What does climate change mean for dairy in northern Victoria and southern NSW?

Regional climate change has already occurred

There is already plenty of evidence that climate change is a reality:

- since 1950, temperatures have increased by up to 1°C across most areas of Australia;
- southern and eastern Australia have had more heat waves, fewer frosts and less rain; and
- the past 11 years have been among the warmest 12 years since 1850.

Dairy farmers in the northern Victoria and southern NSW are noticing that pasture growth patterns have changed and that spring now starts about two to four weeks earlier than it used to. Many have already adapted to these changes by modifying their farm feedbase and adapting their farm management practices.

What can we expect in the future?*

The latest climate projection models for the region suggest that by 2030 it is likely that:

- average temperatures will increase (see page 3);
- the amount of rainfall will fall and there will be a change in the seasonal rainfall patterns (see page 4);
- evaporation rates will increase;
- droughts may become more frequent or longer;
- the amount of run-off will fall; and
- there will be an increase in daily rainfall intensity and the number of dry days.

* All climate projections shown in this fact sheet are from Climate Change in Australian Dairy Regions, Hennessy, K.J., 2007.
As the temperatures and rainfall patterns change, there will be some affect on dairy farms in the region, but there will also be some opportunities:

- Following current trends, it is anticipated that summer will start earlier and finish later. The likely reduction in frosts and cold days should enhance pasture growth during autumn.
- Earlier, warmer temperatures will make it possible to sow summer crops earlier. They will also have slightly earlier maturity and harvest times.
- A longer growing season will allow greater use of drought-tolerant perennial pasture species.
- Low water availability will favour short-rotation pasture systems.
- Warmer temperatures earlier in the growing season will make it possible to boost pasture production earlier using nitrogen fertiliser in winter and early spring.

- It is likely there will be less rainfall and less run-off. This will reduce water security for stock and irrigation, as well as for plant and shed cleaning.
- There may be impacts on both the quality and quantity of feed grains and fodder produced outside dairy areas. Cropping regions are moving from cereals to hay-based crops that will help the dairy industry by increasing fodder supplies.
- Warmer and drier conditions will increase the likelihood of heat stress in cattle.
- Increased temperatures may make C4 (such as kikuyu) pasture species more competitive, at the expense of the more nutritious C3 species (such as ryegrass).
- The irrigation season could be likely to run for 12 months of year (with irrigating in June).

**What are the possible impacts and opportunities?**

**How could the region’s dairy farming systems adapt?**

There are many ways the region’s dairy farmers could adapt their farming systems to cope with changes in climate. For example:

- shifting calving times to make better use of changing pasture growth patterns (spring calving could be earlier and autumn calving may become an option);
- cutting silage and hay 2-3 weeks earlier to better match the changing pasture growth curve;
- shifting from perennial pastures to a mix of annual and perennial pastures/crops;
- increasing the amount of forage cropping during winter;
- using ‘hot day’ timetables or cross breeds to manage heat stress;
- continuing to expand the use of dairy shed effluent and wash down water;
- improving the management of bores for water supply;
- planning the shape of dams to maximise the capture of run-off;
- planting trees near dams to reduce evaporation;
- maintaining or re-establishing shade and shelter belts to protect cattle in extreme temperatures; and
- Improving the efficiency of irrigation systems and practices

Farmers may also need to change their approach to feedbase management to take account of the increased climate variability. For example, those that rely heavily on buying in feed may need to secure supplies 6-24 months in advance. Those that grow their own feed may need to cut more silage and hay to manage the risk of less-predictable summers.
By 2030, the maximum and minimum daily temperatures at Tatura, Kerang and Deniliquin are expected to increase by around 0.5 to 1.5°C. Maximum temperatures are expected to rise more than minimum temperatures and the winter months are likely to experience the least amount of warming. By 2030, there will also be a shift in the seasons. For high projections, the temperatures we currently experience in the spring months are likely to occur two weeks earlier, and in the autumn months they are likely to occur two weeks later. In winter and summer these shifts could extend to almost a month.

The following graphs show the average maximum and minimum temperatures at Tatura from 1971-2000, similar trends are expected at Kerang and Deniliquin. They also show three projections (low, mid and high range) for what the maximum and minimum temperatures could be in 2030.
Rainfall projections for the region

Rainfall is projected to decrease by 2030. The following three graphs show the average rainfall at Tatura, Kerang and Deniliquin from 1971-2000. They also show three projections (low, mid and high range) for what the rainfall could be like at those places in 2030.

The mid-range projections show that on average, rainfall in the region will decrease by about 1% in summer and autumn, almost 5% in winter and around 7% in spring.

With the higher temperatures, evaporation is also expected to increase, so run-off is likely to be reduced.

Further information

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- Regional DfT Co-ordinator – Clair Haines. Phone: 0418 120 335; e-mail: clair.haines@dpi.vic.gov.au
- The document containing the latest climate change projections from the CSIRO and Bureau of Meteorology Climate Change in Australia (2007) is available at www.climatechangeinaustralia.gov.au
- Climate Change in Australian Dairy Regions, Hennessy, K.J., 2007 is available on the Dairying for Tomorrow web site www.dairyingfortomorrow.com
- Department of Climate Change www.climatechange.gov.au
- Two fact sheets Climate Change in Goulburn Broken and Climate Change in the North Central are available on the Department of Sustainability and Environment website www.climatechange.vic.gov.au. Follow the links to climate change and then to climate change projections. This website also has other relevant information on impacts and adaptation in Victoria.
- Climate Change – Can Agriculture Take the Heat? Australian Farm Institute. Farm Policy Journal Vol 1 No 3 Nov 2004
- Managing Climate Variability Programme www.managingclimate.gov.au

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