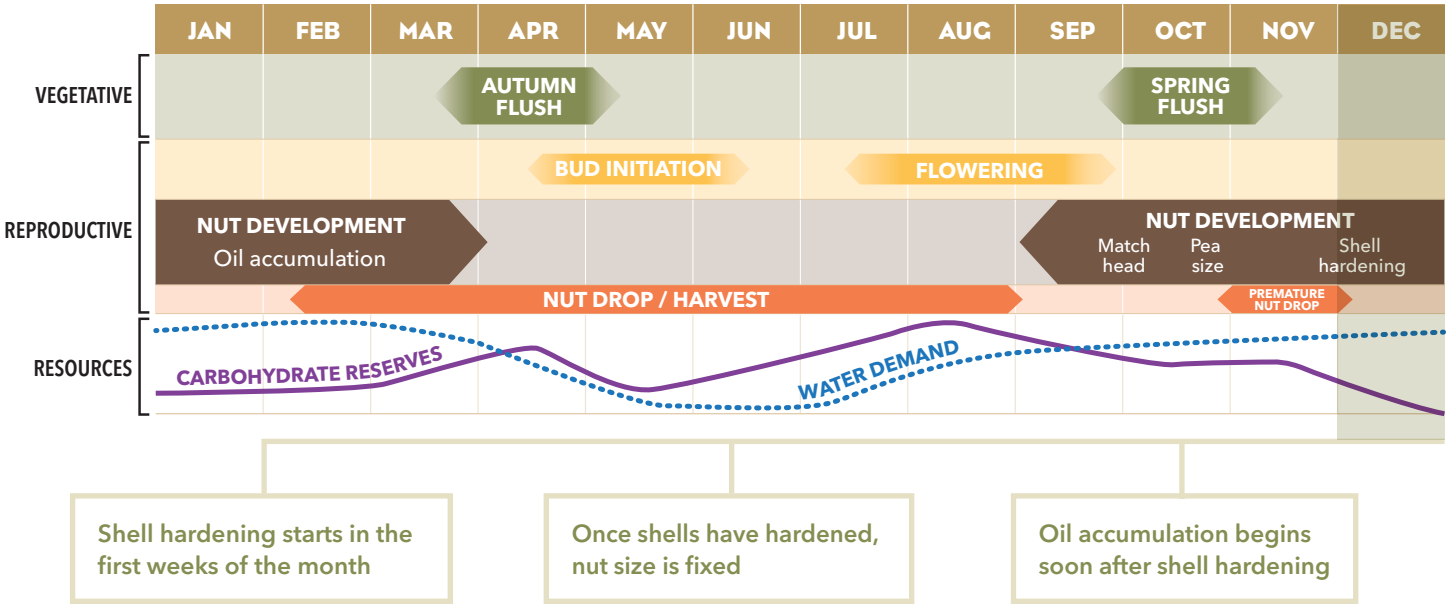
Phenological Cycle



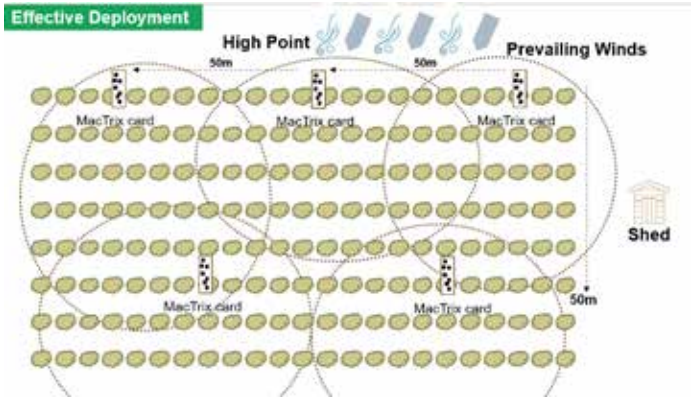
Pest & disease

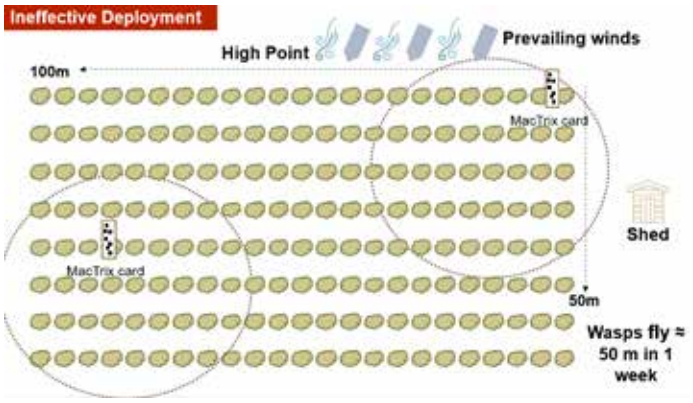
Macadamia Nut Borer (MNB). Keep monitoring for MNB eggs. They look like very similar to scale - white with an orange colour as the larvae develops and black when parasitised.

It is critical in December to release **MacTrix**, the MNB parasitic wasp. **Don't rely on the wasp being endemic or on neighbours to release wasps.**

The small MNB moths fly with the wind, so start initial **MacTrix** releases on the **windward orchard boundary** and surrounding bush to suppress general populations. The recommended orchard release rate is **1000 parasitised eggs/ha,** at least every 50 m on the windward side and at known hotspots. Once these are covered, continue releases for at least **six consecutive weeks** through the orchard.

Left: MNB eggs turn from white to black when parasitised. Right: MNB larvae damage and frass evident on the husk. Photos: Chris Fuller





MacTrix wasp limitations

- They only move **about 50 m in a week**
- Very small (only 0.3 mm) so can't fly **against the wind**
- Die when **temperatures are over 35°C**
- Cannot hatch at **temperatures below 13°C**
- Killed by most **broad-spectrum** sprays
- Only a small window of safety from sprays whilst **within their eggs (unhatched)**

Spotting bugs. Keep monitoring for spotting bug by examining **fallen nuts** for evidence of damage. Spotting bug pressure is much higher in the weeks after **rain**, something we all have had a lot of. Once **shells harden**, damage will not be so obvious. From this stage you may need to change to **drop sheet monitoring** to determine if spotting bug is present and in what quantity.

Young tree pests. If you have trees younger than four years that may not be bearing, remember they can be affected by pests that will hamper growth. Monitor for the presence of pests such as **leaf miner, twig girdler, felted coccid** and **boring beetles**. These can rapidly build up during warmer weather.

Note: Using **broad spectrum chemicals** to control pests in **young trees** can cause **scale, thrip and/or mite** populations to increase. You may be swapping one problem for another.

Some known susceptibilities to secondary pests are:

- **A38** - highly susceptible to numerous scale insects
- **344** and **741** - susceptible to felted coccid
- **A16** - susceptible to **thrips/ mites**

Crop inputs

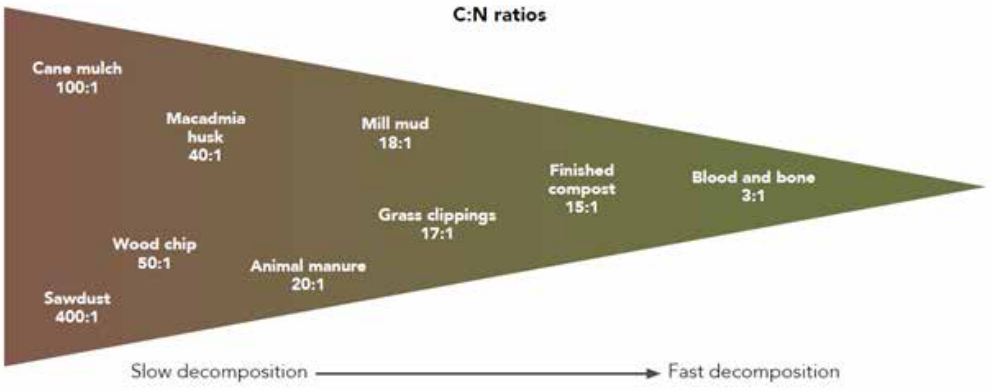
Nutritional demand

Trees need to support both the **spring flush** and **developing nuts**. If you sampled leaves in spring, use these results along with **crop load** estimate and tree health to decide your fertiliser program for the coming months. **Nitrogen** and **potassium** are particularly important at this crop stage.

Long periods of heavy rain may **leach soluble nutrients** such as **nitrogen** from the soil. Talk to your consultant about replacing these nutrients after heavy rain.

With a later season, many growers haven't put out orchard **compost or mulch** yet. At this late stage consider:

- Only put out material with **animal manures if you have evidence of correct composting**.



Processors require at least **120-day withholding period** between manure application and harvest.

- The size of pieces. **Finer materials** generally cost more, but are more likely to be incorporated before harvest.
- If **heavy rains are forecast**, material can be **moved and lost**, so weigh up your options and timing.
- Have an idea of the **C:N ratio** of products you're incorporating.
- **Carbon rich** products such as **woodchip** and **cane mulch** break down slowly and their decomposition can deplete nitrogen in the short term.
- **Nitrogen-rich** products such as **manures** and **green leafy waste** break down quickly. These products make nitrogen available but add less carbon to the soil.

Nut shed is a normal part of the crop cycle and may still be occurring in southern regions. This is where the tree adjusts the crop load it can carry through to nut maturity. Environmental conditions such as **dry soil** or **continual hot, dry** days can exacerbate **nut shed**.

Tree water requirements are generally at their peak and will remain high through to harvest. Macadamias are highly susceptible to **water stress** during **oil accumulation**. Stress during this period can lead to **immaturity**. Long periods of cloudy weather can also lead to delayed maturity. This is because tree carbohydrate reserves are diminished, leaving it to rely heavily on current photosynthates to meet the high demand at **oil accumulation**.

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				

Management

Storm season is here again, and you need to be prepared to deal with any orchard damage.

- Do you know where **broken branches and trees** could be removed to if you have a storm?
- Do you have enough **chainsaws** and do your staff have valid **chainsaw licences**?
- Do you have **chains** to drag material out the orchard if needed? Ropes lasts only a few hours with such heavy work.
- Have you checked **waterways and drains** are clear of debris that could impede water flows?
- Is groundcover in waterways in good condition? If not, you may need fertilise these areas.
- If you have inadequate **groundcover**, have you considered other **physical erosion barriers**?
- If you have a **dam**, have you checked the **spillway** and ensured flow pipes aren't blocked?
- Do you have a **plan** of how you and staff will deal with an emergency and a clear idea of triaging the most important tasks?

Download the AMS *"Managing Storm Damage"* fact sheet.

Mechanical

As part of your **storm damage plan**:

- Get out **chainsaws** and undertake any **maintenance**. Check air filters, chain, guide bar and lubrication.
- Ensure you have **spare chains**, for each model you own, and **chainsaw bar oil** on hand. When a large storm hits there's a rush on **chainsaws** and **parts**, so it pays to be prepared.

Start preparing **mulchers and blowers** for preharvest clean-up. Running a **mulcher** can put considerable strain on smaller tractors, so ensure you complete **tractor** maintenance.

If you're in northern regions, begin **harvester** checks and complete necessary repairs, leaving time for inevitable delays over the holiday period.

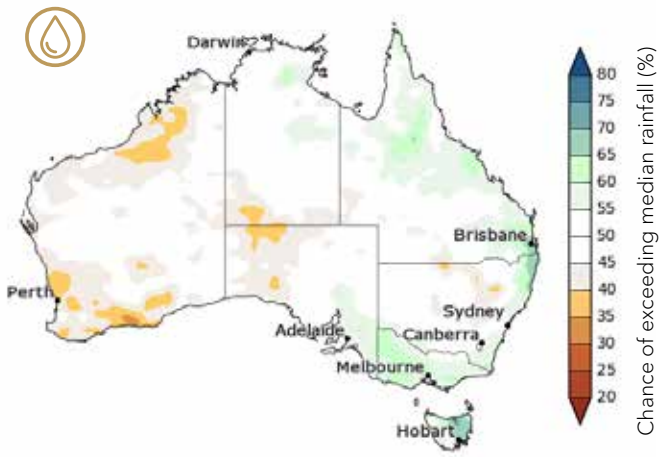
The month ahead

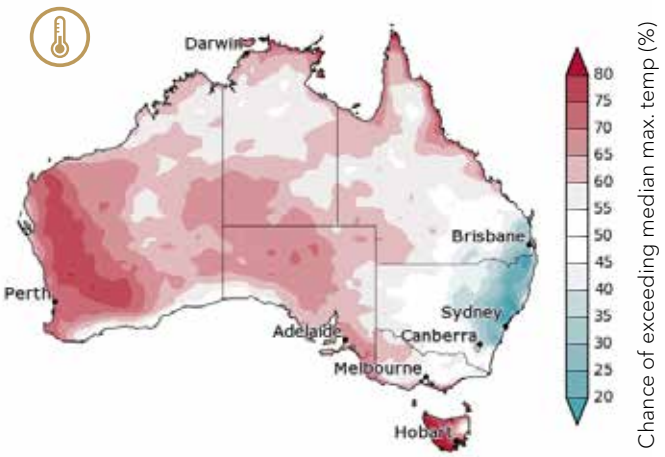
Benchmarking data collection is underway for the 2022 season. **Benchmarking** is a free and confidential service that compares your farm's yield, quality and costs with other similar farms and the wider industry. Sustainability metrics are also being collected for the first time. Complete the ***2022 data collection form*** here.

Start a conversation with your processor. With global and potential domestic oversupply combined with complex market and supply chain conditions, many things will be different to what's "usual". There are likely to be more **kernel quality penalties** and **stricter supply agreements** in the season ahead.

Processors will be less likely to receive consignments at short notice and there will be greater demand on third-party post-harvest services. You may also need to **store nuts on farm**, where you have not needed to in the past.

BOM rainfall and temperature outlooks for January 2023





Further Information

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

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