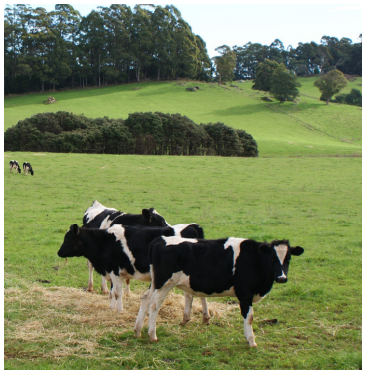
DAIRY PRODUCTION



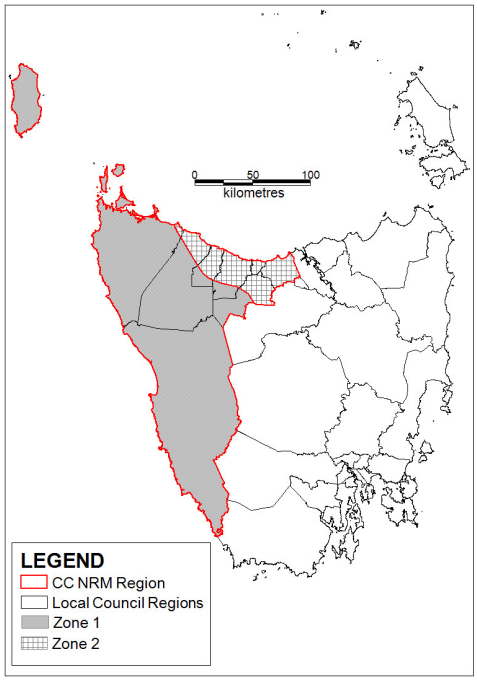
VULNERABILITY RATING

(Low— High)

PROGNOSIS

Pasture production will benefit from earlier spring growth and warmer weather. The resilience of pasture and the extensive opportunities for adaptation to maximise pasture production under a changing climate results in the dairy industry being well equipped to manage the projected changes in climate and associated effects.

THE FUTURE OF DAIRY IN THE CRADLE COAST REGION



The dairy industry in the Cradle Coast region is the highest grossing agricultural industry in the region and accounted for approximately 61 per cent of Tasmania's milk production in 2010-11[1]. Dairy farms in the region are spread from King Island to the far north and central North West.

The entire Cradle Coast NRM region is projected to have an increase in temperature of 2.6 to 3.3°C, which is similar to the rest of the state[2]. Changes in rainfall, however, will vary across the region. In zone 1(Figure 1) rainfall is expected to increase up to 20% in winter and spring, and decrease by 10-20% during summer and autumn. In zone 2 there will be an increase in summer and winter rainfall by up to 10% and a slight decrease in the spring however little change is expected during autumn[2].

Figure 1. Cradle Coast NRM region depicting Zones 1 and 2.

[1] Caboche et al 2013
[2] Holz et al 2010

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Pasture in the dairying region of the North West is predominately a sward of perennial ryegrass (*Lolium prenne*) and white clover (*Trifolium repens*), and is commonly managed with fertiliser inputs and irrigation[2].

Pasture production in the region is projected to be relatively resilient with increases in growth occurring until 2050[3]. A study of the Smithton region, utilising the pasture growth model DairyMod[4], indicates that yields of annual pasture are expected to increase to the year 2050 resulting from an increase in late winter and spring pasture growth[3] (Figure 2).

After peaking in 2050, yields decrease slightly by 2085 due to a decline in summer and autumn yields[3]. This decrease can be attributed to the increase in mean temperature from the baseline period (1971-2000)[3].

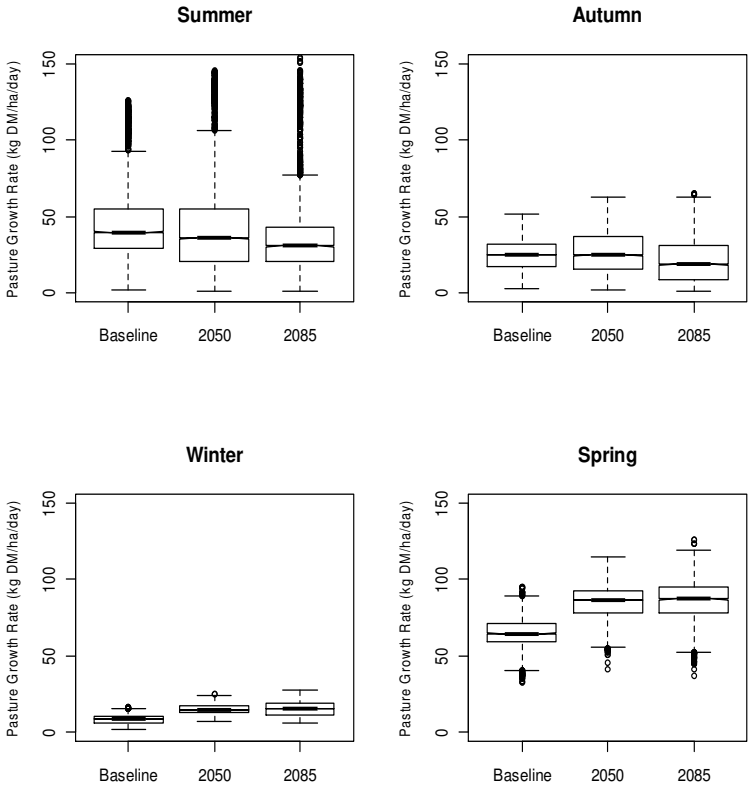

Figure 2. Seasonal differences in simulated pasture growth rates for the period of 1971-2000, 2036-2065 and 2071-2100 shown as box plots (median, upper and lower quartiles, whiskers show maximum and minimum values). Source: Phelan et al (2014).

ADAPTATION OPTIONS FOR DAIRY FARMERS

Spring growth is projected to begin earlier potentially giving farmers opportunities to grow more pasture during this time. In making the most of this opportunity farmers could make management changes including:

[3] Phelan et al 2014
[4] Johnson et al 2008

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⇒ Adjustment of stocking and calving rates to match feed supply and demand.

⇒ Increasing forage conservation during the spring to cover summer shortfalls.

⇒ Prepare for increased demand for nutrients, including nitrogen fertiliser.

⇒ Manage water accordingly. However, water demand for pastures in the short-term is projected to remain similar regardless of the yield increase. While longer dry spells resulting in drought conditions are projected to increase[2].

Towards the end of the 21st Century, increasingly higher temperatures are expected to begin to have a negative impact on the yield of ryegrass. After this time farmers will need to look at other options to meet feed demands during the summer. Possible adaptations for the long term include;

⇒ Changing to better adapted cultivars to give higher yields.

⇒ Changing to alternative pasture species such as deep rooted C_3 perennial and the inclusion of C_4 pasture species.

⇒ Exploring potential for landuse change, particularly in regions currently limited by temperature.

⇒ Increasing capacity to capture runoff as drier summers place additional pressure on irrigation systems.

⇒ Providing shade and cooling to combat heat stress on livestock.

It is expected that a combination of adaptation strategies will work best and that there will be overlap between the benefits of adaptation to various agricultural enterprises.

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REFERENCES

Caboche T, Martin P, Curtotti R, Corrie K, Frakes I, 2013, Agriculture, Fisheries and Forestry in the West and North West region of Tasmania 2013, ABARES About my region 13.46, Canberra, March. CC BY 3.0.

Holz GK, Grose MR, Bennett JC, Corney SP, White CJ, Phelan D, Potter K, Kriticos D, Rawnsley R, Parsons D, Lisson S,Gaynor SM & Bindoff NL 2010, *Climate Futures for Tasmania: impacts on agriculture technical report*, Antarctic Climate and Ecosystems Cooperative Research Centre, Hobart, Tasmania.

Johnson IR, Chapman DF, Snow VO, Eckard RJ,Parsons AJ, Lambert MG & Cullen BR 2008, 'DairyMod and EcoMod: biophysicalpasture-simulation models for Australia
and New Zealand', *Australian Journal of Experimental Agriculture*, vol. 48, pp.621-631

Phelan, D., Kemmerer, E., and Parsons, D., 2014, Planning for climate change: spatial interpolation of pasture yields in north-west Tasmania, Cradle Coast NRM.

Image: E Kemmerer, Cradle Coast NRM

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