to authorised staff. Please see [name of manager]"

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Follow-up visits

- There are usually weekly follow-up visits to the outbreak sites.
- Repeat inspections of the site to determine the incidence of infestation.
- Check treatment records to ensure the agreed chemical/biological/cultural etc. controls are being followed.

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Pest freedom

- The period of pest freedom sufficient to indicate that eradication of the pest has been achieved will be determined by a number of factors including:
  - Life-cycle of the pest
  - Temperature of outbreak site
  - Cropping conditions
  - Control measures applied

- This can be from around 3 weeks to more than 32 weeks.

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Case Study 1

Bemisia tabaci outbreaks at an ornamental propagator

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Case Study 1

- Largest propagator of young plants from cuttings in UK
- 5.5 ha growing area at new site
- 8000 customers
- Company run by owner, not part of an international company

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Case Study 1

Products:

- Basket plants
- Bedding
- Shrubs
- Climbers
- Lavender
- Perennials

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Case Study 1

Imports

- Imported 30 million cuttings from 3rd countries in 2006.
- Imported 20 million cuttings, microprop & seedlings from the EU in 2006.

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Case Study 1

Growing methods

- Unrooted cuttings stuck in module trays
- Rooted under polythene 'cloches' (most genera) on heated floor
- Polythene removed after 2-3 weeks
- Glasshouse enviroment changed with plant age

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Case Study 1

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Case Study 1

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Case Study 1

- *Bemisia tabaci* found on traps over perennial plants
- Pupae and adults found eventually on Veronica – destroyed
- Further consignments cancelled by nursery
- Further adults found on traps placed over previous consignments, over several weeks in several houses

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Case Study 1

Action

- Destruction of infested plants (unrooted cuttings, growing crop)
- Treatments compatible with biological control
- Outbreak houses – plants under hold until clear for 3 weeks

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Case Study 1

- Master trap
- Enermix – Encarsia & Eratmocerus –weekly – can apply under polythene where sprays not possible
- Intercept in soil
- Mycotal spray – post sticking, before polythene put in place

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Case Study 1

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Case Study 1

Cost to nursery

- Late outbreak and rapid detection in 2006 > limited losses
- Plant losses a minimum – able to trim & hold until hold lifted
- Each house – 1.8 million plants, value £300,000 > potential for very significant losses if outbreak widespread on nursery
- Cost of preventative treatments approx. £40,000 - £50,000 per annum

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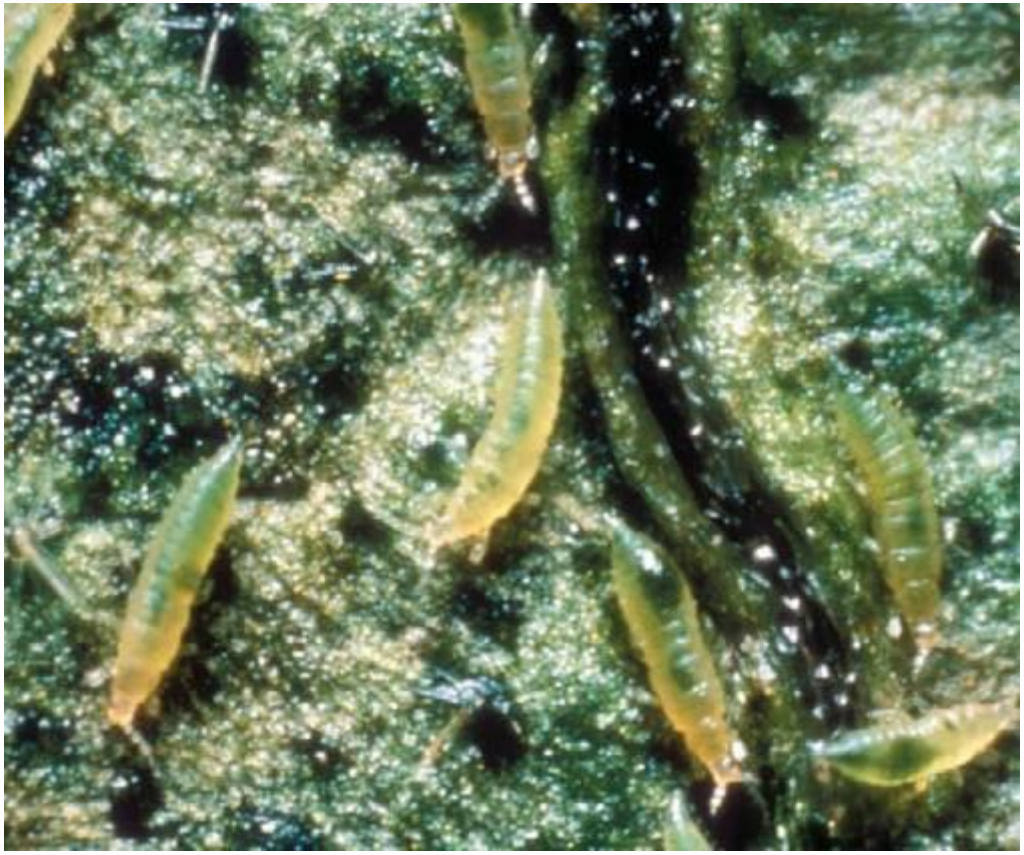
Case Study 2 – *Thrips palmi*

- Adults and nymphs feed on cell contents on leaves, stems, flowers and surface of fruit.
- Cause silvery scars, leaf chlorosis, distortion, virus spread and death.



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Thrips palmi – Host plants

- Potential to damage wide range of glasshouse ornamentals and vegetable crops.
- Economically damaging to cucumber, aubergine, tomato, sweet pepper.

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Thrips palmi – Host countries and spread

- South East Asia
- Throughout Asia, Pacific, Florida, and Caribbean, South America, Africa and Australia.
- Europe outbreaks- Netherlands 1988 and southern England 2000

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Thrips palmi – How is it introduced?

First intercepted 1997 orchid cut flowers from Thailand.

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Thrips palmi – How is it introduced?

- Regularly intercepted on Bitter melon – *Momordica* both from Caribbean and Asia.
- Chrysanthemum and rose cut flowers
- Ornamental cuttings and pot plants.

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Thrips palmi – What happened here?

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Aim of eradication programme

- Contain and eradicate the pest on site.
- Prevent its spread onto surrounding properties .
- Prevent establishment nationally.
- Maintain the UK pest free status.

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Crop inspection

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Leaf distortion and silver scarring

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Inspection prior to marketing

- Weekly site inspections to monitor traps,
- Ensure chemical treatments are applied as specified,
- Check cut flowers for pest freedom prior to marketing.

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Thrips palmi – cost of outbreak

To the Nursery

- April 2000 and July 2001, 6 fold increase in pest control.
- Total cost of eradication £56,000

To Plant Health Authority

- 116 inspection visits to site.
- 188 inspections to all protected cropping in 5km radius.

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Case Study 3

Citrus Longhorn beetle – *Anoplophora chinensis*

- Large black beetle with variable white markings (2-3cm long)
- Antennae longer than bodies, black with white/light blue bands.
- Lays eggs in slits at base of tree.

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Acer palmatum trees

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Citrus Longhorn Beetle – what happened here

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Chinese stock: 46,000 Chinese Acers March 2005

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August 2005 – First beetles intercepted

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Treatments to prevent spread of beetles

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Destruction of Stock

- Trees – destroyed.
- Compost – sieved and re-used to pot non host plants.
- Pots – sterilised and re-used.

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£10,000 Compost Reused

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Trees burned

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Follow-up Inspections – Local and National

- Nursery close to woodland with many host species
- National alert

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Cost of Outbreak

- **In total 22 Adult beetles and 16 larvae found**

Cost to the Nursery:

- Nursery labour (potting up / de-potting / burning, chemical treatments)
- Cost of Stock £316,000
- £1 million saleable value

Cost to Plant Health:

- At peak 9 inspectors on site
- Total inspector input 240 hrs (6.5 weeks)

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Thank you for your kind attention

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