

# Glossary

<b>Abdomen</b>	The third or posterior major division of the insect body
<b>Alatae</b>	Winged forms (e.g. in aphids)
<b>Antennae</b>	'Feelers' at the front of the head, which may be long or short, slender, branched or feathery and sensitive to touch, smell and sometimes sound
<b>Apterae</b>	Wingless forms (e.g. in aphids)
<b>Brassicac</b>	Vegetables in the genus <i>Brassica</i> such as broccoli, cabbage, cauliflower, brussel sprouts and turnips (see also 'crucifers')
<b>Biotype</b>	A strain of an insect species
<b>Cocoon</b>	Silken sac covering the pupa
<b>Compound eyes</b>	Eyes on either side of the adult insect head, which consist of many units each made up of a lens system and a smaller number of sense cells
<b>Crucifers</b>	Vegetables in the family Brassicaceae (or Cruciferae), including the brassicas and some other crops such as rocket, radish, horseradish and cress (see also 'brassicac')
<b>Cucurbits</b>	Vegetables in the family Cucurbitaceae such as cucumber, pumpkin, squash and zucchini
<b>Curd</b>	The edible flower head of cauliflower and broccoli
<b>Dorsal</b>	The upper surface
<b>Ectoparasites</b>	Parasites that live on the exterior of their hosts
<b>Egg raft</b>	Cluster of eggs; egg mass
<b>Endoparasites</b>	Parasites that live inside their hosts
<b>Femur</b>	The third and usually the stoutest segment of the leg
<b>Forewings</b>	Front pair of wings
<b>Frass</b>	Solid larval insect excrement; faeces
<b>Halteres</b>	Reduced hind wings that are used as balancing organs in flies
<b>Hind wings</b>	Rear pair of wings
<b>Instar</b>	Immature stage between moults
<b>Larva (pl. larvae)</b>	Immature stage that hatches from an egg and passes through a life cycle involving complete metamorphosis (common terms: grub, caterpillar, maggot)
<b>Mandibles</b>	Part of the insect mouthparts; large and jaw-like in chewing insects and needle-shaped in piercing and sucking insects
<b>Mealy</b>	Floury
<b>Metamorphosis</b>	Progression through stages from egg to adult
<b>Moult</b>	Shedding of skin from previous instar
<b>Mouthparts</b>	Chewing, sucking, piercing and sucking part of the head that takes food
<b>Nocturnal</b>	Active at night
<b>Nymph</b>	Immature stage of an insect that undergoes incomplete metamorphosis
<b>Ocellus (pl. ocelli)</b>	Simple insect eye
<b>Ovipositor</b>	Egg-laying tube at the end of the female abdomen

<b>Parasite</b>	An organism that lives on another, obtaining food, shelter or other needs
<b>Parasitise</b>	To attack or infest as a parasite
<b>Parasitoid</b>	A parasite that slowly kills the host, usually near the end of the parasite's development
<b>Pathogen</b>	A microorganism that causes disease
<b>Predator</b>	An organism that kills and eats other organisms
<b>Prolegs</b>	Soft, fleshy, false legs on the abdomen of some immature stages, such as caterpillars
<b>Pronotum</b>	The upper and dorsal part of the first segment of the thorax
<b>Pupa (pl. pupae)</b>	Resting stage between larva and adult
<b>Raptorial</b>	Adapted for seizing prey, as in the raptorial legs of the praying mantid
<b>Russetting</b>	To make reddish-brown in colour
<b>Setae</b>	Hairlike projections
<b>Siphunculi</b>	Tubular structures at the end of the aphid abdomen
<b>Solanaceous</b>	Vegetables in the family Solanaceae such as capsicum, eggplant, potato and tomato
<b>Thoracic legs</b>	Legs on the thorax
<b>Thorax</b>	The second section of the insect body (between the head and the abdomen) to which the legs and wings are attached
<b>Tibia</b>	The fourth segment of the insect leg
<b>Tubercule</b>	A small knoblike or rounded protuberance
<b>Vector</b>	An organism that transports a pathogen from one host to another
<b>Venation</b>	Pattern of veins on insect wings
<b>Wingspan</b>	The distance between the tips of the outspread wings

# Further reading and bibliography

There are many books available on insect pests and their management in vegetables and other crops. The following is a selection of those, but you may find others that are informative and useful. Books aimed at the home gardener can also be useful as they often include colour photos and drawings, sometimes with outstanding pictures of insects and arachnids. Check with your local bookshop, at specialist book suppliers or with the online bookshops of your state agricultural department. Some of the books listed may no longer be in print, but they may be available in libraries or at your local agricultural department's offices.

Specialist book suppliers include Johima Books ([www.johima.com.au](http://www.johima.com.au)) and the Rural Bookshop ([www.ruralbookshop.com.au](http://www.ruralbookshop.com.au)). An internet search on 'bookshops and horticulture' or 'bookshops and agriculture' should provide a useful list.

## References for collecting and preserving insects and arachnids

Schauff, ME (ed.) 2005, *Collecting and preserving insects and mites: tools and techniques*, Systematic Entomology Laborator, USDA, National Museum of Natural History, Washington DC.

Available online at [www.ars.usda.gov](http://www.ars.usda.gov)

Upton, MS 1991, *Collecting, preserving and studying insects and allied forms*, 4th edn, Australian Entomological Society Miscellaneous Publication No. 3, Canberra.

Available online at [www.austentsoc.org.au](http://www.austentsoc.org.au)

## Books on insects and crops

Bailey, P (ed.) 2007, *Pests of field crops and pastures*, CSIRO Publishing, Collingwood.

This book includes photographs, descriptions and management notes for pests of field crops, many of which also are pests of vegetables.

Brough, E, Elder, R & Beavis C (eds) 1994, *Managing insects and mites in horticultural crops*, Information Series QI94010, Department of Primary Industries, Queensland.

This book includes descriptions and management notes of major insect and mite pests, but no illustrations.

Fullelove, G (ed.) 1992, *Tomato pests and disorders*, Information Series QI91021, Department of Primary Industries, Queensland.

This book includes an extensive collection of colour photos with management notes.

Heisswolf, S, Carey, D, Walsh, B, Davis, B & Henderson C, 2004, *Brassica problem solver and beneficial identifier*, Information Series QI04005, Department of Primary Industries and Fisheries, Queensland.

This book includes photographs and descriptions of brassica problems, including those caused by insect pests, with a section on beneficial insects.

Hely, PC, Pasfield, G & Gellately JG 1982, *Insect pests of fruit and vegetables in NSW*, Inkata Press, Melbourne, Sydney and London.

This book includes photographs, diagrams and descriptions of pests and their damage. However, the control measures are out of date and should be ignored.

Horne, P, De Boer, R & Crawford, D 2002, *Insects and diseases of Australian potato crops*, Melbourne University Press, Melbourne.

This book has photographs and life cycle and management information on beneficial and pest insects and diseases of potatoes.

Llewellyn, R (ed.) 2002, *The good bug book*, 2nd edn, Integrated Pest Management Pty. Ltd. for Australasian Biological Control Inc.

This book lists suppliers of beneficial insects and mites, and also gives detailed descriptions of these natural predators.

Lovatt, J (ed.) 2004, *Sweet corn problem solver and beneficial identifier*, Information Series Q104008, Department of Primary Industries and Fisheries, Queensland.

This book includes photographs and descriptions of sweet corn problems, including those caused by insect pests, with a section on beneficial insects.

Swaine, G, Ironside, DA & Corcoran RJ (eds) 1991, *Insect pests of fruit and vegetables*, 2nd edn, Information Series Q191018, Department of Primary Industries, Queensland.

This book includes a collection of colour photos with biological and management notes.

## Ute guides

Ute guides (field guides) are small, spiral-bound books, usually printed on plasticised paper, containing photographs and information on pest and beneficial insects in a particular crop or a related group of crops. The guides can be taken into the field and used to identify the insects found in the crops. Ute guides have been prepared for many horticultural and field crops and several of particular interest to vegetable growers are listed below.

Brown, J (comp.) 2004, *Insect pest guide: a guide to identifying vegetable insect pests and their natural enemies in the dry tropics*, Department of Primary Industries and Fisheries, Queensland.

Donald, C, Endersby, N, Ridland, P, Porter, I, Lawrence, J & Ransom L 2000, *Field guide to pests, diseases and disorders of vegetable brassicas*, Agriculture Victoria, Victoria.

Available from Crop Health Services on (03) 9210 9356

Draper, V & Napier, T (eds) 2009, *Pests, beneficials, diseases and disorders in cucurbits: field identification guide*, Department of Primary Industries, New South Wales.

Duff, J 2008, *Green beans: insect pests, beneficials and diseases*, Department of Primary Industries and Fisheries, Queensland.

Goodwin, S & Steiner M (eds) 2002, *Pests, diseases, disorders and beneficials in greenhouse vegetables: field identification guide*, NSW Agriculture, New South Wales.

Llewellyn, R 2000, *Sweet corn pests and their natural enemies: an IPM field guide*, BioResources Pty Ltd.

## Websites

A lot of information can be obtained from the internet, provided you use reputable sites. Government departments and universities, both in Australia and overseas, often have a lot of information on specific pests available on their websites. Search engines are useful for finding the sites you may need.

## Bibliography

Bailey, PT (ed.) 2007. *Pests of field crops and pastures*. CSIRO Publishing, Collingwood.

CSIRO 1991, *The insects of Australia*, 2nd edn, Melbourne University Press, Melbourne.

Hely, PC, Pasfield, G & Gellatley JG 1982, *Insect pests of fruit and vegetables in NSW*, Inkata Press, Melbourne, Sydney, London.

Swaine, G, Ironside DA & Corcoran RJ (eds) 1991, *Insect pests of fruit and vegetables*, 2nd edn, Information Series Q191018, Department of Primary Industries, Queensland.

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**Notes**

Lined area for taking notes, consisting of multiple horizontal lines.



