

Biology and Management of Soil pests

The majority of crops grown in the UK are host to single or multiple insect pests that feed on the growing plant at some stage of their life cycle. Insect pest is not strictly correct terminology because the pests come from a wide range of families or groups, from *Coleoptera* (beetles), *Diptera* (true flies), *Lepidoptera* (butterflies and moths), Molluscs (slugs and snails) and Nematodes.

Pests may attack crops at a number of growth stages from ungerminated seed and young roots through to young tender stems, up to harvest and in some cases during storage of the produce. The consequence of a pest attack will range from a slight reduction in plant vigour to complete plant death, both of which result in reduced yields. Although pest attack may not directly effect yields, produce quality can be greatly reduced for example wireworms in potatoes.



Brassicas devastated by cabbage root fly larvae

Pests have differing abilities to feed and thus reproduce on a range of crops. In some cases this is a fairly narrow range, for example carrot fly which is a pest of carrot, celery, parsnip and parsley. Slugs on the other hand will feed on almost any crop plant.

Major pests

Cabbage root fly
Leatherjackets
Potato cyst nematode
Slugs and snails
Vine weevils
Wireworms

Minor pests

Bean seed flies
Carrot fly
Chafers
Colorado beetle
Cutworms
Free living nematodes
Lettuce root aphid
Millipedes and centipedes
Onion fly
Swift moth
Symphlids
Turnip gall weevil
Wingless weevils



Regular crop inspection is an important part of pest control

Without the option of soil-acting insecticides/molluscides, effective control of pests in an organic system relies to a great extent on cultural methods and bio-control measures.

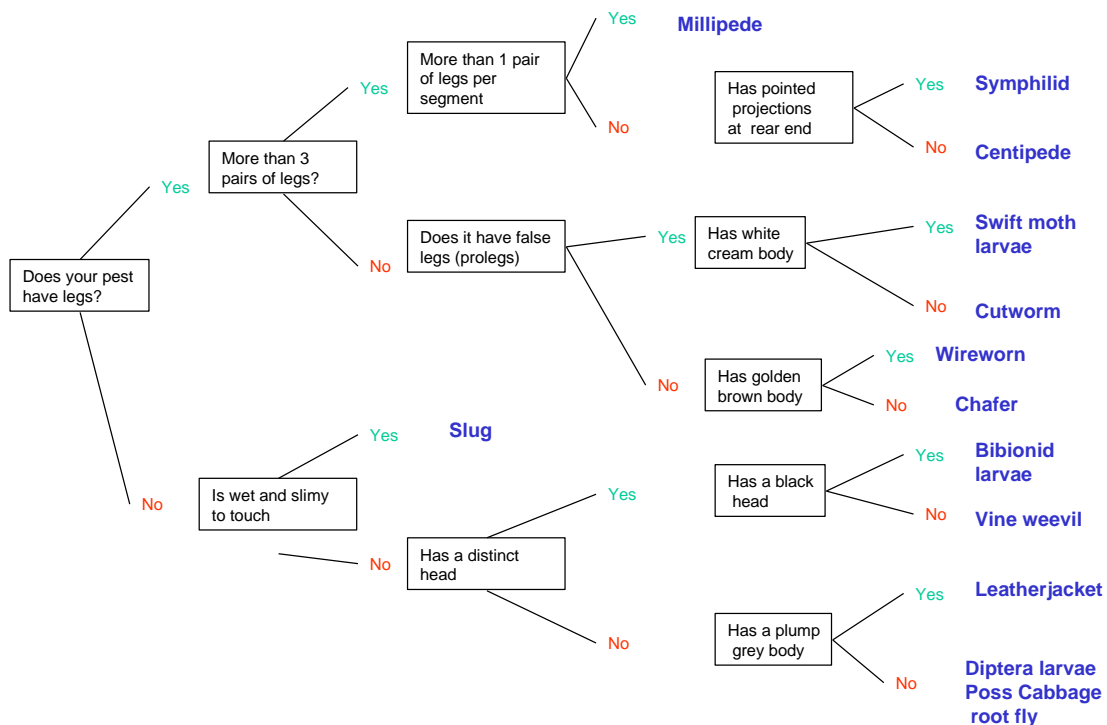
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- **Effective cultural control of any pest requires:**
- Correct identification of the pest
- Understanding the pest's life cycle
- Exploiting any weakness in the pest's life cycle
- Optimising crop rotations
- Use of bio-control agents such as parasitic nematodes where appropriate
- Improving habitats for beneficial insects like carabid beetles which feed on slugs
- Consideration of the use of physical barriers for susceptible or high value crops

Simple key to identify soil pests



Further information

Books and papers

- David Frost (2003) *Review of pest and weed control in organic systems*, Organic Centre Wales
- Marion Gratwick, *Crop Pests in the UK – Collected edition of MAFF leaflets*, MAFF / ADAS Published by Chapman & Hall, London 1992

Websites

- Cyber-Help for Organic Farmers (USA) , <http://www.certifiedorganic.bc.ca/rcbtoa/training/pestmanagement.htm>
- Database of IPM Resources (USA) <http://ipcc.orst.edu/DIR/index.htm>
- Henry Doubleday Research Association <http://www.hdra.org.uk>
- Organic Integrated Pest Management (USA) http://www.attra.org/attra-pub/summaries/organic_ipm.html.
- The *Pest Bulletin*, HDC. <http://www2.warwick.ac.uk/fac/sci/hri2/hdcpbulletin/>

Please note that the USA based websites may not be appropriate in terms of pest life cycles, timing of management operations etc.

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