

CLIMATE CHANGE IMPACTS & HOW YOU CAN RESPOND

Northland

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 in Northland, 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



Summer storms
Increased intensity, wetter and windier.



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



Temperature

- Average temperature 0.7-1.1°C higher by 2040
- Reduced winter chill hours
- Frost events unlikely
- Up to 30 more hot days >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.



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 Northland, are outlined below.

INCREASING *temperatures*

	2040	2090
Days >25°C	20 – 90 per year	80 – 90 per year
Average daily temperature	0.7 – 1.1°C	0.7 – 3.1°C

IMPACTS



Reduction in winter chill 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 (from one every two years to one every 10 years by 2090).



Pests and diseases

- New pests or diseases that can't currently 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

- Some growing areas will become less suitable for current cultivars and orchard practices, requiring adaptation. Alternative cultivars and growing locations may become more viable, presenting new opportunities.

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.

Water

Seasonal shifts in rainfall are projected by 2040 in the Northland region:



Spring decrease in rainfall by 4–7%



Autumn increase in rainfall of 0–2%



Summer increase in dry days



Winter increase in rainfall of 2%

IMPACTS



Prolonged dry periods and drought

- More dry days are predicted, particularly across the east coast margins from Karikari Peninsula to Mangawhai Heads
- Extended dry periods over summer may negatively affect production.



Water availability

- Decreased spring rainfall may increase demand and decrease availability of water
- Sea level rise may increase saltwater intrusion in coastal aquifers.



Irrigation

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

HOW CAN WE ADAPT?



Early planning

- Growers can:
- Start their water take consenting or re-consenting process early, by contacting the Northland Regional Council and seeking advice from a planner between 12 to 18 months in advance.



Efficient irrigation

- Growers can:
- Seek advice from technical specialists and key organisations such as Irrigation New Zealand and Northland Regional Council on water efficiency measures and 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 Northland Regional 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

- 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.

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, including consents and/or a drainage pump and generator.
- Industry will:
- Regularly consult with growers on whether hail cover should be extended to include other natural disasters
 - Invest in cultivar research for plants which are more tolerant of waterlogged soils.



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. It will focus on the following key goals 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](#)

Northland Regional Council information:

- www.nrc.govt.nz/environment/climate-change/climate-change-in-northland/

Reference Material:

NIWA & Northland Regional Council, Northland Climate Change Projections and Impacts, 2017027AK (2016 & 2017). Northland regional Council, Future Impacts, (2017). Ministry for the Environment, Climate Change Projections per Region (2018).