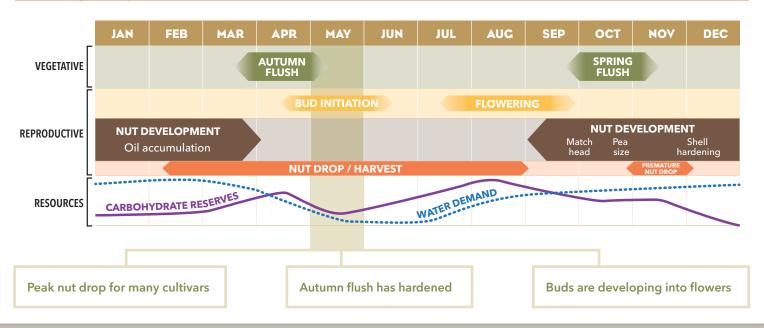


Phenological Cycle



Have you applied for disaster relief if eligible? Grants and loans are available if you have been affected by severe weather. Don't rule out eligibility too quickly, every application is being assessed. Take plenty of photos of any damage! For QLD, head to www.qrida.qld.gov.au or NSW, head to www.raa.nsw.gov.au for more details.

Pest & disease



Following the wet season conduct a survey of your orchard:

- Are there areas where **tree health** has declined?
- Have you identified surface water runoff issues (e.g. trees in drainage lines that need removal or the need to improve ground cover?)
- Do you have a problem with **sub-surface drainage** in certain areas?

Top 10 Mos Phytophthor Susceptible Cultivars
H2
816
508
333
814
842
849
A4
A16
244

Answers to these questions can help understand the likelihood or extent of Phytophthora in your orchard. Research shows certain cultivars are much more susceptible to the disease and longterm integrated management (applying several strategies) is likely to be required.

Phytophthora Tools to Assess Tree Health



Feeder root check

 "Snappy" test. With a spade or fork check how many feeder roots you hear snapping around the tree base

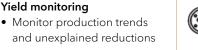


Canopy/trunk signs

 Look for signs of pale to yellow leaves, die back, sparse canopies and stem cracking or dark oozing



Violation of the design





Phytophthora Control Strategies

Soil health & organic matter
Healthy soil that is conducive to root growth, high in organic

matter, free draining and balanced

• Witter

Drainage management

 Without orchard drainage, any Phytophthora strategy is unlikely to succeed



Orchard hygiene

 Eliminating the entry of pathogens into the orchard and spread within



Tree vigour

Download the UQ fact sheets

Phytophthora in Macadamia and the

which this information above is based.

Phytophthora Decision Guide on

 Look for lack of flush, leaf drop, excessive flowering or rootstock shooting



Chemical applications

 Phosphonate and metalaxyl are registered but are short acting controls, not long term integrated solutions



Tolerant rootstock

 Select more tolerant rootstocks.
 Even more so with a history of Phytophthora/drainage issues



Planting systems

 Certain planting systems like mounding assist with greater root zone management There are a number of ways to plan crop inputs for the season ahead, below are 2 common tools:

- 1. **Soil/leaf sampling.** If you are doing these in autumn, arrange samples to be taken and analysed. Ideally **leaf samples** should be taken six to eight weeks after the autumn flush has hardened. **Samples collected** within four weeks of a large fertiliser application can skew results. A professional consultant should help interpret soil/leaf results as norms differ by **cultivar**.
- 2. **Crop load assessment**. The crop you're harvesting removes **nutrients** within the **husk**, **shell** and **kernel** from the orchard system. Assessing this **nutrient removal** helps plan **replacement** to maintain productivity. As a general rule, a high crop load/yield (e.g. 4 t/ha) removes more **nutrients** than a low crop load/yield (e.g. 1 t/ha). Below is an accepted industry guide to **nutrient removal rates**:

Guide to nutrients removed by the tree during husk, shell and kernel development

	N	S	Р	K	Са	Mg	Cu	Zn	В
			Grams per tonne						
Husk	4.03	0.65	0.37	7.33	0.22	0.25	2	3	3
Shell	1.93	0.24	0.06	0.72	0.12	0.12	8	4	2
Kernel	4.54	0.49	0.80	1.10	0.12	0.37	2	6	2
TOTAL	10.5	1.38	1.23	9.15	0.46	0.74	12	13	7

Cultivars have different nutrient removal rates. Recent work by NSW DPI showed as an example that **A cultivars** have a **higher total calcium removal**, with A16 in particular removing more than double the indicative calcium rate.

Returning husk back to the orchard is one of the most cost effective ways to replace many nutrients!

Order compost/organic matter amendments now so they are available immediately after harvest. Book a contractor if you can't spread it.

Do you know what you are purchasing? Compost, mulch, manure, soil conditioners? There is an Australian standard (AS4454) for the supply of these products, and you can request details of the physical, chemical and biological properties from your supplier. At a minimum you should request:

- Material origin and treatments applied
- Ingredients, including any manures in the blend
- pH, C:N ratio and EC.

Download the AMS fact sheets **Buying in Compost for Orchards** and **Making Healthy Compost on the Farm**.

New **Reef Regulations** have come into effect in QLD requiring **record keeping** of **orchard inputs**. Similar **catchment regulations** are likely in NSW. Ensure you understand the materials being added to the orchard and the nutrients they release.





Heading into winter, **monitor weather conditions** for **frost** and apply **frost protectant** if required, such as stem wrapping and overhead irrigation. The BOM has a dedicated frost potential webpage: (www.bom.gov.au/jsp/watl/weather/frost.jsp).

Macadamias are not tolerant to **frost**, while flush damage is recoverable, trunk damage can be fatal.

Many growers in flooded/storm affected regions are wary of **Ethephon** this year, as it is not appropriate for **stressed trees**. Growers are best to assess levels of **stress** in each orchard. In most regions applying **ethephon** should be complete by the **middle of May** (later applications may take place in southern regions). **Ethephon** applied too late can result in **floral inhibition**.

Download the AMS fact sheet **Using Ethephon in Macadamia**.

Mechanical/Infrastructure



Continue to audit harvest efficiency and make adjustments as required in the orchard and shed. This may be difficult if you're harvesting in the wetter conditions in SEQ and NSW because this year is not like any we've seen before. Grass is currently difficult to control and consuming nuts at lightning pace. The performance of your sweeper brushes, blowers, finger wheels and sweeper-harvester rubbers are essential, so ensure you're not wasting your time with worn or incorrectly adjusted gear.

With orchards so wet, every **machinery pass** has an impact and you need to make it count!

Do you have **new** or **inexperienced operators**? If so, it is important to go through the considerations and adjustments for operating machinery in **wet** and **hazardous conditions**.

There is a lot going on, but with supply shortages, now is the time to service and prepare machinery for canopy management or orchard floor management after harvest.

The practice of **tree shaking** to shorten harvest provides a range of benefits. Assess whether your orchard will be dry enough to allow a **shaker**. As far is possible ensure that conditions have been **dry for at least 3 days prior to tree shaking** to limit potential bark damage. If you are going to use a **tree shaker contractor**, book one now.

If you haven't seen it, take a look at the AMS video *Treeshakers in Macadamia*.

Management Cycle

Nut maturation			Flower initiation		Winter		Flowering		Preharvest nut drop		Shell hardening
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					Pest and disease monitoring						
	Harvest										
Мо	Mowing/mulching				Tree shaking				Reduced mowing		
					Pruning and chipping						
					Ap	plying mulch lime & gyp		Cover cropping			
						Aerating/pr	ofiling		Mulching (orchard hygiene)		
								mal manures opportunity onth withhol period)			

Management





With more humid conditions and nuts at higher field moisture, it is vital to manage nuts post-harvest to retain quality. Nuts are metabolically active, living seeds. Key aspects of post-harvest management are:

- Nuts should constantly be reducing in moisture content
- Nuts, if stored, should have adequate and even ventilation
- Nuts are dehusked as soon as possible and **never stored husked**
- Nuts are **sent to the processor** as soon as possible if you are unable to store/dry adequately.

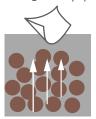
Download the fact sheet **Post-Harvest Handling & Quality** for more information.

When storing in silos or other nut beds, a quick ventilation test is to put tissue paper on the bin. If it flutters rather than lying stationary, then air is moving well through the nut bed.

Good ventilation



hovering tissue paper



Poor ventilation



stationary tissue paper



The month ahead - start thinking about



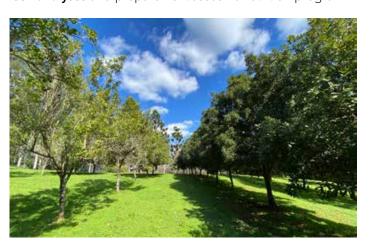
Have you finalised your plan for **post harvest** management for the following?

- canopy management
- orchard floor remediation
- drainage/water management

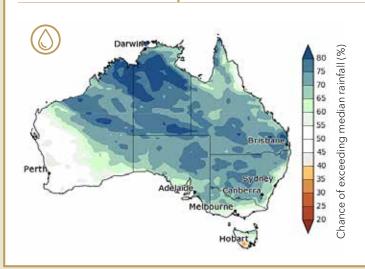
Contractor services book out quickly, particularly with labour shortages, so book early.

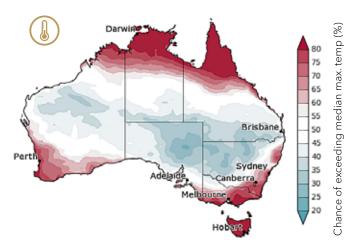
Analysis of **consignment reports** is most helpful when done **block by block**. If you are not recording **yield by block**, consider how you could implement this next season. Understanding which trees make most of your **profit** and which are barely keeping the lights on is a critical distinction.

Book a time with your **nutrition consultant** to discuss **leaf/soil analyses** and prepare next season's nutrition program.



BOM rainfall and temperature outlooks for June 2022





Further Information

For more information, please contact the AMS Industry Development Manager and/or your processor's grower liaison officer. Also, go to the Industry Resources page on the AMS website, login, and search for fact sheets, research reports, Bulletin articles, case studies and more by keyword, category and/or author.





This MacAlert was written with the assistance of industry advisors, and produced by the *National Innovation and Adoption program* using the macadamia research and development levy and contributions from the Australian Government.

MacAlert produced May 2022



Contact the AMS

T: 1800 262 426 (Australia only) or +61 2 6622 4933

E: office@macadamias.org

W: www.australianmacadamias.org/industry