VICTORIAN
LANDCARE
& CATCHMENT MANAGEMENT
Winter 2017 Issue 69

CLIMATE CHANGE FEATURE

The future for dairy farming

Freshwater blue carbon

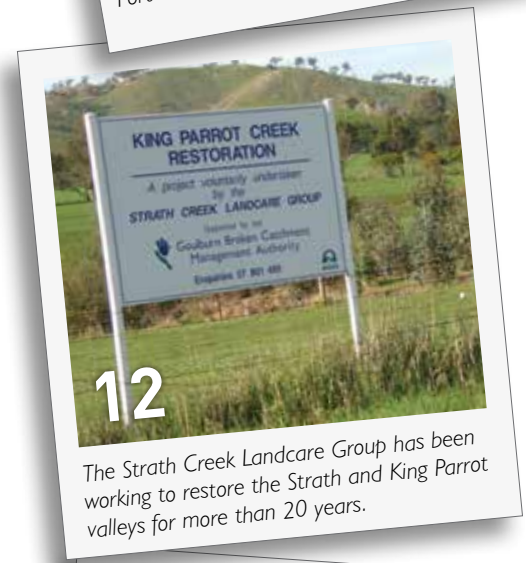
Time to rethink, restore and reboot

Victorian Landcare Program
VICTORIA State Government

Victorian Landcare and Catchment Management

Winter 2017 Issue 69

Black wallabies are on the move around Portland.



The Strath Creek Landcare Group has been working to restore the Strath and King Parrot valleys for more than 20 years.

Landcare training in north west Jamaica in 2015 covered marketing farm products, establishing Landcare networks and launching projects.

Contents

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Accessibility
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Cover photograph
(From right) Alex Pearse, Saras Windecker and Dr Paul Carnell from Deakin University identifying different plant species being sampled for soil carbon at Dereel Lagoon, south of Ballarat. Photograph by Donna Squire, Deakin University.

From the Minister

There is no doubt that Victoria's climate is changing. We are experiencing rising temperatures as well as more extreme weather events. Climate change is a game-changer for how people will live and work in the landscapes of the future. Victoria's native plants and animals are also facing this challenge and need our help now more than ever before.

This is why we are developing a new direction for the management of our native plants and animals in Victoria.

In April this year, I launched our new long-term plan to protect Victoria's biodiversity. *Protecting Victoria's Environment – Biodiversity 2037* will help stop the decline of Victoria's plants and animals, and improve our natural environment so it is healthy, valued and cared for by all Victorians.

This new plan recognises that although the future is uncertain, particularly for the most vulnerable species, we can maximise our achievements in the longer term by tackling issues before species become critically endangered. It will also help drive action from local businesses, government and people to help stop the decline of our biodiversity through investment, improved decision making and planning, and through volunteer action.

The Victorian 2017/18 Budget has provided $86.3 million for priorities identified to protect Victoria's biodiversity. This includes $65.5 million for targeted on-ground actions, recognising that we need to make strong investment in supporting partnerships for action across the environment sector to protect and improve local biodiversity.

Another important piece of work is Victoria's *Climate Change Adaptation Plan 2017–2020*. This plan outlines what the Victorian Government will do for the next four years to help communities meet the challenges and act on the opportunities that come with our changing climate.

We have set a target to reduce Victoria's greenhouse gas emissions by 15-20 per cent below 2005 levels by 2020. We are also leading the way by reducing reported emissions from the government's own operations by 30 per cent below 2015 levels by 2020. This will start us on the path to our long term target of net zero emissions by 2050.

The Victorian Government has committed $25.4 million over four years to take decisive action and restore our position as a leader on climate change.

This issue is packed with interesting stories from researchers and community members on the science of climate change and ideas for response and adaptation.

Richard Eckard, Director of the Primary Industries Climate Challenge Centre, looks at wine grapes and the growth patterns of pastures to show concrete evidence of changes in our climate. Richard explains the role of land managers in developing risk management plans for climate change and that each industry and region will need to consider different emerging risks.

You can also read about a recent study by Dairy Australia that modelled climate change scenarios on a dairy farm in Gippsland. The study showed that the management techniques and skills of our farmers in adapting from one season to the next will be vital in securing the future of our food and fibre industries.

Now is the time to act on climate change. Acting on climate change presents opportunities for local governments, business and communities to adapt, respond to and make Victoria a more healthy, prosperous, clean and vibrant place to work and live.

Finally, I urge you to all think about the many dedicated and inspiring people you know who are involved in important works through local Landcare groups and consider nominating them for a 2017 Victorian Landcare Award. Nominations are now open and Victorian nominations close on 23 June 2017. Recognising and celebrating our achievements can provide great encouragement to the wider community and raise the profile of the important work of our Landcarers across Victoria.

Hon. Lily D'Ambrosio MP
Minister for Energy, Environment and Climate Change

Minister for Suburban Development

2017 Victorian Landcare Awards

By John Robinson

Entries for the 2017 Victorian Landcare Awards are now open. The awards are an opportunity to acknowledge and celebrate the great work done by individuals, groups and networks to enhance, restore or protect our environmental assets and improve agricultural productivity.

If you or your group/network is involved in protecting or improving your local environment, farm, coastline, bushland, wetland, waterway, school, region, or catchment there is an award category to suit you.

2017 National Landcare Award categories:

- Australian Government Individual Landcarer Award
- Australian Government Partnerships for Landcare Award
- Australian Government Excellence in Sustainable Farm Practices Award
- Australian Government Innovation in Agriculture Land Management Award
- Coastcare Award
- Landcare Community Group Award
- Junior Landcare Team Award
- Indigenous Land Management Award
- Young Landcare Leader Award

The winners of these nine awards will represent Victoria at the 2018 National Landcare Awards.

The 2017 Victorian Landcare Awards categories:

- Joan Kirner Landcare Award
- Landcare Network Award
- Urban Landcare Award
- Dr Sidney Plowman Travel and Study Award
- Victorian Farmers Federation and Landcare Victoria Inc. Heather Mitchell Memorial Fellowship

Past award winners have reported that winning an award helped them to leverage funding for group and network projects, including corporate sponsorship, and provided a welcome boost for members.

The Urban Landcare Award has been introduced as a new category to recognise the work done by groups, networks, and individuals in our towns and cities.

The award will also help to increase awareness of Landcare activities in urban areas.

The next edition of the magazine (no.70), published in spring 2017, will feature stories on the winners of the 2017 Victorian Landcare Awards.

Entries for the 2017 Victorian Landcare Awards close on 23 June 2017.
For selection criteria, entry guidelines, and the awards terms and conditions go to www.landcareonline.com.au/

Horse knowledge returns to Corangamite

The winner of the 2015 Dr Sidney Plowman Travel and Study Award, Karen O'Keefe, the Regional Landcare Facilitator at Corangamite CMA, used her award to study the internationally acclaimed Horses for Clean Water program in the USA.

Karen visited a number of best practice demonstration farms in north-west America. She aims to integrate the findings from her visit into a Horsecare through Landcare program to be implemented in the Corangamite region.

For further information contact Karen at karen.okeefe@ccma.vic.gov.au

Michele Bower and Karen OKeefe at Laughing Horse Farm, Preston USA.

The Honourable Linda Dessau AM, Governor of Victoria (left), congratulates Lisette Mill on her 2015 VFF/FTLA Heather Mitchell Memorial Fellowship.

Valuable discussions about shade and shelter

Lisette Mill is the Landcare Facilitator for the Basalt to Bay Landcare Network in south west Victoria. In 2015 Lisette was awarded the VFF/FTLA Heather Mitchell Memorial Fellowship.

Lisette used her fellowship to conduct a survey to investigate why landholders do, or don't, create adequate shade and shelter on their farms.

Lisette spoke with more than 60 people during her fellowship.

"It was a terrific opportunity to have some frank and valuable discussions. I'm very grateful for the fellowship and to the people who gave me their time and opinions," Lisette said.

For further information contact Lisette at basalttobay@gmail.com

Weather and climate resources from Agriculture Victoria

By Liz Hamilton

Agriculture Victoria provides a range of services to support farmers and advisers to manage the risks associated with seasonal variability and climate change.

Drawing on the expertise of primary producers, researchers and educators, the latest science on seasonal forecasting and climate change adaptation is packaged in a variety of tools and resources.

The best place to start is the Agriculture Victoria website at www.agriculture.vic.gov.au. From the home page of the website go to agriculture, then farm management, then weather and climate. A series of online seminars called webinars are available. There are links to recorded webinars on a diverse range of topics from modelling the impacts of climate change on soil carbon in the pastures of western Victoria, to new soil, water and climate applications to enable better decision making on farms.

Seasonal climate update webinars by seasonal risk agronomist Dale Grey are also available. Webinars are a great way of hearing from and interacting with guest speakers and are recorded, so they can be viewed at any time.

For short, sharp, seasonal forecast outlooks you can subscribe to *The Fast Break* newsletter. Enter your email address to receive a monthly newsletter detailing oceanic and atmospheric climate driver activity, summarised three-month model predictions for the Pacific and Indian Oceans, and rainfall and temperature for Victoria.

The Fast Break newsletter section of the website also has links to monthly YouTube clips that summarise Victorian rainfall and describe credible seasonal outlooks from world leading forecast models. The YouTube clips cover stored soil moisture levels, crop growing conditions and the latest climate risk information for Victoria. In a recent survey 90 per cent of farmers who responded said that the information provided through these resources had improved their ability to manage seasonal variability and risk.

Information on what influences climate over the medium to long term is available through the climate dogs animations. These animations use different breeds of dogs to model the drivers that influence Victoria's climate. The dogs provide an easily understood science summary of short and long-term weather patterns, climate variability and change.

Seasonal risk agronomist Dale Boyd with soil M probes. Dale delivers monthly YouTube climate updates available through the Agriculture Victoria website.

The weather and climate webpages also provide links to useful weather forecast sites that show expected rainfall for the weeks ahead.

Information on what's happening to soil moisture levels in dryland cropping regions is available through the Risk Management Through Soil Moisture Monitoring Project (select soil moisture monitoring under the weather and climate page on the website). Farmers can subscribe to the newsletter and access real time information on soil moisture from probes across 16 sites, to help guide their decisions around sowing and crop selection. The newsletter also links to other national soil moisture information.

Agriculture Victoria also recently collaborated with the Australian Government Fertcare Carbon Farming Extension Project to produce new nitrogen use efficiency and nitrous oxide and soil carbon resources. Go to www.fertilizer.org.au and then to Fertcare to find these resources in the nutrients and fertiliser information.

There are in depth reports and summaries of the latest science, knowledge and best management practices for protecting soils, reducing greenhouse gas emissions and maximising returns through better soil carbon and nitrogen fertiliser management.

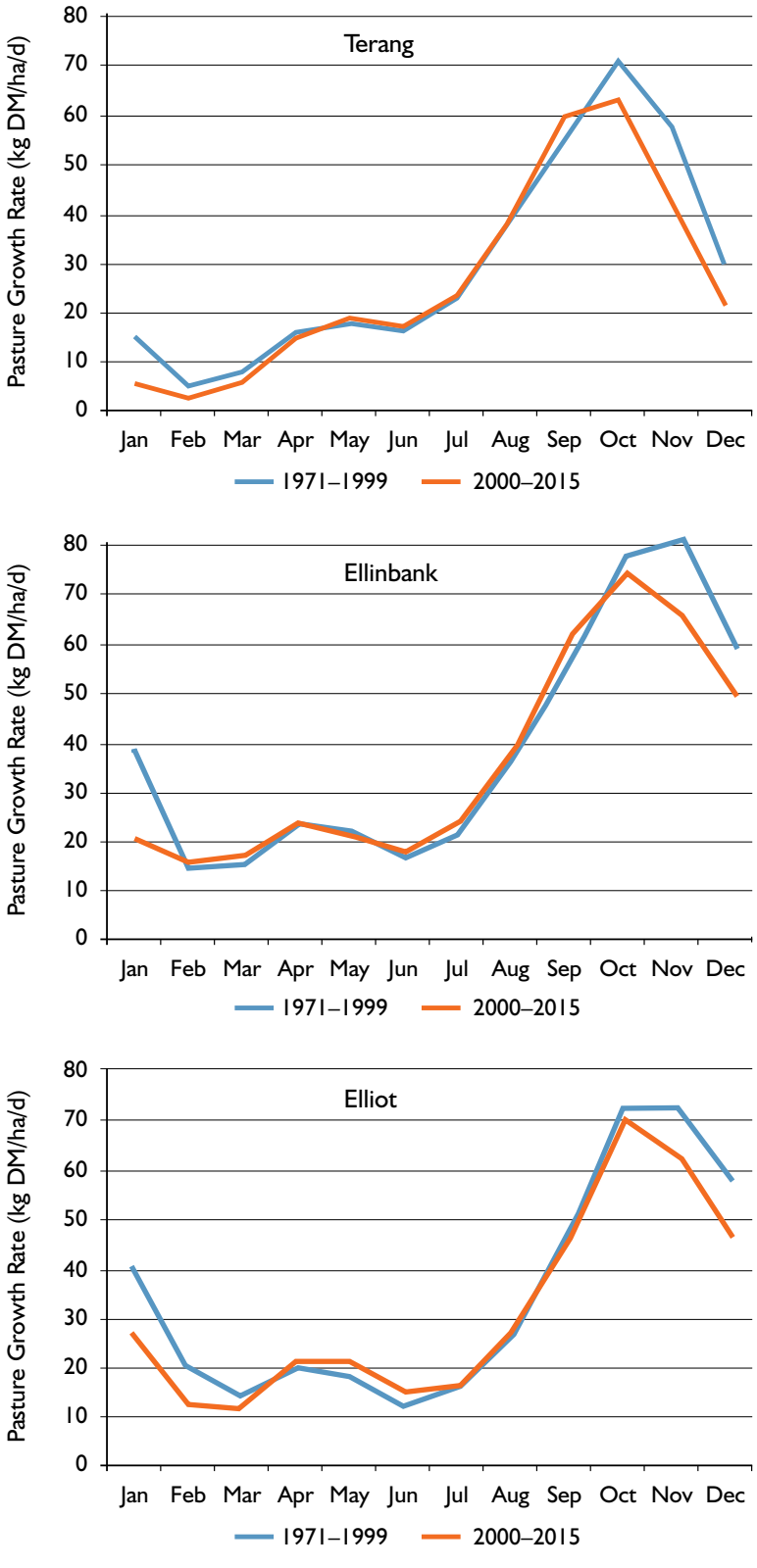
Liz Hamilton is a Knowledge Broker Seasonal Risk for Agriculture Victoria. For more information contact Liz at liz.hamilton@ecodev.vic.gov.au

> *For short, sharp, seasonal forecast outlooks you can subscribe to* The Fast Break *newsletter.*

Climate change – plants and animals don't lie

By Richard Eckard

Climate change has become a politically charged topic in Australia, and it seems our voting preference is heavily influenced by our trust in science. But here's the thing: our plants and animals don't care about politics, and they don't lie!



Average pasture growth rates between 1971 and 1999 (baseline) compared to 2000 to 2015 from Terang in western Victoria, Ellinbank in west Gippsland and Elliott in north-west Tasmania.

Plants and animals demonstrate the truth by their responses to the conditions to which they are exposed. An increasing body of evidence continues to be gathered from plants and animals that proves climate change is already well underway.

The agricultural sector has been noting these changes for some time. This is the plant and animal story as told by wine grapes, pastures and crops. Their responses to a changing climate are not opinion, just evidence.

Earlier ripening of wine grapes

Wine grapes have been ripening earlier in Australia in recent years. In 2016 some vineyards harvested up to four weeks early and picking started as early as February. Winemakers are meticulous in their measurement of grape sugar content leading up to harvest, graphing these for each field and vintage to ensure harvest of the best quality grapes for their wine.

Higher spring temperatures mean the grapes respond by ripening earlier, this also results in a more compressed vintage that presents an increasing logistical challenge for processing capacity on the vineyard.

Winemakers visit each vineyard as the season progresses taking samples of the grapes to measure their sugar content, measured as brix. The best pinot noir wine results from a harvest when the grapes measure 23.6 brix. Natural variability of the date when the grapes reach the brix target are to be expected, but between 1984 and 2007 the average maturation date of pinot noir grapes across southern Australia has been advancing by eight days per decade.

Earlier harvests of eight days per decade were also recorded in Colmar, France between 1972 and 2004 and four days per decade in Geisenheim, Germany between 1955 and 2004. This earlier wine-grape ripening is driven by climatic warming and drying, combined with management practices.

Changes in growth patterns of pastures

In southern Victoria, dairy silage harvesting traditionally started on Melbourne Cup Day – the first Tuesday in November. Many contractors are now starting cutting as early as August, due to a combination of

Grapes at Nazaaray Estate winery, Flinders. Winemakers are meticulous in their measurement of grape sugar content leading up to harvest. Their records demonstrate that wine grapes in Australia are ripening earlier.

warmer and drier conditions. Our recent modelling supports this by illustrating that observed patterns of pasture growth in southern Victoria have changed.

Research published in 2009 predicted an earlier onset of the drier summer in southern Australia. The growing season would be reduced by up to three weeks in late spring, but this was potentially compensated for by an increase in winter pasture growth due to warmer temperatures by 2050.

Re-running the same simulations and sites in 2015, but presenting pasture growth over the past 15 years separately from the 1971 to 1999 baseline (Figure 1), the past 15 years of pasture growth show a pattern closer to what was originally predicted for 2030 and 2050. The pastures are telling us that climate change is advancing faster than predicted in 2009.

Crop frost risk increasing

The science tells us that climate change will initially result in more intense frosts across southern Australia, due to reduced rainfall leading to more clear winter skies and associated night-time heat loss. So what do the crops tell us?

Record recent frost losses in the cropping industries have prompted a national research review commissioned by the Grains Research and Development Corporation. The 2016 season delivered a series of frost events that devastated some crops, particularly in Western Australia, in what had promised to be a record-breaking year.

The climate change sting in the tail is that warmer average temperatures also increase the rate of crop development bringing crops to the susceptible, post heading stages earlier when there are periods of higher frost risk. Estimates of damage, mainly in wheat and barley crops, range from losses of 1.5 to 4 million tonnes across Australia.

Climate change is now

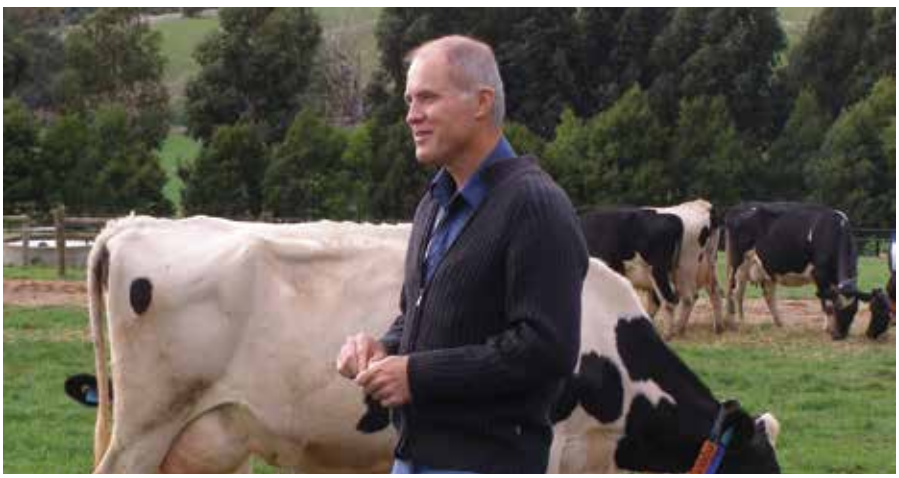
These are only a few of the growing number of climate change stories as told by plants. Other well-documented examples include coral bleaching, mangrove die-off, reduced ripening in fruit tree orchards and the rise of European wasps.

The mounting evidence from the plant and animal kingdoms over the past 15 to 20 years means climate change is not the future – it is now, we are in the midst of it.

While we can clearly cope with the trends already being experienced – through the proactive adoption of current best management practices – the extreme events along the way are the biggest challenge for farmers and land managers.

Given that we now know what extreme events are likely, we need to start working with land managers to develop appropriate risk management plans, as each region and management system will need to consider a different suite of options to manage their emerging risks.

Professor Richard Eckard is the Director of the Primary Industries Climate Challenges Centre. For further information go to www.piccc.org.au or contact Richard at Richard.Eckard@unimelb.edu.au



Professor Richard Eckard at the Ellinbank Dairy Research Centre, talking about research on climate change impacts on pastures, cows and milk production.

Drought declaration produces climate change scenarios

By Rob Shea

The Ararat Rural City Council (ARCC) was drought declared by the State Government in early 2016. The drought declaration brought about positive assistance for farm businesses in the rural city, including Victorian Government Stock Containment Area Program grants and welfare assistance where needed.

Farmers, agribusiness representatives and researchers participate in a future climate scenarios focus group held in Ararat in 2016.

A drought working party was also established by Council to formulate responses to the dry conditions. Mayor Paul Hooper chaired the working party and members included council staff in agribusiness and rural welfare roles; farmer and VFF representative Charlie de Fegely; CEO of Cultivate Agribusiness Jo Cameron; and myself, a former local farmer and Project Manager for the Perennial Pasture Systems farmer group.

Representatives of Agriculture Victoria, the Glenelg Hopkins CMA, and Grampians Wimmera Mallee Water have also been invited to the working party meetings.

As well as looking at the current situation, the working party decided to take a longer-term view and look at the climatic issues that are facing the municipality. Two major strategies were decided on: a water study, and the development of climate scenarios that also considered how to make the region's farm businesses more resilient.

Focus groups gather information

The working party decided to gather the information required for the future climate scenarios project by conducting focus group sessions with farmers, agribusiness representatives and researchers.

The first session was conducted in Ararat in September 2016 with the focus on grazing-based systems with some cropping.

The second workshop was held at Lake Bolac in early October 2016 and focused on cropping systems with some grazing in the enterprise.

Funding for the sessions was provided by ARCC and the Glenelg Hopkins CMA through the Australian Government's National Landcare Programme.

To provide background material for the first session Charlie de Fegely produced a paper on developing more robust perennial-based pasture systems that have been impacted by changes to climatic conditions.

The focus group facilitator, Cam Nicholson, accessed information from Agriculture Victoria using the CSIRO Climate Analogues tool, which identified locations with a current climate similar to the one predicted for the Ararat region in 2030.

At the first workshop the current Ararat climate was substituted with Stawell and in the second workshop Lake Bolac was substituted with Bendigo. Crop and pasture modelling using these different climates enabled participants to understand how their production systems may change in the future.

Current production systems were analysed and the predicted climatic changes were discussed before the anticipated changes in systems were identified. Discussion groups then chose topics to work on and identified issues for research and demonstration projects.

The sessions were met with great enthusiasm by those present. Dr Peter Sale from La Trobe University described the Ararat meeting as one of the best he has attended in his long agricultural research career.

The focus group reports and other information obtained during the discussions will now be compiled into a final report that will form the basis of ARCC's response to dry years in the future.

The report will be available to the public and it is hoped that other municipalities may use it to assist in formulating drought responses.

The drought working party is set to continue. Both council and the agricultural representatives are keen to continue the positive approach to agricultural issues in the municipality, although the drought working party will need a change of name. The Ararat area had a bumper season in 2016, a welcome change to the tough times of the past few years.

Rob Shea is Project Manager of the Perennial Pasture Systems group. For further information contact Rob at yadin@netconnect.com.au

Black wallabies on the move

By Gary Milich

For the past 35 years my wife and I have lived in a rural setting near Portland with 100 acres of forest as our backyard. Up until eight years ago we only saw red-necked wallabies (*Macropus rufogriseus*) in our forest but after three dry years black wallabies (*Wallabia bicolor*) started to appear.

Over the past few years the number of black wallabies in the area has noticeably increased. They are now seen in urban areas and are regularly killed by vehicles on roads. The local panel beating businesses have reported a significant increase in vehicles needing to be repaired as a result of collisions with black wallabies.

We believe that with declining food available due to a number of dry years, the black wallabies have moved south where food is more plentiful. The newcomers have certainly found the south-west coastal area to their liking with a ready supply of vegetation suitable for their browsing habits. We believe this change in their range has occurred as a direct result of climate change.

Our local Tarragal Landcare Group has a long history of successful revegetation projects. We have planted more than 100,000 tube stock in the local area with high survival rates.

Four years ago a substantial planting of tube stock failed due to grazing by black wallabies. The wallabies completely destroyed all of the blackwoods, manna gums and sheoaks with only some prickly moses and banksias surviving.

The group conducted an experiment by erecting a 2.4 metre fence around two plots on the same site. The plots were monitored and the results showed that all of the plants protected by the fence survived. The group is now planning to move the makeshift fence to other newly planted sites to deter the browsing wallabies until the plants are established.

The group is also working in cooperation with Greening Australia on direct seeding. With direct seeding the volume of plants that are established outweighs the effect of browsing. Observations of wallabies at direct seeding sites shows that browsing mainly occurs at the outer edges of the site while interior plants are left alone.

Black wallabies are now common visitors to Gary Milich's garden, near Portland. They eat all types of woody vegetation. Leaves from the apricot tree are their favourite food.

A shelterbelt planted in 2007 by the Tarragal Landcare Group on John and Brigitta Keiller's property. International student volunteers assisted with the project.

A browsing deterrent has also been used to protect plants at the early stage of growth. The deterrent is a natural based substance that sticks to leaves that are then dusted with fine iron filings. It can be administered with a normal seven litre garden spray.

Tarragal Landcare Group is purchasing a sprayer that will spray the deterrent substance onto large trees. A trial plot of 30 manna gums has been used to test the effectiveness of the deterrent in controlling koala grazing, which is also an issue in the area. Several other native species grazed by wallabies have been sprayed with positive results.

The change in the range of the black wallaby has influenced the planning and planting strategies for proposed revegetation projects in the south west. We must now carefully assess each site for the threat of browsing and determine how best to proceed.

Gary Milich is a member of the Tarragal Landcare Group. For further information contact Gary at g.milich@skymesh.com.au

Climate change – an opportunity to rethink, restore and reboot

By Lauren Rickards

Unlike some city folk, many people who live and work in rural areas are inherently attuned to outside weather conditions. This includes awareness of record-breaking extremes in temperature, along with subtler and equally important shifts in seasonality, the sequencing and combination of conditions, and effects on the biophysical world.

It is no surprise that social research suggests that farmers and other rural land managers are among those who are most alert to how strange our climate is becoming. While climatic changes can be hard to put a finger on, many farmers agree that their rules of thumb for how weather behaves and seasons unfold increasingly feels a bit wobbly.

The challenge of adapting to climate change is more than just simply recalibrating our decision making with updated weather parameters. While the broad trajectory of climate change is increasingly being locked in as greenhouse gas concentrations in the atmosphere accumulate, in the short to medium term climate change is better thought of as a loading of the dice of future conditions, shifting but not guaranteeing the odds of what conditions will emerge next.

The new climatic pattern involves new generalities – for example hotter average temperatures and drier winters in Victoria – as well as more variability and more extreme differences in conditions between areas and periods.

Many types of resilience required

While farmers, more than most, work with such probabilistic and context-specific thinking, managing these dual shifts demands resilience of multiple types. Not the least of these is emotional resilience: how clearly we are able to keep thinking at a time when our thinking needs to be clearer than ever.

In all sectors, stress is one of climate change's most unwelcome and pervasive effects. Land managers especially are required to deal with climate change's multiple, overlapping effects, all in the context of other challenges.

As farm households know well, common media representations of disasters such as floods as spectacular events that are neatly bounded in time and space – and determined primarily by physical measures such as water levels – poorly capture the true mess and stress involved.

Likewise, bouncing back from such events is not a quick, neat or automatic process. Impacts do not always diminish neatly over time, and things do not necessarily return to normal. At the same time, land managers are being pushed to ask if a return to normal is desirable, given the emergence of new longer-term conditions.

Rather than resilience referring to putting disruptions behind us as quickly as possible, genuine resilience increasingly requires thinking critically about strategies as well as tactics, goals and methods.

It is no surprise that social research suggests that farmers and other rural land managers are among those who are most alert to how strange our climate is becoming.

Researcher Lauren Rickards from RMIT believes that Landcare is particularly important in an era of climate change.

Members of the Kowree Farm Tree Group at a community fundraiser at the Lemon Springs Conservation Landbank property in 2014. As well as its social benefits Landcare contributes to the positive regeneration of landscapes and the agricultural systems they are part of.

Open-mindedness and innovation

While bounce back forms of resilience will always be necessary in some spheres such as critical infrastructure or physical health, a deeper form of resilience incorporates open-mindedness and the capacity for radical innovation.

This also goes beyond the common idea that resilience is about self-reliance as it highlights the importance of relationships, cooperation, community-building and wider systems.

In this sense, Landcare is particularly important in an era of climate change. Socially, participation in Landcare offers members the sort of support, assistance, information and forum for generating new ideas, norms and rules of thumb that smart adaptation requires. Physically, it contributes to the positive regeneration of landscapes and the agricultural systems they are part of.

Crucially, the latter means that Landcare is not just reactive to climate change, but able to contribute to halting its generation in the first place.

Tracing carbon flows in agriculture

Tracing carbon flows in agriculture highlights two crucial issues. The first is that the sector's contribution to the greenhouse gas burden of the atmosphere is mainly due to the carbon it imports from external sources via fossil fuels, fertilisers and pesticides.

With reliance on such inputs already eroding the profitability of farm businesses, and knowledge about their effects on the climate system, moves to seek local, natural alternatives are now progressing.

The second issue that following carbon in agriculture highlights is that in the right place, carbon is a positive, crucial element of life. In the soil especially, organic carbon is key to fertility and soil health. Awareness of this, and concern about the depletion of Australia's soils, is what prompted the vital soil conservation movement that Landcare largely emerged out of.

Celebrating soil as a natural sink for carbon promises to not just help rebalance the over-accumulation of carbon in the atmosphere but to restore soil life and condition. Similarly, celebrating and protecting trees as natural reservoirs of carbon will help to mitigate climate change as well as boost efforts to restore and enhance the biodiversity, amenity, water catchment and intrinsic value of trees.

When we see climate change mitigation as part of these broader, existing agendas it is possible to see how ways to address it presents some welcome opportunities.

Responses to climate change can promote the move to a higher level of system resilience with the ambition of positively regenerating our land, agriculture and society. Our rural land managers can be the leaders of this movement, no longer just seen as victims or villains of climate change, but saviours working alongside others seeking their own ways to turn the problem of climate change into an opportunity for a major reboot.

Lauren Rickards is a co-leader of the Climate Change and Resilience research program of the Centre for Urban Research, and Senior Lecturer in the School of Global, Urban and Social Studies at RMIT. For further information contact Lauren at lauren.rickards@rmit.edu.au

When we see climate change mitigation as part of these broader, existing agendas it is possible to see how ways to address it presents some welcome opportunities.

Bringing the Landcare ethic into the climate change challenge

By Terry Hubbard

As a farmer and a passionate supporter of Landcare, I would like to put forward a view that I suspect motivates many of us to make this place a better place to live – not just for ourselves but for those who come after us.

The comparison of vegetation cover in Victoria 200 years ago with how it appears now is quite stark. In our zeal to produce we have changed the natural landscape and in doing so have affected natural weather patterns which have contributed to rising temperatures and an increase in catastrophic weather events.

Add to this the world-wide trend for massive land clearance, particularly of rainforests in developing countries, our profligate use of our natural resources, and the reluctance of governments to introduce measures to reduce carbon emissions that contribute to global warming – all of this leads to climate change.

I believe Landcare has much to offer to the challenge of living with and adapting to climate change. The core motivation for Landcarers is the strong desire to make a contribution.

The work done by our small Strath Creek Landcare Group over the past 20 years is a good example. The group, now with an active membership of 66 families, is situated around the entire length of the Strath Creek and the lower reaches of the iconic King Parrot Creek, just to the north of the Great Dividing Range, and within the Goulburn Broken region.

Fertile alluvial creek side flats are surrounded by rising to steep grassy woodlands that were over cleared in the early 1900s. The group has done much to restore the balance of native vegetation in the area, considered by most experts to be a preferred ratio of 30 per cent native vegetation to 70 per cent productive farmland.

We have transformed the Strath and King Parrot valleys and made them places to be proud of. We have worked together as a community of very small-acreage landholders up to the larger, serious farmers, often raising and using our own funds and resources, but from time to time partnering with the Goulburn Broken CMA.

Landcare work is done at a local scale. When we feel helpless to influence environmental outcomes on the wider stage the local work continues and we push ahead with improving our own patch.

How good it would be to see this ethic spread far and wide. Landcare was created here in Victoria and is now in 23 countries around the globe. If our community-based approach to sustainable land management was backed up with regulation and supported with appropriate funding the potential of the program is enormous.

Landcarers understand the link between excess carbon emissions and global warming leading to climate change.

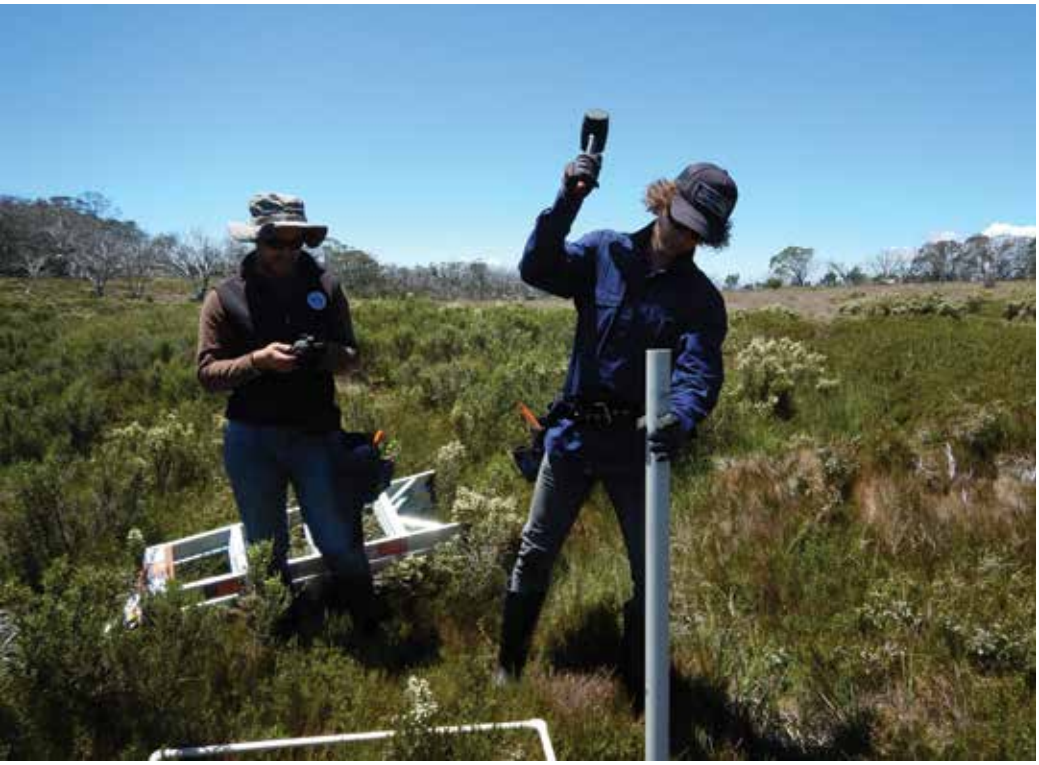
A Strath Creek Landcare Group revegetation project to protect an old course of the King Parrot Creek in 2008.

The beautification of our local environment, brought about by restoring the revegetation balance, brings with it the added bonus of carbon storage.

Although this is on a relatively small scale it is one of the only ways we, as grassroots members of the community, can demonstrate our willingness to bring about necessary and urgent change. There is real frustration, particularly among our young people, that climate change is not being taken seriously by our generation and our leaders.

Terry Hubbard is chair of the National Landcare Network. For further information contact Terry at terjan.hubbard@gmail.com

Janet and Terry Hubbard at a planting day along the King Parrot Creek.



Dr Paul Carnell (left) and Quinn Ollivier from Deakin University taking sediment core samples in the alpine region of Victoria.

> *Every year Victoria's wetlands sequester enough carbon dioxide to offset the emissions from 659,129 cars.*

Victoria's freshwater blue carbon stores

By Kate Brunt and Dr Paul Carnell

As the impacts of climate change are becoming increasingly apparent, wetlands are drawing more and more attention for their vast potential to capture atmospheric carbon.

Until recently investigations of the carbon sequestration capacity of wetlands have concentrated on coastal or blue carbon wetlands. But in fact, estimates identify inland wetlands as the earth's largest store of terrestrial carbon.

Deakin University, DELWP and Victoria's 10 CMAs are collaborating on a comprehensive investigation of the carbon stocks of inland wetlands in an effort to understand their carbon sequestration capacity. More than 100 sites were sampled – the largest carbon sampling effort ever undertaken within Victoria.

The project found that Victoria's wetlands are storing substantial amounts of carbon, with a total carbon stock of 68 million tonnes of organic carbon estimated for the depths sampled. The estimated carbon sequestration of Victoria's wetlands is 3,117,682 tonnes of carbon dioxide equivalents per year, equivalent to the carbon dioxide emissions of 176,538 Australians.

Put another way, every year Victoria's wetlands sequester enough carbon dioxide to offset the emissions from 659,129 cars. On a smaller scale, one hectare of the wetlands in Barmah National Park sequesters enough carbon to offset the emissions from 780 light globes.

The project also found that different wetland types are storing carbon differently. Permanent open freshwater wetlands had the lowest carbon stocks, freshwater meadows and shallow freshwater marshes were in the mid-range, and the highest carbon stock values were in alpine peatlands.

Disturbance and loss of wetlands has a potential to release significant quantities of carbon dioxide back into the environment. Since European settlement, the loss of wetlands has released an estimated 22.5 million to 74.2 million tonnes of carbon dioxide equivalent, depending on the emission factor applied. (Carbon dioxide equivalent refers to the conversion of organic carbon, to the equivalent amount of carbon dioxide.)

Now that we have a good understanding of the carbon stored in the soil of these wetlands across Victoria, the next phase of the research is to gain a complete picture of these systems by measuring emissions of carbon dioxide, methane and nitrous oxide. This will allow researchers and natural resource managers to fully determine opportunities for carbon offsetting and climate change mitigation through inland wetlands.

Kate Brunt is a Senior Project Officer – Climate Change at the Goulburn Broken CMA. Dr Paul Carnell is a Research Fellow at the Blue Carbon Lab at the Centre for Integrative Ecology at Deakin University. For further information go to www.bluecarbonlab.org or contact Kate at katebr@gbcma.vic.gov.au

Research reveals the future for dairy farming

Dairy farmer Judy Johnson from Yarram was involved in the farmer groups that directed the future climates research.

What will the climate in Gippsland be like in 2040 and how will different dairy farming systems respond to a future climate?

These are just two of the questions that the Dairy Businesses for Future Climates research project set out to answer when research began in 2013. At the completion of the research we have some answers and a lot to think about in terms of farming in the future.

The research took three real farms, in Gippsland, South Australia and Tasmania, projected the predicted 2040 climate on them and looked at their profitability if they continued to farm in the same way as today, simplified the current system, adapted it or intensified it.

Currently the central Gippsland farm milks 350 cross bred, spring calving cows. The farm has a stocking rate of 3.2 cows per hectare and each cow produces an average of 395 kilograms of milk solids per year.

The research showed that farms in all three regions of Australia would be less profitable in 2040 and that no one pathway into the future is superior to another. All have pros and cons. With climate variability here to stay, management and farmer skill in adapting from one season to the next will be vital.

Gippsland in 2040

Modelling indicates that in 2040 the climate in central Gippsland will have warmed by 1.4°C with rainfall declines up to 12 per cent. This would be similar to the current climate at Cobden in south west Victoria, though warmer, or Tallangatta in north east Victoria, without the temperature extremes.

Rainfall events are predicted to vary from year to year and to occur in fewer, larger events, with longer dry spells in between. Extreme weather events are predicted to continue with intense rainfall, drought, bush fires and wind events identified as concerns to Gippsland farmers surveyed in this research.

In 2040, March will have maximum temperatures similar to January today, and November will have maximum temperatures similar to December. Some might say that summer is getting longer.

The growing season for pastures will shift under 2040 climate change scenarios creating feed challenges. Gippsland dairy farms rely on pasture production with pasture consumed by cows being a key profit driver.

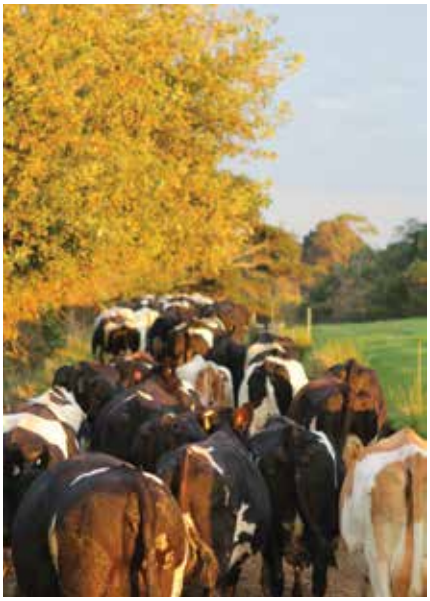
Pasture growth rates from May to September are likely to be higher in the 2040 climate, but lower during the remainder of the year. This results in a lower proportion of pasture being directly grazed and more conserved and fed back to cows unless farming systems are altered.

A group of Gippsland farmers were involved in overseeing the project in Gippsland. They met regularly with researchers, checking in on results and modelling guiding the research effort.

Chris Hughes, a dairy farmer from Koonwarra, believes there's much to be learnt from farmers in other areas who are dealing with climate changes that can be expected in Gippsland.

"We need to be adaptive and open minded about how we farm into the future. It won't necessarily be the same as it has been in the past," Chris said.

"The research took three real farms, in Gippsland, South Australia and Tasmania, projected the predicted 2040 climate on them and looked at their profitability if they continued to farm in the same way as today, simplified the current system, adapted it or intensified it."



Several wet winters followed by six months of drought conditions over the summer of 2016 showed that Australian dairy farmers operate their businesses in some of the riskiest weather and climate patterns anywhere in the world.

in Gippsland

By Gillian Hayman

Shade and shelter for cows may assist farms in adapting to the changing climate.

What does the changing climate mean for Gippsland dairy farms?

- Climate variability already experienced will continue and rainfall variability may be increased.
- Climate variability can have a greater impact on financial returns compared to the general trend of climate change alone.
- If climate change follows a high change trajectory, less pasture will be grown on farm and profitable years will become less frequent. Farmers will need to adapt further to manage greater risk and have financial plans in place to buffer low production in some years.
- Pasture utilisation, feed costs and milk prices will continue to have dominant influences on farm businesses in the 2040 climate.
- In order to minimise the potential impacts of climate variability, dairy farmers will need to continue to improve their management skills and continue to adapt their farm systems to manage future climate risks.

Judy Johnson, a dairy farmer from Yarram who was a member of the farmer group that directed the research, believes that the results show that climate change is manageable in Gippsland.

"I see many factors that will have a greater impact on our business. We have been reminded in the past year that milk prices will have a greater impact on us. We need to be adaptable and plan for extreme situations, we must make sure we have game plans in place for extreme weather events, they will keep coming at us," Judy said.

The Dairy Businesses for Future Climates project was a collaboration between the Australian Government, Dairy Australia, The University of Melbourne, Tasmanian Institute of Agriculture, D-ARM Consulting, and dairy farm managers in three regions of Australia.

Gillian Hayman was previously a Project Manager for Dairy Australia. Information sheets and video clips are on Dairy Australia's climate tool kit website www.dairyclimatetoolkit.com.au or contact Gillian Hayman at ghayman@dcsi.net.au

> *With climate variability here to stay, management and farmer skill in adapting from one season to the next will be vital.*

Managing farm risks in the Corangamite region

By Peter Greig

Farmers are great adaptors. They have always had to cope with fires, floods, droughts, and pests, not to mention profits being squeezed between input costs and output prices. They have learnt to be self-reliant, listening to advice they trust, usually from neighbours and farm consultants, less often from distant experts.

So it's not surprising that the topic of climate change is sometimes dismissed or downplayed as a political issue, possibly exaggerated by vested interests, and a bit remote from practical reality.

However, as shrewd observers, farmers in the Corangamite region have noticed some changes of late. There's more summer rain and less rain in winter and spring. The autumn break tends to start later. As the onset of spring comes forward, the growing season gets shorter earlier and there are more heat waves and reduced run-off.

Farmers have been adapting to these changes by making hay earlier, using feedlots more, sowing more perennial pasture, connecting to domestic water supply, renovating dams, minimising tillage (to conserve soil moisture), maintaining more ground-cover, lambing in spring rather than autumn, and sowing crops before the autumn break.

Local adaptations in line with current research

Local observations and adaptations are pretty much in line with what's been measured and recommended by analysts in research institutes, universities and government agencies across Australia.

A workshop held at Inverleigh in March 2016 provided an opportunity for local landholders to discuss these observations and adaptations, and learn about the climate change research of a German researcher, Christin Meyer.

Christin is a doctoral student at the Potsdam Institute for Climate Impact Research in Germany and The University of Melbourne. She visited Australia for six months in 2015–16, including a six-week stay at Mt Hesse Station, which is close to Winchelsea.

During that time Christin interviewed 15 farmers in the Corangamite region about their perceptions of changes in weather and long-term climate, as well as about their management strategies. She also conducted 25 interviews with leading experts from research, government and private institutions to canvass best-practice management strategies that incorporate climate-change adaptation.

The workshop was held at Maxine and Duncan Campbell's property 'Barwonleigh,' and attended by around 50 local landholders. It was supported by the Corangamite CMA's Regional Landcare Facilitator (funded by the Australian Government) and organised

Local observations and adaptations are pretty much in line with what's been measured and recommended by analysts in research institutes, universities and government agencies across Australia.

Researcher Christin Meyer provides some in-depth knowledge on climate change adaptations to workshop participant, Steve Murphy.

The climate change research was sponsored by Mt Hesse Station. The station is owned by a German family textile business with a mission to create a model farm that is profitable, and socially and ecologically sustainable.

by Upper Barwon, Surf Coast and Inland Plains, and Geelong Landcare networks.

At the workshop Christin added to the observations and possible adaptations that are already current in the area with information from analysts. She suggested staggering crop fertiliser applications to reduce unnecessary costs in the event of crop failure; breeding crop and livestock varieties that can better cope with heat and drought; fencing by soil type and cell-grazing to allow better pasture recovery; and matching stocking rates to seasonal variations.

Planting shelterbelts for shade and wind protection (and possibly for future income from carbon sequestration) was put forward, along with pregnancy-testing of ewes, to allow for lower fertility in rams suffering heat stress. Joining rams and ewes earlier and bringing forward shearing times was also discussed.

Some other ideas for better coping with changes in rainfall and water security included planning and budgeting for three-year droughts; storing enough water for three year droughts; building bigger and deeper dams instead of having several shallow dams to avoid high evaporation rates or even investing in farm-scale desalination.

Some local farmers have already taken up farm-scale desalination. The region is known to have untapped groundwater capacity, while surface water is in decline.

A new idea for water saving emerged during the workshop from one of the participants, Jill Stewart. Jill suggested tempering evaporation from dams using water plants.

When Christin was asked whether the farmers she interviewed accepted climate change and global warming, she said wryly, "It was a good way to clear the room."

An opportunity for rejuvenation

Christin's research is sponsored by Mt Hesse Station, and its owner – a German family-based business that specialises in textiles. The owner has a mission to create a model farm that is profitable, and socially and ecologically sustainable.

The workshop presented a possible rejuvenation opportunity for everyone involved. If farm risks are indeed changing and becoming even more challenging than in the past, there's nobody better placed than farmers to deal with these risks. Risk-management and survival are second nature to farmers, and their best farming practices have already incorporated most of the possible adaptations.

Landcare also has much to contribute. It is an important conduit for information on emerging risks and possible remedies. Landcare projects like shelterbelts and the protection of rivers and streams that have benefits for the farm, but also beyond the farm gate, may also be eligible for public funding.

The endpoint is healthy, happy farmers and communities living and working in a healthy and sustainable natural landscape.

Findings from Christin Meyer's research were used to prepare this article. Peter Greig is the President of the Upper Barwon Landcare Network. For further information contact Peter at pjgreig@iprimus.com.au

> *Risk-management and survival are second nature to farmers, and their best farming practices have already incorporated most of the possible adaptations.*

Helping the grains industry deal with climate

Each year crop losses from frost and heat events cost the Australian grains industry tens of millions of dollars making it critical to better manage the risk and impact of extreme weather.

While frost causes about $33 million in losses to crops annually, one heat wave near spring grain flowering in 2009 cut the returns by $82 million in the Wimmera alone.

Globally, atmospheric carbon dioxide levels are rising. While this increases crop water use efficiency and yield it also causes a decline in grain quality (protein).

We need to better understand how factors interact to affect yield stability of arable crops so adaptation strategies for a future climate can be developed. Grain farmers face the double dilemma of managing the risk of frost and the risk of heat wave damage at the vulnerable times of flowering and grain filling.

Crop models for flowering and grain filling phases needed

Crop simulation modelling provides a powerful tool to investigate the combined effects of climate and weather variables on wheat production and assists in developing adaptive management strategies.

However, current crop models do not adequately account for the response of wheat to extreme heat (or frost) during the flowering and grain filling phases. It is also unclear how heat waves interact with elevated carbon dioxide, and there is a lack of data from experiments to formulate models and calibrate their outputs.

A range of projects designed to increase our understanding of wheat response to extreme temperature effects and elevated atmospheric carbon dioxide are currently underway. The Australian Grains Free-Air CO_2 Enrichment trial site in Horsham is being used by scientists from Agriculture Victoria and the University of Melbourne to examine the impact of simulated heat waves on wheat growth under contrasting atmospheric carbon dioxide concentrations.

When crops were exposed to a simulated heat wave five days prior to flowering, grain number and grain yield were reduced by 18 per cent, but grain size was unaffected. When the heat was applied 15 days after flowering both grain number and size were reduced resulting in a 14 per cent reduction in yield.

Multiple frost events further decrease yields

This compares with elevated carbon dioxide increasing wheat yield by 19 per cent in the same trial, with grain number increased by 14 per cent and grain weight increased by 4 per cent. Whether carbon dioxide advantages buffer some of the heat wave impacts to wheat is still unclear.

The affect of frost is also being tested using artificial frost treatments being applied to field wheat. When wheat was exposed to frost over one and two progressive nights (where temperatures varied from -0.7 to -4.2 degrees Celsius) there was a 7.2 per cent reduction in yield for every degree Celsius below zero (up to -4 degrees Celsius) for a single frost event. This reduction increased to 11.8 per cent for each degree Celsius below zero (up to -3 degrees Celsius) when frost was imposed over two progressive nights, which indicates an additive affect of multiple frosts.

A range of projects designed to increase our understanding of wheat response to extreme temperature effects and elevated atmospheric carbon dioxide are currently underway.

Dr James Nuttall inspects wheat field trials as part of helping the grains industry deal with climate variability.

volatility

By Dr James Nuttall

Frost affected wheat in the Wimmera in 2015. The chambers monitor the relative impact of frost on yield.

Using such data, crop simulation models are being improved to account for weather and climate factors linked with climate change effects. This should provide a platform to extend the scenarios beyond the experimental realm, and increase our understanding of the impact of climate, weather and soil interactions across different geographical regions.

These research programs will ultimately assist with the development of adaptation strategies both agronomic and breeding (better suited crop varieties) for limiting the impacts of climate change on arable crop production.

This research is supported by the Department of Economic Development, Jobs, Transport and Resources (Agriculture Victoria) and The University of Melbourne, with funding from the Australian Government Department of Agriculture and Water Resources and the Grains Research and Development Corporation,

Dr James Nuttall is Agriculture Victoria's Senior Regional Research Agronomist. For further information contact James at james.nuttall@ecodev.vic.gov.au

Introducing Landcare Victoria Incorporated

By Belinda Brennan

It was a historic day for Landcare in Victoria on 16 February 2017. Two special general meetings of the Farm Tree and Landcare Association (FTLA) and the Victorian Landcare Council (VLC) unanimously passed resolutions to merge their organisations to create Landcare Victoria Incorporated (LVI).

After many months of review, negotiation and preparation more than 60 delegates and members attended the meetings with an additional 30 proxy votes submitted, indicating a high level of interest and support, which was welcomed by the transition committee.

LVI will take on the administration, systems and services of both organisations and will be the single independent body representing the interests and activities for Landcare in Victoria.

The new organisation is committed to being a strong voice for Landcare with government, other organisations and the public. LVI's key aim is to enable community-based caring for the land by groups of like-minded people.

The organisation will continue to provide services to groups and networks including incorporation and insurance and being the conduit for grants that were previously provided by the FTLA. It will foster community learning, capacity building and action, and facilitate collaboration and partnerships between Landcare, the CMAs, and all levels of government and community.

LVI will represent the Landcare community's views and participate in government policy development. It will also represent Landcare in Victoria at a state and national level to promote and assist sustainable land and water management practices.

The interim committee is working to ensure a smooth transition and the continuation of incorporation and insurance arrangements.

FTLA and VLC memberships will continue as LVI memberships from April 2017 and the new committee of management has agreed to keep membership fees stable for the first year. Renewals are due on 30 June 2017. Keep a look out in your letterbox for your group's membership renewal for LVI.

For further information contact Belinda Brennan at BelindaB@wgcma.vic.gov.au

The transition committee of Landcare Victoria Incorporated (from left) Terry Hubbard, Peter Berrisford, David Clark, Belinda Brennan, Anthony Dufty, Phil Horner, Artur Muchow, Kaye Rodden and chair, Sandy MacKenzie. Mike Haughton is absent.

A training course in marketing, Landcare management and launching major projects, was held in the Zambian copper belt in 2016. The course was run by the World Agroforestry Center and ALI with Australian Centre for International Agricultural Research and Crawford Fund support.

Australian Landcare a model for international climate change responses

By Rob Youl

Thirty years of Landcare has helped prepare Australian communities for climate change. Positive elements include Landcare's multi-disciplinary ethos, can-do approach, devolved structure, mutual-support networks, technical education, systematic approach to ambitious regional and national projects, involvement in schools, employment of community coordinators, friendly internal collaboration and links to all tiers of government. The list of positives is long.

> *Since the Black Saturday bushfires in 2009 Landcare has also emerged as an economical and efficient tool to help communities recover from natural disasters including flood, fire, cyclones and rural plant and animal epidemics.*

Since the Black Saturday bushfires in 2009 Landcare has also emerged as an economical and efficient tool to help communities recover from natural disasters including flood, fire, cyclones and rural plant and animal epidemics. In fact Landcare is so effective it should become part of Australia's traditional municipal disaster-planning system.

People overseas have noticed the remarkable and empowering evolution of Landcare, in particular post-tsunami Japan, whose Landcare movement is emerging slowly but surely. Others include the South Pacific nations and the Philippines.

Australian Landcare International (ALI) started in 2007-08 with climate change high on its agenda. ALI runs a small grants program that has raised and distributed around $20,000 for 30 projects in 14 countries over the past four years.

ALI has also run training courses in Fiji and Jamaica, and ALI members recently trained coordinators and farmers in northern Zambia in marketing farm products, establishing Landcare networks and launching projects.

In February 2017, the Hon John Anderson AO, the newly appointed Chair of the Crawford Fund, said that Australia's agricultural scientists will play a vital global role in improving world food supplies and land management.

ALI believes that this technical excellence must be accompanied by community Landcare campaigns to field-test research, inform and motivate farmer groups, build new marketing initiatives – often via social media – and sustain productivity gains and smallholder networks.

Rob Youl is the President of ALI. For further information contact Rob at robmyoul@gmail.com

Yackandandah aims to be 100 per cent renewable by 2022

By Ben McGowan

In 2014 Totally Renewable Yackandandah (TRY) formed with the objective of moving to a 100 per cent renewable energy target by the year 2022.

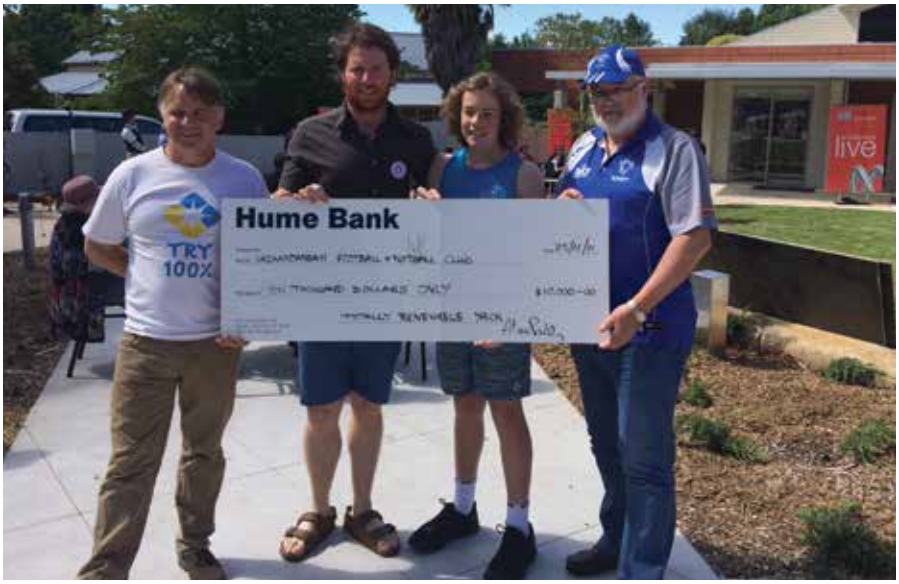
TRY functions as a community advocacy group, encouraging and assisting businesses, individuals, other community organisations and key energy stakeholders in and around Yackandandah to implement energy efficiency measures and install solar panels.

Over the last three years the town of Yackandandah has made some serious progress towards its target. Approximately 35 per cent of the households and businesses in Yackandandah now have solar panels, well over the state average of 14 per cent.

Besides its renewable energy advocacy work, TRY has been assisting businesses and community groups to install large solar arrays through its Perpetual Energy Fund (PEF). The PEF offers organisations an interest free loan to remove the upfront cost of the installation of solar panels. Organisations can pay off the loan through savings on their energy bills.

Last year TRY announced a $10,000 PEF loan to the Yackandandah Kangaroos Football Club. It is being used to help the club to fund ways to reduce energy costs at the Yackandandah Sporting Complex.

The savings the club will make on its energy bills from lighting upgrades and other energy-saving improvements will be paid back into the fund and the process will be repeated for other community organisations.



From left, TRY Co-Presidents, Matthew Charles-Jones and Matthew Grogan, present $10,000 to Yackandandah Football and Netball Club representatives James McKenzie-McHarg and Trevor Matthews to help the club reduce energy costs at the Yackandandah Sporting Complex.

The PEF was also used to advance $5000 to the managers of the local hospital, Yackandandah Health, for the same purpose, enabling it to commission a 90-kilowatt solar-panel energy-generation system that is expected to save the service up to $1 million over the next 25 years.

The investment will also lead to a reduction in greenhouse gas emissions of 115 tonnes per year – the equivalent of taking 23 cars permanently off the road.

Soren Hermansen (centre in the white shirt) leading a workshop at Yackandandah earlier this year. Soren's Danish Island, Samso, transitioned to 100 per cent renewable energy in 2007.

Earlier this year TRY announced it was working towards developing one of Australia's first commercially operating mini grids. The mini grid is an energy system in which a group of households is equipped with an individual energy generation (solar panels) and storage capability (battery). As a mini grid this group can function as a unified energy community through the use of technology such as wireless communications, cloud-based software platforms and home energy management systems.

As a part of this mini grid plan, TRY will launch a community energy retailer able to facilitate trade between households on the mini grid, under a type of shared economy model, and to sell locally produced renewable energy to those houses and businesses not connected to the mini grid.

We know that the Yackandandah community has the will and the energy to reach its 100 per cent renewable energy target. With the mini grid plan and technology we are confident that we now have the means as well.

Ben McGowan is a volunteer at TRY. For further information contact Ben at mcgowan2352@gmail.com

Around the State – News from the Regional

Port Phillip and Western Port

Planning has been a major activity in the region. NatureWest, Bass Coast, Yarra Ranges, Western Port Catchment, Moorabool, Middle Yarra, Mornington Peninsula and Nillumbik Landcare Networks have all been busy with Conservation Action Planning work that will help to clarify their focus and priorities for community engagement and on-ground works.

Western Port Catchment, Mornington Peninsula and Nillumbik Landcare Networks have also been undertaking organisational strategic planning to provide clear direction and purpose for their respective organisations.

The time and effort the networks are putting into planning is a positive investment in the future. Good planning provides clarity of direction and purpose that can unify members, make it easier to explain goals and make decisions, work out who is best placed to help, and recruit the people and resources needed to achieve goals.

For further information contact Doug Evans on 8781 7920.

Wimmera

Landcare groups in the region have been involved in the release of the new strain of rabbit calicivirus aimed at reducing rabbit numbers and damage to the landscape.

Local nominees for the Regional Landcare Awards were celebrated at a gala presentation at Horsham Town Hall on 12 May 2017, as part of the 2017 Volunteering Recognition Awards for the Wimmera. The awards event, which was held during National Volunteers Week, was delivered in partnership with the Centre for Participation. Regional Landcare Award winners will represent the Wimmera in the Victorian Landcare Awards later in the year.

Plans are underway to celebrate the 20th anniversary of the iconic Project Hindmarsh planting weekend. Hindmarsh Landcare Network volunteers and supporters will get together on 7-9 July 2017 at Little Desert Nature Lodge. The celebrations will involve visiting sites rich in Aboriginal cultural values along the lower Wimmera River.

For further information contact Joel Boyd on 5382 1544.

North Central

Cross catchment partnerships have been a strong theme in regional Landcare. The CMA partnered with the Goulburn Broken CMA to deliver a peer-to-peer workshop for local Landcare facilitators in Nagambie in March. This was followed by the fifth annual Future Farming Expo held in Rochester on 5 April 2017, with a focus on future proofing farm businesses.

Landcare groups and landholders around Amphitheatre, Kerang and Ravenswood are collecting data as part of the national release of the new strain of rabbit calicivirus that took place in March. Landcarers within the region have been keen to volunteer release sites and act as citizen scientists, collecting vital data during this national experiment.

Kyabram Urban Landcare Group held a recent event on enhancing native birds in the environment. Birds like these white-breasted woodswallows that have been observed returning to the restored Landcare sites at Ern Miles Reserve were the focus of the event.

The *North Central Chat* newsletter remains a great source of information for Landcare groups in the region to keep up to date on Landcare related news, up-coming events and funding opportunities.

For more information contact Tess Grieves on 5440 1890.

West Gippsland

Cherish, celebrate, and imagine were the themes at West Gippsland's 30 years of Landcare Green Carpet Gala held on 30 April at the Heyfield Wetlands. The event celebrated 25 Landcare individuals, groups and projects from across the region at different stages of their Landcare journey. The day included a five-course Landcare paddock to plate lunch showcasing pork, venison, beef, lamb and eggs produced by the local Landcare community.

The region will host the first Victoria-based Intrepid Landcare retreat in May. A group of 20 young people are headed to Wilsons Promontory National Park to spend a weekend learning about Landcare. Facilitated by Megan Rowlatt and Naomi Edwards from Intrepid Landcare, the retreat will inspire and empower young people with a passion for environmental conservation and build their connections with Landcare groups and organisations in the region.

For further information contact Kathleen Brack on 1300 094 262.

North East

The draft of the *North East Community Natural Resource Management Plan* has been released for public comment, with the final plan to be launched in June.

More than 20 participants from the North East and Goulburn Broken regions are being inspired by the sessions and activities of the 2017 Community Landcare and Agricultural Leadership Program that started in late February. Participants come from a wide range of backgrounds including agricultural and natural resource management professionals, and students.

The CMA together with Trust for Nature, DELWP, Parks Victoria, and Charles Sturt University's Institute for Land, Water and Society are working together to present the 2017 North East Environment Forum. This year's forum will focus on connecting people with nature and incorporates the annual John Paul Memorial Lecture to be held on 25 May 2017.

For further information contact Tom Croft on 02 6043 7648.

Landcare Coordinators

Corangamite

Locally grown and sown produce was on show in April at the Otway Food and Fibre event coordinated by Barongarook Landcare. Some of the best Otway-grown produce including olives, cheeses, native bush foods, fruits and vegetables, honey, meat, smallgoods, wines and other brewed beverages were on show.

More than 1500 people attended the event to taste and purchase produce, while meeting local growers and makers. Permaculture expert and Landcare supporter Costa Georgiadis brought his infectious energy and enthusiasm for sustainably grown food and healthy living to the practical demonstrations.

Farm Talk Magazine is a useful resource showcasing the innovative work being done in the region to enhance our soils, water and vegetation. Find it on the Victorian Landcare Gateway www.landcarevic.org.au. For climate change information specific to south west Victoria go to www.swclimatechange.com.au

For further information contact Tracey McRae on 5232 9100.

East Gippsland

Local farmers were captivated by a presentation from Associate Professor Robert Faggian from the Centre for Regional and Rural Futures at Deakin University in February. Professor Faggian's presentation focused on farming for the future and provided great insight into climate change impacts on the local region.

Landholders have attended recent succession planning workshops and also listened to guest speakers such as Nigel Kerin from Kerin Poll, who discussed grazing management. The aim being to thrive, not just survive.

In April, Landcare groups came together to learn about social media. Participants learnt how to build awareness, create engaging content and were given useful tools and resources to promote Landcare activities.

Far East Victoria Landcare (FEVL) has initiated a trial program for the recycling of soft plastics, with the aim of extending this to include silage wrapping. The drop off point is the FEVL office in Orbost.

For further information contact Carolyn Cameron on 5150 3582.

Glenelg Hopkins

The Upper Mount Emu Creek (UMEC) Network has completed its long-running free tree to members program.

Local Otway producers participating in the Food and Fibre festival in Colac.

The Waubra Wind Farm Community Fund sponsored the trees, which were grown from local indigenous seeds. The UMEC Network services groups in the Glenelg Hopkins and North Central CMA areas. The program has proven to be an excellent motivational and recruitment activity.

The CMA has had an excellent response to its small grants to celebrate 30 Years of Landcare. Successful activities included celebration dinners, published histories, photographic exhibitions and the development of action plans. There are many groups and individuals in the region who have been involved in Landcare activities for more than 30 years.

Upper Hopkins Land Management Group hosted a recent bat night with ecologist Peter Homan at Doug Hopkins' Challicum property. Local Landcarers started with an evening barbecue followed by a session setting traps just before dusk. Peter explained his work and shared his knowledge of bats before returning to the field to check the nets. The 45 attendees were excited to find 35 bats from six different species.

For further information contact Tony Lithgow on 5571 2526.

Goulburn Broken

Pest plants and animals continue to be a focus for the region's Landcare groups and networks. The release of the new strain of rabbit calicivirus, the prolific growth of blackberries, and local government roadside weed control programs are keeping people busy.

The Northern Rivers Roundup held in March brought Landcare facilitators and coordinators from Goulburn Broken and North Central regions together to share and learn from each other. We had some great discussions around the issues associated with Landcare community support roles and how to do it better. A number of positive new partnerships and project opportunities were generated.

Landcare events are underway in schools and the community with workshops and forums. There's a strong interest from participants and good feedback as the activities are evaluated.

For further information contact Tony Kubeil on 5761 1619.

Mallee

In March the region hosted the final forum of the Victorian Landcare Council prior to its amalgamation with the FTLA to create the new Landcare Victoria Inc (LVI).

At the forum Landcare representatives from around the state enjoyed beautiful autumn weather at Lake Cullulleraine located in the far north-west corner of Victoria. Both Victorian Landcare Council delegates and regional Landcare members celebrated the achievements of the Mallee's Landcare groups over the past 28 years and discussed how the region can be involved in LVI.

Participants came away with a greater understanding of the future challenges for Landcare in the Mallee.

For further information contact Kevin Chaplin on 5051 4344.

In brief

Victoria's Climate Change Adaptation Plan

The Victorian Government is committed to action to keep global warming below two degrees. However, no matter how quickly we reduce emissions, some change is inevitable, and we must prepare for and adapt to the impacts.

Victoria's Climate Change Adaptation Plan: 2017-2020, which was released in February 2017, is a blueprint for action that will help Victorians meet the challenges and act on the opportunities of climate change.

The plan will build a detailed understanding of Victoria's exposure to climate change risks and impacts, catalyse partnerships for integrated and effective responses to climate change, and tackle immediate priorities to reduce climate change risks.

It will help us all play our part and work together to achieve our vision for Victoria – a thriving natural environment and a healthy, prosperous, safe and vibrant place to work and live for all Victorians, and for the thousands of visitors we welcome each year.

For more information visit www.delwp.vic.gov.au

Victorian Landcare & Catchment Management magazine index

The index for the magazine currently includes more than 6500 index entries and can be accessed via https://www.landcarevic.org.au/resources/magazine-library/. As each new issue of the magazine is published the index is updated. The index lists stories by author, title and by subject. Each index entry is hyperlinked to a specific story that has featured in an issue of the magazine.

Next issue

The next issue of the magazine, to be published in spring 2017, will feature stories of the winners of the 2017 Victorian Landcare Awards.

The summer 2018 issue will feature stories about water. If your group has a story to tell about managing water – from waterway health to wetlands, flooding, and drought proofing, we would like to hear from you.

Our readers are keen to learn about the successes of different projects, as well as what hasn't worked, and the insights and reflections of your group or network along the way. Please contact the editor with your story ideas.

Contributions to the water issue should be sent to the editor by Friday 17 November 2017.

Carrie Tiffany, editor
Victorian Landcare and Catchment Management Magazine

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Mailing list enquiries and to receive your copy via email alert
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