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Climate Change Commission

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Tēnā koe Climate Change Commission,

DairyNZ welcomes the opportunity to submit evidence for the Climate Change Commission's 2026 National Climate Change Risk Assessment (NCCRA). Our evidence provides insights into the risks and opportunities a changing climate presents for New Zealand's dairy sector.

DairyNZ is the industry organisation that represents all New Zealand dairy farmers. Our purpose is to progress a positive future for New Zealand dairy farming. DairyNZ is focused on helping farmers build profitable, sustainable, and resilient farm businesses through extension, advocacy, science and research. DairyNZ is funded by a levy on milk solids that all dairy farmers pay under the Commodity Levies Act 1990. A significant proportion of our work is allocated towards research and development.

Our evidence responds to the seven interconnected domains as specified by the Commission, although predominantly focuses on the dairy sector's reliance on the biosphere and how a changing climate will affect our viability.

A complete list of references can be found in Appendix One. Other relevant information is included in Appendix Two.

#### Risks and evidence for the dairy sector across the Commission's domains

#### Natural Environment

A changing climate will continue to significantly impact soil health, water availability, and pasture ecosystems, which are critical to dairy farming. Research by Babylon et al. (2022<sup>i</sup>) has shown that perennial ryegrass in the Upper North Island will likely experience declining growth rates and yields under future climate scenarios. This trend is further supported by modelling studies from Beukes et al. (2021<sup>ii</sup>), highlighting reduced pasture persistence and productivity. These findings emphasise the importance of developing resilient pasture species and refining management strategies for feed, production and viability. This research also highlights the future of other dairy regions such as Waikato and Bay of Plenty.

DairyNZ has undertaken large-scale risk analysis in recent years to understand our current exotic animal disease and plant pest/weed risks. External reports we have commissioned as part of this process indicate that the risk of incursion for several exotic organisms will increase as larger areas of New Zealand become climatically suitable for establishing insect vectors, weeds and plant pests (DairyNZ, 2023<sup>iii</sup>).

#### Built Environment

The dairy industry relies on resilient infrastructure, yet extreme weather events threaten transportation networks, processing facilities, and water systems. Investments and understanding of climate-resilient infrastructure, such as enhanced water storage and flood mitigation measures, are crucial for maintaining production and supply chain efficiency. Water storage will become a key tool for dairy farms to build resilience into their farming systems (Bright et al., 2022<sup>iv</sup>).

# Economy and Financial System

The economic impacts of climate risks on the dairy sector are substantial. Rising operational costs, reduced productivity, and increased vulnerability to extreme weather events challenge individual farmers and the broader economy. An example of reduced productivity is heat stress in dairy cows, as highlighted by (Woodward et al., 2025<sup>v</sup>), a growing issue affecting milk production, animal welfare, and farm management practices. Mitigation measures such as improved shade structures, access to water, and breeding for heat-tolerant livestock will be important.

The dairy sector faces operational challenges due to climate variability, including higher costs for irrigation, supplementary feed, and infrastructure to mitigate adverse weather conditions. DairyNZ research from (Marmont et al., 2024<sup>vi</sup>) highlights the financial risks of reduced pasture productivity and extreme weather events, which could impact rural economies and export revenue.

## People, Health, and Communities

The well-being of communities is closely tied and will be increasingly tied to climate resilience. Furthermore, farmers' mental health, often challenged by increasing climate uncertainty, can benefit from community-centred adaptation initiatives that promote knowledge sharing and mutual support. See the attached research and report from the Matamata-Piako <u>Climate</u> <u>Resilience & Adaptations study.</u>

## Incorporating Lived Experience and Mātauranga Māori

DairyNZ's evidence includes an AGFIRST & Primary Purpose (2024<sup>vii</sup>) report from 33 in-depth interviews with sheep, beef, and dairy farmers across Northland, Waikato, Bay of Plenty, and the King Country. These interviews provide firsthand insights into the challenges of maintaining pasture and adapting to climate change. Farmers' perspectives emphasise the importance of practical solutions informed by on-the-ground experience.

Additionally, DairyNZ recognises the value of mātauranga Māori in understanding climate risks and developing holistic adaptation strategies. The sector can create culturally relevant and environmentally sustainable solutions by incorporating traditional knowledge and observations.

## DairyNZ upcoming work on climate resilience

DairyNZ is partnering to shape a new Resilient Pastures programme, bringing together farmers, researchers, industry leaders, and the government to address declining pasture productivity in northern regions. Key objectives include:

- Defining current and future climate conditions that farmers must adapt to.
- Evaluating pasture species, mixtures, and management practices at paddock and farm system scales.

- Designing sustainable and profitable farming systems centred on resilient pastures.
- Supporting adoption across Te Tai Tokerau, Waikato, and Te Moana-a-Toi through decision-support tools and stakeholder collaboration.
- These efforts demonstrate the sector's proactive approach to addressing climate risks while fostering innovation and sustainability.

Please note that this work is still subject to contracting processes and, therefore, is <u>confidential</u>. We will provide further information to the Commission when the project has been announced.

#### Conclusion

We trust that DairyNZ's submission of evidence assists the Commission in achieving its goals of identifying climate risks, understanding cascading impacts, and promoting actionable solutions in the NCCRA 2026. Please do not hesitate to contact us if you require additional information or clarification.

Sincerely,

**Roger Lincoln** 

Head of Policy, DairyNZ

Contact for further information: <a href="mailto:laura.kearney@dairynz.co.nz">laura.kearney@dairynz.co.nz</a>



#### Appendix One: References cited in DairyNZ evidence

<sup>i</sup> Babylon, A., Woodward, S., & Beukes, P. (2022). Summer growth rates and annual yields of perennial ryegrass (Lolium perenne L.) in the Upper North Island are expected to decline as a result of climate change. *Journal of New Zealand Grasslands*, 31–40. <u>https://doi.org/10.33584/jnzg.2022.84.3565</u>

<sup>ii</sup> Beukes, P., Babylon, A., Griffiths, W., Woodward, S., Kalaugher, E., Sood, A., & Chapman, D. (2021). Modelling perennial ryegrass (Lolium perenne) persistence and productivity for the Upper North Island under current and future climate. *NZGA: Research and Practice Series*, *17*. <u>https://doi.org/10.33584/rps.17.2021.3450</u>

<sup>iii</sup> DairyNZ. (2023). *Evaluating biosecurity risks - DairyNZ | DairyNZ*. Dairynz.co.nz. <u>https://www.dairynz.co.nz/biosecurity/biosecurity-support/evaluating-biosecurity-risks/</u>

<sup>iv</sup> Bright, J., Alexander, J., & Dark, A. (2022). *WATER AVAILABILITY AND SECURITY Sensitivity Analysis*. Ministry for Primary Industries. <u>https://www.mpi.govt.nz/dmsdocument/52060-Water-availability-and-security-national-scale-assessment-2022-technical-paper-</u>

<sup>v</sup> Woodward, R., Beukes, P. C., Edwards, J. P., Verhoek, K. J., Jago, J. G., & Zammit, C. (2025). Regional heat stress maps for grazing dairy cows in New Zealand under climate change. *Animal Production Science*, *65*(4). <u>https://doi.org/10.1071/an24231</u>

<sup>vi</sup> Marmont, B., Neal, M., & Minnee, E. (2024). The economic impacts of declining pasture harvest on Northland and Waikato dairy farms. *Journal of New Zealand Grasslands*, 237–242. <u>https://doi.org/10.33584/jnzg.2024.86.3703</u>

<sup>vii</sup> AGFIRST, & Primary Purpose. (2024). *Farmer insights on forage selection and management in response to a changing climate*. (Sent separately as a PDF).

#### Appendix Two: Additional references of relevance

Wall, A. M., J. Goodrich, and L. A. Schipper. 2021. Importance of resilient pastures for New Zealand's agricultural soil carbon stocks. Resilient Pastures - Grassland Research and Practice Series 17:191-200 Importance of resilient pastures for New Zealand's agricultural soil carbon stocks | NZGA: Research and Practice Series and Practice Series

Teixeira, C. S. P., S. T. Olykan, and D. J. Moot. 2024. A review of grass species yields and growth rates in Northland, New Zealand. New Zealand Journal of Agricultural Research: 1- 24. (PDF) A review of grass species yields and growth rates in Northland, New Zealand