



FACTSHEET

Where to go from here: irrigation for chestnut growers.

The best returns come from staying ahead of tree stress

The takeaway

Results from two chestnut grower surveys show the best returns come from preventing stress, not reacting to it.

This fact sheet sets out practical, staged next steps to improve irrigation timing and decision confidence without a big upfront spend.

What we learnt

Across the surveys, several themes kept repeating.

Many growers are managing well, but the system (and decisions) are being stretched by more variable seasons and peak-demand periods.

Key patterns that stood out include:

- Rainfall patterns are mixed, with many growers reporting winter-peaking or highly variable rainfall
- About two thirds of growers report a shift in rainfall timing
- Around half of the growers have changed practices in response to climate variability (mainly irrigation timing/ volume, soil moisture retention, and delivery upgrades)

- Bore and river/creek water are the most common irrigation sources
- Nine growers are rainfed and do not irrigate

There were also a number of observations relating to how growers' work with water and soil:

- Many irrigators never check water quality
- Systems are split between drip and low-impact sprinklers
- Most irrigation is still operated manually
- Soil and water testing are often infrequent, or not done at all
- Most irrigating growers rely on visual cues to trigger irrigation
- Where soil moisture is measured, the hand feel test is the most common method.

The core problem

Visual cues are useful, but they usually appear after the tree has already started to stress.

Once stress is visible, your yield, nut size and quality may already have been affected.

Stress can also reduce the next season's potential by limiting growth and bud development.



Stress also increases disease risk, including chestnut blight which can heavily impact stressed trees, exploiting wounds and fissures created by drought.

Rainfed growing

From the survey responses, around one third of orchards appear to be rainfed, relying on rainfall with no supplementary irrigation.

“Rainfed” growing can work well in some seasons and some sites, but it needs the right conditions.

Rainfed performs best when you have:

- Deeper, more moisture-holding soils
- Reliable in-season rainfall or storms that refill the profile
- Lower heat and wind exposure during key periods.

Rainfed is at higher risk when:

- Soils are shallow, lighter, or prone to drying quickly
- Summers are hotter and drier, with longer gaps between rain events
- You hit repeated hot, windy days during nut fill and early kernel development
- There is limited subsoil moisture carry-over from winter and spring

North-East Victoria

In NE Victoria, risk usually spikes from late spring through summer, when hot days and wind drive high water demand and trees can move into stress quickly (*e.g. during 2–4 consecutive 35°C days with northerly winds.*)

Many orchards also sit on variable soils (changes in depth, gravel, clay layers and drainage) which means some blocks run out of moisture earlier than others.

If you are rainfed, the practical goal is to protect the most vulnerable blocks and have a simple contingency ready for heat events.

Rainfed “Plan A”

Plan A is about stretching the profile and avoiding stress; Plan B is the “safety net” for the weeks when heat and wind outpace rainfall and stored moisture.

Plan A is your normal, rainfed operating approach in an average season: build and protect soil moisture, monitor conditions, and use simple trigger points to manage risk without irrigation.

Even if you don’t irrigate, soil testing and simple moisture checks help you manage risk as they show:

- Which blocks dry out first (*your first-to-stress blocks*)
- How much subsoil moisture you carry into summer
- When a heat-and-wind week is likely to push trees into stress.

Rainfed “Plan B” option

Plan B is what you shift to when those trigger points are reached and the season turns against you.

The aim of Plan B is not to fully convert the orchard to irrigation. It is to prevent the worst stress events during the highest-risk weeks.

Low-cost contingency options rainfed growers could use include:

- Portable pump plus a basic

line to protect a small priority area (for example, young trees, lighter soils)

- A small “nurse line” or temporary micro-sprinkler line used only during heatwaves
- Hiring or borrowing a pump during high-risk periods
- A limited micro-sprinkler zone on the lightest soil or most exposed block, used only when triggers are met.

If you are setting up a Plan B,



Hire pump set as a low-cost “Plan B” option to protect trees during heat and dry spells. (Image: Agline. With permission.)

keep it simple by:

- Picking one priority block, not the whole farm
- Using existing water sources where possible (confirm access and pump capacity early)
- Designing for quick deployment **before** heat events
- Having a clear trigger for when you turn it on (see “simple decision triggers” on the next page.)



Portable K-Line irrigation system several chestnut growers have indicated that they use in their orchards. (Image: philmac.com.au. With permission)

Irrigation growing

If you do just one thing that pays back fast, focus on irrigation timing: keep the active root zone topped up through the hottest, windiest period.

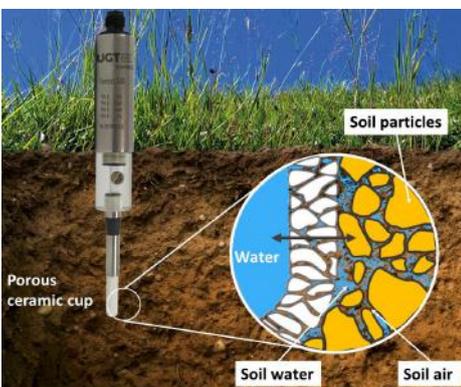
A practical way to do that is:

- Make smaller, earlier corrections rather than waiting until trees show stress
- Check moisture where the active roots are (often around 20–40 cm, depending on soil and root depth)
- Focus effort on the high-demand window (hot, windy days during nut fill)
- Confirm you are refilling the profile, not just wetting the surface

Note: This step-by-step approach is written for irrigators, but the first steps (soil testing, moisture checks and simple triggers) also help rainfed growers make better decisions and know when a contingency Plan B is needed.

A step-by-step upgrade

This is designed so each step stands on its own. You do not need to do everything!



Root-zone tensiometer: tracks soil water tension so irrigation can be timed before visible stress appears. (Image: Umwelt-Geräte-Technik GmbH - The Solutionists. With permission.)

Step 1: free or very low cost

Start by building a repeatable routine. The goal is consistency, not perfection.

- Choose one or two indicator sites per block (for example, a lighter spot and an average spot)
- Do a quick hand feel check at a consistent depth (around 20–40 cm)
- Keep a simple note of date, conditions, and what you found and did.

Even once a week is better than only checking when trees look stressed.

Step 2: low cost

Add one basic tool in one representative block to build confidence.

- One hand probe or one tensiometer can be enough to start
- Use it to confirm your “feel test” and refine timing

Step 3: moderate cost

Add 2–3 monitoring points in key soil types or blocks (not across the whole farm).

- Focus on where decisions matter most (young trees, lighter soils, exposed blocks)

Step 4: only when ready

Add simple automation where it removes missed irrigations rather than adding complexity.

- Timers/solenoids on a critical set can be a big step if labour is tight

What to measure first

A common trap is trying to measure everything and then doing nothing.

Start with a small number of representative points and get good at interpreting them.



Hand feel test: a quick field guide to estimating soil texture (sand–silt–clay).

A simple starter set is:

- One typical block (average soil)
- One fast-drying block (lighter soil, exposed site)
- One “slower” block (heavier soil, shaded or lower area).

Simple decision triggers

Triggers help you move from reactive to proactive watering. For example, if the 20–40 cm layer is dry to the feel test, and 3 hot/windy days are forecast, start earlier.

A practical set of triggers includes:

- Weekly checks in mild weather, twice weekly in heat and wind
- A simple “refill check” after irrigating
- A note of when you started irrigation and whether trees stayed ahead of stress
- A basic record of date, hours, weather, and outcome to build confidence year to year.

Manual operation

Many growers are managing irrigation manually, which makes peak periods harder.

The goal is to reduce complexity so you can complete a cycle when demand is high.

Practical ways to do that include:

- Fix leaks, blocked emitters and pressure losses early (*small issues become big under peak demand*)
- Standardise set times and run sheets so irrigation is not reinvented each week
- Use a simple checklist for pump-to-emitter performance (*so weak areas are found early*)
- Where possible, reduce changeover time between sets (*even small gains help*)

Peak demand

Peak demand exposes limitations in pump capacity, block design, filtration, and labour.

When you can't irrigate everything at once, prioritisation matters.

Common constraints that show up include:

- Inability to complete a full cycle during peak demand
- Muddy water increasing filter cleaning and reducing reliability
- Bore or supply limits
- Long sets that run past the point where conditions change

A practical response is to protect the worst blocks first, which means:

- Shorten sets so you can get across more blocks sooner (*a timely top-up*), rather than fully watering one block while others miss out
- Prioritise young trees, light soils, or known stress-prone blocks during heat events
- Use a contingency Plan B for the most exposed areas if the main system cannot keep up

Water quality

Water quality problems often show up as uneven performance, blocked emitters, pressure issues, or rising maintenance effort.



Testing irrigation water helps protect pumps, filters and emitters from blockages. (Image: Test Needs Lab. With permission.)

A sensible, low-effort approach is:

- Test at least once per season, and again if water changes (after heavy rain, algal events, or supply changes)
- Focus on the issues that affect systems most (sediment, salts, EC/salinity, iron, and biological load)

- If filtration is a constant headache, treat that as a priority upgrade because it improves reliability immediately

A simple 12-month action plan

Next 4 weeks

- Choose one indicator block and implement a simple moisture check (feel) routine
- Confirm you are getting a consistent refill after irrigation
- Identify your highest-risk block for heat events and decide what you will prioritise
- List your 'first-to-stress' blocks and mark them on a simple farm map.

Next 3 months

- Add one objective tool in one representative block (hand probe or tensiometer)
- Create a simple set schedule and checklist for peak weeks
- Do at least one basic water quality test if you irrigate

Next 12 months

Expand monitoring to 2–3 key blocks (not whole-farm)

Address the top system constraints that slow you down (leaks, filters, pressure, changeovers)

If rained, set up a basic Plan B contingency for heat and wind periods.

Closing message

The goal is not high tech.

It is fewer stress events and more consistent nut fill.

Start with a routine you can keep doing, prove it in one block, and then scale up once it is working.