AUSTRALIAN

NOVEMBER 2022 / MacAlert

Phenological Cycle





Ť

Spotting bug feeding through the mature shell

Spotting bug. With the rainy season, monitoring for **spotting bug** will be critical. Look for damage at least weekly and preferably more regularly in warmer regions. The next few months are a period of high risk and potential crop loss.

There are some myths around the behaviour of **spotting bugs** that need to be dispelled to manage them effectively:

MYTH 1: ONLY ADULT SPOTTING BUGS CAUSE NUT DAMAGE AND ONLY UNTIL SHELL HARDENING

All juvenile spotting bugs, from the first instar have developed stylets that can and do sting nuts.

Spotting bugs can penetrate both nut husk and shell at full maturity. Late season damage (blind stings) only appear once nuts are processed.

Thin shelled cultivars are much more susceptible to damage and preferred by spotting bugs.



MYTH 3: SPOTTING BUG DAMAGE IN THE ORCHARD IS RANDOM

While damage is seasonal, there are clear cues that **spotting bugs** follow. They return to **previously stung nuts,** so the better you can monitor and control damage, the lower the negative feedback of more damage.

Spotting bugs are **upper canopy breeders and feeders,** so the taller the trees, the more difficult to control. This is a problem for **spray coverage** and our ground-based **monitoring**.

LEARN THE ORCHARD HOTSPOTS that **spotting bugs** return to time after time.



MYTH 2: A STUNG NUT WILL ALWAYS DROP TO THE GROUND

Most but not all **spotting bug** stung nuts drop, more remain in the tree as the crop matures.

Monitoring only nuts on the ground can miss stung nuts in the tree. A good for late season monitoring is a **drop sheet** test. Spray a representative tree/s with a knockdown product to catch and evaluate **spotting bug** pressure and beneficials.



MYTH 4: SPOTTING BUGS ARE IN THE ORCHARD IN THE SAME NUMBERS ALL THE TIME

As **generalist feeders**, they follow attractive resources in and out of the crop. Populations are dynamic and opportunistic.

Crucially, **egg laying increases with day length**, so on long summer days more eggs are laid. Laying also spikes after **rain**.

With **warmer days spotting bugs develop** (complete their life cycle) **quicker**, meaning more generations in the orchard in hotter periods and regions.

KEEP MONITORING AFTER CHRISTMAS, late summer & autumn conditions are ideal for bugs and significant damage .



Macadamia nut borer. Monitor for macadamia nut borer (MNB)

eggs, which signal the start of flights into orchards, to help time releases of the parasitic wasp, MacTrix.

With wet and warm conditions this is likely to be from early November in QLD and mid-November in NSW. **Don't rely on the wasp being endemic** or on neighbours to release wasps. Your own releases is a **minor cost** compared to the **cost of your crop being damaged by MNB**. Remember that the wasps are not good flyers and have a very limited home range (maximum 50 m).

MNB moths fly with the wind, so start the initial **MacTrix** releases on the **windward orchard boundary** and surrounding bush. An average release rate is **1000 parasitised eggs/ha, at least every 50 m on the windward side** and **known hotspots.** Once these initial areas are done, continue for at least **six consecutive weeks** throughout the orchard. You need to release wasps for longer if:

- your orchard has a **history** of late **MNB** damage
- your cultivars are **thin shelled**
- conditions are not conducive to **parasitic wasp survival.**

Wasp survival. It is best to place cards where they are shaded in the heat of the day. Temperatures over 35°C will kill wasps, but not MNB. Although adult wasps are easily killed by sprays, the developing MacTrix larvae inside the parasitised MNB egg is relatively safe.



MNB eggs turn from white to black when parasitised



MNB larvae damage and frass evident on the husk

Macadamia seed weevil. Monitor **shed nuts** on the ground for **MSW** eggs or larvae, particularly if control such as an indoxacarb spray was missed or mistimed because of rain. If your scout finds many **infested nuts**, they need to be **mulched** but this is just another job and impacts your ground cover so be proactive to control **MSW**.

Leaf Miner. This moth will likely be driving you crazy! We've had a season like no other for this usually **minor pest**. Get your pest scout to assess the need for control.



We really only have **highly disruptive** chemistries registered for **leaf miner**, which don't easily fit as part of an **integrated pest management** system.

Husk spot. With a later flowering and very wet season, a later than usual husk spot control program may be required. There are several new products available, but ensure you are rotating chemical groups, which is a like more complicated with the new compound products.

Crop inputs

Nutritional demand is increasing to support both a new flush and developing nuts. Nitrogen and potassium are particularly important at this crop stage. An excellent source of these expensive nutrients is husk. If you have a third party dehusking for you, ask about getting your husk back.

Monitoring soil conditions is as important in wet times as it is in the dry times.

- In irrigated orchards you are monitoring soil water, leaving capacity for all the rain currently.
- In dryland and irrigated orchards you are checking for good



water infiltration and drainage, taking note of areas to be earmarked for ground cover and drainage works in a drier time.

With animal manures, ensure a minimum of **120 days** between the last application of manure and harvest so there is no pathogen risk to nuts. This is a legal requirement and essential to maintain food safety.

Mechanical

Orchards don't need to look like golf courses!

There are many benefits to letting grass and other ground cover grow in this period before harvest; including growing your own organic matter, improving soil fertility, infiltration, temperature

buffering, water holding capacity and as a habitat for beneficials.

Download the AMS <u>Ground</u> <u>Cover</u> fact sheet.



Management Cycle



Management

The potential for **damage** from hail, wind, excessive rain or flooding from intense storms is increasing and will remain through summer, so be prepared! On **wind exposed** sites. **young orchards** are vulnerable and thinning the canopy allows wind to pass through trees instead of pulling them over. Trees can be stood up and **staked** but they are likely to always struggle, worse when older and bigger.

Storm damage leaves broken branches, which are a safety hazard and hamper operations. Have machinery ready to **prune** branches and trees and an area to remove them to if you can't chip in field. The **goals** of post-damage pruning are:

- Orchard **access** and **safety** of farm staff.
- Restoring tree **productivity**.
- Sealing tree wounds, pruning back to neat cuts. Jagged breaks hold water instead of shedding it.
- **Rebalancing** tree canopy structure/weight.
- **Reducing** further **vulnerability** to storm damage.

A rule of thumb when pruning is to cut in a way that **discourages** or **encourages** regrowth:



The month ahead

The new **'Macadamia Industry Benchmarking & Sustainability Insights 2022 -2027'** project has officially started, and the team has commenced data collection for the 2022 season.

Benchmarking allows you to confidentially compare yield, quality and optionally costs for your farm with other farms of a similar size, tree age and locality.

The **benchmark** sample represents nearly **60% of industry production** and spans all major growing regions. The team collect your yield and quality information (with consent) from your

(with consent) from your processor(s), or directly if you prefer.

You receive a personalised, confidential farm benchmark report usually by the end of February.

Download and complete the <u>2022 Benchmarking data</u> <u>collection form</u> here and take a look at the new <u>Macadamia industry</u> <u>benchmark report 2019-2021</u> here. What's new? In addition to ongoing reporting of yield, KR, rejects and costs, the project will introduce a range of metrics to benchmark sustainability.



Benchmarking is a free and confidential service for Australian macadamia

growers, funded through your levy and Australian Government contributions. The Queensland Government has also co-funds the project through the Department of Agriculture and Fisheries.

For more information email:

<u>NSW</u> jeremy.bright@dpi. nsw.gov.au

<u>Old and other states</u> grant.bignell@daf. qld.gov.au

BOM rainfall and temperature outlooks for December 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.



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



Contact the AMS

 T: 1800 262 426 (Australia only) or +61 2 6622 4933
E: office@macadamias.org

W: www.australianmacadamias.org/industry