CLIMATE CHANGE IMPACTS & HOW YOU CAN RESPOND

Bay of Plenty

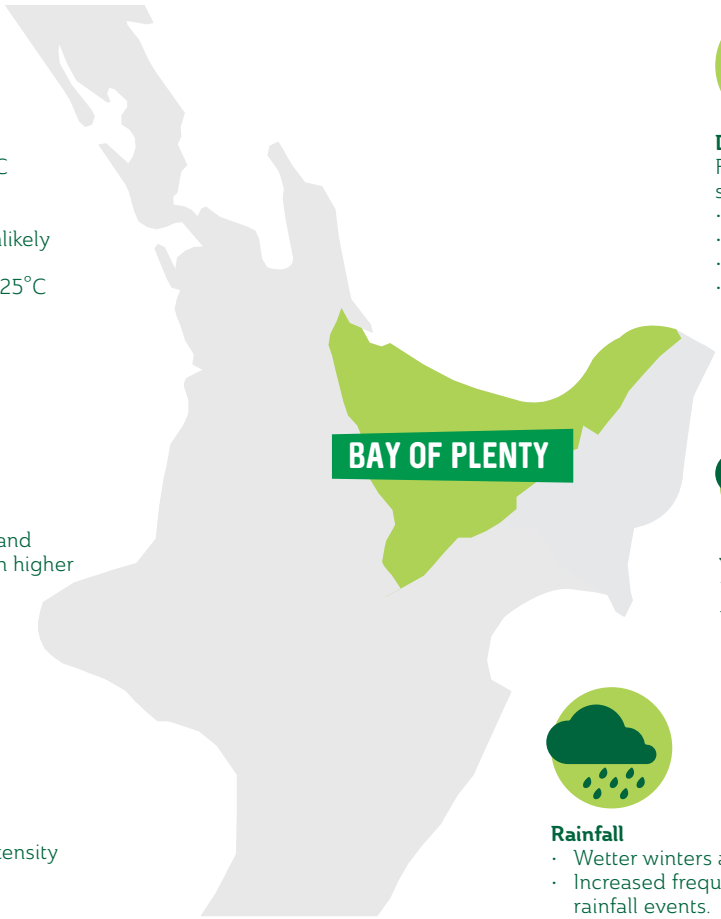
Over the coming decades, climate change and its effects will have economic and physical implications on how we grow and operate the kiwifruit industry in New Zealand. This factsheet gives an overview of the changes in climate we expect to see in Bay of Plenty, and the actions growers can consider taking 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 0.5°C higher by 2050
- Reduced winter chill hours
- Fewer frost events, frosts unlikely in some areas
- 0–25 more hot days above 25°C by 2050.

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

Storms
- More frequent and intense
- Increased frequency and intensity of summer storms.



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

Wind
Decrease in annual mean wind speed.

Rainfall
- Wetter winters and drier summers
- Increased frequency of heavy / extreme rainfall events.

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 Bay of Plenty, are outlined below.

INCREASING temperatures

	CURRENT	2050	2100
Hot days - >25°C	25-40	25-65	55-80
Average daily temperature	15°C	+0.5°C	+1.5°C
Frost days	5 -15	-1 to -4	-1 to -7

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).

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
- In the long term, by 2090 some growing areas may become less suitable for current cultivars and orchard practices, requiring adaptation. Alternative cultivars and growing locations may become more viable, presenting new opportunities in inland Bay of Plenty.

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, 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 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 / DRY DAYS

By 2050 it is predicted that there will be little change to overall average rainfall, however rain fall timing will vary.

Summer decrease in average rainfall by 8-15%

Winter potential increase in average rainfall by 8-10%

By 2100 annual average rainfall decreases of 2–6% may be seen across the region. The number of dry days is expected to increase, particularly in autumn.

	CURRENT	2050	2100
Dry days (<1mm of rainfall)	120 – 240	118 - 246	128 - 260

IMPACTS

Prolonged dry spells and drought
More dry days are predicted across Tauranga and Te Puke
- Extended dry periods over summer may negatively affect production.

Water availability
- Decreased summer 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 Bay of Plenty have aquifers which are already overallocated, available allocation will likely reduce, particularly in periods of high demand.

Irrigation
- Increased frequent dry periods may reduce the soil's ability to retain moisture
- Extended dry spells may affect the efficacy 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 Bay of Plenty Regional Council and seeking advice from a planner
- Check the Bay of Plenty Regional Council ground water allocation maps. In over allocated areas, where possible start the process 18 months to two years in advance.

Efficient irrigation
Growers can:
- Seek advice from technical specialists and organisations such as Irrigation New Zealand and the Bay of Plenty Regional 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 Bay of Plenty 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
- Increased flood risk in low lying areas; Whakātane, Ōpōtiki
- 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, 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 into 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

Bay of Plenty Regional Council information:

- www.boprc.govt.nz/environment/climate-change
- www.boprc.govt.nz/environment/resource-consents/consent-forms-and-maps/water-take

Reference Material:
Bay of Plenty Regional Council (2022).