

Macadamia grower's handbook

Reprint – information current in 2004



REPRINT INFORMATION – PLEASE READ!

For updated information please call 13 25 23 or visit the website www.deedi.qld.gov.au

This publication has been reprinted as a digital book without any changes to the content published in 2004. We advise readers to take particular note of the areas most likely to be out-of-date and so requiring further research:

- Chemical recommendations—check with an agronomist or Infopest www.infopest.qld.gov.au
- Financial information—costs and returns listed in this publication are out of date. Please contact an adviser or industry body to assist with identifying more current figures.
- Varieties—new varieties are likely to be available and some older varieties may no longer be recommended. Check with an agronomist, call the Business Information Centre on 13 25 23, visit our website www.deedi.qld.gov.au or contact the industry body.
- Contacts—many of the contact details may have changed and there could be several new contacts available. The industry organisation may be able to assist you to find the information or services you require.
- Organisation names—most government agencies referred to in this publication have had name changes. Contact the Business Information Centre on 13 25 23 or the industry organisation to find out the current name and contact details for these agencies.
- Additional information—many other sources of information are now available for each crop. Contact an agronomist, Business Information Centre on 13 25 23 or the industry organisation for other suggested reading.

Even with these limitations we believe this information kit provides important and valuable information for intending and existing growers.

This publication was last revised in 2004. The information is not current and the accuracy of the information cannot be guaranteed by the State of Queensland.

This information has been made available to assist users to identify issues involved in macadamia production. This information is not to be used or relied upon by users for any purpose which may expose the user or any other person to loss or damage. Users should conduct their own inquiries and rely on their own independent professional advice.

While every care has been taken in preparing this publication, the State of Queensland accepts no responsibility for decisions or actions taken as a result of any data, information, statement or advice, expressed or implied, contained in this publication.



Queensland Government

GROWING GUIDE

Macadamia grower's handbook

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Using this guide

The handbook is constructed around two important principles. Firstly, it focuses on the core information that is most needed and regularly used by growers. Hence, it does not provide detailed information on all areas of macadamia growing. Where additional information is available and considered useful for further study, references are provided. Secondly, the information is presented in line with how it has been sought from the authors over a number of years. Hence, there are different chapters of the handbook designed to suit different needs. Here is a brief roadmap:

If you are an:

Intending grower
(thinking about growing macadamias)

New grower (about to establish an orchard, in the process of doing so, or taking over an existing orchard as a new grower)

Established or more experienced grower

Start with:

Before you start – this is a checklist of the things you need to know before you start growing macadamias, and will give you the best introduction into other sections of the handbook. Other useful chapters are:

Common questions – the twenty or so most commonly asked questions about growing macadamias

Contacts and references – a list of industry organisations, product suppliers and further reading

Growing the crop – this is the authors' guide for establishing, producing and handling macadamias and will refer to other appropriate sections of the handbook where needed. Other useful chapters are:

Additional information on some key issues – detailed information on some of the key decisions for macadamia growers

Contacts and references – a list of industry organisations, product suppliers and further reading

Chemical handy guide – a list of currently registered chemicals and their registered uses

Additional information on some key issues – this chapter contains detailed technical information on some of the key decisions for macadamia growers. Other useful chapters are:

Chemical handy guide – a list of currently registered chemicals and their registered uses

Remember that the handbook contains a detailed index at the back.

If you don't understand a term used in the handbook, refer to the *Terms and concepts* section on page viii.

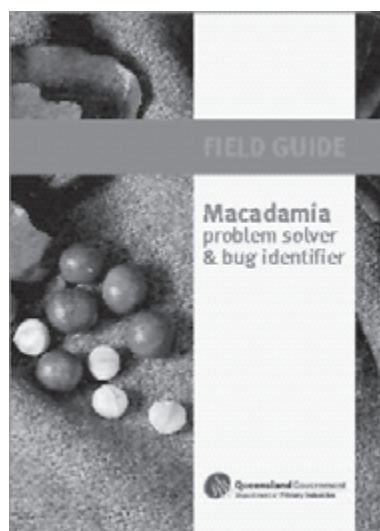
WARNING!

This handbook is a general guide only and is not intended to be used as the only tool in reaching key management decisions. We always recommend that you also seek independent advice from experienced consultants in your district.

A listing of consultants is contained in the *Contacts and references* chapter.

There are some limitations in using this handbook. These include:

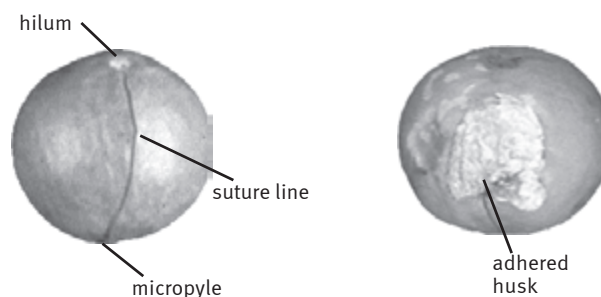
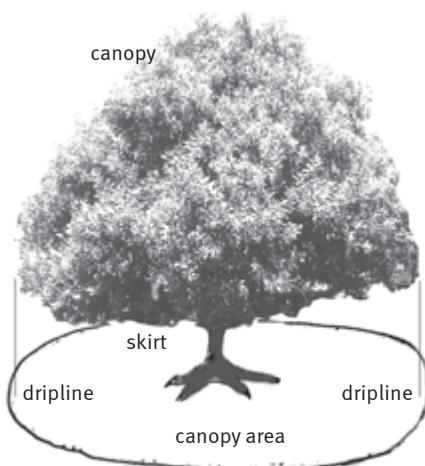
- The book does not contain colour pictures of pests, diseases or other problems that occur in macadamias. These are found in the field guide companion to the handbook – the ***Macadamia problem solver and bug identifier***. This special pocket-sized waterproof guide is designed to be used in the field to first correctly identify a problem, before the recommendations in the handbook are consulted.



- Because chemical registrations change frequently, these should be checked at routine intervals. Sources of updated information are contained in the *Contacts and references* chapter.

Terms and concepts used

Abscission	The process by which leaves or nuts separate from the tree and fall. The abscission layer is the separation point.
Action level	The level of a pest population at which control measures should be implemented.
Adhered husk	Remains of the husk adhered to the shell; characteristic of some varieties (see diagram).
AMS	Australian Macadamia Society.
Beneficial	A commercially produced or naturally occurring insect, mite, nematode, predator or parasite that will help control a pest.
Canker	A dark discoloured area of wood or bark on the trunk or branches.
Canopy cover/canopy area	Area on the ground which is covered by the canopy of the tree. Calculated by measuring the radius of the tree (distance from trunk to edge of canopy – ‘r’) and using the formula πr^2 (see tree diagram). Note that this is not canopy volume.
Central leader	The main shoot of the young tree which is trained to form the trunk and main branch framework.
Dripline	An imaginary line on the ground corresponding to the outer perimeter of the canopy (see diagram).
Fertigation	Application of fertiliser through the irrigation system.
Flailing	The process by which mulch and other residue is broken down into smaller pieces (generally by flail slashers or mulchers).
Floret	An individual flower bud (see ‘raceme’).
G1K	Percentage first grade kernel.
Gross margin	The difference between total production income and production (or variable) costs. It does not account for fixed (or overhead) costs or capital costs.



HAES	Hawaii Agricultural Experiment Station—refers to varieties selected in Hawaii, for example HAES 344.
Hedging	Pruning of sides of the tree canopy.
Hilum	Point at which the nut was attached to the stalk (see diagram).
HVA	Hidden Valley A—refers to varieties selected in Australia by Hidden Valley Plantations, for example HVA16.
Inorganic fertiliser	A manufactured or synthetic fertiliser.
Integrated pest management (IPM)	An approach to pest and disease management that incorporates aspects of chemical, cultural, physical and biological methods to prevent pests and diseases from reaching damaging levels. It involves regular monitoring to determine if and when treatments are needed.
KR	Kernel recovery.
m.c.	Moisture content.
Micropyle	White spot at the end of the nut opposite the hilum. Water enters here to initiate germination. Very prominent in variety HAES 246.
Monitoring	A process of systematically checking the tree (and fallen nuts) for pests and diseases, and recording progress, in order to make decisions on pest and disease management strategies.
Natural enemy	A naturally occurring beneficial organism.
NIH	Nut-in-husk.
NIS	Nut-in-shell.
Nut drop period	The period of time when mature nuts fall naturally to the ground.
Petiole	Leaf stalk.
Precocious	Starts bearing at an early age.
Pre-germination	Germination on the tree before nuts fall.
Raceme	The compound macadamia flower consisting of a central stalk (called a rachis) carrying up to 400 individual flowers or flower buds ('bud' is the term applied to a flower before it opens; when it opens, it is referred to as a 'flower').
Rootstock	The lower portion of a grafted or budded tree below the graft union.
Scion	Wood that is used to graft trees. Also used to refer to the upper portion of the graft above the graft union.
Skirt	The lower part of the leaf canopy nearest the ground (see diagram).
Skirting	Pruning the bottom branches of the tree to keep a clear space under the tree for management purposes.
Sound kernel	Fully matured kernel that is free from any defects such as insect damage mould, decay, immaturity, discolouration, germination or rancidity.

Terms and concepts used...continued

Specific gravity	A term from physics denoting relative density.
Sticktight nuts (sticktight)	Dry, mature nut-in-husk (with brown husk) which stay attached to the tree and do not fall naturally.
Stomata	Small pores on the leaf surface which control the loss of water from the plant.
Straight fertiliser	A fertiliser consisting of one primary compound supplying one main nutrient.
Suture	A conspicuous small furrow extending down the side of the nut from the hilum to the micropyle (see diagram) which on germination, splits open to allow the young roots and shoot to grow out from the nut.
Systemic	A substance that is absorbed through the plant surface and translocated throughout the body of the plant.
Unsound kernel	Kernel which is unsuitable for processing and/or sale as raw kernel because of the presence of insect damage, mould, decay, immaturity, discolouration, germination or rancidity.
Whorl	The node or point on the shoot where buds (leaf or nuts) form. A whorl of leaves is the three (or four) leaves which form at the node.