How will agriculture in NZ be impacted by climate change?

Andrew Tait
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Latest climate projections for NZ

Source: Our Future Climate NZ – https://ofcnz.niwa.co.nz
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Latest climate projections for NZ

Change in Number of Annual Hot Days Between 1995 and 2090

Change in Number of Annual Frost Days Between 1995 and 2090

Hot Days

Frost Days

RCP8.5 (high emissions)

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Source: Our Future Climate NZ – https://ofcnz.niwa.co.nz
Latest climate projections for NZ

- 2011 report for MPI, on the likely effect of climate change on drought in New Zealand (Clark et al.)

- New Deep South Challenge project underway to update these projections, based on NZDI
Modelled agricultural impacts

**APSIM** simulated climate change impact on **silage maize yields** for end-of-century climate (2080–2099, RCP 8.5 using the HadGEM2-ES climate model) and the effect of adapting genotypes and sowing dates across New Zealand’s arable lands.

Results from CenW modelling indicate that climate change will have a **positive impact on** *P. radiata* productivity. Increased atmospheric CO₂ enhances growth and helps compensate for other potentially negative aspects of climate change.
Modelled agricultural impacts


**Pasture Production**

2081-2100

(a) Without CO₂ Fertilisation Effect

(b) With CO₂ Fertilisation Effect

*Biome-BGC* model ensemble for percent change in *annual average total pasture production* with constant (a) and variable (i.e. increasing) CO₂ concentration for sheep/beef and dairy pastures (RCP 8.5).
Modelled agricultural impacts


Haywards Kiwifruit

With hydrogen cyanamide

Without hydrogen cyanamide

RCP8.5 (high emissions)
Some ongoing impacts and adaptation research projects

Focus of the project:
- economic
- social
- biophysical

Topic:
- Production
- Impact on the environment

SLMACC Future low emission options
SLMACC adaptive pathways
DSC-OLW CC impacts on LUS
PFR discovery project

‘Project map’ courtesy of Anne-Gaelle Ausseil, MWLCR
Thank you

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