



Growing irrigated lucerne in New South Wales: preparing for a changing climate

Irrigated lucerne growing regions in NSW are likely to experience a minimal decrease from high to moderate climate suitability by 2050 under both emissions scenarios.

Developing industry-informed climate planning information

Climate change is altering the growing conditions for many agricultural commodities across NSW. Primary producers need evidence-based information about the changing climate, and the risks and opportunities it may bring.

Through its Vulnerability Assessment Project, the NSW Department of Primary Industries is enhancing the resilience of our primary industries by providing information and data to help the sector better plan for, and respond to, climate change. The project has assessed climate change impacts for extensive livestock, broadacre cropping, marine fisheries, forestry, horticulture and viticulture, and important cross-cutting biosecurity risks associated with these industries to inform sound planning, risk management and adaptation decisions.



Lucerne in NSW

Lucerne is a legume introduced into Australia over 200 years ago as a dryland forage crop for grazing. Since the 1970s, more than 50 lucerne varieties have been bred for Australian conditions.

Lucerne is now produced for seed, hay, silage and pasture and exported as pellets. The drought tolerance of lucerne means it can provide out-of-season fodder, ground cover and mixed pasture stability to reduce erosion, and can act as an effective firebreak.

The main production areas for irrigated lucerne in NSW include the river flats of the Murray, Murrumbidgee, Lachlan, Macquarie, Hunter and Peel Rivers.

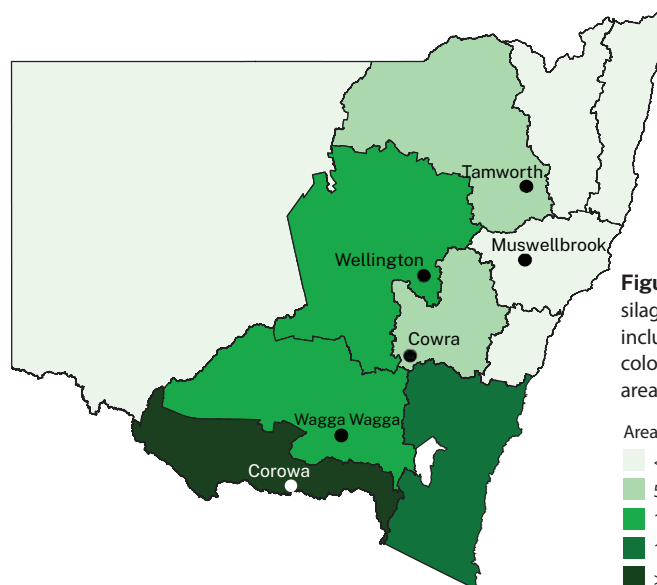


Figure 1. Major NSW silage growing regions, including the lucerne. Darker colours represent larger areas of silage grown.

Area of Silage (ha), including lucerne
< 5,000
5,000–10,000
10,000–15,000
15,000–20,000
> 20,000

Climate and the lucerne industry

Irrigated lucerne growing regions in NSW are likely to experience a minimal decrease from high to moderate in climate suitability by 2050 under both emissions scenarios.

Climate risks and opportunities include:



Increased mean temperatures may have a minimal negative changes along the Great Dividing Range. This region may also be impacted by an increase in hot days with maximum temperatures exceeding 30°C (*high confidence*).



Increased irrigation water requirements are expected by 2050. The increase is likely to be greatest under the high emissions scenario and in southern NSW (*high confidence*).

Climate impacts: what to expect

Establishment is likely to experience decreased climate suitability due to more days over 30°C (*high confidence*). Frost occurrence is likely to decrease across the east of the state (*high confidence*).

Harvest is likely to maintain high or very high climate suitability. However, there may be a higher risk of damage due to hot days over 30°C (*moderate to high confidence*).

Irrigation water requirements

The irrigation water requirements of lucerne are likely to increase, especially under the high emissions scenario (*moderate to high confidence*).

Adapting to the changing climate

The irrigated lucerne industry may need to be more efficient with water storage and water use by changing irrigation practices or adopting new technologies.

Expanding growing regions to parts of NSW with lower irrigation water requirements, such as the eastern upland regions, could be helpful.

Planting strategies that avoid hot days, or the development of varieties of lucerne that are tolerant to heat damage, may help adapt to future climates.

Methodology and data

A winter-active irrigated lucerne, similar to SARDI 7, was modelled with establishment and harvest assumed to be occurring simultaneously in adjacent paddocks.

Climate projections were sourced from Climate Change in Australia's 'Application Ready Data'. This dataset is comprised of projections from an ensemble of 8 global climate models, each presenting a plausible future climate. The models differ in their projections, giving rise to uncertainty in our modelling which is reflected in the confidence statements given in brackets in the text. Care should be taken when interpreting these results.

The Vulnerability Assessment Project is intended to highlight potential industry- or regional-level changes. Intermediate and high emissions scenarios were used in the assessments (RCP4.5 and RCP8.5), but these are not the only future scenarios possible. The inclusion of climate variables important to the commodities production was based on published research, expert knowledge and data quality and availability.

FOR MORE INFORMATION

Please get in touch with vulnerability.assessment@dpi.nsw.gov.au

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