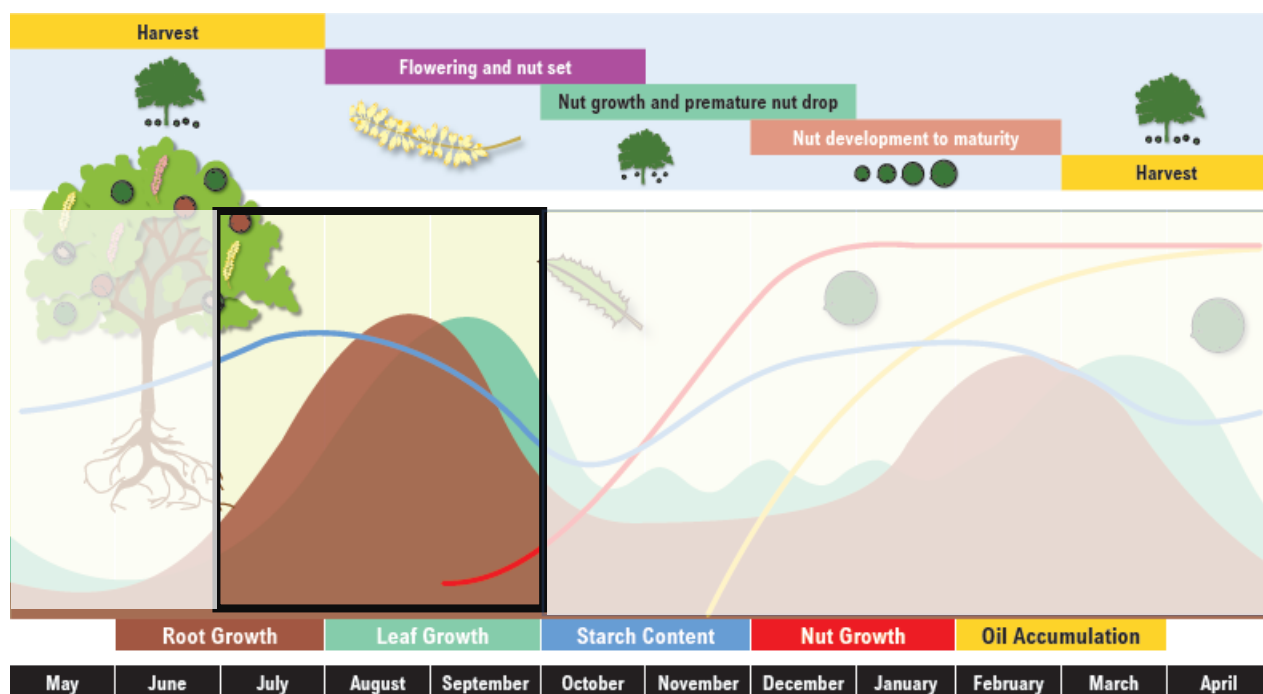


July to September in a nutshell

During this period, a root growth flush earlier in the winter is followed by a leaf growth flush later on. Flower development continues and culminates in full bloom and nut set. Research by SAMAC in South Africa has shown that cross-pollination can increase yields by between 48% and 52% when compared to self-pollination. Mixed cultivar orchards and optimal honeybee activity contribute to cross-pollination, and the visitation rate of bees can be increased by introducing hives into an orchard. Irrigation and fertilisation practices are also important during flowering and nut set to maximize yields and quality.



General orchard management

- 🌿 Early cultivars can be stripped if this has not taken place already.
- 🌿 Weekly harvest cycles for late bearing cultivars are ideal, and should not exceed ten days.
- 🌿 Annual pruning activities are still taking place to maximize light penetration and air movement in the canopy. Regrowth will be controlled by breaking the shoots off during December and January when they are still soft. The pruning material can be used to mulch under trees to encourage healthy feeder roots.
- 🌿 Continue with your irrigation and fertilisation schedules as recommended by your technical advisor. Crop removal and harvest values from the previous season, the general nutrient requirement for growth (dependant on tree age) and soil and leaf analyses determines nutritional schedules. Irrigation during flowering and nut set is important to limit water stress as rainfall is typically low during this period. Recent research has shown that trees stressed during flowering and nut set can have lower total kernel ratios.
- 🌿 For young trees, soil nutritional analysis, fertilisation and tree training also takes place.
- 🌿 New orchards are usually established from September onwards, but avoid this in areas where cold may occur.
- 🌿 Introduce pollinators into orchards at a stocking rate of at least two hives per hectare.

Pests and Diseases

🐛 For stink bugs, monitor weekly, preferably early morning when insects are inactive. Only spray chemical products that are compatible with bees, and spray early morning or late afternoon when bees are more inactive.

- Threshold: 0.4 stink bugs per tree.

- **Stink bug scouting protocol**

Flowering – end of premature abortion (\pm 9 weeks Sept – Late Nov)

- 1) Randomly select data trees the previous afternoon and place the plastic sheeting out, covering at least 80% of the drip zone. Anchor corners of sheets with rocks or pegs to ensure that the sheet is not blown away by the wind.
- 2) Spray early in the morning before sunrise or when temperatures are still lower than 18°C.
- 3) Keep the time after the spray to the collection of the bugs constant so that insect populations can be properly compared between successive weekly monitoring intervals. Practically an hour is recommended.
- 4) Collect all bugs (immature & mature) and differentiate between coconut bugs, short mouth and long mouth bugs.
- 5) Ten prematurely aborted nuts should be dissected per tree and stink bug feeding lesions inside the husk should be recorded. Differentiate between the two-spotted bug and the coconut bug.
- 6) Nearly all stink bugs can damage the young nuts during this stage because individuals of the winter complex can still be found in most orchards for a few weeks after flowering.

🐛 For thrips, monitor through the “beating method”: spring flush is tapped at least five times on an A4 paper to dislodge and count the thrips. Thrips are widely regarded as repercussion pests, thus ensure that the problem is not aggravated by simply spraying more chemicals.

- **Thrips scouting protocol**

Before flowering and after pruning

- 1) Monitor thrips on new vegetative leaf flushes with an A4 black beating sheet.
- 2) The recommended threshold of thrips larvae counted after dislodging them from the flush by beating it 5 times on a dark background is 4, to keep flush damage < 2%.

From flowering to harvest

- 1) Many thrip species occur during flowering, most of them are harmless and may only feed on pollen.
- 2) Citrus thrips, the main thrip pest of macadamias in South Africa prefer to feed on new vegetative flushes. When the growth tips are monitored, ensure that only new flush is therefore selected. This method is suggested to gather data that is comparable between successive weeks and seasons.
- 3) Monitor 10 terminal branches with the A4 beating sheet for each data tree in each block.

🐛 For nut borers, monitoring focusses on tracking flowering and nut borer activity to predict the egg-laying peak later in the season, as pheromones for mating disruption must be applied long before the egg-laying peak, while chemicals should be applied close to the peak so that eggs are laid on active residues.

- Flowering – end of premature abortion (\pm 9 weeks Sept – late Nov)
 - 1) Monitor 10 flowers per data tree and record if flowers are still closed, open or finished.
 - 2) Flowering times and concomitant treatment dates will differ from cultivar to cultivar. The window of opportunity for these insects is very narrow and for best results early and late maturing cultivars should be treated separately.
 - 3) Delta trap catches should be recorded weekly and accurate records should be kept of moth flights of the two most important pest species (false codling moth and macadamia nut borer).
 - 4) Five to six weeks after main flowering, 10 randomly selected nuts per data tree should also be examined for the presence of moth eggs on the young developing nuts.
 - 5) Inspect older out of season nuts for the presence of eggs or larvae and identify larvae where possible. This is necessary to deploy the correct pheromone-based product and should be compared with moth counts in the yellow delta traps.

🐛 Blossom blight: preventative sprays before 10% of flowers have opened can be considered.

🐛 Phytophthora: the presence of stem cankers (vertical bark cracks and gumming) and dieback are indicative of Phytophthora infections.

Growers should always use registered plant protection products and be mindful of preharvest intervals (PHI's) and maximum residue limits (MRL's). Although tree phenology is linked to the calendar, it is important to remember that tree phenology is determined by climatic factors, thus some variation in the timing can be expected.