CLIMATE CHANGE IMPACTS & HOW YOU CAN RESPOND

Gisborne & Hawkes Bay

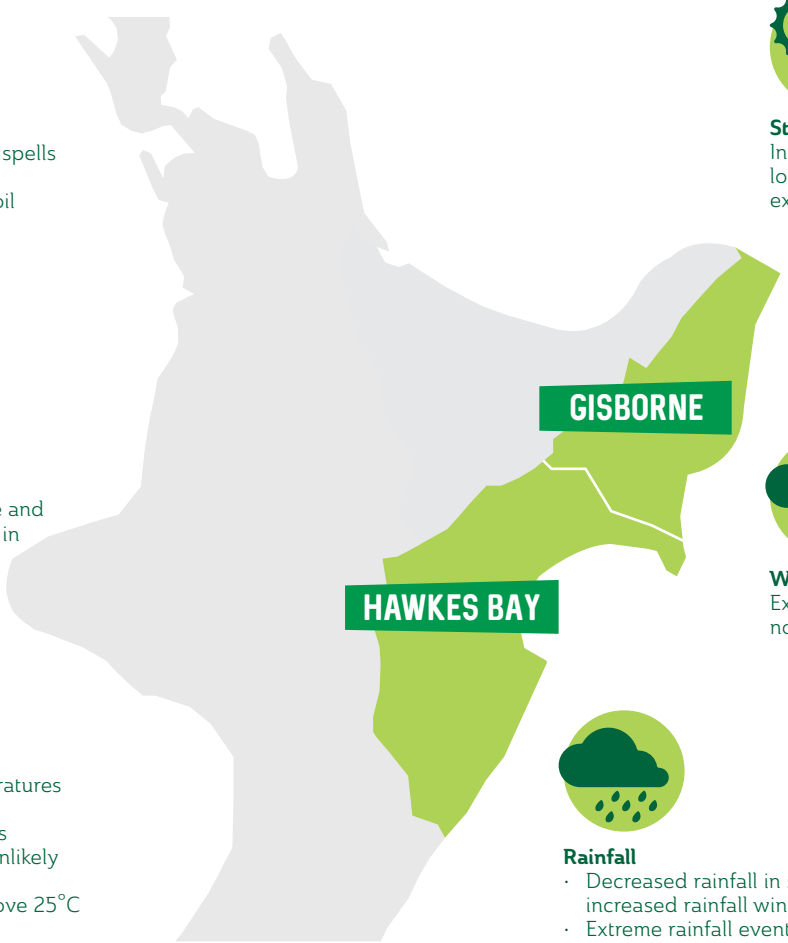
Over the coming decades, climate change and its effects will have economic and physical implications on how we grow and operate the kiwifruit industry in New Zealand. This factsheet gives an overview of the changes in climate we expect to see in Gisborne and Hawkes Bay, and the actions growers can consider 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

Drought
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.

Temperature
- Increased average temperatures 0.5 - 1°C by 2040
- Reduced winter chill hours
- Fewer frost events, frost unlikely in coastal areas
- 10 - 40 more hot days above 25°C by 2040.



Storms
Increase in intensity of local storms and tropical ex-cyclones.

Wind
Extremely windy days are not expected to increase.

Rainfall
- Decreased rainfall in spring and increased rainfall winter
- Extreme rainfall events will be more intense.

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 Gisborne and Hawkes Bay, are outlined below.

INCREASING temperatures

	CURRENT	2040	2090
Dry Spells (three days of >25°C)	32	20 - 70	20 - 90
Average temperature	14 to 15°C	+0.5 to 1.°C	+1 to 3.°C
Frost days	5 - 15	-1 to 10 Minimal reduction	-1 to 20 Minimal reduction

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).

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
- With increased warming and reduction in frost events in the long term, by 2090 some growing locations may become more viable, presenting new opportunities for growth in Gisborne and the Hawkes Bay.

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 such as; girdling, alternative row cropping and pollination methods.

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 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 boarders.

Rainfall / DRY DAYS

By 2040 it is predicted that there will be minimum change in average rainfall, however there will be a change rain fall seasonality, with small increases or decreases over summer and autumn.

Spring decrease in rainfall by 5-10%

Winter increase rainfall of 5%

IMPACTS

Prolonged dry spells and drought
More dry days are predicted, particularly across Eastern Gisborne and southern Hawkes Bay.
- Extended dry periods over summer may negatively affect production.

Water availability
- Changes to rainfall patterns 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 Hawkes Bay and Gisborne have aquifers and surface water catchments which are already overallocated. Future available allocation will likely reduce, with increased demand.

Irrigation
- Increased frequent dry periods may affect the soil's ability to retain moisture
- Extended dry spells 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:
- Check on available allocation in your region by contacting the Hawkes Bay Regional Council or Gisborne District Council
- Start water take consenting or re-consenting early, contact the Hawkes Bay Regional Council or Gisborne District Council and seek early advice from a planner.

Efficient irrigation
Growers can:
- Seek advice from technical specialists and organisations such as Irrigation New Zealand and the Hawkes Bay Regional Council or Gisborne 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
- The Hawkes Bay Regional Council recommends investigating on site storage in areas where water take is heavily allocated.

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 and those close to surrounding hill land
- May impact land stability 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 roading to 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.

GOAL 1: FUTURE-PROOF GROWING & BREEDING

1. Support growers to adopt climate-resilient practices
2. Continue to invest in climate-resilient cultivars
3. Develop a future-focused climate research programme

GOAL 2: MAINTAIN FRUIT QUALITY & MANAGE SUPPLY

1. Respond to fruit quality challenges
2. Adapt to changes to the season
3. Include climate impacts in industry planning

GOAL 3: PROTECT INDUSTRY PROFITABILITY

1. Assess likely effects on productivity and profitability
2. Lessen exposure to carbon costs by reducing emissions
3. Take action to address consumer and customer response

STRONG FOUNDATIONS

1. Improve data quality
2. Advocate effectively
3. Govern effectively

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

Council climate change information:

- www.gdc.govt.nz/environment/climate-change-in-tairawhiti
- www.hbrc.govt.nz/environment/climate-actionhb/

Reference Material:
NIWA, Climate change projections and impacts for Tairāwhiti and Hawke's Bay (2020).
NIWA, Regional Projections Zone 3. Ministry for the Environment, Climate Change Projections per Region, (2018).