

Why understanding climate change makes cents for mango growers in Darwin



Growers with a view to the long-term sustainability of their enterprises cannot ignore the business risks associated with the changing climate. Identifying and planning for these risks now could help to reduce the costs associated with the impacts of severe weather events and maximise the returns on investments made now.

The climate of the past is no longer a sound basis for decision-making, but we do have a great deal of science-based information we can draw on to help identify and plan for future risks. Knowing where to find this information, and how to use it, is critical for sustainable mango production into the future.

What's changing?

Over the coming years and decades, we will increasingly see:

- warmer average temperatures
- more hot days
- fewer cold days
- more intense extreme rainfall events
- more intense tropical cyclones – but fewer of them.

Darwin currently experiences around seven days per year where the minimum temperature is lower than 16°C. By 2050, this could get down to just one day per year. By the end of the century there may be no days per year with a minimum temperature lower than 16°C.

At the other end of the scale, Darwin currently experiences around 46 days per year where the maximum temperature is greater than 35°C. By 2050 that could rise to 176 days. By the end of the century that number could reach 289 days per year.

The timing and extent of these changes will largely depend on greenhouse gas emissions. If emissions continue at the present rate the impacts will be severe.

If greenhouse gas emissions continue along their current path, Darwin's climate in 2030 will be similar to Batchelor, Aurukun and Weipa today. By 2050, it will be more like Jabiru and Oenpelli. There are presently no places in Australia (and possibly none in the world) with a similar climate to the one Darwin will experience in 2090.

Explore the future climate at climatechangeinaustralia.gov.au. As well as maps, data downloads and publications, you'll find the **Climate Analogues Explorer** and **Thresholds Calculator** tools used here.

Darwin is in the **Monsoonal North** projections region on this website.

How will this impact mango production?

Mango growers may have to manage: new pests as the changing climate allows species to change their ranges; changes to the timing and duration of growing seasons; and damage to crops from extreme weather events.

There may also be impacts on mango development. For example, changes in absolute maximum and minimum temperatures and the frequency of these events will affect flowering and fruit production in northern Australian mango production regions.

The National Environmental Science Program's Earth Systems and Climate Change (ESCC) Hub is working with the Northern Territory Department of Primary Industry and Resources (DPRIR) to assess the impact of changing temperatures on Kensington Pride, B74, Honey Gold® and three cultivars from the National Mango Breeding Program around Darwin at timescales relevant to the current planting, next planting and breeding program. The results of this assessment (which will be available in March 2020) will help growers, and the industry as a whole, make decisions about which varieties are likely to be better suited to future climate conditions.

Stay up-to-date on this research

More information about this project is available on the ESCC Hub website at nespclimate.com.au (look under Our science > Current activities) and on the NT DPIR website at dpir.nt.gov.au (search 'mangoes' for information on current partnerships and research activities).

Growers also need to be aware of possible indirect impacts. For example, roads washing out in floods or being damaged through extreme heat could hamper fruit transport, and labour costs could increase as working conditions become more difficult.

The **Earth Systems and Climate Change Hub** is funded by the Australian Government's National Environmental Science Program.

What can growers do?

Get informed about climate change, to understand what's in store for the future. Ensure your information is from a trusted source – CSIRO, the Bureau of Meteorology, and government agencies and departments are good places to start. Look for evidence-based information over opinion.

Identify climate-sensitive aspects of mango production that need to be investigated and talk to extension officers and industry reps about them. Impact assessments and associated research are industry-driven, so tell researchers what would be useful for them to work on.

Investigate proactive changes you can make in your business, such as planting different varieties; reviewing canopy management, nutrition and irrigation; and shifting production zones.

Think about the consequences of a changing climate along your supply chain, to identify climate sensitivities and consider ways to lessen their impact.

Where can I find out more?

Finding and using climate change information

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Photo: Maddison Clonan, NT DPIR