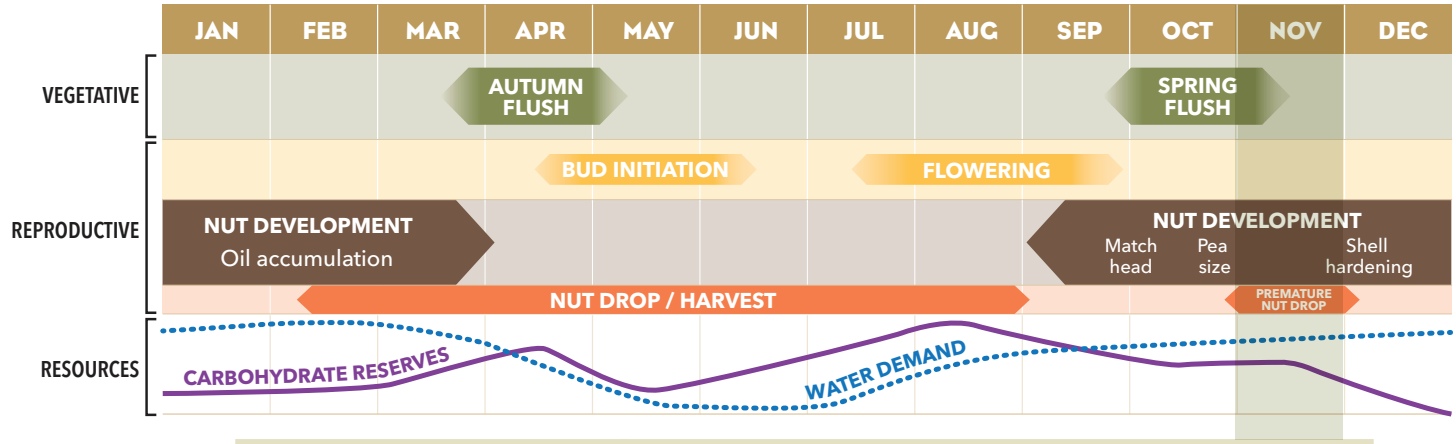
Phenological Cycle



Nuts are sizing rapidly

Nut shed is occurring as trees adjust crop load

Spring flush is finishing (if not already)

Crop inputs

Can I Reduce November Nut Shed With Crop Inputs?

NO **Premature nut drop** is a normal part of the tree's cycle - **adjusting crop load** to match available resources. **We can't stop this natural shed** that starts after flowering through to maturity. Research shows that trees tend to retain **cross-pollinated nuts** through to maturity, so limited cross pollination from weather impacts, short flowering, pollinator inactivity or limited cross varietal trees can lead to higher **early nut drop**. The **3 natural phases of abscission** are:



Flower drop	Peak premature drop	Immature gradual drop
Up to 90% of flowers drop in the first 2 weeks post anthesis, mostly unpollinated.	Up to 80% of set nuts drop approximately 6 – 7 weeks post anthesis. Usually in November.	Another immature drop at 10 weeks and then gradual and reducing drop through to maturity.



YES **Hot, dry weather at peak drop** exacerbates natural shed and management can minimise this. Maintaing **soil moisture** reduces the effects of environmental conditions. Damage from pests like **spotting bug (FSB/BSB)**, **seed weevil (MSW)** and **nut borer (MNB)** cause immature drop as does infection of **husk spot** or **husk rot**. To a lesser degree, **nutrient availability** plays a role, but the **largest factor is stored carbohydrates**, which can't be adjusted in the short term. **In season levers to reduce nut shed** include:

Flower drop	Peak premature drop	Immature gradual drop

Ensuring adequate moisture: infiltrating, carbon rich and covered soil
Irrigation (if available): smaller amounts more often to mitigate stress

Pollinator availability
Adequate **nutrients** (e.g. B)

Pest damage: MSW in Oct/Nov, MNB in Nov – Jan & FSB/BSB in Sep – Feb
Disease early infection: husk spot (Dec/Jan drop) & husk rot (Jan/Feb drop)
Later disease infection or FSB/BSB stings impacts **quality but not nut drop**

Balanced nutrition & key requirements (e.g. Ca, K & N)

All year: Maintaining energy production drivers – light/airflow (canopy), healthy roots (orchard floor/drainage management)

Crop inputs

Nutritional demand. Growing flushes and nuts are currently large nutritional sinks. **Nitrogen (N)** and **potassium (K)** are very important at this crop stage. A large portion of an annual **potassium** budget needs to be applied during the months of rapid **nut growth** to **oil accumulation.**

Husk is an excellent and inexpensive **nutrient** source, particularly of **potassium** which is the most abundant mineral nutrient in **macadamia husk**. Over **80% of the potassium** in the whole nut is accumulated in the **husk**.

Water demand. Water use depends on weather and soil conditions, tree canopy and cultivar. In general, mature trees use **30-70 litres per day**. Other crucial factors include; soil type, orchard floor cover, drainage and irrigation scheduling.

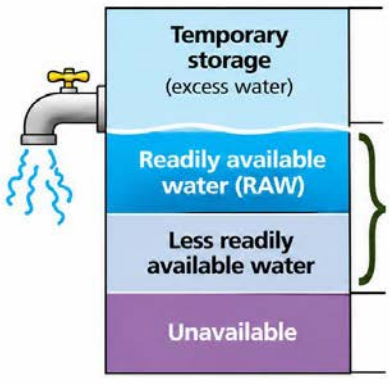
During rapid **nut sizing**, maintaining adequate moisture is particularly important to minimise additional **premature nut shed**. In irrigated orchards, monitor soil moisture at different depths within the active root zone and schedule irrigation according to the **readily available water (RAW)** for your **soil texture**.

Thinking of the **soil as a water tank**, the aim is to replenish moisture before trees experience water stress, but **without saturating the soil**.

Prolonged **soil saturation** reduces oxygen through soil pores, creating hypoxic conditions that restrict root respiration and growth, nutrient uptake and soil microbial health. This compromises tree water uptake despite abundant **soil moisture**.

Below is an indication of **RAW** values in millimetres per metre for different **soil textures.**

Soil moisture: what's available to the tree?



Saturation
Soil is full of water (poor aeration).

Field capacity
Maximum water the soil holds after excess drains away.

Plant-available water
Total water the tree can extract (from field capacity to permanent wilting point).

Permanent wilting point
Water is held too tightly for the tree to use.

Zero water content
Oven-dry soil.

Soil texture	Readily available water (mm/m)*
Sand	30
Loamy sand	50
Sandy loam	70
Loam	**90**
Clay	50
Clay loam (Ferrosol)	80
Well-structured clay	60

** Indicative values. Actual readily available water can vary with soil structure, organic matter and crop sensitivity.*

Monitor soil moisture at a range of depths and schedule irrigation to keep soil water in the **readily available range** – enough to meet tree demand, without reaching saturation.

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				

Pest & disease

Spotting bug. Monitoring for these highly mobile and damaging pests is critical. Check for damage **weekly** or more regularly in **warmer regions** or in **thin shelled cultivars**. The next few months pose a high loss risk for, below are **monitoring guidelines:**

Spotting Bug Monitoring Guide

- Peak damage is from **Sept - Feb.**
- From **Dec** stung nuts don't drop.
- Bugs generally return to **hotspots.**

Action triggers:

- If ≥ **3%** of nut drop has lesions.
- If ≥ **30%** of bugs are at/beyond 5th instar nymph stage.
- If ≥ **0.5** bugs found per pheromone trap in a fortnight.

Spray within **10 days** of triggers.

Spotting bugs: myth versus fact



Myth 1

Only adult spotting bugs cause damage and only until shell hardening.

All juvenile spotting bugs, from the first instar have stylets that can and do sting nuts. **Spotting bugs** can penetrate nut husk and shell at full maturity. Late season stings only appear once processed.

Myth 2

Stung nuts always drop.

Most but not all **spotting bug** stung nuts drop, many remain in the tree as the crop matures. Only **monitoring** nuts on the ground can miss the wider impact. A **drop sheet** test is an option for late monitoring.

Myth 3

Spotting bug damage is random.

While damage is seasonal, **spotting bugs** follow certain cues. They are **upper canopy breeders/feeders** and return to **previously stung nuts.** This makes tall trees (which are already difficult to spray and **monitor**) such a problem. There are also distinct **hotspots** they frequent.

Myth 4

After Christmas the risk is over.

Late summer and autumn conditions are ideal for bug breeding, which is opportunistic. **Egg laying increases** with **day length** and **spikes after rain.** On warmer days bugs develop quicker, which means more generations in **hotter periods** and regions.

Macadamia seed weevil (MSW). The optimal period for chemical control has passed. Continue monitoring **shed nuts** for **MSW larvae**. If you find **infested nuts**, they must be **mulched**, to destroy developing weevils and reduce future pressure.



However, **mulching** nuts on the orchard floor disrupts ground cover and soil condition at a critical time. Be proactive next season, with monitoring and well-timed control at **match-head to latest pea size** to minimise **MSW** infestation.

Macadamia Nut Borer (MNB). Keep monitoring for **MNB** eggs which help time wasp releases. **MNB** eggs look similar to scale. They are white initially and develop an orange colour. Eggs that are parasitised, turn black and wasps emerge in 4-5 days.

MacTrix wasp releases begin before **MNB** populations build. As a guide, start early to mid-November in QLD and approx. two weeks later in NSW (dependent on location/monitoring). Release approx. **1,000 parasitised eggs/ha** each week (dependent on pressure/history) for at least **8–10 weeks.**

MNB moths and **MacTrix wasps** fly with wind, so first position **MacTrix cards** along the **windward** boundaries, in known **hotspots** and **surrounding bush**. Then through the orchard spaced approx. **50m apart**.

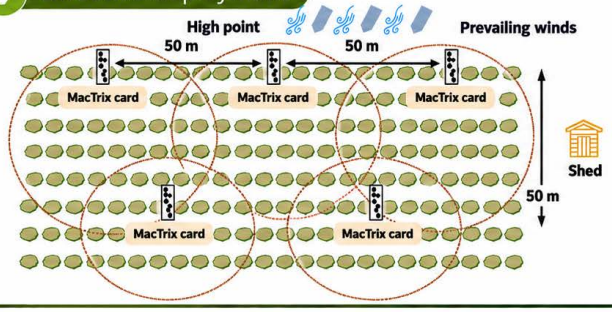
To stall wasp emergence, store cards at **8-14˚ C**, in a cool room or Esky, generally **household fridges are too cold. Check the IPM profile** and residual impacts of all insecticides before spraying, as some products are highly disruptive to **MacTrix.**

MacTrix wasp limitations

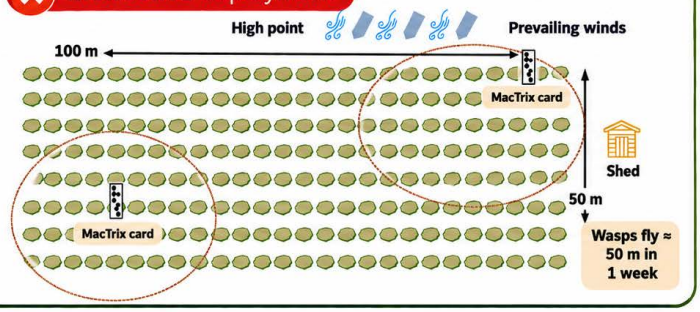
- Only move **~50 metres** in a week
- Very small (only 0.3 mm) so they can't fly **against the wind**
- Die with temperatures **over 35°C**
- Wasp emergence is **minimal below 12°C**
- Killed by most **broad-spectrum sprays** and only a small window of chemical safety whilst **within their eggs**



Effective deployment



Ineffective deployment



Management

Storm season is here and there are months to still get through! There are important preparation aspects to consider to get storm ready:

Orchard and Farm Risk Management:

Wind. Where you can, **thin canopies** or correct **unevenly weighted** trees. Easier said than done with bigger trees. Highly saturated soils make trees more susceptible to **uprooting,** so manage soil moisture and irrigation closely. Check infrastructure for ways you can limit potential damage from **destructive winds** including secure anything that could become airborne.

Erosion. Clear **drains/culverts/waterways** and avoid soil exposure activities like profiling too late into the summer rainy season.

Input loss. Smaller, more frequent fertiliser applications limit **physical and leaching loss**. This is a balance with the current needs of developing nuts.

Hail. There are few options but it is prudent to have some **copper/wound sealing** product on hand. This can also be used to treat **major limb damage** sites.

Storm Recover Preparation:

Assessment. Have a plan to **triage damage.** Remember to take **photographs** of orchard and farm infrastructure damage as well as recovery activities. These are a requirement of most insurance claims/disaster assistance.

Safety. Ensure safety protocols are known and protective equipment is on hand. Some of the recovery equipment used requires licencing/certification.

Gear. Undertake any maintenance of tools such as **chainsaws, chippers, mulchers, trimmers,** etc. Ensure **spare parts** such as chainsaw chains are on hand. Chains and hitching equipment are also handy during clean up.



Backup power. Ensure you have generators and fuel ready as **power outages** come hand in hand with storms.

Staking. Have some tree stakes and ties to get started with the job of standing smaller trees. Spare soil and/or crusher dust can also be helpful.

For more info take a look at the AMS *Storm Damage* fact sheet, in QLD: QFVG *Farm Strong - Disaster Planning & Recovery Toolkit* or in NSW: the RAA *Disaster Assistance* web page.



A reality this time in the season is having to **spray chemicals**. Used judiciously and applied correctly, they are effective, safe and economical controls. **Used or applied poorly**, they cause countless issues including **market access loss, environmental damage, crop loss, chemical resistance** and **waste** of costly resources/inputs. Getting **spray management** right is critical for productivity and global competitiveness.

A common misconception is that if a product has no withholding period (WHP), it is safe to contact nuts but that is not the case. If nuts are still to be harvested or aren't mulched before harvest, what you spray now and implementing WHP's are crucial.

A **farm pesticide management plan** is an expectation of agencies like the Environmental Protection Agency (EPA) in NSW. Download *Pesticide Management On-farm* for more info.

The month ahead

The **Benchmarking** team has begun data collection for the 2026 season. This levy-funded project allows you to compare **yield, quality and** optionally **costs** confidentially for your farm with others of a similar size, age and locality. With your permission, the team collects yield and quality data from your processor(s) or directly. You also need to complete a short survey about the season's conditions, challenges and on-farm activities.

You receive a free, personalised and confidential farm report in early 2027, as well as being able to attend small group **Benchmarking meetings.**

In addition to reporting on yield, kernel recovery, rejects, costs and industry trends, the project is also tracking **sustainability metrics** like fuel, fertiliser and other input use. You can use these to develop your own **farm sustainability footprint** or support applications for finance products that reward improved farming practices.

New Season Data Collection Form

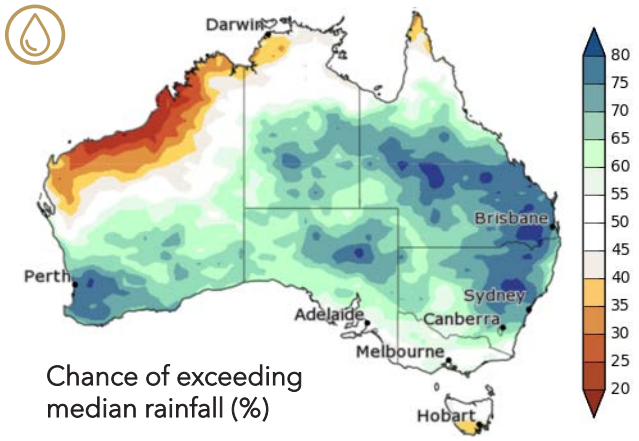
Macadamia Industry Benchmark Report 2009 - 2025

For information, contact:

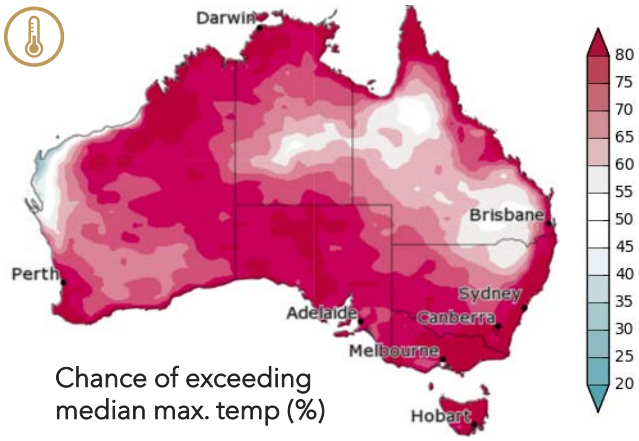
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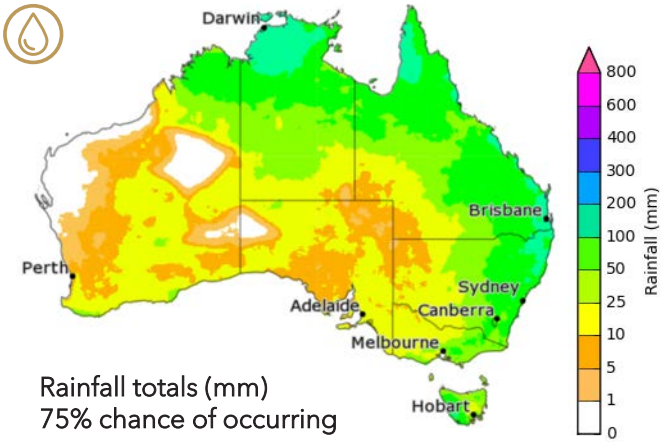
BOM weather outlooks for December 2026



Chance of exceeding median rainfall (%)



Chance of exceeding median max. temp (%)



Rainfall totals (mm)
75% chance of occurring



BOM El Niño outlook

Current status
STRONG EL NIÑO
A strong El Niño is established and continues to strengthen.

What's next?
FURTHER STRENGTHENING
Further warming of the tropical Pacific is forecast.

Peak timing
NOVEMBER–DECEMBER
El Niño is forecast to peak as a very strong event.

Duration
INTO AUTUMN 2027
El Niño conditions are forecast to persist into autumn.

Hort Innovation MACADAMIA FUND

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