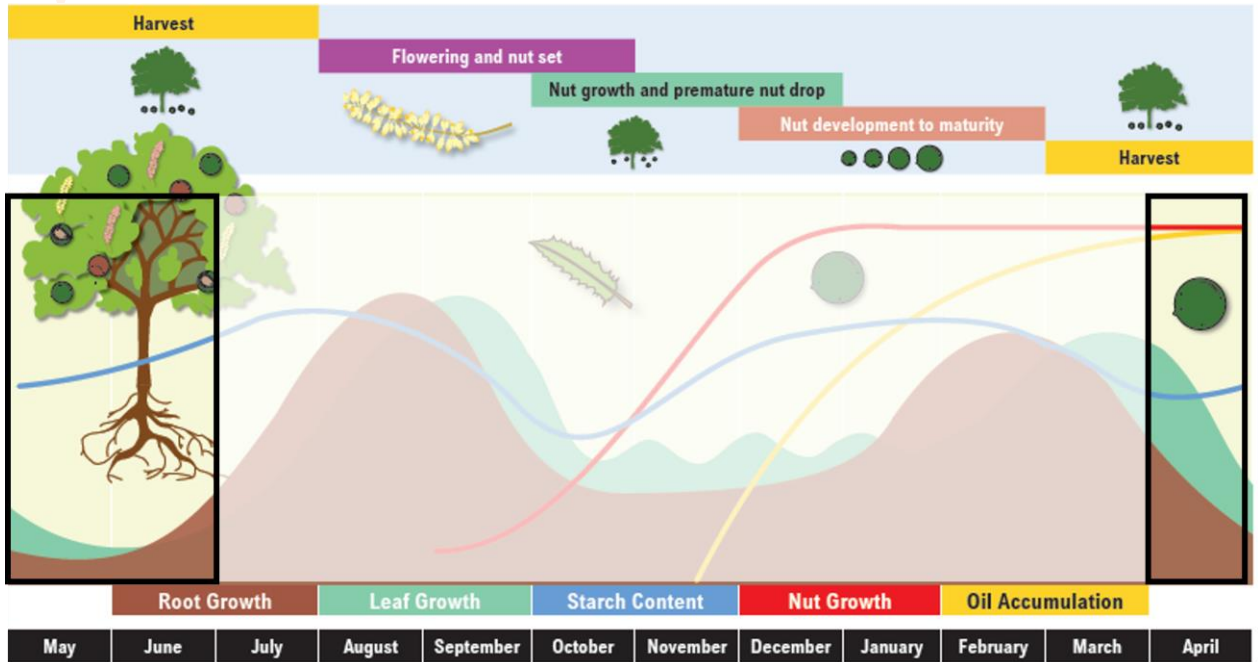


April to June in a nutshell

Oil accumulation has reached a plateau and nuts have reached maturity. Harvesting has usually commenced on most farms, and by June, consumers around the world should be able to start enjoying macadamia nuts from the current growing season. Only mature nuts should be harvested from a clean orchard floor to ensure good quality nuts. Nuts should be handled with care throughout harvesting and drying to maximize whole kernel percentages.



General orchard management

- Annual pruning activities usually take place during May to July, but sometimes even earlier depending on the harvest date.
- Continue with your irrigation and fertilization schedules as recommended by your technical advisor.
- Growers often use this time period for irrigation system management.

Harvesting and curing

- Nuts can be harvested by picking them up off the ground, stripping nuts from trees or applying plant growth regulators such as ethephon. It is important to ensure the whole crop has reached maturity before stripping trees or applying ethephon. Stripping is generally used with cultivars that don't drop their nuts after reaching maturity, and protects against stink bug damage, germination, loss of quality and theft. Ethephon is often used with cultivars such as 695 which don't drop their nuts at all. Ethephon should be applied to trees according to the label instructions, and not to trees subjected to stress factors such as drought, temperature and moisture extremes etc. Warm weather is required, as cold spells can limit the functioning of ethephon. Certain cultivars such as 816 and 791 do not respond well after ethephon application. Nuts should drop within 1-2 weeks after application.
- Nuts damaged by insects and immature nuts associated with the first drop of the season are often processed separately from the main crop in order not to compromise quality.

- 🌰 Mature nuts should not remain on the orchard floor for more than two weeks.
- 🌰 Harvest nuts every week, or at least every second week.
- 🌰 Harvested nuts should be de-husked as soon as possible, preferably on the same day. De-husking as soon as possible reduces the water content of nuts and the survival of food-borne pathogens. Harvested nuts should not be kept in plastic bags for more than 12 hours, and preferably in the shade. Nut-in-husk is susceptible to respiration and heat build up, thus storing nut-in-husk in the shade for less than 12 hours will also minimise fungal growth.
- 🌰 Make sure de-husking equipment is cleaned regularly and that spare chains/belts are available in case of breakdowns.
- 🌰 It is important to “calibrate” the de-husker to the cultivar (size of nuts and thickness of husks and shells) being processed to avoid damage to the shell (or kernel) as bacteria could be introduced to the kernel in this manner and this will affect quality. 695 and 814 have smaller nuts, while 816, A4, A16 and Nelmak 2 are larger nuts with thinner shells.
- 🌰 If you float nuts for maturity or quality reasons, consider using an antimicrobial agent in the water (please obtain advice in this regard from your technical advisor to avoid the exceedance of maximum residue levels).
- 🌰 Remove small, deformed and defective and damaged nuts (insect damage, cracked shells etc) by hand sorting after de-husking.
- 🌰 Drying facilities should be clean.
- 🌰 During the curing process, nuts should be handled with care as any wounds are susceptible to bacteria and fungi. This will also simultaneously contribute to whole kernel percentages.
- 🌰 Dry air with a reduced relative humidity (between 40% and 70%) will limit microbial growth.
- 🌰 Nut-in-shell is generally dried to a moisture content of 10% over 7-10 days after de-husking, with a moisture loss of 2% per day.
- 🌰 As is the case in the orchard, animals are reservoirs of food-borne bacteria, thus control rodents, birds and bats during storage of dry nut-in-shell. Moths can also be a problem in stored nuts, blacklight zappers or UV lights which attract moths can be employed.

Pests and diseases

- 🌰 From February onwards, the population numbers of natural enemies increase, so attention should be paid to the chemicals used. Pesticides with a narrow spectrum or a short residual action should be used during this time to provide existing natural enemies with the best opportunity to regulate populations of pests, especially those of stink bugs. Examples include registered products containing various insect pathogens such as *Beauveria bassiana*. UV intensity should also gradually decrease towards autumn which will decrease the environmental ephemerality of these insecticides.
- 🌰 Felted coccid, bark borer beetles (Fam: Scolytidae) and branch dieback (*Botryosphaeria*) numbers should increase from the end of January, be vigilant for possible infestations, especially in the Barberton/Nelspruit/White River areas.

- 🌰 Monitor maturity and if an orchard is mature, harvest as soon as possible as the two-spotted stink bug and other stink bugs can penetrate the hard shell and feed on kernel prior to harvest.
- 🌰 Nuts become very attractive to stink bugs during the oil accumulation phase and remain attractive up to early winter (mid June).
- 🌰 For stink bugs, monitor weekly, preferably early morning when insects are inactive.
- 🌰 Threshold: 0.4 stink bugs per tree.
- 🌰 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.