# Irrigation scheduling

## Water Use Efficiency – factsheet

### When to start

Starting irrigation too late in the season is one of the most limiting factors when it comes to effective water management. A common mistake when deciding when to start is relying on visual cues, such as surface water pooling in low-lying areas of the paddock. While these zones may suggest adequate moisture, they often don't reflect the condition of drier parts of the paddock. This can lead to under-watering in more elevated or fast-draining areas, suppressing early crop development and creating inconsistencies in plant growth. Over time, these moisture deficits can also alter soil structure, promoting crusting or hydrophobicity, which further reduce irrigation efficiency as the season progresses.

### Top tips

**Don't have a set calendar date to start irrigating**

- Irrigation timing depends on seasonal weather, soil type and crop demand, not a fixed date.

**Monitor winter refill**

- If winter rainfall hasn't brought soil to field capacity, consider starting irrigation earlier in spring.

**Use weather data**

- Monitor when weekly evapotranspiration exceeds weekly rainfall to identify the need for irrigation.

**Use and understand the early warning signs on moisture probe graphs**

- Diurnal stepping is the primary early warning sign of plant water use increasing (Figure 1).

### Benefits of starting irrigation early enough

- Reduced risk of surface hydrophobicity or crusting
- Lower evaporation rates
- Usually more rainfall events to help with infiltration
- Easier to fill deeper soil layers.

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# WUE factsheet – Irrigation scheduling

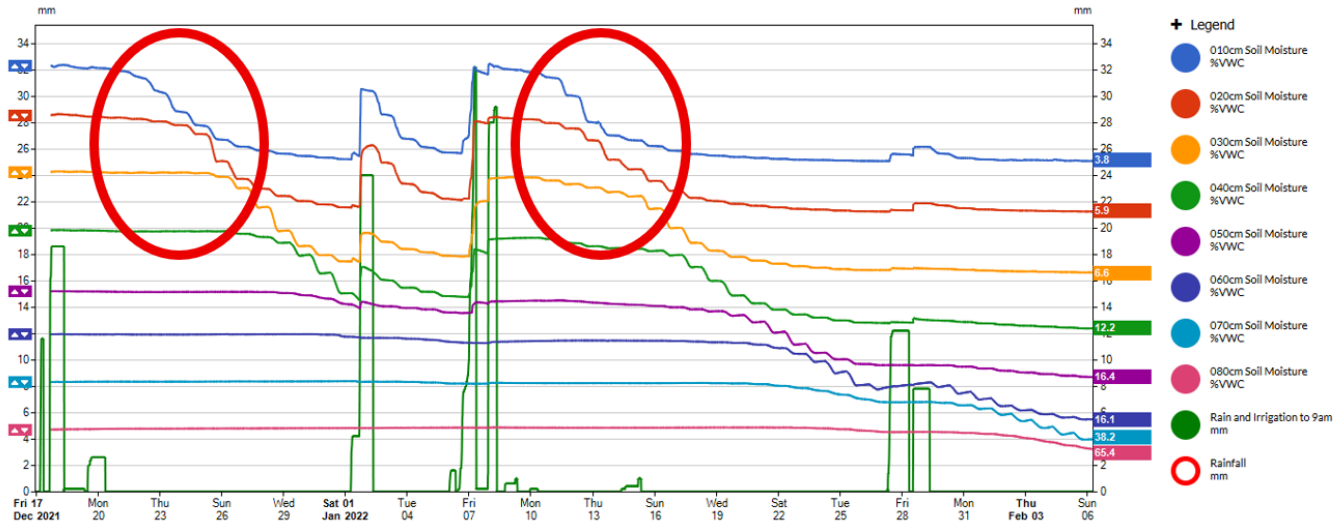


*Figure 1: A stacked soil moisture graph with the start of diurnal stepping (circled in red) as an early warning sign of rapid increase in plant water use and the need to irrigate (Image source: Ag Logic).*

## Irrigating during the season

Irrigation scheduling throughout the season is a dynamic process that must adapt to crop growth stages, varying weather and soil conditions, and system constraints.

## Top tips

### Undertake regular paddock walks

- Your shovel is your best tool. Make sure to dig holes in several locations and make sure you dig deep enough to assess the whole root zone.

### Use weather data

- Monitor when weekly evapotranspiration exceeds weekly rainfall to identify the need for irrigation.

### Use moisture probe data (Figure 2) but also assess how the probe site compares to other parts of the paddock

- Again, your shovel still has a use.


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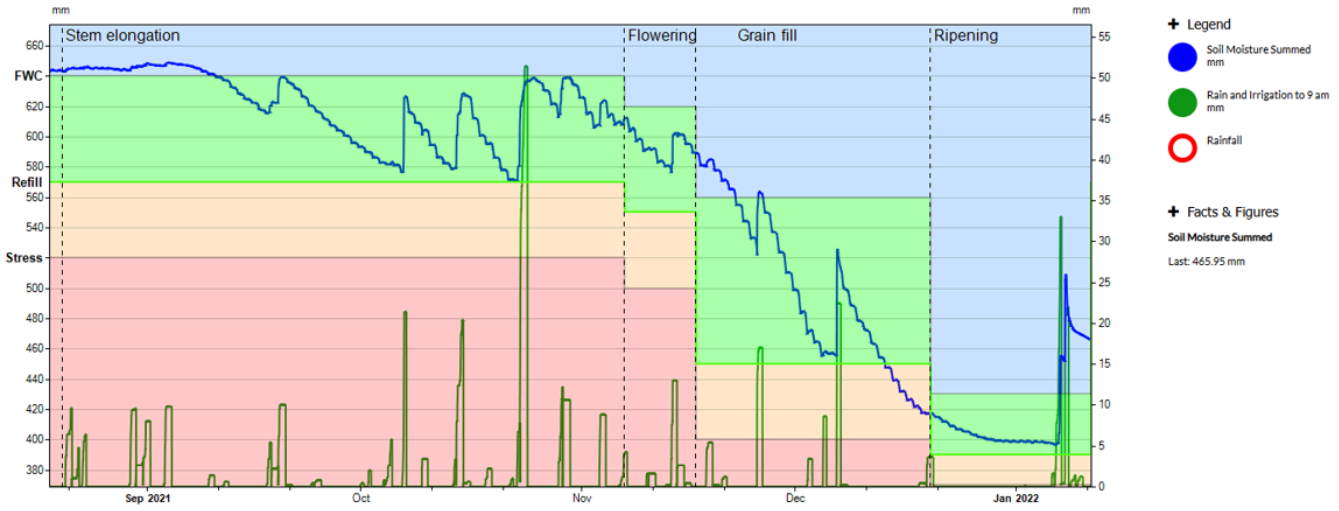


*Figure 2: A soil moisture graph demonstrating the ideal soil moisture (green zone) to keep summed soil moisture at the right levels for the phenological stage of a grain crop and how that needs to be adjusted throughout the season to reflect the water demands of the plant (Image source: Ag Logic).*

## When to stop irrigating (drying off)

The timing of your final irrigation depends on several factors, including crop type, soil characteristics, and system capacity. An irrigation end point is necessary to use all the water in the soil profile, as stopping irrigating does not stop the plant accessing water deeper in the profile.

### Estimating when to stop irrigating

- Use a soil moisture probe to give you data or dig holes deep enough to understand your soil profile moisture levels.
- Estimate the point at which a crop will stop using water (e.g. ripening in a grain crop) (Figure 3).
- Consider the decline in crop water use as it matures.
- From the end point, work backwards to estimate how much water remains available in the soil profile (Figure 3 - red line).
- Then calculate the amount of irrigation required to ensure the crop can fully access the plant-available water.

This approach helps optimise water use, support crop finishing and maintain productivity under varying seasonal conditions.

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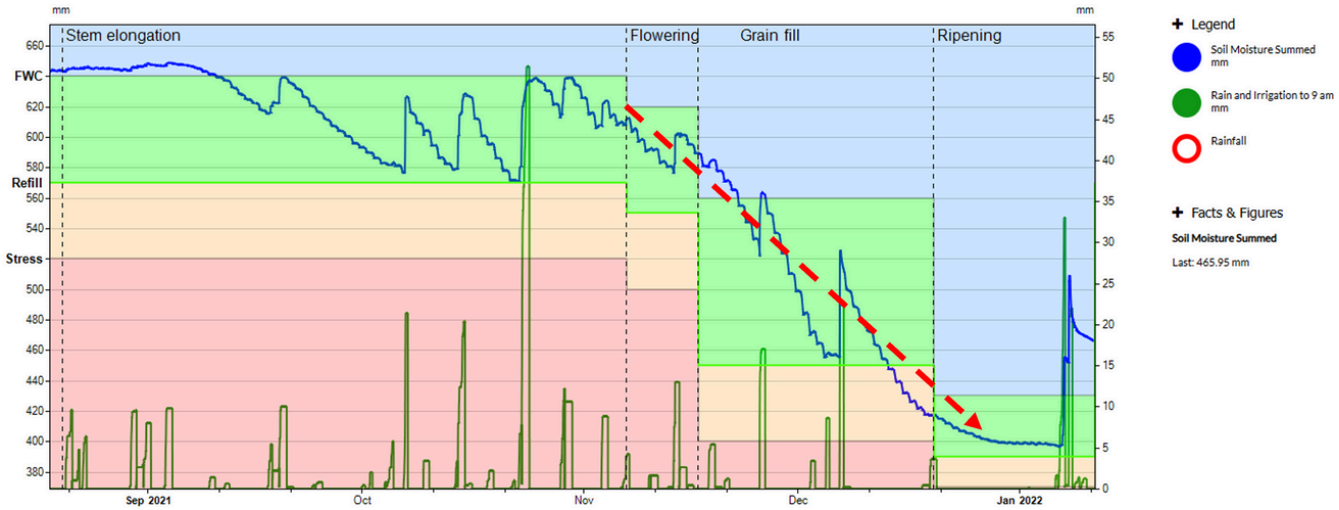


*Figure 3: A summed soil moisture graph illustrating how to estimate when to stop irrigating a grain crop (Image source: Ag Logic).*

## Irrigation strategies to overcome poor infiltration

Poor infiltration is one of the biggest barriers to efficient irrigation, especially as soils dry out. Soils can behave very differently when dry compared to when wet, and infiltration challenges are often worsened after extended dry periods. Common signs of poor infiltration include dry topsoil following irrigation, surface runoff, and uneven wetting (already wet areas become wetter, while dry zones remain unresponsive). These patterns signal that water isn't reaching the rootzone effectively.

## Top tips

**Managing soil structure**

- If possible, avoid management practices that have an impact on soil structure.

**Reduce instantaneous application rate**

- Change nozzles to a smaller size to reduce the flow rate or space the nozzles further apart to increase their footprint.

**Irrigate during or after rain**

- Rain pre-wets hydrophobic or crusted surfaces allowing for better infiltration of the irrigation.

**Double irrigation applications**

- Halve the amount and irrigate twice. The first irrigation helps the infiltration of the second irrigation.

**Irrigate at night**

- More effective due to reduced evaporation.

**For more resources to assist with optimising water use efficiency visit:**
https://www.tasfarmhub.com.au/water-use-efficiency-project/

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