Budding Pistachios

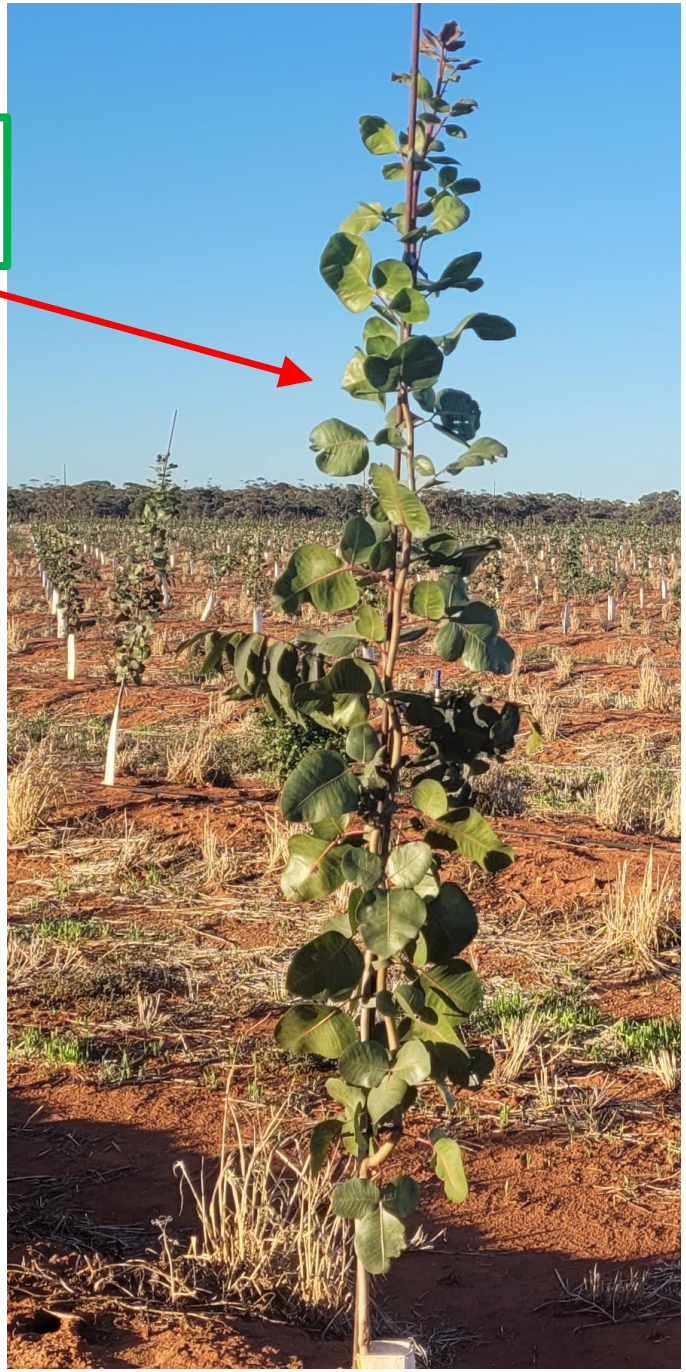
This is the goal at end of first growing season.....

But sometimes we only achieve this

To get more of this requires a combination of many factors.....

1. Preparation of land and irrigation system
2. Begin with good quality rootstock
3. Planting on time and correctly
4. Good irrigation management
5. Good fertiliser management
6. Weed management
7. Budding on time
8. Management of new scion
9. Timely rebudding of misses

There are ***a lot*** of things going on over 5 months August-December. It can be a juggling act, but they all need attention to detail.



Land preparation

- There is no general rule for land preparation, as soil type and topography vary so much across growing regions.

  - However almost any land will benefit from some form of pre plant preparation.

- Engaging a qualified soil surveyor will assist decisions…..

  - Is ripping required, and to what depth?
  - What amendments are required?
  - What areas should be avoided?
  - Will mounding be beneficial?
  - Irrigation system design?

- The orchard will not be replanted in our lifetime, so pre plant preparation is the best opportunity to make conditions as good as they can be.

Planting rootstocks

- Communicate with the nursery during 12 months prior to planting .....so they understand expectations and can do their best to deliver what you want.
- Root growth in the pot will be active in August, so early August is a good time to plant before vegetative growth begins.
- Earlier planting, including Autumn, can work also but frost risk can be an issue with smaller plants.
- UCB-1 is more frost tolerant than PG1 so better suited to early planting.
- The aim is to grow rootstock to achieve ***budding calliper by Christmas***.....get trees in the ground early.

August 5th
PG1 rootstock

Optimum size of rootstock at planting

- A good year 1 result can be achieved with planting either small or large rootstock.
  - A smaller tree will be cheaper to buy, and cheaper to transport/plant.
- ***However***,.....a 400-600mm tree with 5mm calliper will require more attention, and have a higher risk, than a 1200mm tree with 8mm calliper.
- The small tree needs to grow to minimum 8mm calliper at 600mm high by Christmas for optimal budding results.
- A bigger tree that is already at or close to correct budding calliper is a lower risk option, but more expensive to buy/transport/plant.
  - In a cool wet year like 2022, achieving size early enough can be challenging with small trees.
  - A bigger tree just needs to get into a vigorous state by Christmas.

Differences in rootstock size

Larger tree with 8-9mm calliper at planting.

Small trees need continual spring growth to reach budding calliper by Xmas.

8mm steel rod as guide for minimum budding calliper.

Early irrigation management

The first 3 months of irrigation management is not difficult, but needs close monitoring, and will influence reaching ***budding calliper by Christmas***.

- The new tree is effectively still in a pot for some time after planting.
- Monitor the root mass to ensure water is getting right into the potting media.
- If potting media dries out, sometimes it can become hydrophobic – corrective action required.
- Dig in different soil types to check for new root growth beyond the media and adjust irrigation.

Early fertiliser management

- An August planted tree *may* not need any fertiliser until late Sept/Oct.
- Early root growth is key, and a balanced Phosphorous/Nitrogen fertiliser will encourage root growth.
- When the tree has full leaf canopy N based fertiliser can be introduced.
- Observe tree vigour to avoid unnecessary fertiliser use.
- When needed, as a guide use 5kg of N/Ha/week. Boost if any doubts about reaching ***budding calliper by Christmas***.
- Early foliar fertiliser is generally unnecessary, but may help if vigour is lacking

Preparing trees for budding

The goal is budding calliper by Christmas……

1. Minimum 8mm calliper at preferred budding height
2. Actively flushing tips (or just coming into a flush)

If the majority of trees are not in this condition, it is better to delay budding.

- Weather is important:
  - Warm to hot during/after budding, no rain.

- To help the budding crew
  - No ties around budding position.
  - Clear guidelines on preferred budding height

Selecting budwood

1. Be confident of your budwood source trees

2. Ideally the source trees have been pruned to produce strong vegetative growth

3. Ensure budwood is “mature” enough – ie a stick should be darker in colour and stiff rather than green and bendy.

4. Select bud sticks close to diameter of the trees to be budded

5. Select sticks with large prominent buds

6. Cut budwood in the morning and keep cool

7. Budwood can be stored in a cool room for several days, but if possible, daily fresh is best.

8. ***Avoid having both male and female budwood in the orchard at the same time!!!***

Bud stick matches tree calliper

Optimum budding period

- The optimum summer budding window to achieve full height scions is only about 3-4 weeks

- The first week of January is good, and beyond the end of January will limit ability to achieve full height scions. To get here, we need ***budding calliper by Christmas***.

- December budding will extend the growing season
  - Usually only possible if larger rootstocks are planted
  - Dependent on budwood being mature enough (example 2022 was delayed).

- UCB-1 is more vigorous than PG1 and better suited to early budding.

- UCB-1 will shut down earlier than PG1, so late budded UCB may achieve less scion growth than PG1.

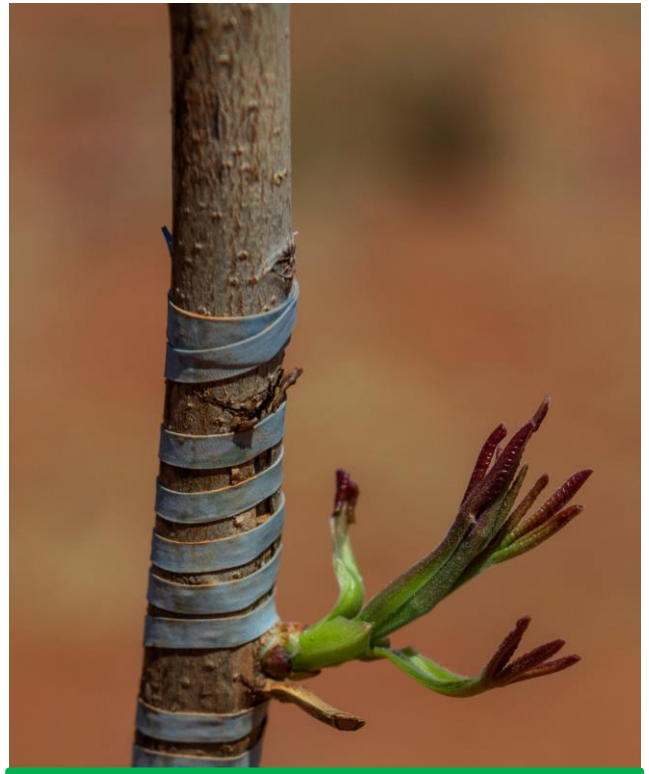
- Storing dormant buds and budding in spring is another option
  - Possible only if large rootstock are planted, or unbudded trees from prior season.
  - Common for nursery budded trees, less common in field budded trees.
  - Field results can be good, but less reliable than fresh budding.
  - Others may have more experience

Post budding management

- Maintain a normal irrigation program
- Cut back vigorous rootstock by 50% 5-7 days post budding.
- Cutting back sooner than 5 days ***may*** push the bud sooner but anecdotally doesn't make a lot of difference.
- Cutting harder than 50% does not seem to make much difference.
- On weaker trees only tip all terminal buds to preserve leaf area
- Cincturing just above the bud at 5-7 days ***may*** push the bud sooner but anecdotally doesn't make a lot of difference. Cincturing stubborn buds during tying passes will help push.
- Watch soil moisture after cutting back rootstock – 50% of leaf area has been removed!
- "Petiole test" after 7-10 days is an early indicator of successful bud take.
- Some bud movement should be visible 10-14 days post budding

Management of emerging bud

- At 12 days post budding there should be some movement as shown above.
- Some buds may not be showing any signs of movement – does not mean they have failed
- If no movement at 12 days petiole “flick test” will indicate success.

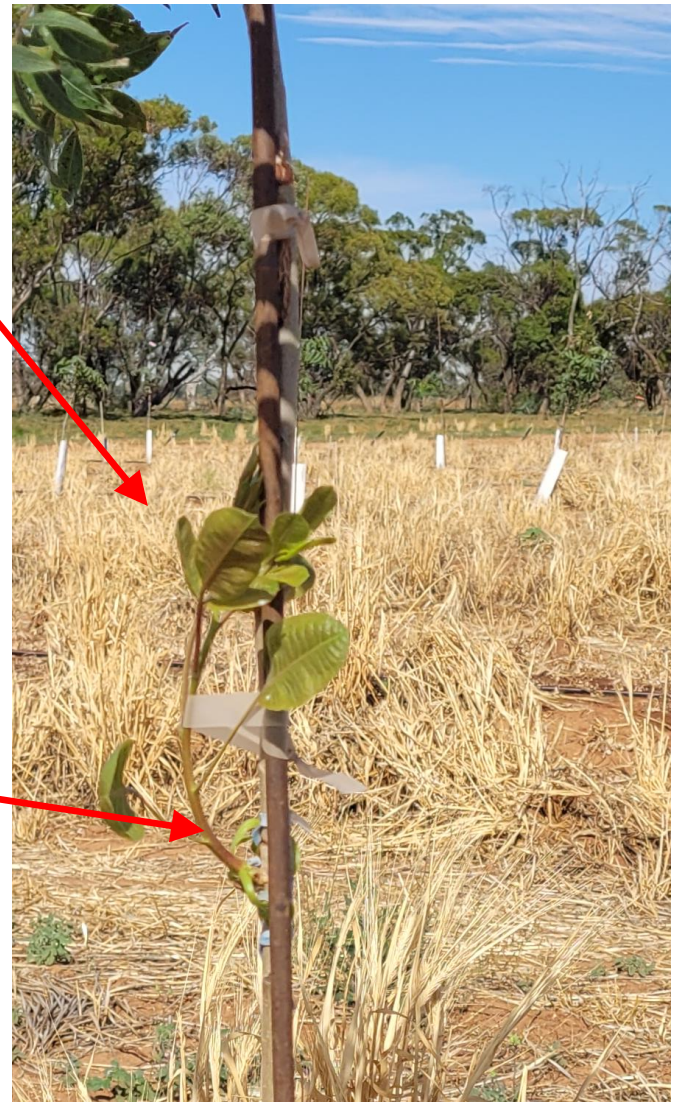


- Bud emerging strongly
- ***Too early to tie!!***

- This bud is ***<u>just</u>*** big enough to tie
- Tying smaller than this risks bud-stem angle being too tight, or breakage.

Management of emerging bud

- This is a good time for first bud tie
- ***Ideally*** first tie would be a little earlier than this - a balance between enough buds ready, and buds getting too long.
- Note good scion angle – tying too soon or too tight can create a weak bud union from bark inclusion.
- First tie needs to be done before the base of scion fully lignifies.
- Remove remnants of budding rubber
- A range of soft ties can be used



Re budding

- Some degree of bud failure is inevitable, so an early rebudding pass is important.
- Some buds just take time to move, but by day 21 failures should all be obvious, and can be marked on a tying pass.
- Getting a budding crew back in 3 weeks can be difficult, so having one person trained on farm can make the early pass happen.

- Planting and budding extra trees at row ends is another strategy to achieve 100% budded positions in year 1.
  - ➢ No additional management required
  - ➢ Winter transplanting usually has a high success rate.

Spare trees ready for budding

Fertiliser - N P K management post budding

- Total Nitrogen requirements in year 1 50-70 kg N/Ha as a guide.
  - Be guided by vigour of the scion, and 5 kg N/Ha/week is a good guide
  - Efficiency of uptake is low because of small root area
  - Excessive Nitrogen may lead to problems such as Copper deficiency

- Total Phosphorous requirement in year 1 5-10 kg P/Ha as a guide
  - If pre plant P applied only minimal required in spring

- Total Potassium required in year 1 Not required
  - Generally, Mallee soils should provide enough K until cropping phase

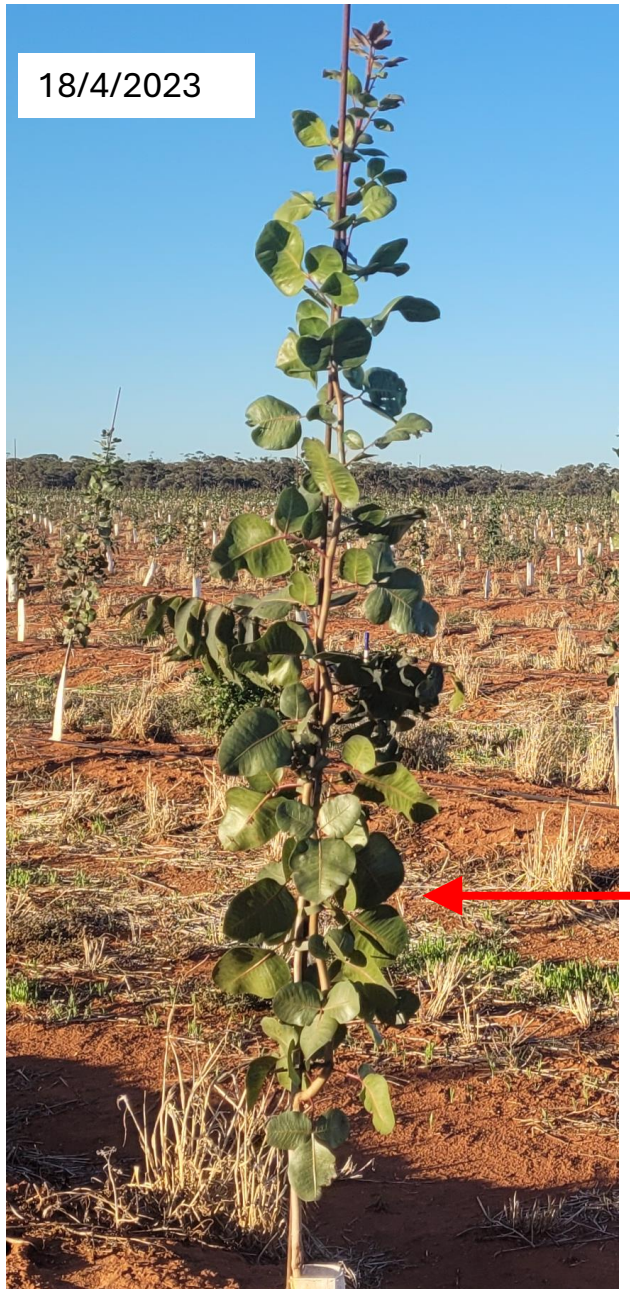
Fertiliser – Trace Element management post budding

- Trace Elements
  - Zinc/Copper EDTA and Boron, or a general blend can be applied in 1-2 foliar sprays
  - Zinc/Copper EDTA, and Iron EDDHA can be applied via fertigation
  - We used to chase our tail with Copper deficiency, but moderating irrigation and Nitrogen seems to minimise this problem.
  - Watch Iron deficiency (lime induced chlorosis) in calcareous soils. Look for ***pale*** green leaves.

Copper deficient tip
Note red stem

Strong healthy tip
Note green stem

Finally.....



- If we can achieve ***budding calliper by Christmas***, and bud in January or earlier, we have the best chance of reaching a ***full height scion by the end of March***.

- MSL pruning techniques have shown we can catch up some lost time if scions do not reach full height in year 1, but ***<u>full height scion remains the gold standard.</u>***

Full height & topped

Not full height, not topped