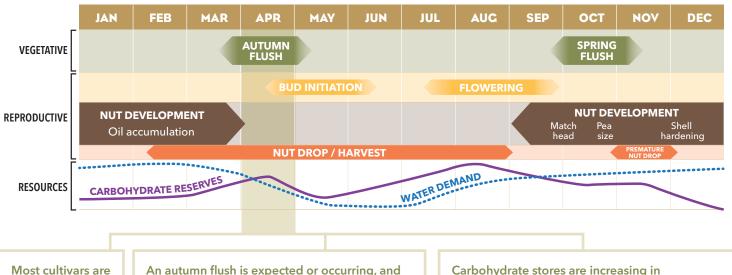


APRIL 2022 / MacAlert

Phenological Cycle



Most cultivars are dropping nuts

An autumn flush is expected or occurring, and excessive rainfall may induce additional flushes

Carbohydrate stores are increasing in preparation for bud initiation and a new season

Disaster grants and loans are available if you have been affected by the severe weather and flooding. Don't rule out your eligibility too quickly, every application will be assessed. Take plenty of photos and get help with estimating damage, often in the midst of a disaster it can be difficult to self-assess. Head to www.qrida.qld.gov.au or www.raa.nsw.gov.au for more details.

Crop inputs



Contact the person conducting your leaf and soil analyses and organise sampling if you complete these in autumn (as opposed to spring). Booking early ensures you sample at the right time. Sampling too late reduces the chance to adjust soils before flowering.



Leaf sampling provides a **snapshot** of plant nutrient status and indicates nutrient availability. When sampling ensure that:

- you sample leaves from the second or third whorl
- you sample hardened leaves in full sun
- you sample leaves from a nonflushing terminal

- you sample from the top two-thirds of the tree
- you don't sample leaves that recently had a foliar fertiliser applied.



Soil sampling provides an indication of **trends** in soil health status and nutrient availability **over time**. When sampling ensure that:

- you sample soil at least six weeks after the last fertiliser application
- you sample soil to a depth of 15 cm
- you remove the ground cover/ organic matter before sampling soil
- you sample in areas **representative** of larger orchard blocks.

If you are **inexperienced**, leave sampling to your consultant.

It may seem far away but determine the **organic amendments** you will be applying after harvest now. These organic inputs can be hard to secure, as finished products or components for **compost**. Most thermophilic orchard **composts** require **6-12 weeks preparation**. Discuss with your consultant how to include organic inputs into your **nutrient budget**.

Download the AMS fact sheets **Buying in compost for orchards** and **Making healthy compost on orchards**.

Tree water use is decreasing as the season cools. **Smaller irrigation** events are required, and management of a soaked soil profile. The BoM predicts **La Nina** conditions should ease in May.

Using ethephon may assist with canopy management, earlier orchard floor management and conclusion of harvest and reduce pest and disease carry over. If you are considering using ethephon, download the AMS fact sheet Using ethephon in macadamias as the use is complex and efficacy varies with weather conditions and cultivars.

Pest & disease



Managing **vertebrate pests** is essential during **nut drop**, especially now that populations have increased in response to rain and food availability. This requires more monitoring and active management. The vertebrate pests causing most damage are **cockatoos**, **rats** and **pigs**.

Cockatoos

Black, white, grey and pink cockatoos including galahs. Native and protected



Rats

Invasive black rat, also called roof/ ship rats (Rattus rattus)



Feral pigs

Invasive pigs, also called wild boars/pigs (Sus scrofa)



Characteristics and behaviour

- Intelligent and curious birds, habituating to deterrent tactics
- Long lived; 30 to 50 years
- Live in habitats that can be some distance from orchards
- Highly mobile
- Active in the day, peak in the morning and afternoon
- Flock animals with sentinel/scout birds that alert the flock to food

Characteristics and behaviour

- Opportunistic and rapidly reproduce with resource availability
- Lifespan of about a year
- Live in bordering vegetation and nests in orchard trees
- Mobile but prefer sheltered areas providing cover from predators
- Active in the evening and during quiet periods
- Most nuts are hoarded and consumed outside the orchard in burrows and nests

Characteristics and behaviour

- Very intelligent with foraging routines
- Lifespan of between three and five years
- Live in family groups which can join to form large mobs. Males can be solitary
- Active in the early evening through to early morning
- Can travel long distances (more than 50 km) to forage
- With no cooling mechanisms, they require bushland shelter and water twice a day

Did you know?

Cockatoo beaks grow continuously, so they need to maintain and trim them by chewing and rubbing rough surfaces.

Did you know?

A rat can crack a macadamia shell and be eating the kernel in as little as 7 seconds.

Did you know?

There are over 24 million feral pigs in Australia. Large pigs can consume over 15 kg of macadamia kernel in a night.

Orchard/crop damage

- Crack and consume nuts, leaving halved shells behind
- Chew tree bark
- Pinch off branch tips
- Damage irrigation lines and other infrastructure
- Worse affected areas are those that border vegetative zones and known roosting habitats
- Cockatoos "play" with anything in the orchard that provides stimulation



Orchard/crop damage

- The kernel is eaten through a hole gnawed in the shell leaving empty shells behind
- Shell holes have bevelled edges and teeth marks
- Extensive underground burrows can cause ground collapse or instability
- Tree nests hamper orchard management
- Rats chew irrigation and damage other infrastructure, particularly in shed areas



Orchard/crop damage:

- Shatter and consume nuts leaving shell shards behind
- Dig large furrows in the orchard floor and move a lot of soil when rooting
- Rub on tree trunks and push over small trees
- Scat is easily picked up by harvesters and contaminates loads
- Pigs are a source disease and can easily spread soil borne diseases like Phytophthora and other pathogens



Management

- Difficult and time consuming, requiring rotation of many strategies
- Scare tactics, e.g. gas cannons, recorded distress calls and bird lasers
- Other deterrents such as pepper sprays have limited efficacy as they must be reapplied continuously
- Damage mitigation permits to shoot birds are available under certain conditions, for more information: QLD: Dept. of Environment and Science NSW: Dept of Planning and Environment.

Management

- Population control year round
- Managing habitat is critical and supported by baiting when required
- Baiting hotspots and orchard entry
- Bait where the crop is (i.e., in trees when they bear nuts and on the ground when nuts have dropped)
- Rats won't consume soiled (wet, old or dirty) bait, so hanging bait in stations helps keeps it fresh and palatable
- Different rodenticides are registered for certain areas e.g. orchard or shed.

Management

- Fencing is highly effective, particularly when electrified
- Trapping is time consuming and requires knowledge of routines and orchard entry points
- Population control through ground shooting must target whole families
- Random culling of single animals is not effective
- Camera monitoring (mainly at night) can help identify population movements and size
- Feral pig baits and stations are available (e.g., HOGGONE and HogHopper)

Managing the resources that the pests are harbouring in and searching for in the orchard is essential to mitigate damage and reduce populations of all vertebrate pests.

Mechanical/Infrastructure



Orchard access is an issue for most growers and conditions will affect machinery performance. You may need to reduce your speed, be even more alert to safety risks (i.e. traction and weight distribution) and do everything to maximise harvest rounds (i.e. using new finger wheels).

Check and maintain grease points, bearings, chains, filters, belts, rubbers, auger flights, fingerwheels and brushes. Service mowing equipment and ensure spare parts are ordered as current supply issues seem set to continue.

Every nut counts, here are ways to prevent quality (and money) loss:

- **Harvest regularly**, at least every three weeks with >95% pickup
- **Dehusk immediately** if not completed in-field

- Don't overlook **finger**wheel wear or try to
 straighten bent finger
 wheels; these are the first
 to break
- Monitoring and adjusting harvesting and dehusking performance will make you money
- Managing moisture
 and heat in stored nuts
 is critical. Air flow must
 always be at least 1 m³/second
 through nuts. Install a silo relative
 humidity controller
- The longer the nuts remain on farm the greater the risk of quality loss, if they are not stored properly.

Ventilating harvested nuts doesn't need to be high-tech. Simple extractor fans on Nally bins can be effective.
Read the recent AMS Bulletin article about this on farm solution here.



Download the AMS information sheets Harvest Strategy Tips and Grower Experiences and Harvest Strategy Checklist here.

If you are going to use **ethephon** make sure your shed can handle the additional nut volume and ensure larger deliveries to the processor are scheduled. Blocks sprayed with **ethephon** take twice as long to **harvest**. Check your **sprayer** for coverage uniformity.

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		ing
				Pruning and chip			ping				
					Applying mulch/compost/ lime & gypsum			Cover cropping			
						Aerating/pro	ofiling		ching hygiene)		
								Animal manures last opportunity (4 month withholding period)			

Management



Audit harvest efficiency per block. If there are nuts left behind, check your machinery and target these areas for remedial orchard floor work after harvest. Are you conducting some sort of analysis of on farm crop loss?

Discuss a suitable protocol with your grower liaison officer now. This may seem like extra effort but is invaluable.

Download the AMS factsheet **Assessing Crop Loss** here.

Work place health and safety audits are ongoing in Old, but possible in any state or farm enterprise. The current focus in Old is:

- high risk licensing
- chemical storage and use
- plant/machinery guarding
- electrical safety and
- traffic/pedestrian management.

The month ahead - start thinking about



If you are going to be **tree shaking**, confirm the booking and dates with your contractor.

Frost mitigation is essential if in frost risk areas. Consider small tree stem wrapping, stress ameliorant applications and in severe cases frost fans to shift sinking cold air.

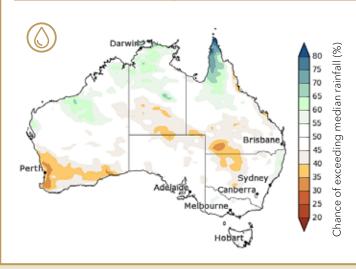
Canopy management is required as soon as harvest has been completed, so discuss the appropriate strategy with your consultant. Contact your **contractor** to make sure you are booked in.

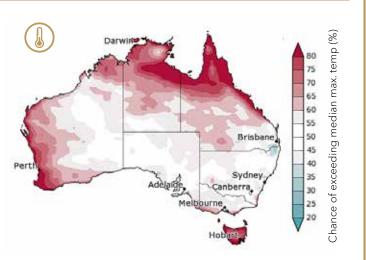
Good planning is vital to ensure **canopy management** is conducted on time and without major problems.

Do you have a plan to manage material removed by **canopy management**, i.e., chipping in the orchard or removing to a composting area?

If you are planning major work such as **tree removal**, you must have a plan to plant **groundcover** as part of the process.

BOM rainfall and temperature outlooks for May 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.





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Contact the AMS

113 Dawson Street, Lismore NSW Australia

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

E: office@macadamias.org

W: www.australianmacadamias.org/industry