Northern Australia Climate Program

NACP case study

Arcadia Valley, Queensland

May 2024

Producers: Alton, Elizabeth, Jonathon & Samuel Winter

Property: Kaimanna

Location: Arcadia Valley, Qld

Property size: 4,040 ha

Enterprise: Beef breeding

Land type: Brigalow scrub country

Average rainfall: 603 mm

Soil type: clay loam to loamy clay

Main pastures: Introduced pasture-legume mix of Biloela/Gayndah buffel, stylo, panics, Digit grass, Desmanthus & burgundy bean plus Leucaena

Key message: integration of climate information into decision-making processes can help to build a more sustainable and resilient business

Building resilience to rainfall variability in the Central Highlands

Alton & Elizabeth Winter and their sons Jonathon and Samuel run a Hereford beef breeding enterprise on their 10,000 acre property, Kaimanna, at the southern end of Arcadia Valley, in Queensland's Central Highlands region.

Kaimanna is Brigalow scrub country with clay loam - loamy clay soil types. Pastures are predominantly Biloela/Gayndah buffel, with a pasture-legume mix of Stylo, panics, Digit grass, Progardes® Desmanthus, and burgundy bean. The Winters have also recently planted about 200 hectares with Leucaena.

Average annual rainfall on Kaimanna is 603 mm and is influenced by its proximity to the Carnarvon Range. Alton also says that they have four rain gauges across the property and that these can show over 25 mm rainfall variation in one rainfall event and in mean precipitation over a rainfall period, which adds to the challenges of planning and management.

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About NACP

The Northern Australia Climate Program (NACP) is a partnership between the Queensland Government (through the Drought and Climate Adaptation Program), Meat and Livestock Australia and the University of Southern Queensland (UniSQ) to help red meat producers in northern Australia to manage drought and climate risks. A core component of the program is the 'Climate Mates' initiative, which employs and trains local climate extension experts who are connected through the program to leading climate science researchers at UniSQ, the Bureau of Meteorology (BoM) and UK Meteorological Office.

The NACP Climate Mates have two key roles: to 'translate' the best available climate information for the local regional context to help producers make informed decisions; and to pass feedback from producers back to researchers to ensure research and product development is targeted to producer needs.

The Climate Mate for Southern Central Queensland, Elsie Dodd, says working with producers like the Winters creates a lot of job satisfaction. The Winters are proactive in their decision making and use many tools, including climate tools, to help inform decisions. Relying too heavily on one aspect of decision making can be risky so the way the Winters balance the climate information available with their stocking rates, forage budgeting and other available information is admirable. As a family run operation with good succession in the wings, Kaimanna is in great hands well into the future.

Climate Awareness & understanding

The Winters first engaged with NACP in 2019. They had always previously kept an eye on the Southern Oscillation Index (SOI) for seasonal weather information, but found it consistently lagged by about two weeks. Since participating in the NACP training and with follow up support from Elsie, the regional NACP Climate Mate, the Winters say they have become more skilled in interpreting a number of climate drivers relevant to their location and are now both more confident in the forecasts and in their ability to interpret the information provided by a forecast. They now actively use short- and longer-term forecasts when planning and making decisions.

The Winters have long felt that their proximity to the Carnarvon Range, part of the Great Dividing Range that extends across eastern Queensland, plays a role particularly in the reliability of weather information such as the BOM's radar rainfall mapping in their region. They say that information from Roger Stone, a well-known and well-regarded expert in seasonal climate forecasting and its use in agricultural decision-making, confirmed their

perceptions, bolstering their confidence in their understanding of the area's forecasting nuances. While they feel this adds another layer of uncertainty to climate information for their region, they also say that local knowledge helps their interpretation of forecast information. For instance, a key indication of annual seasonal patterns on Kaimanna are the early summer storms that roll in off the Carnarvons,.

For the Winters, '*there's always a challenge to find the best information that's accurate for our location, due to the greyness of the area with the Carnarvon ranges. However, we now watch more drivers and have built a more solid confidence in the forecasts and in our ability to interpret the information provided by the forecasts.*'

The Winters now closely monitor several climate drivers relevant to their location in southern central Queensland, including El Niño-Southern Oscillation (ENSO), Madden-Julian Oscillation (MJO), Indian Ocean Dipole (IOD), and Southern Annular Mode (SAM). They say they also find the Climate Mate regional calendar and monthly emails from the NACP extremely useful.

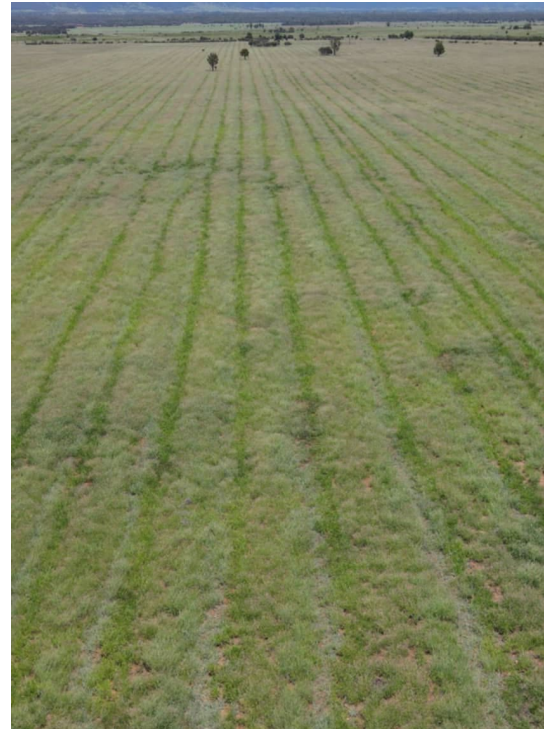### Climate risk decision-making

The Winters take a comprehensive approach to weather and climate forecasting, accessing various information sources such as Oz Forecast, Weather Zone, Windy, Elders, a number of social media pages, and official meteorological services, and using both short and long-term forecasts, including seasonal predictions.

The Winters says they regularly use short-term climate forecasts in their operational decision-making, adjusting their stocking rates, the timing of weaning, hay purchases, insect and pest control, weed management, and supplementary feeding strategies based on the forecast outlook. They time their weaning based on the probability of winter rain to avoid having cattle in wet yards. Depending on forecast conditions and the cattle market, they will decide on the proportion of weaners that they either sell, fatten or retain as breeders.

They also consider destocking any surplus dry cattle by the end of February if there's been a lack of spring and summer rain. As an example, the end of 2019 was exceptionally dry, following a total of just 277.5 mm for the calendar year. While the Winters say they rarely supplementary feed, they held onto a mob of steers in the hope of getting a good sale price at a heavier weight given rain was forecast for late summer and autumn, 2020. However, when, by late December, it hadn't rained, they made an early decision to sell the steers to save their pasture and land condition.

Climate forecasts also inform their more strategic decision-making such as shifting cattle to higher feed paddocks before anticipated wet summers, undertaking blade ploughing or dam building in dry seasons, and planting improved pasture species when suitable conditions are forecast. This was the case in spring 2022, when, with the seasonal forecast for a wet spring/summer, the Winters decided to plant around 200 hectares with Leucaena.

On the other hand, the Winters say they do not strictly adhere to the green date recommendations for their region. Instead, they rely on their generational knowledge of local weather patterns and have their own decision dates in place that take into account on-ground conditions and rainfall, supported by forage budgeting through the summer months to April and then again through winter and spring.

Establishing Leucaena

Northern Australia Climate Program

Triple bottom line

Enhanced understanding and use of climate information, facilitated through the NACP, has given the Winters greater confidence in their decision-making and has had significant positive impacts on the triple bottom line of their beef breeding business.

Strategic decisions based on seasonal forecasts, like establishing *Leucaena*, have enhanced their perception of the reliability of climate information and its value in their business operations. The Winters say that *Leucaena* can be difficult to establish if the climate conditions aren't just right, and that the establishment period was quite stressful as it is a costly investment. They add that there's always a risk that forecast outcomes do not align with reality, and that it can be challenging when financial losses are incurred when anticipated rainfall does not eventuate.

Environmentally, their improved understanding of climate information has allowed the Winters to better anticipate upcoming seasonal conditions, which, in combination with monitoring of the amount and quality of forage available, helps them to make early decisions about stocking rates and grazing pressure. This facilitates pasture regeneration and recovery, provides greater soil cover and erosion control, and

maintains better land condition. Further, the Winters say that the decision to establish *Leucaena* will have a range of production and environmental benefits, lifting the condition and post weaning weights of dry cattle, further reducing grazing pressure through shorter grazes and improving pasture condition due to Leucaena's nitrogen-fixing properties.

They also say that taking climate forecasts into account in their decision-making has resulted in economic benefits such as reduced labour costs, increased cash flow through better sale prices, and savings on feed and stock purchases. Timely decision-making based on weather predictions has also minimized transportation costs and improved animal welfare by reducing disease risks and exposure to adverse weather conditions, while tailoring their marketing based on climate forecasts has enabled them to further optimise cash flow through increased sales and improved market positioning.

Overall, the Winters say that the integration of climate information into their decision-making processes has helped them to build a more sustainable and resilient business, with a range of tangible benefits, while also fostering their understanding and appreciation of the value of climate forecasting tools.