RiskWi$e – Cropping decisions in a risky environment:

In-season Nitrogen Decisions Considering Opportunity and Risk

Source: GRDC

After several difficult seasons, 2026 has delivered a very different set of circumstances for grain growers across much of South Australia.

Strong opening rains, high levels of stored soil moisture and early crop establishment have created genuine yield opportunities. At the same time, fertiliser prices remain relatively high and seasonal forecasts are pointing towards an increased likelihood of a drier finish.

For growers making mid-season nitrogen decisions, the challenge is clear: how much should be invested in chasing yield potential while managing the risk of a less favourable spring?

Rather than trying to predict the season perfectly, the focus should be on making decisions that balance opportunity with risk.

A season full of opportunity

Much of the Central SA region has experienced one of the best starts to a season in recent memory. Good rainfall during late summer and autumn has provided valuable stored soil moisture and set crops up with strong yield potential. For many growers, the current season represents a significant change from the dry years experienced recently.

Importantly, some paddocks are also carrying valuable nitrogen reserves following previous dry seasons. Nitrogen that wasn't used by crops during those seasons has not necessarily been lost. Combined with mineralisation stimulated by summer rainfall and warmer soil temperatures, many growers are finding that there is more nitrogen "in the bank" than expected.

One of the strongest messages emerging this season is the importance of understanding starting nitrogen levels.

Deep soil testing across the region has revealed considerable variation between paddocks and soil types. Previous crop history, summer rainfall and mineralisation have all contributed to elevated levels of plant available nitrogen in many situations, particularly following legumes.

However, averages only tell part of the story. Sandy soils often contain substantially less available nitrogen than heavier soils, and differences within paddocks can be significant.

Knowing how much nitrogen is already available provides a much stronger foundation for decision making than relying on assumptions or blanket application rates.

Uncertainty – understanding what we know and what we don't

Good decision making starts by separating known information from uncertainty.

There are several things growers know with confidence. Soil moisture reserves are generally higher than average, crop establishment has been strong and some paddocks are carrying residual nitrogen following previous dry seasons. In many cases, soil testing has confirmed higher-than-normal levels of plant available nitrogen, mainly due to mineralisation that has occurred following late summer and autumn rainfall, and warmer soil temperatures.

What remains uncertain is how the rest of the season will unfold. Climate indicators are pointing towards an increased likelihood of a drier spring associated with El Niño conditions. However, forecasts are not guarantees and a wide range of seasonal outcomes remain possible.

Rather than trying to predict the future, the focus should be on understanding the probabilities and making decisions that provide favourable outcomes across a range of scenarios.

Defining yield potential

Estimating yield potential is one of the most difficult aspects of nitrogen management. Stored soil moisture has become a major contributor to yield potential this season and should not be overlooked. Even if spring rainfall is below average, stored moisture can help buffer crops against a tougher finish, provided root growth is not restricted by subsoil constraints.

Instead of aiming for one fixed yield target, growers should consider a range of possible outcomes.

Barry Mudge's example from Port Germein demonstrated this approach. Depending on how the season finished, yield outcomes ranged from around 2.5 t/ha under a decile 1 finish to 5 t/ha under a decile 9 finish.

Thinking across a range of seasonal finishes helps avoid two common traps: being overly conservative and leaving yield potential behind, or becoming overly optimistic and exposing the business to unnecessary downside risk.

What does El Niño mean?

Much attention has been given to developing El Niño conditions and the possibility of a drier spring. The Bureau of Meteorology encourages use of their seasonal forecast which incorporate many climate influences rather than just focussing on El Niño It is easy to misinterpret the brown colour on the maps as a forecast of no rain rather than a change in probabilities as shown in the map legend, (see map below). Clicking on the magnifying glass enables the user to enter a location and get the forecast spread across deciles for a single location. This shows that of the 100 computer runs, 71 have ended up with a drier than the median finish at Brinkworth, but 29 are wetter than the median.

Each of the 100 runs of the computer are valid and equally possible.

The current outlook may justify slightly more caution, but it is not a guarantee of a dry finish. This is frustrating for nitrogen decision making, however, RiskWi$e has developed a Nitrogen app where a decision maker can leave the chance of a dry or wet spring at 50:50 or adjust it based on their interpretation and trust in the forecast.

Nitrogen still pays – focusing on profit rather than maximum yield

Nitrogen decisions are inherently risky because the final outcome depends on rainfall and weather events that are yet to occur.

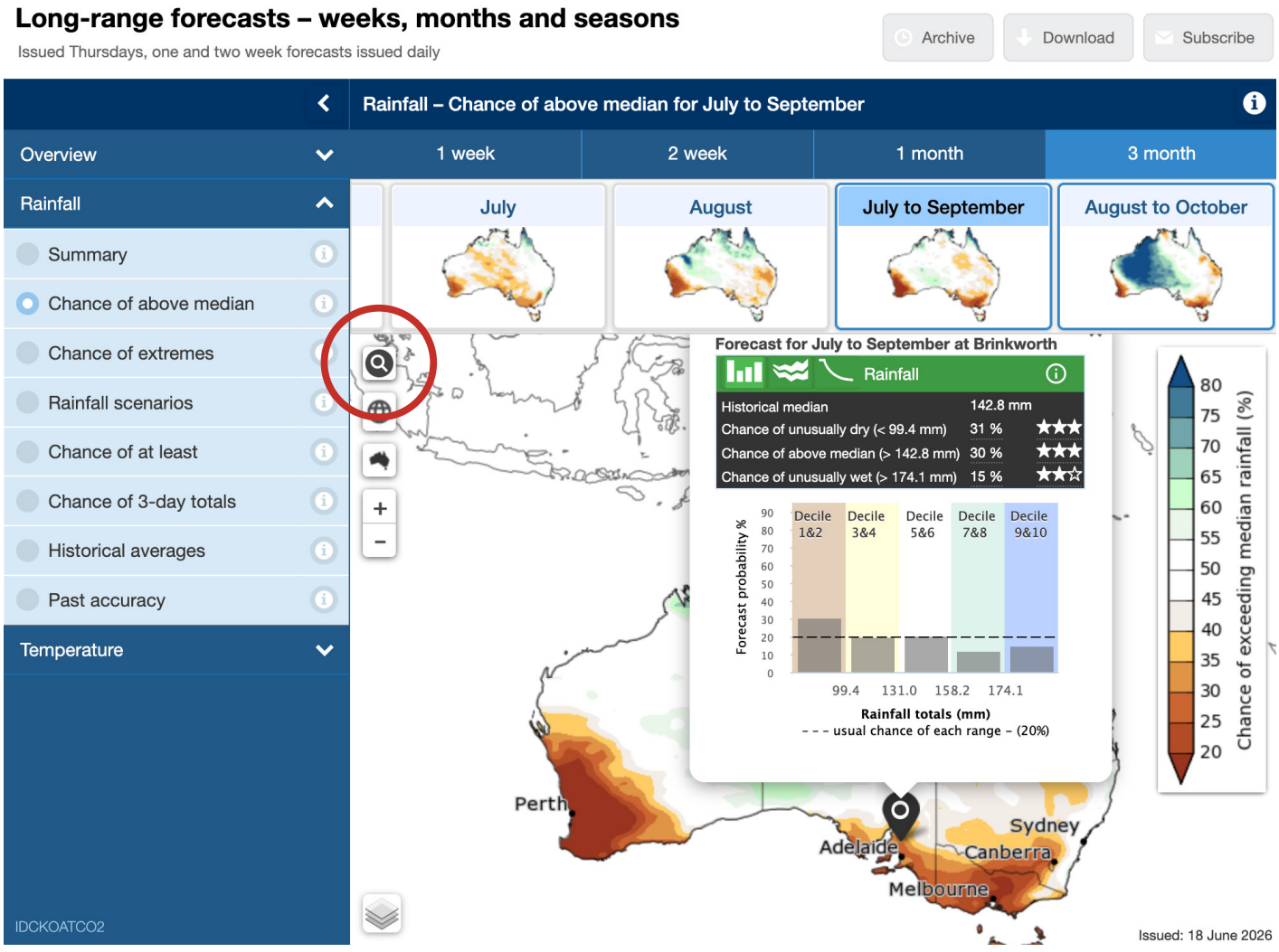
The key question is not, **"What nitrogen rate will maximise yield?"** but rather, **"What decision provides the best balance between opportunity and downside risk?"**

This shift in thinking sits at the heart of the RiskWi$e approach.

Nitrogen should be viewed as an investment rather than simply a cost. Like any investment, there are possible gains and losses. The objective is not to eliminate risk, but to improve the quality of decisions and increase the likelihood of favourable outcomes over time.

Where crops are already adequately supplied, additional nitrogen may simply add cost without increasing returns. Conversely, under-fertilising responsive crops can leave substantial profit on the table.

Despite higher fertiliser prices, nitrogen still provides attractive returns where crops are responsive. The economics depend not simply on fertiliser price, but on the likelihood that extra nitrogen will produce additional grain.



Where crops are already adequately supplied, additional nitrogen may simply add cost without increasing returns. Conversely, under-fertilising responsive crops can leave substantial profit on the table.

Economic responses also vary between crop types. Relative grain prices and crop nitrogen requirements influence returns, and in the current market environment crops such as canola and durum have generally offered stronger returns on nitrogen investment. Barley is also providing a stronger economic response than wheat in many situations.

	APW1	Canola Non GM	Canola GM	DR1	BAR1
Crop N requirement per 1t/ha grain (kg N/ha)	40	80	80	50	35
Grain price ($/T)	325	800	750	475	300
Urea price ($/T)	1200				
Return on investment (ROI)	3	3.8	3.6	3.7	3.3

Where nitrogen supply or application capacity is limited, strategic prioritisation between crops, paddocks and zones within paddocks will maximise overall returns.

Practical take-home messages

The 2026 season presents genuine upside opportunities, but those opportunities need to be managed carefully.

Growers are encouraged to:

- Base decisions on current season conditions rather than recent memories.
- Use soil testing and nitrogen budgets to understand available soil nitrogen and additional fertiliser requirements.
- Consider a range of yield outcomes rather than one fixed target.
- Focus on economic returns rather than maximum yield.
- Recognise that seasonal forecasts alter probabilities, not certainties.
- Continue reviewing decisions as more information becomes available.

Ultimately, improving decision quality is more important than trying to predict the season perfectly. The aim is to get it more right, more often - consistently making better decisions that balance opportunity with risk and improve long-term profitability.

Key mindset:

Think in **probabilities, not certainties**

Focus on **profit, not yield**

Aim to be **"more right, more often"**

Useful resources

Fast Graphs for Slow Thinkers – N budgeting across deciles
N FGFST V3 - Water, Soil N & Fert Limited Yield

Fast Graphs for Slow Thinkers – N budgeting across deciles: The App explained
Barry & Peter talk about the N app - YouTube

SARDI WUE spreadsheet
Contact Dane.Thomas@sa.gov.au or Peter.Hayman@sa.gov.au

CliMate app
CliMate: Home Page

Bureau of Meteorology
Southern hemisphere monitoring

GRDC – Local climate tool – How the key climate drivers (ENSO and IOD) affect out seasons
Local Climate Tool

ABC article on BoM declaring El Nino on 16th June 2026
El Niño declared by BOM and it could become the strongest on record - ABC News

Yield Prophet Lite
yieldprophet.com.au/yplite/

CSIRO RiskWi$e website

RiskWi$e
– the National Risk Management Initiative

RiskWi$e is GRDC's flagship **National Risk Management Initiative**, a five-year, $30 million investment running from 2023–2028 that aims to help Australian grain growers **strengthen decision making under risk and uncertainty for enduring profitability**.

The program helps growers understand the trade-off between **potential reward and downside risk** across a range of farm management decisions. **We're helping growers get decisions 'more right more often'.**

This initiative was delivered by the South Australian Central - Action Research Group

AGRILINK AGRICULTURAL CONSULTANTS · BARRY MUDGE CONSULTING · TRENGROVE CONSULTING