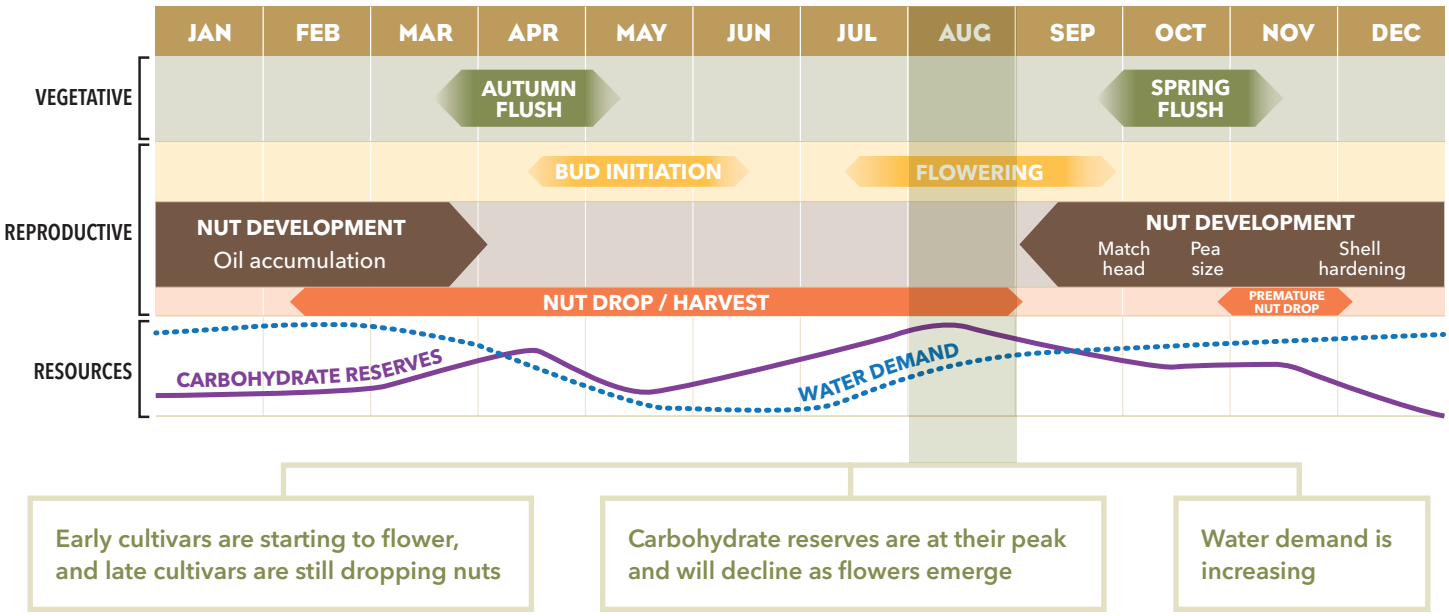
Phenological Cycle



Early cultivars are starting to flower, and late cultivars are still dropping nuts

Carbohydrate reserves are at their peak and will decline as flowers emerge

Water demand is increasing

Pest & disease

Start monitoring for pests and diseases that impact flowers, paying particular attention to what is currently happening with the plentiful **out-of-season flower**.

If you haven't already done so, book a **pest consultant** to regularly monitor your orchard. Consider it an investment rather than a cost. Pest scouts see hundreds of orchards and their knowledge is invaluable.

Lace bug. In NSW and SEQ, monitoring for **lace bug** - a high-risk pest, is critical. Previous **hot spots** are a good place to start. **Lace bugs** are about 3 mm in size and hard to see with the naked eye, so it is best to look for damage to flowers such as **shrivelled blackened florets** on the raceme.

Photo: Kirsten Ellis

Take a hand lens and a white piece of paper with you and tap the raceme onto the paper to see what falls out. You're looking for live l**ace bugs adults and nymphs** and their cast skins. Discuss control strategies with your pest consultant as there are newer options that are as effective as older, very disruptive chemicals.

Photos: Chris Fuller

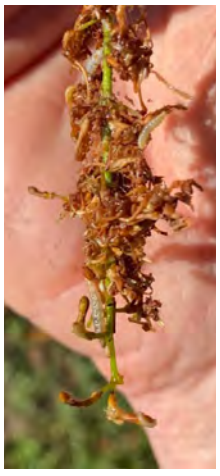
Eggs

Caterpillars

Floret damage

Flower caterpillar. In **northern regions**, start monitoring for **flower caterpillar**. Thresholds to act on flower caterpillar are tricky because the population often can drop without intervention, but you cannot rely on this as the opposite is also true. You need a keen eye to find flower caterpillar **eggs**, but they are the first sign of infestation. These are followed by small, white to translucent caterpillars which **brown flowers** as they feed, eventually leading to the development of a **webbed mass** of damaged flowers. If you need to spray, consider softer options like Prodigy® (methoxyfenozide) that target the **caterpillars** of **moths and butterflies** and are safer for foraging bees.

Flower damage



Thrips, felted coccid and aphids. Although considered minor pests, they can cause damage if left unchecked. Discuss management options with your pest consultant. Check with your consultant if anything is out of balance in with control strategies that have resulted in these **secondary pests** developing.

Flower blights. There are a range of blights that can impact flowering, but each has different environmental triggers and flower stage susceptibilities.

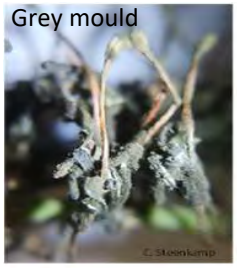
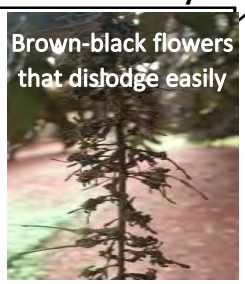
If your orchard has a **history of flower diseases** and conducive **conditions**, you may need to apply a **fungicide**. Recently, Fontelis® (penthiopyrad) has been registered for use in macadamia. As with all new products, its **use pattern** is stringent so read the label carefully. It's also not cheap, so make the decision on whether to use it with your pest consultant.

Download the *UQ Flower Blight Risk Assessment Tool* for detailed information.

Husk spot. Shortly after flowering, husk spot control is important if your orchard has a history of the fungal disease, has **stick tights** and/or **susceptible cultivars** such as A16. This is even more important if you want to **shake trees**, which helps remove **husk spot** spores in stick tight husks.

Rats are always an issue, but you have an opportunity at the end of harvest to reduce populations through resource management. As nuts in the orchard decline, rats are more likely to take baits, so ensure you keep them **fresh, dry and safe in bait stations**.

Download the AMS *Rat Control: An Integrated Approach* fact sheet.

Risk Level	Mean Air Daily	Botrytis Blight		Cladosporium Blight		Dry Flower Disease	
		Cold					Warm
High	Temperature	Below 22 °C	*Cold &*	22 °C - 27 °C	*Warm &*	24 °C - 30 °C	*Warm &*
	Rel. Humidity	Above 70%	*Moist-wet*	Above 60%	*Moist*	Above 40%	*Dry*
Moderate	Temperature	Below 22 °C	*Cold &*	22 °C - 25 °C	*Warm &*	Above 30 °C	*Warm &*
	Rel. Humidity	50 - 70%	*Humid*	50% - 60%	*Dry*	Above 40%	*Humid*
Low	Temperature	Above 22 °C	*Warm &*	Below 22 °C	*Cool &*	Below 22 °C	*Cool &*
	Rel. Humidity	Below 60%	*Dry*	Below 50%	*Dry*	Below 40%	*Dry*
		Wet					Dry
Disease symptoms							
Most susceptible flower stages		Stage 3-4		Stages 1 - 4		Stages 1 - 4	

Crop inputs

As the weather warms, tree **nutrition** and **water** requirements will increase, particularly as flowers have started to emerge so early this season.

Nutrition. Have you checked whether **boron** levels are adequate for flowering? If not, consider a foliar application. **Do not apply more boron** than recommended as it is only required in small amounts. Other elements crucial during flowering are **zinc** and **nitrogen**, and a lack of these can impact flowering. If these are deficient, start earlier next season to build levels. Flowers use significant **stored nutrients** and these need time to be taken up by **roots** and stored in **vegetative structures**.

Water. Tree **water demand** is increasing, and you need to have moisture monitoring in place, even if it has been a rainy season. In fact, it's especially important in a wet season to have good soil **moisture monitoring** as **over watering** can be more detrimental than under watering! This can easily happen if you have had plenty of rain and continue to irrigate as usual.

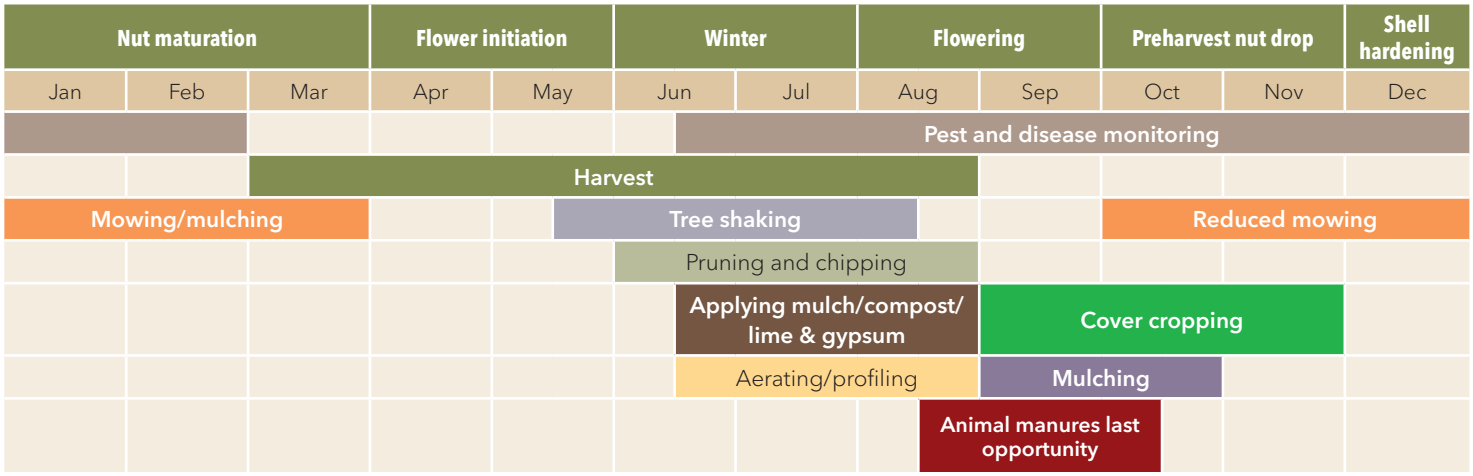
Many trees are still **waterlogged** from the La Nina events and anything you can do to assist drainage will help. These are not usually small interventions so make sure you apply for **disaster assistance** which can be used to make the orchard more resilient to weather events.

The benefits of applying organic matter cannot be overstated. What is your **organic matter application plan** for this spring?

Mechanical

At end of **harvest season**, which for many is still far away, conduct a thorough audit of what needs to be repaired – **harvesters, dehuskers and shed equipment**. How did this equipment perform under trying conditions? Make some notes now while it's fresh in your mind and if you need a **major upgrade**, start as early as possible. Leaving upgrades or repairs to the Christmas/New Year period is fraught with difficulty.

Management Cycle



Management

Once you have finished harvesting **review the season** with your consultant/GLO:

- Review your **consignment results**.
- What was your **harvest efficiency**?
- How well did the **shed and post-harvest** procedures run?
- Where did **yield** come from and where were the **greatest losses**?
- Are there orchard areas you are targeting for **major works**?
- Do you have areas with a **drainage** or ***Phytophthora*** problem?
- Do you have a post-harvest **orchard floor** and **canopy management schedule** in place?

Prepare for start of new crop protection season

- Check you and your staff have valid **Chemcert** certificates.
- **Calibrate** your sprayer and conduct any maintenance.
- Check tractor cab **carbon filters**.
- Prepare **spray record logbooks**.
- Prepare a **spray protocol** including:
  - spray drift risk/buffer zones
  - neighbour relations
  - workplace safety procedures
  - environmental monitoring such as weather stations and anemometers
  - record keeping
- Audit your **chemical store** - are all products still registered and do you have the latest label/permit?
- Do you have a **spray coverage assessment** plan?

Have you organised **managed pollinators** and do you know where they have come from? Ensure you have a written agreement with a **beekeeper**.

Good communication is key to a successful outcome for your crop, for the apiarist and their bees. Discuss the potential for any **sprays** while the bees are in the orchard and use the most appropriate **bee-friendly product**.

Download sample *pollination agreements* here.

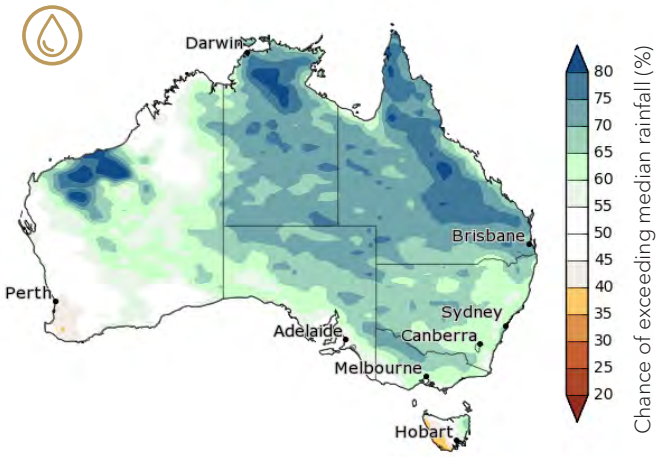
The month ahead

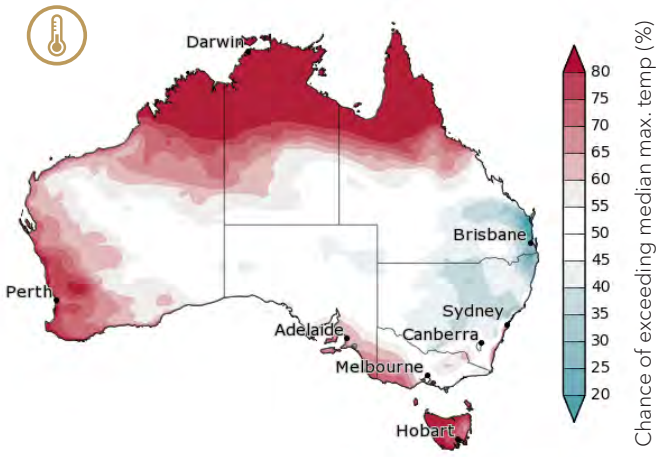
September is peak month for **flowering**. Ask yourself these questions:

- Have I got **monitoring** in place for flower pests and diseases and know what to look out for?
- Have I got **operations** in place so I can respond to a pest or disease problem **quickly**?
- Have I got a handle on **weather conditions** that may affect flowers and anything I could do to respond?

Depending on your cultivars, flowering timing depends on growing region, seasonal conditions and orchard management factors. Below is an indicative guide for early, mid and late flowering cultivars.

BOM rainfall and temperature outlooks for September 2022





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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