



PISTACHIO SEASONAL REMINDERS SUMMER & PRE-HARVEST 2021/2022

Welcome to 2022! As always, hopefully you all had a good Festive period and had some time off to refresh in preparation for the rest of the 2021/2022 season.

COVID continues to dominate headlines and our lives and has led to major changes in the way we live and interact. The PGAI is no different with border closers affecting grower meetings. Even so, the PGAI was able to conduct PIT group meetings in July 2021 and November 2021 along with virtual meetings for the Pesticide Evaluation and Review Program.

Hopefully, with COVID border restrictions easing, we can get back to more in-person meetings starting with a pre-harvest pistachio industry dinner planned for 3rd February 2022 in Mildura. This dinner provides an opportunity for growers to come together (under COVID requirements), network and recognise the long and important contribution by Dr Robinson to the PGAI and the pistachio industry in general. A flyer for this function is attached.

THE 2021/2022 SEASON TO DATE

It has been an interesting season to date. Winter chill was somewhat variable across the pistachio growing regions this season. The PGAI continues to provide regular chill newsletters during winter and this season, regions east of Swan Hill had sufficient chill whilst the Riverland had inadequate chill. As for the Sunraysia, different chill modelling methods gave different results this season with the region receiving sufficient dynamic chill portions but hours <7°C were below normal. In this situation, most growers opted to apply winter oil to mitigate the effect of insufficient winter chill.

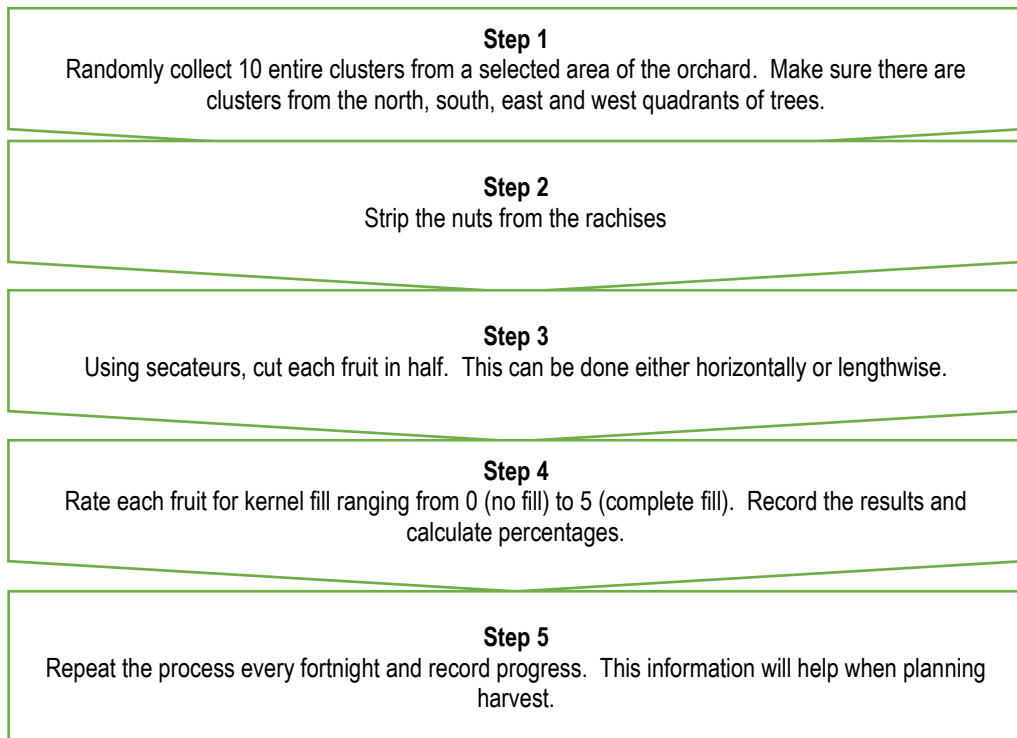
Spring 2021 was somewhat unusual with cooler than expected conditions across many pistachio growing regions which resulted in slower than expected growth and vigour for many growers. Despite this, I observed good vigour, leaf colour and fruiting buds on many orchards during my travels in December. Many growers are reporting promising crop potential with many trees exhibiting on-crop open fruit clusters. Fruit size also seems okay although the cooler spring conditions may see smaller fruit and nut size at harvest.

MANAGEMENT DURING NUT FILL

We are now in the nut fill period of the pistachio production cycle which is a critical phase of the pistachio production cycle when the kernel grows and causes the shell to split. Good management during this phase will maximise kernel growth and shell splitting. Key issues at this time are understanding kernel development, managing irrigation and nutrition and preparing the orchard for harvest. This is also the time for leaf analysis and budding young trees.

- **Kernel development.** During the nut fill period, the kernel within fruit start to grow and fill the shell. The start of this period varies each season and flowering and fruit set was variable this season for many growers. As such, understanding the range of kernel development is very important when considering irrigation and fertiliser applications as well as being very valuable when estimating the start of harvest.

In the past, I have commented on the kernel development protocol recommended by Bob Beede. This protocol is repeated below for your convenience.



Bottom line: Develop a good understanding of kernel development during the nut fill period by routinely cutting open developing fruit. For example, Photos 1 & 2 show pistachio fruit at about 25% nut fill and 100% nut fill respectively.



Photo 1: Approx. 25% nut fill



Photo 2: 100% nut fill

- **Irrigation.** Pistachio kernel development is particularly sensitive to water stress during the nut fill period (from late December to harvest). Shell splitting is particularly sensitive with water stressed trees having reduced kernel growth, fewer properly split nuts and more narrow or non-split nuts resulting in lower returns to growers.

Bottom line: Pay particular attention to irrigation during the nut fill period up to harvest to avoid water stress, maximise kernel growth and hence the percentage of nuts that split properly.

- **Nutrition.** Studies have shown that almost all current season potassium uptake by a pistachio tree occurs during the nut fill period. They also take up considerable amounts of nitrogen at this time.

Bottom line: *Ensure trees are well supplied with potassium fertiliser during the nut fill period. The rates applied should be matched to expected yields. Nitrogen fertiliser applications are also important for kernel growth but care is needed to avoid stimulating vegetative vigour. Again, the rates applied should be matched to expected yields.*

- **Disease management.** Most growers have been applying fungicides during the growing season. However, continued monitoring is important to avoid disease outbreaks. With harvest approaching, care is needed to observe withholding periods.

Bottom line: *Keep a look out for disease symptoms. Pay particular attention to and observe withholding periods.*

HARVEST PREPARATION

In the past I have commented on the issues to consider when preparing for harvest including orchard preparation, harvest machinery, understanding fruit maturity, contract harvesting, transport and processing. My comments are repeated below for your convenience.

- **Orchard preparation.** Remove low lying and/or fallen limbs that may interfere with tree access for the shaker and/or receiver. Prepare the orchard floor by mowing weeds, filling holes etc.

Bottom line: *Ensure access for the shaker and receiver to maximise removal and catch of fruit.*

- **Harvest machinery.** It is important that harvest machinery is in good working order prior to the harvest period commencing and plenty of spare parts are available as breakdowns do occur.

Bottom line: *Ensure harvest machinery is in good working order. Review spare parts on hand and order additional spare parts if required.*

- **Understanding fruit maturity.** For most efficient use of harvest machinery, it is important to be able to determine when pistachio fruit are mature and ready for harvest. This occurs when the fruit changes colour and separates cleanly from the tree with a gentle shake. At full maturity, the hull also separates cleanly from the shell – otherwise known as hull-slip (Photo 3).

Note that pistachio fruit do not mature/ripen evenly throughout the tree meaning there will be mature and immature fruit present (Photo 4). After the first shake, growers allow the remaining fruit to ripen further and then reshake the trees.



Photo 3: Hull slip in pistachio



Photo 4: Pistachio fruit ready for harvesting. Note presence of mature and immature fruit

Bottom line: Growers should assess fruit maturity carefully to determine when enough fruit is fully mature and ready to harvest. Late harvest increases the risk of nut damage and reduced value through fungal infection, increased shell staining and adhered hull.

- **Contract harvesting.** Many smaller growers use a contract harvester. For those growers, work closely with your contract harvester to ensure trees are harvested at the optimum time.

Bottom line: Maintain regular contact with your harvest contractor aiming to harvest trees at the optimum time.

- **Transport.** With pistachio, shell staining increases with increased temperature and storage time. Therefore, it is critical to ensure fruit is delivered to the factory as soon as possible (preferably within 24 hours) following harvest.

Bottom line: Discuss your requirements with your transport contractor stressing the need for fruit to be delivered to the processor as soon as possible following harvest. Be sure to inform your transport contractor of traffic requirements at the processor.

- **Processing.** All growers have been sent the 'Pre-crop circular for the 2022 pistachio season' from the Australian Pioneer Pistachio Company (APPC) which outlines the services provided by APPC along with details/policies regarding scheduling deliveries to the processor, delivery of in-hull pistachios, aflatoxins and foreign matter.

Bottom line: With only one major pistachio processor in Australia, it is critical that growers liaise closely with the processor to develop a schedule which best fits your needs and the needs of all growers. Of most importance is keeping the processor informed of deliveries especially if there are unexpected delays.

SHOTGUN PELLETS

We wish to reinforce the issue of shotgun pellets being found inside nuts by metal detectors at APPC during processing and packing. Growers need to remember to shoot away from trees and reduce the risk of shotgun pellets contaminating fruit and nuts. The following comments provided by APPC highlight that this continues to be an ongoing issue.

"Shotgun pellets inside nuts are regularly being found by the metal detectors at APPC during packing. Whilst the APPC equipment is first class, there is always the risk that one is missed and a consumer will break a tooth.

The supermarket auditors are questioning the frequency of the detection of the pellets and expressing concern that one may be missed.

There is also the cost associated with metal detectors rejecting the package and the subsequent sorting with packets of pistachios needing to go back through the machine to find the individual pellet in the individual nut. This is slow and expensive.

Pellets can only get into a nut if the shot is fired below the shoulder into the tree. This is a dangerous orchard practice.

Growers need to ensure that shooters are fully brief on the danger of shooting below the shoulder not only for orchard safety but also for the food safety of our product."

LEAF ANALYSIS

For pistachio, conventional leaf analysis is conducted in the month prior to harvest. The plant part sampled is a single leaflet from 1 of the 2 subterminal leaflets (not a terminal or end leaflet) from a fully expanded leaf in the middle of non-bearing shoots (Photo 5) located about 1.5 – 2m above the ground.



Photo 5: Pistachio leaf sampling. Arrow shows correct leaflet to sample.

Research conducted in California recommends collecting 8 leaflets from 18 trees to represent a planting/block allowing 30m between trees sampled.

For more information on leaf analysis, contact Ben Thomas Consulting on 0417 143 797 or benthomasconsulting@bigpond.com

BUDDING YOUNG TREES

Rootstocks planted in spring 2021 should soon be ready for budding. Budding can continue as long as there is sap flow and the bark on the rootstock 'slips' allowing insertion of the bud. Note that when trees are budded later in the season, it is possible that the new bud will remain dormant. Do not try to force growth from such buds as the young growth will then be susceptible to frost damage in late autumn and winter. These dormant buds generally survive and start growing in the following spring.

Some other considerations regarding budding of young pistachio trees are:

- *Do I use a contractor to bud the trees?* Contractors, whilst more expensive, typically provide some guarantee of success. If you are not confident budding trees, consider using a contractor.
- *Where do I source budwood?* At this stage, the Australian pistachio industry does not have a budwood depository. Instead, budwood is sourced from existing orchards.
- *Can smaller trees be budded?* Smaller trees can be budded but, generally speaking, rootstocks with diameters of at least 1cm will take a bud better than smaller trees.
- *How many male trees should I have?* Pistachio trees are dioecious meaning they have separate male and female trees with the female trees bearing the fruit. Pistachio trees are also wind pollinated and there needs to be sufficient male trees to produce enough pollen to fertilise the female trees. Traditionally, about 8-10% of the trees in an orchard were male but more recent plantings have seen fewer male trees planted (4%) which appear to yield as well as older plantings.
- *Which male trees should I have?* There are 3 types of male pistachio trees used in Australia which vary in flowering time – early, mid and late. I recommend including male trees of each type in a planting.
- *What planting pattern do I adopt?* Most growers opt for a rectangular planting pattern meaning there are male trees evenly spaced in a grid pattern.



The Premier Nut Industry Conference is back!
Crowne Plaza, Melbourne 23 -25th March, 2022
Registrations open January www.nutindustry.org.au

Platinum Sponsor: **stahmann webster**

For more details or to discuss any of the issues raised in this seasonal reminder, contact

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**Hort
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Strategic levy investment

**PISTACHIO
FUND**

This project has been funded by Hort Innovation using the pistachio research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au