

Managing uncertainty

Deal with climate changes now

By DAVID HARDWICK

THERE has been much debate on climate change and whether it has really been happening over the past few years despite mounting evidence the climate has been changing all over the world.

Whether due to our using fossil fuels and the increase in greenhouse gases in the atmosphere, or whether it is part of the natural, long-term climate cycles, the recent stark evidence shows climate change is not "coming". It is already here.

Changes in the climate are affecting every aspect of our lives, including agriculture. People in cities and towns are debating the use of recycled water. In many places we no longer have lush green gardens, and many irrigators have faced massive cuts in water allocations for production.

More profound changes are likely to come. Water shortages due to lower rainfall and lower run-off to fill dams are becoming more serious throughout eastern Australia. The viability of many agricultural sectors will be under pressure.

Despite the rapid increase in our knowledge of climate, scientists believe climate change will bring much uncertainty. Many producers now manage climate using their understanding of past seasons, the Southern Oscillation Index and looking at probabilities of rainfall events based on past long-term records.

Unfortunately, these tools are becoming less reliable and need revising. We no longer can rely on the past to predict the future. Our seasons are being turned upside down.

IMPACTS ON THE FARM

Along with soil health, climate is the most important natural asset determining the productivity of one's farm. It regulates water and temperature, both of which define the productivity of the crop or pasture.

The challenge to successful farming under new climatic conditions is to ensure your farm business remains viable in the face of huge changes in the amount and patterns of rainfall, changing temperatures and a possible increase in extreme events such as floods, cyclones or droughts.

Some areas are drying up drastically while others are experiencing more rainfall. A warming trend is consistent across most of the continent. The threat to farming is evident.

From a recent climate change meeting of farmers in the Darling Downs of Queensland, it has become clear the stocking rate in that district has been lowered drastically in the past 10 to 15 years. In some places, it is about half what it was in the 1980s.

Since the 1950s, many places in eastern Australia have experienced a 50-millimetre loss in annual rainfall per decade since 1950. Mackay in central Queensland has lost an average 80mm of annual rainfall per decade. It now has an annual average 400mm less than in 1950; 400mm is the total annual rainfall of many parts of Australia.

Cropping and horticulture are affected with some regions

of Australia drying out, resulting in fewer production opportunities both rainfed and irrigated. Increasing temperatures will also affect life-cycles of crops. An increase in fruit-drop incidence due to heat stress might lead to major losses in some crops, for example.

A few areas in Australia may be presented with new opportunities for farming. Rainfall in northern Western Australia has been increasing since the 1950s. In some districts, warming minimum temperatures may lower frost incidence, increasing possible crop selection.

But much of eastern Australia, including the traditionally very productive cropping and grazing areas, are experiencing less rainfall and much less run-off in the past decade.

Recently scientists have stated that El Ninos, those drought and drying seasonal conditions, will become more persistent across Australia. The struggle to remain viable, already a challenge with market forces, is getting harder.

MANAGING FOR THE FUTURE

Dealing with climate change will require taking a risk management approach for your farm business.

What impact will a reduction in rainfall have on my pasture or crop growth? Will increased temperatures increase the incidence of pests and diseases? How can I mitigate an increase in heat stress in my dairy herd if heatwaves become more common?

POSSIBLE IMPACTS ON FARM ENTERPRISES FROM REDUCED RAINFALL, INCREASED DROUGHT AND MORE SEVERE STORM EVENTS

ENTERPRISE	POSSIBLE IMPACTS
Cropping & Horticulture moisture	<ul style="list-style-type: none"> Reduced water rainfall and soil Loss of irrigation water access Increased evaporation Reduced crop yields. Increased erosion from storms Increase risk of pests and diseases Changes to frost frequency Increases damage risk from hail, storms and flooding
Grazing & livestock	<ul style="list-style-type: none"> Reduction in carrying capacity Decrease in forage quality Increase in pests and diseases Increased heat stress on production & welfare

Source: Australian Greenhouse Office 2006

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These are the sorts of questions you may need to ask yourself. As in all aspects of business management, considered planning is essential.

Organic farming is based on the science of natural systems, the science of ecology; and so organic farmers can use organic and ecological strategies to help cope with changes in climate. Nature has coped with climate change before. By learning from nature, we can learn as well.

In many natural ecosystems, water and nutrients are used as efficiently as possible. Strategies that improve water-use efficiency are critical. Also important is building soil health and organic matter to retain more water.

Catch water and store it where it falls, in the soil. In northern Queensland, some cane farmers have built soil health and water-holding capacity through using trash cover. This has turned into megalitre savings on irrigation water.

NSW broadacre farmer and innovative climate manager Chris Roche sums up his approach to water management in the face of a risky climate: *“At the end of the day, we try and conserve as much moisture as we can because we are in the business of trying to make money out of moisture. In this country, money is made by using correct rotations and conserving moisture.”*

Other strategies are to choose crops and animals more suited to a changed climate and to diversify so that when one enterprise is not possible there is always a back-up income.

Diversity is one of the cornerstones of nature. This may be an off-farm source of income or developing a niche farm enterprise such as farm forestry on an extensive grazing property.

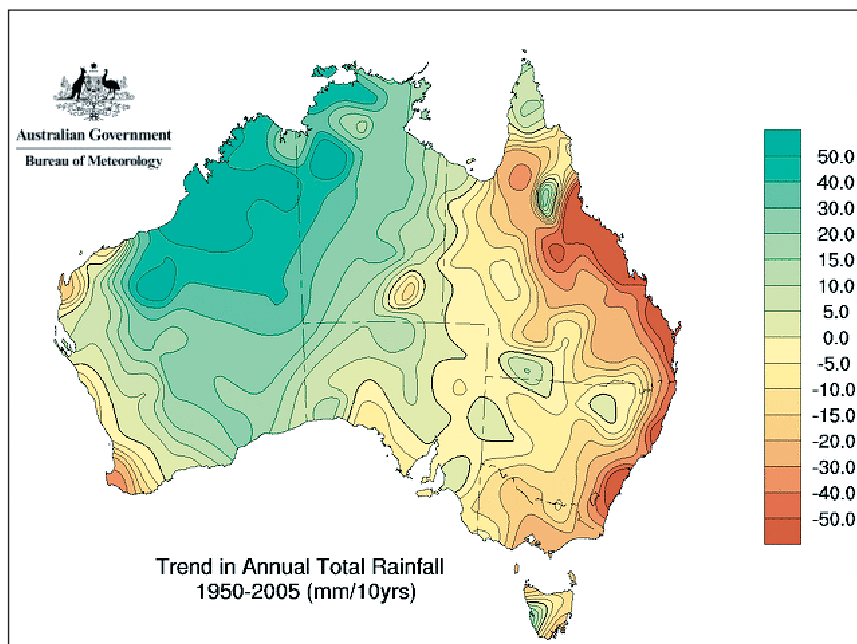
WHEN TO ACT

The general scientific consensus is that climate change is here and we need to act – now. Governments and industry are starting to devote large resources to the issues that will arise. In our own businesses and homes, we need to plan and act.

In one way, Australian agriculture is lucky — we have the driest and most unpredictable climate of any continent. This has meant being innovative to deal with droughts and flooding rains for many decades.

But climate change will test our climate skills much further. It is important to build skills in climate management to ensure your farm enterprise can cope.

Looking outside the square and using organic farming approaches that work with natural principles such as diversity, soil health and efficiency along with sound modern management skills will help build resilience into your farm business.



RESOURCES

Bureau of Meteorology — <www.bom.gov.au>, main website for rainfall and climate information in your area and state; see trends in rainfall and temperature on maps.

Rainman — climate software program for agricultural climate management developed by the Department of Primary Industries (DPI) and the bureau; available through your DPI.

The Long Paddock — <www.longpaddock.qld.gov.au>, a DPI Queensland website for farmers on climate and drought management.

The Australian Greenhouse Office — <www.greenhouse.gov.au> has many helpful publications on climate change and how it might affect your business and community.

Managing Climate Variability — <www.managingclimate.gov.au>, research and development program.

DPI and Agriculture departments in all states have climate information and help for the agricultural sector.

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