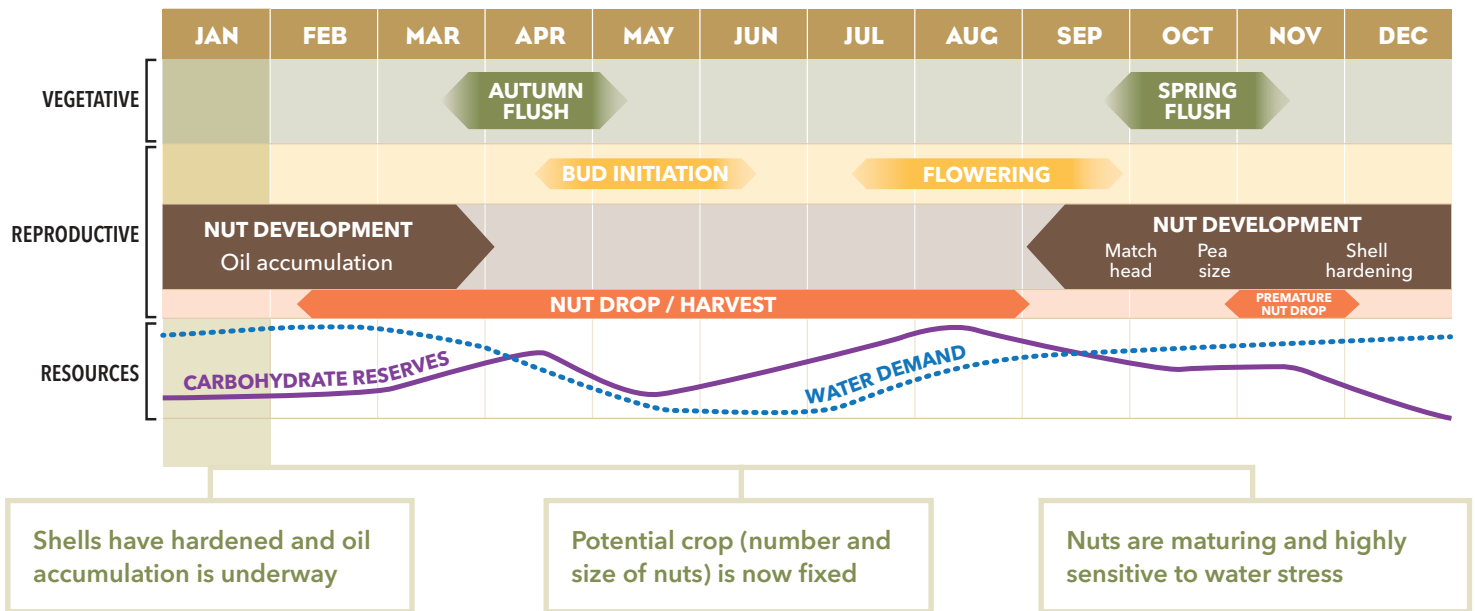


Phenological Cycle



Pest and disease



Spotting bugs. Although shells have hardened, damage is still possible and will be worse after **rain**. Examining fallen nuts is no longer useful and while you could sample from trees, most stings are now blind. Your best bet is **drop sheet/knockdown** monitoring, particularly in known **hotspots**. Download the [“Drop Sheet Monitoring” fact sheet](#), which includes key safety considerations.

Your pest consultant or grower liaison officer can help identify whether the damage is caused by **spotting bug vs green veggie bug vs leptocoris** - they look very similar!

Leptocoris. More Leptocoris have been found in orchards. We don't know if this is due to population surges or better late season (knockdown) monitoring resulting in more being identified. Importantly, **Leptocoris is NOT effectively controlled by beta-cyfluthrin** (i.e. Cyborg or Bulldock), so talk to your pest consultant if you have a problem.

Fruit Spotting Bug



Leptocoris



Green Veggie Bug









Spotting bug damage from early (post nut shed) to late (oil accumulation) in the season. Photo: NSW DPI

Macadamia nut borer. MacTriX wasp releases should continue into January. This is particularly important if you have thin shelled cultivars. Remember: if temperatures have **exceeded 35°C**, MacTriX wasps are likely to have been killed and you will need to re-release.

Husk spot and husk rot. January is a good time to assess the extent of loss from these two husk diseases in the orchard. A common threshold for implementing better control is finding more than **10 diseased nuts per tree** on the ground.

IS IT HUSK SPOT OR HUSK ROT?

HUSK SPOT	HUSK ROT
Full-sized nuts with yellow spots prematurely fall from December onwards, exacerbated by wet conditions	Full-sized nuts with blackened husk prematurely fall from January onwards, exacerbated by a hot and dry summer
Infection occurs from match head stage from spores carried in rain splash off sticktights	Infection occurs from full size nut stages mainly from husk injury (i.e. hail, pest damage, husk split)
Higher risk of disease with ongoing wet conditions from match head to maturity	Higher risk of disease with prolonged hot and humid conditions
Single known fungal pathogen	Multiple known fungal pathogens and compounding factors
Husk has distinct yellow to brown spots that are harder than surrounding green tissue	Husk has dark spongy lesions that are softer than surrounding green tissue
 	<p>Phomopsis husk rot: black spongy lesions</p>  <p>Anthrachnose husk rot: brown-black spongy lesions with concentric rings</p> 
Quick test: A fingernail won't easily pierce spots	Quick test: A fingernail easily pierces lesions
Several registered fungicidal products are available to control husk spot. Timing and coverage are critical!	Only copper products are currently registered for control of anthracnose husk rot. Good pest management is critical!
Tree shakers have been found to be a highly effective cultural control	Ensuring more open, ventilated canopies is a good cultural control
Worse in sticktight cultivars e.g. A16, A38 and trees near these	Worse in some Hawaiian cultivars e.g. 246 and 344
 Get rid of sticktights Timing and coverage of spray	 Manage ventilation Manage pest damage injury

Crop inputs



Water requirements are now at their maximum, but most regions have ample water in the soil profile.

Water stress (which includes **too much or too little water**) during oil accumulation can increase **immaturity** and other **kernel defects**. Continue to use **soil moisture sensors** and maturity testing as a guide.

Accurate **sensor information** relies on:

- correct **placement** (site and depth)
- knowledge of **soil characteristics**
- sensor **maintenance**
- ability to **interpret trends**.

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									
Mowing/mulching					Tree shaking				Reduced mowing		
					Pruning and chipping						
					Applying mulch/compost/ lime & gypsum			Cover cropping			
					Aerating/profiling			Mulching			
								Animal manures last opportunity (4 month withholding)			

Management



Heavy rain along with the potential for **strong winds, storms**, and **east coast lows** can be expected. Have a plan in place to deal with **storm damage** to the orchard and infrastructure. This includes:

- **cleaning out drains** on the property
- ensuring **waterways** are in good condition
- leaving grass **at least 100mm** high in orchard **drains** to slow water flow and reduce erosion

- ensuring you have **working equipment** - chainsaws, chippers etc and the necessary safety tickets for operation

With **young trees** the debate **to stake or not to stake** is common. If you are on **heavy clay** soils, consider staking trees before the wet season. If you have already staked trees, check that **ties** are in good condition and **stakes** are well secured. Also consider strategic pruning to reduce the **'windsail'** effect and **downwind balling**.

No use in having strong stakes with weak/worn ties



Mechanical



Start preparing for **preharvest clean-up**. **Orchard floor fanatics make more money** because their pickup efficiency is so much better with a good **harvestable surface**. Nuts you're unable to pick up are an **expensive loss** as you've put so much into producing them.

Over the next few months, it is important to maintain a balance between **preharvest clean-up** and keeping **orchard operations** to a minimum during **wet weather**, to avoid **compacting** soil and **rutting** the orchard floor. This affects not just current operation but future productivity.

Preharvest clean up includes **mulching** all old nuts, branches and leaves.

This also helps break pest life cycles by removing food for rats, pigs, cockatoos, kernel grub etc.

Have you checked your **mulching** equipment, including:

- The condition and wear of mulcher **hammers** and **bolts** holding the **hammers**?
- Is the **drum** holding the hammers **balanced**? If not, this can cause excessive vibration and damage **bearings**
- If your mulcher is belt driven, check the state of all **belts** for wear and have a spare set on hand
- Are the **CV joints** on your **PTO** in good condition and well-greased?
- Is the **PTO cover** in good condition, and does it meet workplace health and safety standards?

Ensuring all **equipment** is in good working order is even more important with a potential **wet harvest** which means **short bursts of high activity** between rain that put a lot of strain on equipment.

Perform a dry run of all **shed equipment** which has probably been standing idle for months.

If you have finished **spraying** for the season, thoroughly check the **sprayer** for repairs that are needed before you mothball it for next season. Thoroughly wash out the **tank, pump, filters, and spray lines** and dispose of washings appropriately. Grease all **bearings** including on the PTO shaft. Check **spray records** are completed and filed properly, including **weather monitoring data** for days when you sprayed.

The month ahead



Are you relying on **contractors** for critical **orchard operations** over the next few months? Communicate early and book in as many firm dates as you can.

The same applies with **consignment deliveries** to your processor or third party dehusking/sorting. With domestic nut supply increasing you need to have fixed arrangements in place.

It is highly likely that you'll need to **store nuts on farm** if processor intakes don't match your harvest times. This is on all growers minds this season! **Delaying harvest or harvest intervals** is a risky strategy that will increase rejects.

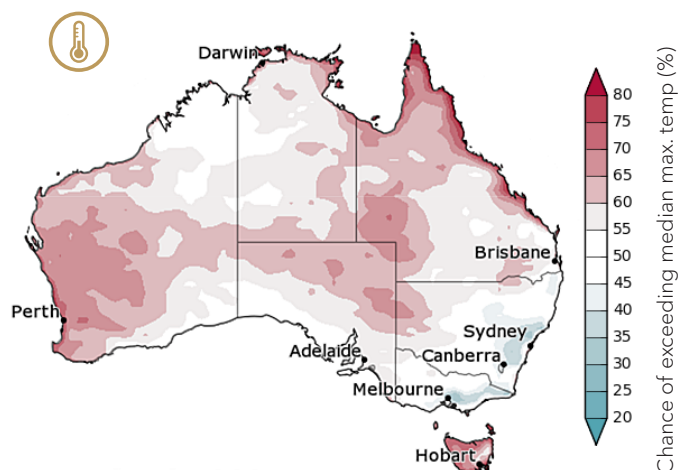
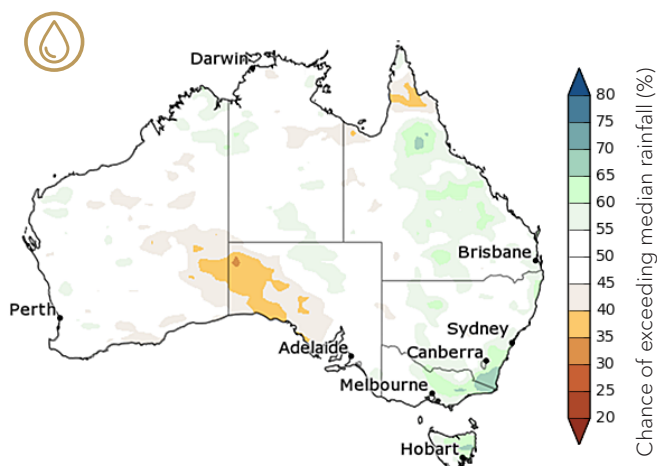
On farm nut storage is a nuanced operation and professional advice is recommended. Nuts are **living seeds** that are metabolically active with **quality constantly degrading** (oils are oxidising).

The principles of on farm **nut storage** are reviewed in the AMS Grower Toolkit and include:

- **Nuts need to be constantly reducing in moisture content.** You need to know field moisture and monitor ambient conditions (humidity and temperature) closely.
- **Nuts must be stored with adequate and even ventilation.** Air flow helps to dry nuts and is dependent on velocity, bed depth, container dynamics including ventilation pathways and ambient conditions.
- **Nuts should never be stored with husk on.** Even for short periods, as husks respire and generate heat within nut beds. Within hours in hot conditions nut quality is reduced.
- **Nuts should be delivered to a processor ASAP if adequate on farm storage facilities aren't in place.** Not all storage (silos, bins, etc) does a good job of drying nuts. If you are relying on old, unregulated holding facilities you are losing nut quality and money.



BOM rainfall and temperature outlooks for February 2023



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.

**Hort
Innovation**
Strategic levy investment

**MACADAMIA
FUND**

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

MacAlert produced January 2023



Contact the AMS

PO Box 4174 Goonellabah NSW Australia

T: 1800 262 426 (Australia only)

or +61 2 6622 4933

E: office@macadamias.org

W: www.australianmacadamias.org/industry