



Serrated tussock: a decreasing biosecurity risk under a changing climate

NSW may become less suitable for serrated tussock growth under a changing climate. This may present opportunities to reinvigorate the number, diversity and quality of pasture species in NSW pastoral ecosystems.

Developing industry-informed climate planning information

Climate change is altering the biosecurity risks 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 increasing 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 determined climate change impacts for extensive livestock, broadacre cropping, marine fisheries, forestry, horticulture and viticulture, and important cross-cutting biosecurity risks to inform sound planning, risk management and adaptation decisions.



Serrated tussock in NSW

Serrated tussock (*Nassella trichotoma*) is a perennial, drought-resistant grass that invades cool-season and temperate grasslands. It can be difficult to control due to its high seed production, wind dispersal, longevity and tolerance to drought and low-nutrient soils.

Serrated tussock affects pastoral and threatened grassland ecosystems, endangering native and agricultural animals, plants and landscapes. It affects the productivity and palatability of pastures, reducing the number of stock that can be supported. It also contaminates meat, hides and wool. The cost of controlling serrated tussock infestations in southern and central NSW is estimated to exceed \$100 per hectare¹.



Figure 1. Regions of serrated tussock infestation in NSW (yellow area). Locations indicate sites associated with observations.

¹ Millar, G., Simmons, A., Behrendt, K., Simpson, M. and Badgery, W. (2016). Determining the value of pasture to limit serrated tussock invasion. Unpublished report. New South Wales Department of Primary Industries, Orange. 99 pp.

Climate and serrated tussock

Overall, the impacts of serrated tussock by 2050 under a changing climate in NSW are projected to decrease in all seasons. Changes in climate suitability are likely to occur across both stages of the serrated tussock life cycle.

Climate risks likely to change the occurrence and spread of serrated tussock include:



Warmer temperatures will likely decrease the climate suitability for serrated tussock growth, which may lead to fewer infestations in NSW.

Climate impacts: what to expect

Seedlings

(plants before flowering)

- **Decreased climate suitability** in the region in all seasons (*low to high confidence*).
- **Increased climate suitability** in the region in winter (*low to high confidence*).

Reproductive growth

- **Decreased climate suitability** in the region in summer (*low to high confidence*).
- **Maintained historical climate suitability** in the region in autumn, winter and spring (*low to high confidence*).

Impact on key NSW primary industries

There are likely to be fewer serrated tussock infestations, resulting in increased meat production and improvements in the quantity and quality of wool. Grazing animal health will improve, and fire risk and intensity will reduce with decreasing tussock occurrences. Adverse impacts on native flora, fauna and ecosystems will also decrease with fewer tussock infestations.

Increased investment and a focus on containment and eradication will help prevent further spread and ensure serrated tussock does not become established in threatened or protected ecosystems in NSW, such as the Kosciuszko National Park.

Methodology and data

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. Low confidence in the projected changes due to differences between the models is noted 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 each biosecurity risk 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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