



National nut growers' project: Managing water and soil in a changing climate

Survey Summary for Nut Growers

Thank you to all nut growers who contributed their time and experience to the recent survey. Your responses have provided a valuable, practical snapshot of how chestnut, hazelnut and walnut orchards are currently managing irrigation, soils and climate variability. The survey was designed to understand how decisions are made on farm, what constraints limit performance, what practices are already changing, and what kinds of support growers find most useful.

The results are being used to shape future extension activities, on-farm demonstrations and practical resources into the future. This summary reflects what growers reported in the survey.

1. What growers are facing across all nut crops

More variable seasons and hotter finishes

Growers across all crops reported that rainfall is becoming less reliable, seasons are harder to predict and hot periods are placing more pressure on trees and irrigation systems. Many growers described earlier starts to irrigation, more frequent watering, and longer dry periods extending into late summer or autumn. Several growers also noted heavier rainfall events that run off rather than soaking in.

Irrigation timing still relies heavily on experience and observation

Most growers who irrigate continue to rely primarily on visual cues such as canopy appearance, leaf behaviour and surface soil condition to decide when to irrigate. Manual soil checks using a spade or hand feel are common. Formal soil moisture monitoring tools are used by a smaller proportion of growers and are not always linked to clear decision rules.

System reliability limits effective water delivery

A consistent message was that even when water is available, systems do not always deliver it efficiently. Growers frequently reported filtration workload, pressure loss, blocked lines, leaks, ageing infrastructure and uneven distribution across blocks. These issues reduce the amount of water actually reaching the root zone and increase labour and maintenance burden.

Peak demand exposes system limits

Many growers reported that their systems struggle to meet peak demand during heat events. Some systems cannot irrigate all blocks fast enough within available hours, particularly where overhead systems depend on calm conditions or where pumps and pipe sizes limit flow rates. This creates stress during heatwaves when timing matters most.



Annual water use is poorly quantified

A large proportion of growers could not confidently estimate how much irrigation water is applied per hectare each year. Irrigation is commonly managed by run time rather than measured volume, and meters are not always available or easily interpreted. This limits benchmarking, planning and long-term water budgeting.

Soil improvement is recognised but unevenly applied

Growers reported a wide range of soil types, with clay loams and loams dominant in many regions. Practices such as mulching, compost, manure and cover crops are used by some growers to improve soil water holding and structure, while others report little or no active soil improvement. Soil testing frequency varies widely, and organic carbon measurement is uncommon.

Time and labour constraints shape decisions

Many growers balance orchard work with other enterprises or off-farm employment. Manual irrigation and system maintenance compete with many other tasks, reducing flexibility during heat events and peak periods. Growers expressed interest in simple automation where it saves time and improves consistency.

Growers prefer practical learning

Across all crops, growers consistently expressed preference for hands-on learning, orchard demonstrations, one-on-one support and peer discussion rather than formal training or complex technology. Short, practical resources that lead to immediate action were strongly favoured.

2. Chestnut growers – key survey themes

Chestnut growers reported a wide range of orchard sizes and system types, including drip, micro-sprinklers, overhead systems and a significant number of rain-fed orchards. Many orchards have evolved incrementally rather than through a single system design.

Water sources are diverse, including bores, catchment dams, winter-fill dams, rivers and springs. Some growers blend sources to finish crops in dry seasons. Routine irrigation water testing is uncommon, with most growers testing only when problems are suspected.

Irrigation decisions are mostly based on visual cues and manual soil checks. Automation is limited, with most systems operated manually. Only a small number of growers use timers or remote control. Many growers are unsure of their annual irrigation volumes.

Soil types are dominated by clay loams and loams, which provide buffering against short dry periods but can present infiltration and compaction risks during heavy rainfall. Soil testing practices vary widely, and only a small number of growers measure organic carbon. Some growers actively improve soils using mulches and organic inputs, while others do little in this area.



Around half of chestnut growers reported having made changes in response to climate variability, such as starting irrigation earlier, irrigating more frequently, improving soil cover, or upgrading irrigation systems. Others reported no change, often due to infrastructure constraints, capital limits or reliance on rainfall.

Interest in participating in new water management trials was generally strong, even among growers who have not recently adopted new technologies.

3. Hazelnut growers – key survey themes

Hazelnut growers reported wide diversity in orchard age, size and management intensity. Many orchards are still transitioning into full production, bringing challenges around irrigation scheduling, root development and canopy management.

Water sources include bores, dams and surface water, with filtration workload and water quality variability raised by some growers. Irrigation system types vary, including drip and micro-sprinklers. As with chestnuts, many hazelnut growers rely primarily on visual cues and manual soil assessment rather than formal monitoring tools.

System reliability, maintenance burden and peak delivery capacity were recurring themes. Some growers reported difficulty irrigating all blocks adequately during heat periods.

Soil variability within blocks was commonly noted, creating uncertainty in irrigation uniformity and response. Soil testing practices are mixed, with inconsistent frequency and interpretation.

Many hazelnut growers expressed interest in clearer benchmarks for irrigation and soil management as the industry expands into new regions and soil types. Growers showed strong interest in practical demonstrations and peer learning rather than formal training.

4. Walnut growers – key survey themes

Walnut growers tended to operate larger and more complex irrigation systems with higher peak demand. Maintaining uniform delivery across long runs and multiple blocks was a common operational challenge.

System capacity and scheduling efficiency during heat events were key concerns. Some growers reported limitations in pump capacity, zoning and energy costs that restrict flexibility.



Soil structure, drainage and compaction were raised in some regions, particularly on heavier soils. Monitoring tools and automation were of interest to some growers, but reliability and simplicity were considered essential.

Walnut growers also highlighted the importance of practical system audits, staged upgrades and peer learning to manage risk and capital investment.

5. What growers are already doing

Across all crops, growers reported a range of practical adjustments, including:

- starting irrigation earlier in spring
- irrigating more frequently during hot periods
- improving soil cover and organic matter
- trialling simple soil moisture tools
- exploring basic automation for night irrigation
- upgrading or repairing ageing infrastructure

However, adoption remains uneven, and many growers have not yet made significant changes.

6. What growers say would help most

From the survey, growers consistently prioritised:

- practical, orchard-based demonstrations
- one-on-one advice tailored to their system
- peer learning and discussion groups
- simple tools that support real decisions
- staged, low-risk improvements rather than major upgrades

Formal courses and complex technology platforms were less favoured.

7. How this will be used

The survey provides a strong baseline for designing activities that focus on:

- improving irrigation reliability before adding complexity
- strengthening soil-based decision triggers



- managing peak heat and delivery constraints
- building confidence in simple monitoring
- supporting staged adoption pathways
- tracking real on-farm actions rather than paperwork

Future activities will continue to reflect grower feedback and practical realities.

Thank you

Your contributions have helped build a clear picture of current practices, constraints and opportunities across Australia's nut industries. This feedback will directly guide future work and ensure that resources and trials remain grounded in what actually matters on farm.

Thank you for sharing your experience and helping shape the next phase of this program.

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