Impacts on farm performance

**Pasture and Crop Productivity**
More variable pasture production between seasons, years, and regions.

- **Increased frequency of drought**
  - Severe droughts may occur more frequently.
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- **Water Use**
  - Pressure on water resources will continue and efficient use will become more important.
  - Increased use of deeper rooting species to improve available water use e.g. lucerne and chicory
  - Increased consideration of water harvesting, storage and irrigation
  - Investment required in irrigation and technology to improve efficiency of water use

- **Animal Performance**
  - Extreme heat and cold can affect animal production and welfare.
  - Potential reduction in cold stress on stock
  - Temperature increase of stock may contribute to heat stress
  - Higher temperatures and CO2 reduce pasture availability and digestibility
  - Increased variability in pasture utilisation

- **Pests & Diseases**
  - Rising temperatures may change pest and disease incidence.
  - Some diseases may become less prevalent
  - Opportunity to use alternative fungus for improved persistence and performance
  - Risk of new pest and disease emerging
  - Pest populations may build to critical levels more quickly and frequently e.g. grass grub and Porina
  - Risk of extension of zones at risk of facial eczema

- **Pasture and Crop Productivity**
  - More variable pasture production between seasons, years, and regions.
  - Reduced arable crop yields
  - Increased risk of drought-induced feed deficits
  - Reduced arable crop yields
  - Change in farm policy and management to cope with more dry seasons

**Summary**
Planning reduces the impact of climate change on farms. Actions farmers can take include:
- adapting their farm system and lifting profitability in anticipation of these changes
- being prepared for weed and pest problems
- increasing shelter and shade
- using more appropriate pasture species
- capturing surplus water (water storage) and using available water efficiently

**Projections of how climate will change:**
Through the century, NIWA projects the following likely trends in New Zealand’s future climate:
- **Warmer by about 2.0°C** - **Wetter in the west and drier in the east** - **More extreme weather events**

**Extreme weather events – higher variability and uncertainty**
The effects of extreme weather events are already being felt. Intense storms are difficult to predict and their impact on farmland and livestock can be huge.

- **More intense and frequent rain**
  - Higher temperatures may result in more intense rainfall events.
  - Increased fertiliser use
  - Increased crop losses
  - Increased variability in feed supply & arable crop yields

- **More wind**
  - Frequency of westerly winds and strength of strong winds may increase by up to 10%.
  - Rising temperatures may change pest and disease incidence.
  - Some diseases may become less prevalent
  - Opportunity to use alternative fungus for improved persistence and performance
  - More extreme weather events.

- **Warmer temperatures, less frost**
  - Fewer frost days in lower North and South Islands.
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- **Increased frequency of drought**
  - Severe droughts may occur more frequently.
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- **Increased risk of pugging**
  - Greater need for shelter for animals, pasture and arable crops
  - Increased water use and risk of crop damage

- **Higher risk of wind erosion**
  - Changes in seasonal timing of pasture production
  - Improved lamb and calf survival

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- **Higher risk of drought**
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- **Greater risk of nutrient and CO2 reduction**
  - Changes in seasonal timing of pasture production
  - Improved lamb and calf survival

- **Increased risk of wind stress on arable crops**
  - Changes in seasonal timing of pasture production
  - Improved lamb and calf survival

- **Potential to divert high yield**
  - Changes in seasonal timing of pasture production
  - Improved lamb and calf survival

- **Increased water use and risk of crop damage**
  - Changes in seasonal timing of pasture production
  - Improved lamb and calf survival

- **Increased risk of damage to buildings and shelter**
  - Changes in seasonal timing of pasture production
  - Improved lamb and calf survival

- **Increased variability in feed supply & arable crop yields**
  - Changes in seasonal timing of pasture production
  - Improved lamb and calf survival

- **Higher risk of wind stress on arable crops**
  - Changes in seasonal timing of pasture production
  - Improved lamb and calf survival

- **Increased risk of drought-induced feed deficits**
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  - Improved lamb and calf survival

- **Reduced arable crop yields**
  - Changes in seasonal timing of pasture production
  - Improved lamb and calf survival

- **Change in farm policy and management to cope with more dry seasons**
  - Changes in seasonal timing of pasture production
  - Improved lamb and calf survival

**Images kindly supplied by Horizons Regional Council, Landcare Research, Marie Casey and Alison Popay.**