

# Prime lamb production in southern Australia



Photo: NSW DPI

Seasonal climate forecasts were found to improve the profitability of prime lamb production systems in southern Australia by between \$0 and \$54/ha by improving stocking rate decisions at key times.

## How can seasonal climate forecasts provide economic value to farming enterprises?

Seasonal climate variability is a key source of year on year variability in farm profitability. Seasonal climate forecasts provide opportunities for farmers to better match farm decisions with upcoming climatic conditions. These forecasts can provide economic value if they change management decisions to capitalise on opportunities in good seasons or minimise losses in poor seasons.

While seasonal climate forecasts help manage production risks associated with climate variability, they do not remove the impact of a particular climatic event. For example, a skilful forecast can reduce uncertainty about drought occurrence, but drought influences productivity and profitability however well farmers are able to anticipate it.



Photo: NSW DPI

## Sheep production in southern Australia

The core production goal of prime lamb producers in southern Australia is to convert feed into animal weight gain. Farmers aim to match the feed requirements of the flock to the availability and quality of feed, particularly pasture, to optimise production.

An important management decision is whether to sell lambs in November or to hold lambs and sell them before March. This decision is a trade-off between selling lighter lambs in November with lower feed costs versus selling heavier lambs later with potentially higher feed costs.

A skilful seasonal climate forecast may influence this decision due to the relationship between rainfall and pasture growth and therefore animal weight gain.

## Can seasonal climate forecasts improve prime lamb production systems?

A case study prime lamb enterprise located at Holbrook in New South Wales was used to test how a seasonal climate forecast could help farmers make a decision about how many lambs to sell in November and

how many to carry to be sold prior to the beginning of March.

A decision model chose between 11 possible stocking rate strategies (sell 0%, 10%, ..., 100% of lambs) with and without a climate forecast. Increasingly skilful climate forecasts provided greater levels of certainty about the occurrence of one of three climatic states (dry, average and wet), allowing farmers to choose more profitable stocking rates.

### Case study at a glance: Southern prime lambs



**Site:** Holbrook, New South Wales

**Decision:** Stocking rate – how many lambs to sell

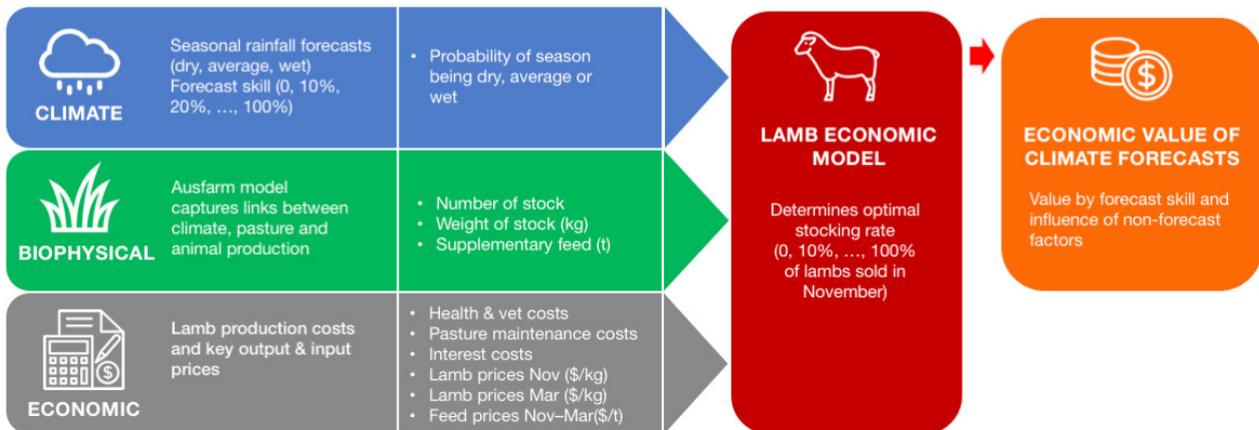
**Decision time:** November

**Trade-off:** Sell lambs in November at lower weights or carry through to higher weights but potentially at a cost of increased supplementary feed

**Forecast:** Rainfall (November–February)

**Other drivers:** Initial pasture availability; lamb price; supplementary feed price

**Forecast value:** \$0–\$54/ha



Inputs to the model used in this case study to assess the economic value of climate forecasts for prime lamb production in southern Australia.

## Key findings

Initial pasture availability in November was the major determinant of the most profitable stocking rate strategy. With low initial pasture availability, skilful forecasts did not result in a change in the stocking rate relative to the without forecast decision. With poor pasture conditions in November, rainfall received in each of the different climate states was insufficient to influence pasture growth to change the stocking rate decision.

Lamb prices in November and supplementary feed prices were also found to be important determinants of forecast value. Low lamb prices led to a decision to hold all lambs with skilful forecasts offering little value. In this situation, selling heavier animals later, absorbing higher feeding costs, was more profitable than selling lambs at lighter weights at low prices. In contrast, high lamb

prices in November tended to lead to a decision of selling lambs to take advantage to high lamb prices while also reducing supplementary feed costs associated with holding onto lambs for later sale.

Seasonal climate forecasts were found to have more value when initial pasture availability was higher and forecasts were for either dry or wet. The most valuable forecasts led to decisions that ran contrary to the direction of production conditions. For example, a dry forecast when pasture availability was high triggered greater lamb sales in November which was different to the decision without a forecast.

While the value of seasonal climate forecasts increased as forecast skill improved, the relationship between skill and value was heavily influenced by initial pasture and market conditions.

## When can seasonal climate forecasts have economic value?

For seasonal climate forecasts to have economic value:

- the climate for the months relevant to the decision must be historically variable, and that variability must translate into variable production and economic outcomes
- production (e.g. current soil moisture or standing pasture) and market (e.g. commodity prices or supplementary feed costs) conditions are at a point where decisions are sensitive to climate forecast information.
- the seasonal forecast must have sufficient skill and timeliness for the decision to be changed.

**Important:** The results for other sites, systems and decisions will differ from those in this case study. However, it is likely that the general findings around the circumstances for which forecast value was found will provide insights for the use and value of seasonal climate forecasts for southern producers more generally.

This fact sheet is a summary of the report: Darbyshire, R., Crean, J., Broadfoot K., Simpson, M. and Cashen, M. (2018). Valuing seasonal climate forecasts in Australian agriculture: Prime lamb case study. New South Wales Department of Primary Industries.