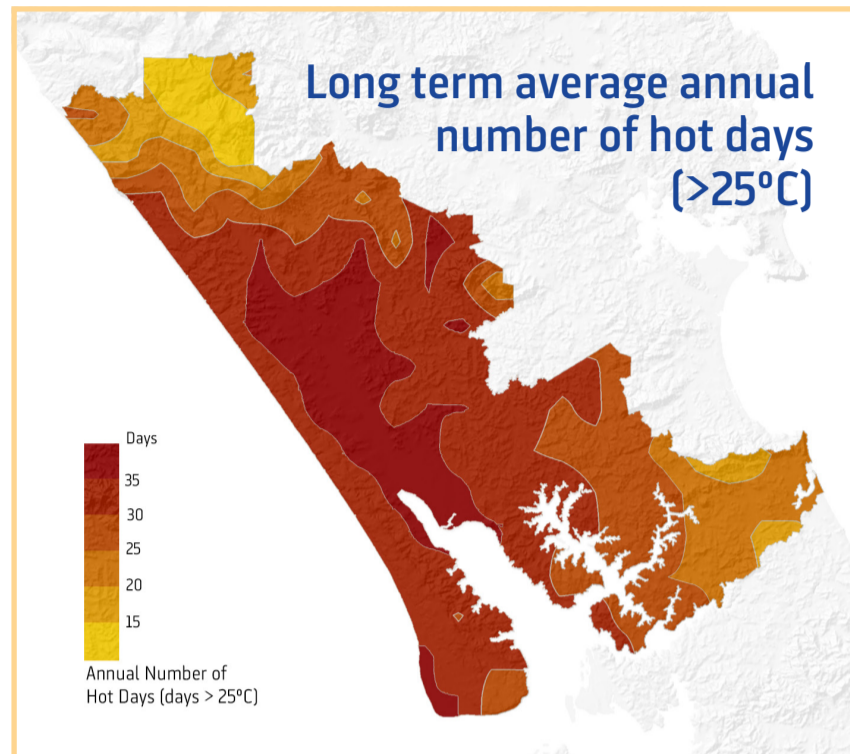


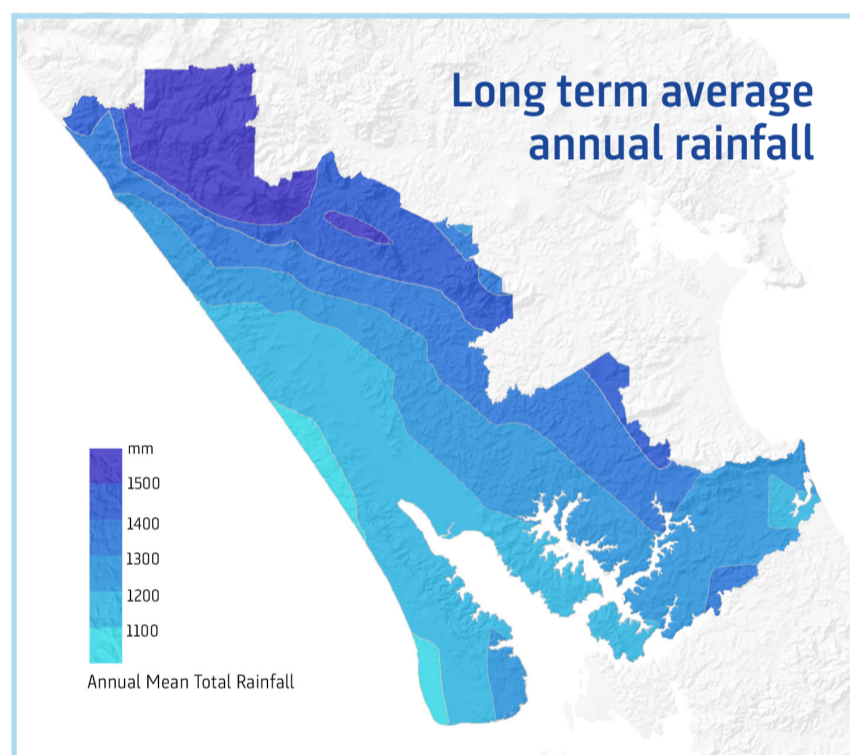
KAIPARA CLIMATE

The climate of Kaipara District can be characterised as mild, humid and rather windy; owing to its northern location, low elevation and proximity to the sea. Summers are warm and tend to be humid, while winters are mild, with much of the district only observing a few light frosts per year. Rainfall is typically plentiful year-round, with occasional very heavy falls. However, dry spells and drought can occur, especially during summer and autumn. Projected climate changes will bring challenges and opportunities to the horticulture industry of Kaipara District.



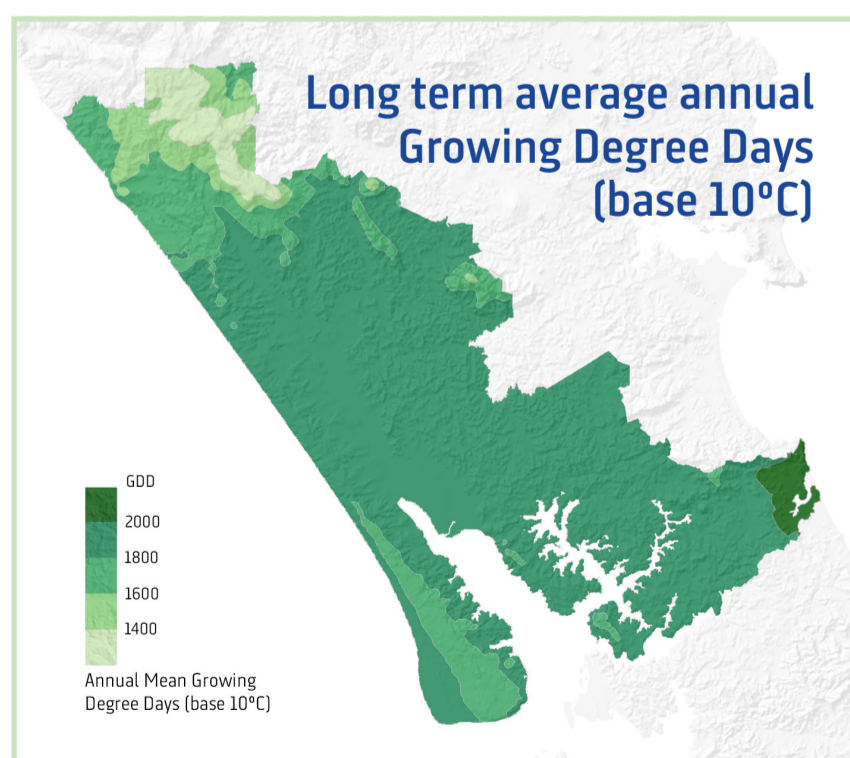
Annual temperature

- Most of the district observes an average of 25-40 hot days (days with temperature >25°C) per year.
- Frosts are rare and typically do not occur after 8 August in a given year.
- By 2090, annual average temperature could be 2.0-3.5°C warmer with 60-80 more hot days per year.
- Increasing temperatures will impact all types of crops, as plant phenological development may occur at a faster rate. Different stages of plant growth (e.g. bud burst, flowering, and fruit development) may happen at different times, which may affect the harvested crop.
- Extreme heat affects the rate of evapotranspiration, or the uptake of water by plants. Therefore, increases to extreme heat may affect water availability, as under hot conditions plants use more water than usual. Extreme heat may also result in current varieties of crops and pasture becoming unsustainable if they are not suited to growing in hot conditions.



Annual rainfall

- The annual average rainfall for most is between 1,100mm and 1,400mm
- Summer total rainfall ranges from 225-300mm
- According to the NZ Drought Index, the district regularly experiences drought, with four severe droughts occurring between 2007-2020. Projected increased prevalence of drought and longer dry spells will likely have impacts on water availability for irrigation and other horticultural uses.
- Tropical cyclones, or storms of tropical origin, affect Kaipara from time to time. These weather systems usually bring heavy rain and strong winds to the area.
- Future winter and spring rainfall may decrease by 6-15% by 2090. However, extreme, rare rainfall events are also projected to become more severe in the future.
- Increases in extreme rainfall means slips on hill country land may become more prevalent, and soil erosion may also be exacerbated by increasing drought conditions. This has impacts on the quality of soil for horticulture, the area of land available for production, and other impacts such as sedimentation of waterways (which can impact flooding and water quality).
- Slips may also impact transport infrastructure (e.g. roads, farm tracks) which may in turn affect connectivity of farms and orchards to markets.



Growing Degree Days

- The average amount of Growing Degree Days (GDD) in a location may influence the choice of crops to grow, as different species have different temperature thresholds for survival.
- Annual GGD (base 10°C) ranges between 1,700-2,000 GDD for most of the Kaipara District.
- Growing degree day increases of 250-300 GDD are expected by 2040, and increases of 900-1,000 GDD by 2090 are possible.
- Increases in GDD may have positive impacts for diversification of new crop varieties that are not able to currently be grown in Kaipara District.
- Warmer temperatures are expected to increase risk of pests and disease which were previously limited by cold conditions.

This infographic is based information from the following report: *Current and future crop suitability in the Kaipara District* prepared by

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