

SOIL MOISTURE

SUMMER	High	Control summer weeds and prepare for autumn planting or autumn germination of pasture and forages.
	Moderate	Understand growth habits of summer active pastures, ie lucerne and benefits and potential short but productive growth responses to moisture.
	Low	Controlled grazing of residual dry growth of annuals to permit best potential response from autumn break. Maintain effective groundcover protection. Utilise stock containment areas. Prevent over grazing perennials.
AUTUMN	High	Monitor soil temperatures, understand autumn break averages for district and sow pastures at the appropriate time for risk and production.
	Moderate	Supplementary feeding until food on offer is at a level for optimum growth responses.
	Low	Utilise stock containment areas and plan for longer supplementary feeding as pasture growth responses will be slower with later autumn break. Plan options to increase pasture growth when rain/soil moisture occurs.
WINTER (EARLY)	High	If early break, assess pasture production to date and nutrient removal and consider further application of fertiliser to maintain production through winter and ensure the nutrients match available water for high production.
	Moderate	Revisit season potential. Consider options to increase winter growth when soil temperatures are suitable.
	Low	Start to understand the potential dominant climate driver in your region and learn the influence that it can have with rainfall and temperature. Use information sources such as The Fast Break
WINTER (LATE)	High	Monitor soil temperature and potential responses to nitrogen according to temperature thresholds. Consider boosting pasture production by applying urea, giberellic acid and consider future hay or silage harvesting opportunities.
	Moderate / Low	Identify dominant climate driver in your region and learn the influence it can have with rainfall and temperature. Consider seasonal outlook and potential impacts of your strategies on poor spring.
SPRING	High	Assess stock numbers to utilise spring growth. If calculations identify understocking, allocate paddocks for hay and silage. Tactically graze paddocks with excess growth. Target the early maturing paddocks, first (optimise the high protein/energy feed when available). Progress to the improved pasture later. Consider options for renovating pastures.
	Moderate	Early spring, if moisture conditions okay but seasonal outlook is a concern, a strategy to boost pasture production and maximise available moisture is to apply nitrogen so soil nutrition is not a limiting factor. Alternatively, consider options for dry season management.
	Low	Below average spring growth likely, so consider options to manage feed and stock early. Short spring looming with high reliance on spring rainfall to produce dry matter. Early weaning and other dry season management options.

TURNING DATA INTO KNOWLEDGE

Weather station and soil moisture probe network

Perennial Pasture Systems, VIC

PPS has a network of soil moisture and temperature probes in the upper Wimmera, upper Hopkins and Avon River catchments in central, western Victoria. The broad range of data, presented in real time, is helping farmers manage risks and increase profitability. The probes provide immediate readings of soil moisture and temperature at varying depths to assist in pasture and crop management.

PPS is adding more sites to the network through Wimmera CMA's Data Driven Drought Resilience program.

PPS has installed the probes with Crowlands Warrak and Winjallock Landcare groups and the support of Glenelg Hopkins, North Central and Wimmera CMAs.

The probes are linked to the Agriculture Victoria Soil Moisture Monitoring Sites information hub: <https://extensionaus.com.au/soil-moisturemonitoring/>



PERENNIAL PASTURE SYSTEMS

The Perennial Pasture Systems (PPS) group formed in 2007 to push the boundaries of perennial pasture research and provide information on productive pasture management to members.

PPS is a not-for-profit group based in central Victoria and the southern Wimmera with a membership base of more than 150 farms. Members are mostly from prime lamb and mutton production systems.



PPS paddock event, lucerne growth patterns.



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ROBERTS FAMILY

- > GLENLOFTY, VIC
- > 360HA
- > PRIME LAMB PRODUCTION,
PERENNIAL PASTURES
- > AAR 620mm

Tony and Sally Roberts farm on rising clay foothills and steep hill country at Glenlofty in the upper Wimmera catchment. The Roberts family hosts one of the PPS soil moisture probes, installed in 2018.

With climate predictions forecasting less rain and warmer temperatures, Tony is embracing the use of farm technology to support decision making that enhances their farm's ability to remain resilient and productive in dry times. Tony's main challenge is to increase pasture growth and availability in early winter and summer, where feed gaps are increasingly a climatic feature.



"We're faced with making decisions numerous times every day. Some of these are obviously bigger and they're greater risk and more significant than others. We use our gut and our head when making decisions.

"Gut feel is based on experiences and personal values, and then you use your head to support or dismiss it with facts, figures and calculations. I think of it like a set of scales really. When you add the information to either side of it, it eventually tips in favour of pursuing something or not pursuing it."

Tony uses the soil moisture probe data to track how much soil moisture is available at any given point and to become familiar with historical trending.

"The soil probe data provides me with some facts and figures to support my gut feel. Primarily, the probes have data on two of the biggest common determinants of pasture growth, being moisture and soil temperature."

Tony says they know that in autumn and winter, they will see soil moisture increase and fill, and in spring and summer, pasture growth draws this moisture out as the plants actively grow and the soil temperatures rise.

"This can be viewed like a battery charging and then discharging again."

WHEN TO DE-STOCK

When combining the soil moisture and temperature data with seasonal forecasting, Tony has been able to make informed decisions that benefit his business financially, while also protecting the farm's valuable soil asset.

"If we get a short spring, moisture can draw down really quickly. The plants start to get stressed and become reproductive earlier than normal and, as a result, nutritional feed quality decreases.

"Having a handle on your soil moisture reserves can help you make a decision to offload stock earlier."

He says this also allows them to retain groundcover which enhances rain readiness, protects the soil from erosion and reduces the time, stress and money involved in supplementary feeding of livestock.

WHEN TO SOW

Tony also uses the soil moisture probe data and seasonal forecasts to back his gut feeling to make the most of a full soil moisture profile to invest in late sowing of a perennial pasture and a summer forage crop. Both come with a significant financial outlay but when the timing works, they provide huge gains for filling the early winter and summer feed gaps.

"The probes provide very useful data that I use to support my decisions. With the extensive network we've got, even if they're not right on your place, you can still glean good data from that local information and knowing what the soil profiles are."

