

CLIMATE CHANGE IMPACTS & HOW YOU CAN RESPOND

Nelson / Tasman

Over the coming decades, climate change and its effects will have economic and physical implications on how we grow and operate the kiwifruit industry in New Zealand. This factsheet gives an overview of the

changes in climate we expect to see around Nelson, and the actions growers can consider taking to adapt to a changing climate. It also describes the collective actions the kiwifruit industry will take to adapt as the climate continues to change.

EXPECTED CHANGES TO CLIMATE



Temperature

- Average temperatures 0.7-1.25°C higher by 2040
- Reduced winter chill hours
- Frost events less likely
- Up to 19 more hot days above 25°C by 2040.



Drought/dry spells

- Frequency and length of dry spells may increase affecting:
- Water evaporation from soil
 - Water availability
 - Irrigation efficacy
 - Plant health.



Pests and disease

Mild changes to temperature and seasonal rainfall could result in higher pest and disease risk.



Wind

Decrease in annual mean wind speed.



Adverse weather

- Increased storm intensity
- Increased frequency of extreme rain events and flooding.



Rainfall

- Increased rainfall over summer, autumn and winter with slight decreases possible to spring rainfall.

Why ADAPT?

Planning for climate change and implementing adaptation measures will mean you're better prepared to respond, whatever the outcome. Predictions on the impacts of climate change and their severity are not

an exact science. The climate forecasts can be a useful prompt for discussion with your orchard manager or grower services representative when making decisions about your orchard.

Adapting TO THE IMPACTS

For adaptation to be successful, it will require early consideration and action by growers, investors, and industry.

Climate change impacts, industry commitments and actions for growers to consider, specific to Nelson / Tasman region, are outlined below.

INCREASING *temperatures*

	CURRENT	2040	2090
Hot days >25°C	11	11 – 31	61 – 101
Average daily temperature	11 to 13°C	+0.7 to 1.25°C	+1.25 to 3°C
Frost days	36	23 – 25	8 – 19

IMPACTS



Reduction in winter chilling hours

- A reduction in winter chill hours, may:
- Change the timing of natural plant processes
 - Result in less uniform maturity
 - Reduce flower numbers (per winter bud).



Frost

- Frost prevalence, particularly in existing growing areas will reduce.



Pests and diseases

- New pests or diseases that can't tolerate cooler conditions may establish as temperatures rise.



Orchard management

- Orchard management priorities and timing may change, e.g. in relation to pest and disease control, thinning, pruning and harvest.



Post-harvest

- Increased cooling requirements from hotter ambient temperatures.



Growing locations

- Alternative cultivars and growing locations which are limited by colder conditions may become more viable, presenting new opportunities for growth in the region.

HOW CAN WE ADAPT?



Networking

- Growers can:
- Actively participate in grower workshops and field days, to share knowledge with each other
 - Establish and share orchard weather station data to contribute to science and understanding of climate impacts.



Management

- Growers can:
- Implement changes to spray programmes to manage emerging risks
 - Review and adjust management techniques; girdling, alternative row cropping, pollination methods etc.

Industry will:

- Continue research into budbreak enhancer alternatives.



New cultivars

- Industry will:
- Invest in cultivar research - to source more climate tolerant and pest resistant rootstocks and scions.



Pest and disease management

- Growers can:
- Actively watch for and report unusual sightings to enable in rapid detection.

Industry will:

- Develop new systems and technologies to help growers manage risks from pests and diseases
- Ensure information is up-to-date with any new emergent pests or pathogens
- Continue to partner with key research entities
- Continue to advocate for strong biosecurity at New Zealand's borders.

Rainfall / DROUGHT

A seasonal shift in rainfall is projected by 2040 in the Nelson / Tasman region



Spring decrease in rainfall by 0-3%



Autumn increase in rainfall of 1-3%



Summer increase in rainfall 1-2%



Winter increase in rainfall of 3-11%

Drought frequency and duration is likely to increase by 5% between 2030 and 2050

IMPACTS



Prolonged dry periods and drought

- Extended dry periods over summer may negatively affect production.



Water availability

- Decreased periods of rainfall may affect groundwater and surface water availability during high demand periods
- Sea level rise may increase saltwater intrusion in coastal aquifers
- Some areas of the Nelson / Tasman region have aquifers which are already overallocated, available allocation will likely reduce, particularly in periods of high demand.



Irrigation

- Increased frequent dry periods may affect the soil's ability to retain moisture
- Extended dry days may affect the efficiency of irrigation systems.



Soil

- Prolonged dry periods can harden the soil, this may prevent water from soaking in, increasing the risk of run-off, flash flood events and land instability on sites near hill country.

HOW CAN WE ADAPT?



Early planning

- Growers can:
- Start water take consenting or re-consenting early, by contacting the Tasman District Council and seeking advice from a planner
 - Tasman District Council has a water allocation waitlist in over allocated water management zones. Registering on this list will ensure that you are in the order of priority and are in line for allocation when allocation becomes available.



Efficient irrigation

- Growers can:
- Seek advice from technical specialists and organisations such as Irrigation New Zealand and the Tasman District Council on new irrigation technologies.



Alternative water sources

- Growers can:
- Investigate alternative water sources, such as groundwater, surface water and where possible on-site storage. Check water availability in your area by talking to Tasman District Council.



Soil health

- Growers can:
- Maintain or improve soil health. Such as by adding organic matter to aide moisture retention. The Zespri Canopy website has information and technical resources on maintaining soil health.



New cultivars

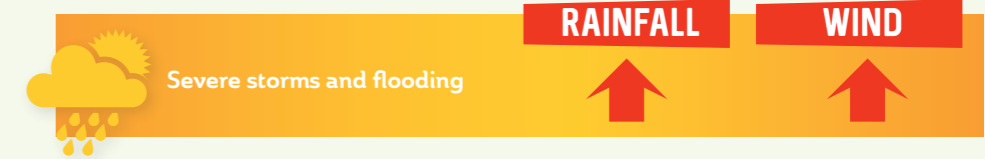
- Industry will:
- Invest in cultivar research, including plants which are more tolerant in drier conditions.



Advocacy

- Industry will:
- Continue advocacy with regional and national government to ensure that water regulations are fair and equitable.

Weather EVENTS



IMPACTS



Wind damage

- Higher wind intensity may damage young growth on vines
- Increased potential for wind rub damage to fruit.



Flooding

- Increased extreme flood risk in low lying areas
- May impact land stability, soil compaction, and erosion
- May cause waterlogged soil, affecting plant health, machinery and staff accessibility and safety
- Sedimentation may affect soil health.



Infrastructure

- Heavy rainfall may increase risks of slips causing damage to roading infrastructure, which may cause delays or increased costs of fruit transportation.

HOW CAN WE ADAPT?



Orchard protection

- Growers can:
- Consider whether crop covers are appropriate
 - Ensure orchard shelter is well-maintained
 - Where relevant consider investing in drainage, and/or a pump and generator.

Industry will:

- Regularly consult with growers on whether hail cover should be extended to include other natural disasters.



Plan Ahead

- Growers can:
- Monitor weather watches and warnings
 - Where possible identify alternative transport options and routes.



Actions WE'LL TAKE

The kiwifruit industry is already experiencing and responding to the physical, market, and regulatory impacts of climate change. To help prepare the industry to respond, we have prepared a Climate Change Adaptation Plan. This plan brings together the

experience and input of kiwifruit industry stakeholders into a coordinated approach, and proposes areas for future work to allow us to thrive, as the climate continues to change. This plan will focus on the following key areas and will be reviewed in 2025.



WANT TO KNOW *more?*

Zespri resources:

- [The Kiwifruit Industry Climate Change Adaptation Plan](#)
- [Zespri Climate Change Strategy](#)
- [Zespri Climate Change Risks and Opportunities Report](#)
- [Zespri Grower Portal - Canopy Website](#)

Tasman District Council information:

- www.tasman.govt.nz/my-region/climate-change/how-is-climate-change-affecting-tasman-district/

Reference Material:

Ministry for the Environment, Climate change projections per region (2018). NIWA, Climate Change and Variability - Tasman District (2015). NIWA, Regional Projections Zone 4 (2022).