



Mixed cropping zone grazing systems in New South Wales: preparing for a changing climate

Climate change is likely to offer both opportunities and challenges for mixed cropping zone grazing systems in NSW by 2050.

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 biosecurity risks associated with these industries to inform sound planning, risk management and adaptation decisions.



Mixed cropping zone grazing systems in NSW

The mixed cropping zone (MCZ) represents the typical pastures of mixed livestock cropping enterprises in the wheat-sheep belt of NSW. This is located west of the high rainfall zone regions and east of the rangelands in the Western Division of NSW (Figure 1). Species typically found in this system are sown annual legumes, lucerne (a perennial legume) and native grasses, along with annual grazing crops such as wheat, oats and other broad-leaf forage species used in phased farming systems.

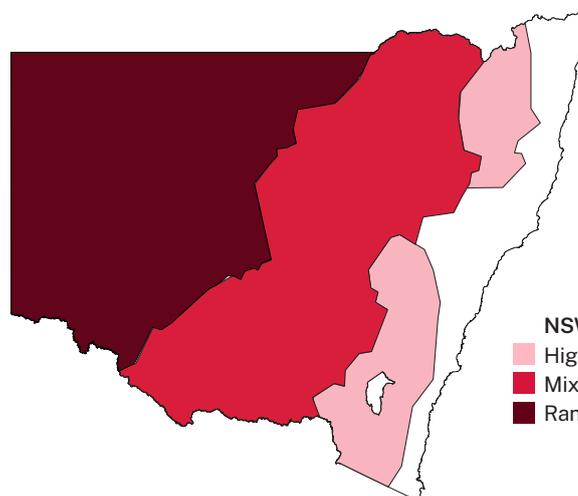


Figure 1. Map of NSW grazing systems areas used in the Vulnerability Assessment Project.

NSW Grazing Systems
■ High Rainfall Zone
■ Mixed Cropping Zone
■ Rangelands

Climate and mixed cropping zone grazing systems

Overall, the climate suitability in mixed cropping zone grazing systems are likely to experience a slight decline in suitability by 2050, under both emissions scenarios.

Climate change risks to the mixed cropping zone grazing systems include:



Changes in temperature and rainfall are likely to decrease suitability for the mixed cropping feedbase in spring, summer and autumn.

Climate impacts: what to expect

Autumn is likely to have a minimal to moderate decrease in climate suitability across mixed cropping zone grazing systems under both emissions scenarios (*moderate to high confidence*). This is driven by increased temperatures and variable rainfall.

Winter ability to meet animal requirements will likely remain similar to what has been historically experienced in the mixed cropping zone grazing systems (*moderate confidence*).

Spring ability to meet animal requirements is expected to have a minimal to moderate decrease in suitability by 2050 in the western mixed cropping zone (*moderate to high confidence*).

Summer is likely to have a minimal decrease in ability to meet animal requirements across the mixed cropping zone under a high emissions scenario (*moderate confidence*).

Adapting to Climate Change

Adapting to increased temperatures and variable rainfall

Using tropical pasture species and increasing soil fertility have been identified as key adaptation strategies for industry. Changing stocking rates and the joining time of stock could also be implemented. This will allow for periods of peak feed demand to be better aligned with periods of peak feed supply.

Methodology and data

The ability of this pasture system to meet the feed intake requirements of livestock was analysed using a winter lambing system with a 5.2 DSE/ha stocking rate, considered representative of livestock enterprises employing grazing systems in the mixed cropping zone.

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. 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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