CCRSPI

CLIMATE CHANGE RESEARCH STRATEGY FOR PRIMARY INDUSTRIES

HAL

Know-how for Horticulture™

Climate change and the Australian horticulture industry

Discussions about climate change can be hard to understand and focused on scenarios far into the future. Complex economic models often do not explain actions in terms of what can be done now, through existing business operations and strategies, to help businesses reduce greenhouse gas emissions (mitigation) and prepare for future climate conditions (adaptation).

Horticulture Australia Limited (HAL) and the Climate Change Research Strategy for Primary Industries (CCRSPI) network have produced this brochure so that growers have information about:

- predicted climate change impacts on horticulture,
- research underway to assist growers to respond to climate change,
- practical measures to mitigate and adapt to the challenges and opportunities presented by climate change, and
- a glossary of commonly used climate change terms.

Climate change impacts and opportunities

Horticulture is the third largest agricultural industry with a gross value of production (GVP) of $8.6 billion. The sector employs one in four agricultural workers and delivers products and services that enhance the amenity and quality of life in homes and cities, and play a vital role in delivering national food security. Australia's increasingly variable climate poses challenges for horticulture, given the sector's dependency on natural resources, especially water for irrigation. This makes horticulture inherently vulnerable to the impacts of both short-term climate variability and long-term climate change.

Horticulture's greenhouse gas emissions equate to just 1.0% of agriculture's emissions while horticulture constitutes about 25.5% of the GVP of Australian agriculture.

In comparison to other agricultural sectors, horticulture has a small environmental impact relating to climate change. While agriculture emissions amount to some 16% of all national industry emissions, horticulture comprises just 1% of this total. This low level of emissions is due in part to the types of crops grown. The mixture of perennial crops such as tree fruits, tree nuts and vine fruits, combined with seasonal vegetables and herbs, provides carbon storage above ground. The fact that minimal tillage is involved further helps to build up and contain carbon in the soil.

Despite these good credentials, the industry is still vulnerable to predicted changes to rainfall and temperature that will impact on, plant growth, pest and disease risk, product quality and industry location.

The extent these physical impacts affect horticultural products, and businesses will be further shaped by the:

- growing global demand for food,
- impacts of climate change policy,
- increasing demands for productivity growth,
- increasing competition for natural resources, and
- requirements for ever more efficient and sustainable production practices.

Photo above and on front cover Arthur Mostead.

Predicted climate change impacts: temperature and rainfall

Temperature and rainfall changes present the greatest biophysical impacts on the horticultural sector's ability to remain profitable and competitive. The following snapshots summarise the predicted changes in temperature and rainfall.

Temperature into the future

By 2030, under the medium climate change emissions scenarios, the annual temperature over Australia is expected to have warmed by about 1.0°C relative to 1990. Inland areas are likely to experience stronger warming of up to 1.8°C, with coastal areas warming a little less. Climate modelling experts predict there will be significant variations from region to region, with night-time temperatures increasing faster than day-time temperatures. Night-time (minimum) temperatures are likely to rise particularly sharply in the north-east of Australia. There are also trends from 1957 to 2003 of an increasing frequency in the number of hot days of 35.0°C or more, and a decreasing trend in cold nights of 5.0°C or less.

By 2070, annual temperature is expected to have increased by around 1.8°C (range of 1.0 to 2.5°C) for the low emissions scenarios and around 3.4°C (range of 2.2 to 5.0°C) for the high emissions scenario, both relative to 1990. Most warming is expected to occur in spring and summer, with mean warming in winter expected to be less than experienced in other seasons. Mean temperature change is likely to be greatest inland and least on the coast. In south-eastern Australia, El Niño events may tend to become drier and La Niña events may become wetter.

Photo at top National Program for Sustainable Irrigation (NPSI).

Rainfall into the future

Changes in rainfall are expected to vary widely across regions and seasons. By 2030, rainfall is projected to decrease by 2–5% across Australia, except for northern Australia where little rainfall change is projected. Importantly, runoff will also substantially decline, resulting in significant negative impacts for water quality and quantity.

By 2070, annual rainfall is estimated to have decreased by about 7.5% across Australia, with the exceptions of the far north where there will be little change and in south-western Australia where decreases of up to 40% are expected. Across Australia, decreases in rainfall are expected to be greatest in winter and spring. Scenarios also show an increase in daily rainfall intensity (rain per rainy day) and in the number of dry days. Due to the projected changes in rainfall, soil moisture is likely to decline over much of southern Australia.

As these snapshots indicate, the combined impact of the predicted changes to rainfall and temperature will affect horticultural commodities and regions in a number of ways.

1. **Changes in enterprise structure and location** — changes to growing conditions will impact on the suitability of regions for different crops.
2. **Changes to crop selection/mix** — changes to growing conditions will impact on the suitability and adaptability of current cultivars, including the need to match crop selection with optimum growing times.
3. **Changes to irrigation management** — increased irrigation demand and change to reliability of irrigation schemes and water availability will impact on growers' irrigation scheduling.
4. **Impacts on soil management practices** — more intense rainfall events (coupled with warmer temperatures) may result in the increased risk of spread and proliferation of soil borne diseases.
5. **Impacts on current integrated pest management** — there is the potential for changes in the distribution of existing pests, diseases and weeds, and an increased threat of incursions into new crops.

Photo (top) Roger Charlton, (beneath) Alison Pouliot.

6. **Increased incidence of physiological disorders and associated impacts on product quality and yields** — tip burn, blossom end rot, hail damage and soil erosion could all increase with higher incidences and severity of extreme events.
7. **Increased public and political pressure on the use of resources** — increased competition, reduced reliability and rising costs will all increase pressures to improve on-farm efficient use of natural resources.
8. **Increased economic impacts** — there will be an impact of the Australian Government's Carbon Pollution Reduction Scheme as the sector is exposed to changes in compliance costs, input costs and flow-on costs from the supply chain that supports it; for example, through new requirements for product labelling and other regulatory requirements (both domestically and overseas).

A case study of the citrus and vegetable growing industry in the Central Riverina in 2008 demonstrated both negative and positive impacts of climate change on production.

Negative impacts

- Higher cost of irrigation under hotter conditions.
- Impacts on quality due to effects of sunburn and frost.

Positive benefits

- Earlier maturing crop resulting in a 10 to 14 day jump on competitors into the market.

Opportunities

There is the potential for climate change to provide some opportunities for growers. For instance, increased atmospheric carbon dioxide concentrations will increase the productivity of most horticultural crops. There is a high probability that these benefits will only be felt with the lower-range predicted temperature increases, and that in the long term these potential growth benefits will not continue.

Photos NPSI (mandarins), Roger Charlton (orange trees and lime).

Higher temperatures may also lead to shorter/faster breeding cycles for pests and diseases. Further research into plant, pest and disease responses to increased carbon dioxide and varying temperatures needs to be undertaken in order to assess the potential for these benefits to be realised.

Other potential opportunities that need to be further researched include:

- investigating how increased temperatures may improve growing rates and lengthen the growing season in some areas,
- promoting the opportunities that exist for growers that are open to adapting their systems and stocks in response to climatic shifts,
- identifying new markets for Australian plants (such as the waxflowers pictured at left) and increasing export opportunities,
- developing new products and services to replace drought intolerant species,
- promoting the incorporation of natives into new building design and landscape management strategies for the built environment, and
- highlighting the value of horticultural products with a lower environmental footprint than many other agricultural sectors. This offers opportunities for growers to brand their products and increase market share in light of increasing environmental awareness, and willingness to pay more for environmentally sensitive products amongst consumers.

The implementation of the Australian Government's Carbon Pollution Reduction Scheme (CPRS) may also provide some opportunities (see glossary for more on the CPRS). The need for carbon offsets may provide openings for some strategic investment within horticulture plantings (though it must be highlighted that the transaction costs with offset schemes may make such an approach only viable for growers with an adequate scale of operations). It is important that industry maintains a watching brief on the implications of the CPRS and other related policies in order to proactively respond to any potential opportunities as they arise.

Photos Allison Mortlock (grasses), Nadeem Samnakay (waxflower).

A summary of climate change impacts on horticulture

1. The horticulture industry has been, and will continue to be, vulnerable to impacts of climate change and climate variability.
2. Impacts vary between horticulture and other agricultural industries as well as within horticultural commodities and their growing regions. There can even be variability in impacts within a business. There is a need for further work to be undertaken to better understand and communicate the impacts within the industry.
3. Aside from the physical impacts of climate change, the main challenge for the horticulture sector is the need to respond to both changes in consumer preferences and the impacts of climate change policy decisions (including the introduction of the CPRS). Policy changes could include new compliance costs and increased input costs without growers necessarily being able to pass on those costs to consumers. Improved understanding of these impacts is required to inform research, development and extension (RD&E) responses.
4. The ongoing drought in many key horticultural regions has had an immediate significant impact and will reduce the long-term resilience of the horticultural industry. Climate change will continue to impact on water resources into the future.
5. There are still some potential opportunities for horticulture in a changing climate, including the potential for an increase in productive capacity due to increased carbon dioxide levels. However, the extent and sustainability of these potential benefits are not well understood.

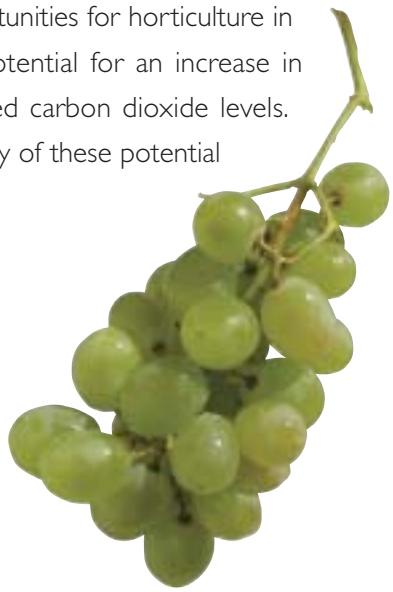

Photo Allison Mortlock (grapes).

Helping horticulture respond to climate change

Since 2003 HAL, in partnership with industry, has invested about $18.8 million into research that is helping horticultural growers adapt to climate change — this includes projects on water use efficiency, surviving the drought, pest management, best management practices and climate variability projects. In comparison with the extensive climate change and climate variability research and development conducted in broad-acre agriculture and the grazing industries, this investment by horticulture is quite small and has mainly been in response to the drought.

The best defence against future climate change is to continue to develop the capacity and knowledge to sustainably and cost effectively manage our response to current climate variability.

Investment in climate change research will now, however, need to increase so that the horticultural sector can compete in new environmental, social and policy settings. Due to the diverse nature of the industry and the anticipated impacts climate change poses for horticultural businesses, research responses will need to be varied, reflecting different end-user needs.

Most of the anticipated climate changes point towards the need for a very high standard of crop management. Industry and farm managers will need to distinguish between 'old climate expectations', and 'new climate realities', in determining and implementing new adaptation strategies or options. It is vital that management strategies be identified and implemented by horticulture to either offset negative impacts, or take advantage of positive responses. It is also important to develop the capacity and knowledge so that growers can make effective business decisions, minimise risk, and manage their response to climate variability more effectively.

Avocado farmers, Bonnie and Tony, responding to climate change

After 20 years of producing avocados we believe that a healthy, biologically active soil is our best defence against plant disease, pests and climatic challenges. We incorporate biological farming practices into our management system to achieve our goals. We provide organic matter in a variety of forms such as wood chip mulches, animal manures and vigorous, deep rooting ground covers.

High organic matter levels helps to maintain — good soil structure to enhance water infiltration, holding capacity and root health; nutrient cycling/availability; abundant and healthy soil biological communities; and good organic carbon levels. We do not use highly soluble acidic or salty fertilisers. Herbicides are only used around sprinkler heads.

Bonnie and Tony Walker, Baclisin Pty Ltd, Tuckombil, Alstonville, NSW

The Horticulture Climate Change Action Plan

The Horticulture Climate Change Action Plan has recently been developed to identify RD&E needs for the area of climate change/variability within the HAL Environment Portfolio. Being knowledgeable about the likely impacts of climate change and developing a positive approach to adapting to it, is central to the plan. The key question guiding its development is "What does climate change mean to my farm?"

While there has been a significant amount of research already undertaken, there are still gaps in climate change research relevant to horticulture. The Horticulture Climate Change Action Plan has been developed to address these gaps.

The action plan has three strategies that cover adaptation, mitigation, and awareness and communication. All three strategies seek answers to questions being asked by people working in the horticulture industry.

1. Adaptation

Question: "Do horticulture producers (and their advisors) have appropriate tools and an understanding of climate change and variability issues to avoid the risks and/or take advantage of the opportunities of a variable and changing climate into the future?"

RD&E response: The industry needs to develop a clearer understanding of what regional and industry specific impacts will be, and the management strategies that either offset the negative impacts, or take advantage of positive responses. With this understanding, horticultural producers can adapt and maintain sustainable profits.

Some adaptation research options include:

- improving understanding about the impacts and vulnerability of the industry to climate change,
- identifying and developing tools to assist growers to manage the risks of climate change — these tools will need to integrate with existing business management systems and link to appropriate training and extension channels,
- identifying more adaptable cultivars and a range of cultural practices that enable growers to maintain current production in current locations (i.e. adapt to the 'new' climate in the current location),

Photo NPSI.

- implementing successful adaptation strategies — for example, diversification into shorter duration crops to reduce the potential risks associated with higher temperatures and reduced availability of irrigation water,
- addressing barriers to adaptation, for example, identifying options for incentives for growers to allow them to best meet policy options (reduce emissions) — support for water innovation and security measures, energy efficiency measures, and tax and financing solutions to support infrastructure based adaptation,
- adapting production systems, distribution networks and branding and marketing strategies to capitalise on climate change,
- exploring niche markets and/or more creative marketing for crops, and
- developing links with other national scale activities, such as the Managing Climate Variability Program and the agricultural sector national RD&E strategies being developed by the Primary Industry Standing Committee (PISC) to ensure an 'across-agriculture' response to adaptation.

The horticulture industry continues to value improvements in production efficiencies and best management practices as strategies for managing ongoing climate variability and change.

It is vital that any adaptation responses are integrated with mitigation as the two are intimately linked. The horticulture industry is extremely susceptible to the impacts of climate change/variability and, as a result, is supporting the need for mitigation and reduction of emissions to reduce the potentially catastrophic impacts of climate change. At the same time, it is important for horticultural growers and businesses to undertake a risk management approach to better understand the potential impacts and appropriate actions required to respond to those impacts.

Photo Roger Charlton (leaves).

2. Mitigation

Question: "Do we understand how to reduce greenhouse gas (GHG) emissions from horticulture cropping systems?" and "Are current fertiliser management practices in horticulture appropriate for managing nitrous oxide emissions? What additional measures can also be taken to manage methane and carbon dioxide emissions?"

RD&E response: Two of the necessary mitigation outcomes for Australian horticulture are further reduced GHG emissions from horticultural production systems, and profitable horticultural production systems that contribute to GHG abatement.

CH_4	methane
CO_2	carbon dioxide
N_2O	nitrous oxide

Priorities in this area focus around determining the contribution ("carbon footprint") that all horticulture (and specific regions and commodities) make to methane, nitrous oxide and carbon dioxide emissions. With this information work can then be undertaken to identify and promote horticulture-specific best management practices that minimise GHG emissions and, at the same time, promote the simultaneous goals of productivity, sustainability, adaptability and abatement.

3. Information, awareness and communication

Question: "Do horticulture producers (and their advisors) have appropriate tools and an understanding of climate change and variability issues to avoid the risks, and/or take advantage of the opportunities of a variable and changing climate?"

RD&E response: Priorities in this area of investment are focused on informing growers, politicians and the community about the impacts of climate change, and to develop simple and helpful information products that promote horticulture specific messages to the community, as well as to industry stakeholders.

This brochure and the climate change glossary have been jointly developed by HAL and the CCRSPI to support this RD&E response for horticulture.

More horticulture information products will be developed to provide (1) a clear understanding of climate change and climate variability issues, and (2) sufficient understanding of climate change and climate variability issues for stakeholders to be able to make appropriate risk management decisions.

Photo Allison Mortlock.

Implementation of the Action Plan

The Horticulture Climate Change Action Plan has been developed by the HAL Environment Portfolio, in consultation with and on behalf of industry. Options for funding the implementation of the action plan are being discussed with industry.

The vision of the HAL Environment Portfolio is:

> *By 2010, Australian horticulture will be recognised internationally for its widespread adoption of commonly agreed good management practices, which both conserve and enhance the natural resource base, and promote a long-term viable industry.*

To achieve this vision there is a need to focus on empowering industry leaders, facilitating meaningful partnerships, encouraging innovation and adoption of research, informing policy, and positioning the industry.

The success of the Horticulture Climate Change Action Plan will be measured by:

- resilient and adaptive horticultural production systems that are less vulnerable to climate change and climate variability,
- improved resilience to changes in pest and disease incidence,
- increased ability to capitalise on new market opportunities,
- regionally specific climate change scenarios tailored for horticulture growers, and
- practical tools for growers and their advisors to better manage climate change and climate variability.

In addition to the Horticulture Climate Change Action Plan, HAL is currently investing in two national, across-agriculture climate change programs in order to ensure effective and meaningful collaboration (see opposite). The strategies within the Horticulture Climate Change Action Plan are aligned with the priorities of both programs, and HAL will continue to work with collaborative partners to invest in climate change and variability issues.

Photo Arthur Mostead (mango trees).

Collaboration is the key

There is no 'ready' solution to climate change, but the urgency of information and action is new. In the past, climate change research has been fragmented; across all areas of innovative technologies, biological systems and communication/ education. It is vital that government, agencies and industry now work together to communicate and respond to the implications of climate change. The CCRSPI network has been set up specifically to address this need, delivering coordination and collaboration on key climate change research issues.

Managing Climate Variability Program

The Managing Climate Variability Program (MCV) is funded by the rural research and development corporations and the Australian Government. MCV has been helping farmers to manage climate risk on-the-ground for over a decade, providing practical tools to incorporate climate information into farm business decisions.

The objectives of MCV are to:

- improve seasonal forecasting — its accuracy, lead-time and ease of use,
- provide tools and services for managing climate risk, and
- increase adoption of climate risk management among Australian farmers and natural resource managers.

HAL is a co-funder of a horticulture specific MCV project focused on identifying the critical thresholds ('tipping points') and climate change impacts/adaptation in horticulture.

For more information www.managingclimate.gov.au

Photos NPSI (potatoes),
Arthur Mostead (potato field).

CCRSPI works through collaboration, coordination and communication.

National collaboration — the CCRSPI network

CCRSPI is a collaborative partnership between all state and territory governments; the rural research and development corporations; experts from the university sector and the Federal Government (through the Department of Agriculture, Forestry and Fisheries and the CSIRO). CCRSPI was set up in recognition of the need for a national response to the challenges of climate change, and the reality that research dollars are better invested when duplication is avoided and knowledge is shared.

HAL is a partner of CCRSPI and has been a strong supporter of the need for coordinated research and sharing of knowledge between primary industries. CCRSPI is supporting HAL's initiatives to help horticulture better understand and respond to climate change, and also to ensure insights from, and the needs of, horticulture producers are communicated to other organisations within the CCRSPI network.

For more information www.lwa.gov.au

Next steps

Climate change will impact on horticulture, with different outcomes depending on location, industry, supply chain, and timeframe. However, producers can respond to these challenges, especially if they focus on climate change as being another business issue, associated with investment planning, financial planning, process and operational management, product positioning and branding, and pricing strategy.

HAL and CCRSPI hope this brochure will help producers think about climate change in terms that relate to their operations and region. Australian producers can and will, continue to adapt to the challenges and opportunities associated with climate change.

Photo Roger Charlton.

Climate change glossary

Adaptation is a response to the impacts of changing environmental factors such as temperatures and rainfall on production systems. Adaptation can occur in a planned manner in response to known changes, or in an autonomous manner as farming systems change gradually over time.

Climate change is the term used to refer to changes in long-term trends of environmental factors such as temperature and rainfall. These changes can be due to natural variability or as a result of human activity.

Carbon credits are used to offset greenhouse gas (GHG) emissions. A common offset is investing in planting trees which sequester carbon dioxide (CO_2). The most common unit of a carbon credit is one tonne of carbon dioxide equivalent (tCO_2-e).

Carbon footprints are the amount of CO_2-e produced by an activity, a business or even a country. In its strictest sense, a carbon footprint accounts for both direct emissions (those which a business or activity is wholly responsible for — e.g. all on-farm activities which produce GHGs), and indirect emissions (those related to activities such as transport of raw materials to a business, and transport of product to the consumer). Other GHGs that contribute to global warming are often converted to a 'carbon equivalency' metric (the amount of carbon that would have a similar effect to the actual amount of the GHG released) and then the final impact of all gases given in terms of carbon. Producers need to look at their exposure to **all** GHGs and not just CO_2, both for product labelling and also in case of any exposure to regulatory reporting (either under the proposed Carbon Pollution Reduction Scheme (CPRS) or under the National Greenhouse Energy Reporting Framework).

Carbon neutral is when an activity, event, household, business or organisation can voluntarily declare carbon neutrality by reducing GHG emissions, and purchasing offsets such as "green" energy for any residual emissions in order to achieve zero net emissions.

Photos Allison Mortlock.

Carbon offset is an investment by an individual or a company in a GHG abatement activity that sequesters carbon from the atmosphere. It is used to "offset" or compensate for GHG emissions from the activities of an individual or a company. Internationally offset schemes, approved under the tenets of the Kyoto Convention, can be used to generate tradable 'Certified Emission Reduction' (CERs) issued under the Clean Development Mechanism. However, there are conditions as to what makes up viable offset schemes, and approval and monitoring can generate costs. Currently within Australia offsets only exist in a voluntary market, and under the CPRS will be available within a regulated market. Other offset schemes may be able to used, depending on future policy directions and the economics of developing and trading offsets or accompanying derivate instruments (such as CERs or other permits).

Carbon Pollution Reduction Scheme (CPRS) is part of the Australian Government's commitment to reduce GHG emissions by 5% of 2000 levels by 2020, and in the longer term reducing emissions by 60% compared with 2000 levels by 2050. Emissions from stationary energy, transport, industrial processes, waste, and fugitive emissions from oil and gas production will be covered when the CPRS commences in 2011. Approximately 75% of all emissions from these sectors will be covered by the CPRS by applying obligations to only 1000 businesses. Agriculture will not be included at the inception of the scheme. A decision to include agriculture will be made in 2013, and it is likely that agriculture will be included by 2015. Agriculture will follow when a method of emissions estimation and reporting has been developed.

Carbon sequestration refers to the long-term storage of carbon from the atmosphere. Trees (and all plants) sequester CO_2 from the atmosphere through the process of photosynthesis. CO_2 can also be sequestered in soils.

Carbon sinks are processes that remove more carbon dioxide from the atmosphere than they release. Trees, soils and oceans are important carbon sinks.

Direct emissions are emissions of GHGs from sources within the boundary or control of an organisation. These are also called Scope 1 emissions, for example, the burning of fossil fuels for transport and N_2O emissions from the use of nitrogen fertilisers.

Food miles are the distance food travels throughout the complete production process ending with the consumer. The concept allows for a simple comparison to be made amongst different foods, in relation to energy use and GHG emissions.

Global warming refers to the warming of the earth's surface, which is both natural and human induced.

Greenhouse gases (GHGs) are gases that absorb and trap heat near the earth's surface and reflect it back to earth to increase global warming, resulting in climate change. The six gases of major interest are — CO_2, N_2O, methane (CH_4), HFCs (hydro-fluorocarbons), PFCs (perfluorocarbons) and sulphur hexafluoride (SF_6).

Indirect emissions are emissions of GHGs from sources outside the boundary or control of an organisation. These are also called Scope 2 emissions and include, for example, purchasing electricity.

Intergovernmental Panel on Climate Change (IPCC) was established jointly by the United Nations Environment Programme and the World Meteorological Organization in 1988. The purpose of the IPCC is to assess information in the scientific and technical literature related to all significant components of the issue of climate change. The IPCC draws upon hundreds of the world's expert scientists as authors and thousands as expert reviewers. Leading experts on climate change and environmental, social, and economic sciences from some 60 nations have helped the IPCC to prepare periodic assessments of the scientific underpinnings for understanding global climate change and its consequences.

Kyoto Protocol is an international agreement adopted in December 1997 in Kyoto, Japan. The Protocol sets binding emission targets for developed countries that would reduce their emissions on average 5.2% below 1990 levels.

Life cycle assessment is an assessment of the environmental, economic and social impacts of a production system or product. The life cycle commences from the raw materials stage through to processing, transport, use, reuse, recycling or disposal.

Mitigation is a process whereby the sources of GHG emissions are reduced, and/or carbon sinks are created or enhanced.

United Nations Framework Convention on Climate Change (UNFCCC) was established in 1992 at the Rio Earth Summit and currently has 189 signatories. An international framework was agreed that aimed to stabilise atmospheric concentrations of GHGs. The UNFCCC agreed to the Kyoto Protocol in 1997 to implement emission reductions in industrialised countries.

Vulnerability refers to the level of susceptibility to the adverse effects of climate change. It also refers to the ability of people or businesses to cope with the adverse effects of climate change.

Photo Land & Water Australia.

Further information

Horticulture Australia Limited — www.horticulture.com.au

Climate Change Research Strategy for Primary Industries — www.lwa.gov.au

Managing Climate Variability Program — www.managingclimate.gov.au

Primary industries responding to climate change, CCRSPI Update One, Land & Water Australia — www.lwa.gov.au (Product code PN22340)

Carbon pollution reduction scheme and farmers, Fact Sheet number 5 — www.climatechange.gov.au/greenpaper/factsheets/fs5.html

Australian Government
Land & Water Australia

Photos Arthur Mostead (top), Roger Charlton (strawberries).

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