

NRM on farms



A monthly news summary about climate and natural resources in agriculture.

May 2016

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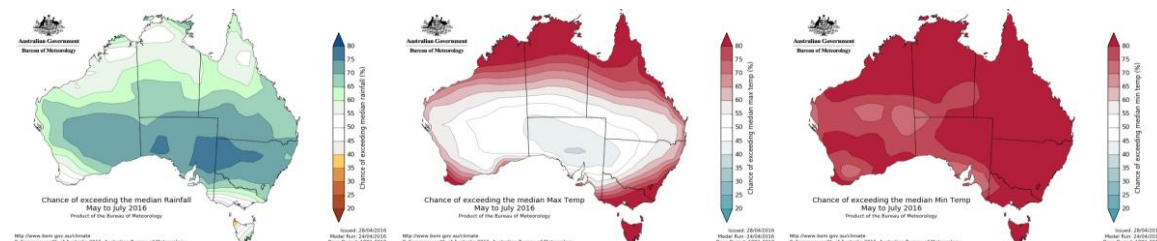
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CLIMATE

NSW seasonal outlook



NSW rainfall is likely to be above average over the next three months due to a rapidly weakening El Niño, very warm Indian Ocean temperatures and warm sea surface temperatures around the Australian coast. Daytime temperatures are likely to be average except for the coast and south-east of the state. Nights are likely to be warmer than average.

<http://www.bom.gov.au/climate/outlooks/#/overview/summary/>

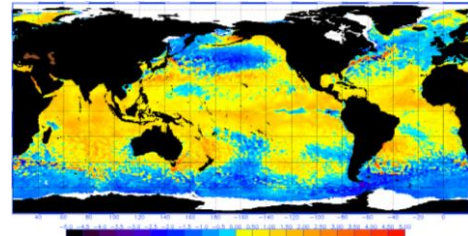
<http://www.bom.gov.au/climate/outlooks/#/overview/video>

Ocean temperatures

Temperatures have cooled significantly in the eastern Pacific, but warmer temperatures surround most of Australia. Large parts of the southern and northern coastline are more than 1°C above average, and waters near Tasmania are more than 2°C above average.

<http://www.ospo.noaa.gov/Products/ocean/sst/anomaly/index.html>

<http://www.bom.gov.au/climate/enso/#tabs=Sea-surface>



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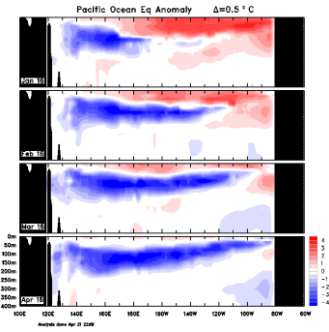


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Subsurface temperatures

A large volume of cooler water is now present beneath almost the entire equatorial Pacific Ocean.

<http://www.bom.gov.au/climate/enso/>

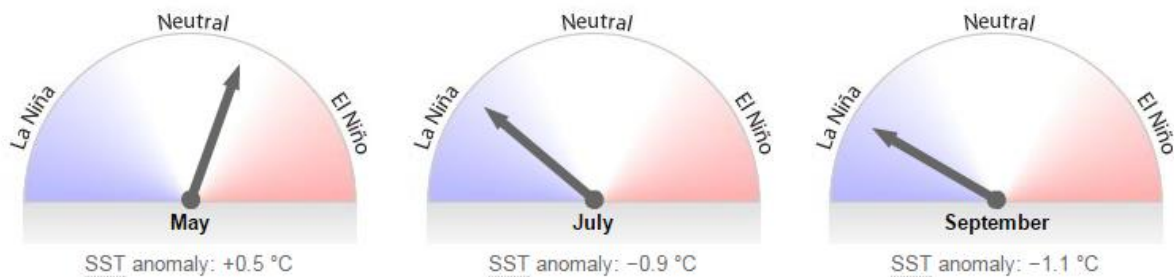


El Niño

The 2015–16 El Niño is in its last stages; six of eight international climate models suggest the tropical Pacific Ocean will return to neutral levels within the next month. The likelihood of La Niña forming later in 2016 is around 50%, with individual model outlooks showing a large spread between neutral and La Niña scenarios.

<http://www.bom.gov.au/climate/enso/>

Model outlook

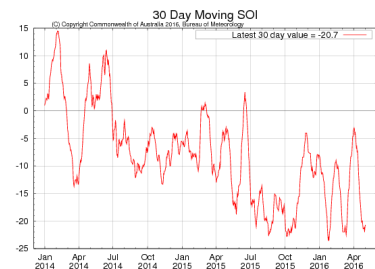


<http://www.bom.gov.au/climate/model-summary/>

SOI still negative but rising

The SOI is still negative but fluctuations are not unusual during Australia's northern wet season between October and April. The more reliable 90-day SOI has been rising since the start of March, reflecting the easing back of El Niño.

<http://www.bom.gov.au/climate/enso/#tabs=SOI>



IOD remains neutral

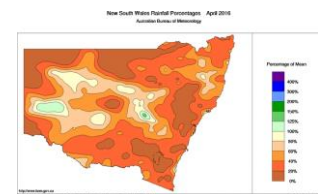
The Indian Ocean Dipole does not typically influence Australian climate between December and May. Currently it is neutral but international models indicate negative (wetter) conditions are possible by July. However, model skill is generally lower at this time of year, and outlooks should be used with caution.

<http://www.bom.gov.au/climate/enso/#tabs=Indian-Ocean>

NSW April warm and dry

April was NSW's ninth-driest on record. Large parts of the state recorded less than 40% than average rainfall, partly due to high pressure systems blocking rain bearing systems from the south. The state recorded its second-warmest April for average maximum and mean temperatures, and its fifth warmest April minimums.

<http://www.bom.gov.au/climate/current/month/nsw/summary.shtml#maps>



NSW DPI seasonal conditions report

Subscribe to NSW DPI's seasonal conditions report, and the climate summary which provides a snapshot of the monthly report in an easy to read four-page format with additional graphs and charts.

<http://www.dpi.nsw.gov.au/agriculture/emergency/seasonal-conditions/regional-seasonal-conditions-reports>

CLIMATE RESOURCES

CSIRO climate research centre in Hobart

CSIRO has announced a national climate research centre to be based in Hobart. It will employ 40 staff, and will focus on climate modelling and projections for Australia, with a guaranteed research capability for 10 years. CSIRO's critical measurement infrastructure, such as the ice and air libraries, ARGO float program and Cape Grim, will be guaranteed in the same manner as the other national facilities such as the RV Investigator, which is also centred in Hobart. Around 75 positions will still be lost within the CSIRO's Oceans and Atmosphere division, which is responsible for climate science.

<http://www.csiro.au/en/News/News-releases/2016/CSIRO-Climate-Science-Centre-a-win-for-Australias-future>

<https://theconversation.com/new-climate-science-centre-doesnt-make-up-for-csiro-cuts-experts-58401>

Warm oceans cause mass coral bleaching

Aerial and underwater surveys confirm that 93% of the 2300km Great Barrier Reef has been affected by coral bleaching. Mass coral bleaching occurs when warm sea temperatures cause corals to expel colourful algae. The loss of the algae causes the corals to turn translucent and white, and 'bleach'. Mildly bleached corals can recover if the temperature drops and algae are able to recolonise, otherwise the coral may die.

<https://www.jcu.edu.au/news/releases/2016/april/only-7-of-the-great-barrier-reef-has-avoided-coral-bleaching>

ENSO linked to seasonal lightning

BoM Analysis of seasonal lightning activity in the world's tropical and temperate regions has found that ENSO is significantly correlated to local lightning activity. Although ENSO originates in the tropical Pacific Ocean region, it can affect land and ocean regions in many regions of the world through the Walker Circulation, storm tracks and jetstreams.

<http://www.nature.com/articles/srep20874>

Warmth increases storm rain and reduces storm size

UNSW research has found that warm temperatures increase rainfall levels and intensity, while storm extent decreases. The results have significant implications for the severity of flooding, as precipitation may become both more intense and spatially concentrated in a warming climate.

<http://onlinelibrary.wiley.com/doi/10.1002/2016GL068509/abstract>

Bushfire frequency increases 40%

Analysis of fire incidence and climatic data indicates that Australian weekly bush-fire frequencies increased by 40% between 2007 and 2013, particularly during summer months, implying a serious climatic shift.

<http://rsos.royalsocietypublishing.org/content/3/2/150241>

NSW North Coast IRVA released

The North Coast Integrated Regional Vulnerability Assessment is now available on the AdaptNSW website. It outlines the region's major vulnerabilities to climate change, similar to the IRVAs for Sydney, SouthEast NSW and the Riverina Murray.

<http://www.climatechange.environment.nsw.gov.au/Adapting-to-climate-change/Regional-vulnerability-and-assessment/North-Coast>

WA climate forecasting tools

New and updated online climate forecasting tools are now available on the DAFWA website, including a soil water tool, a potential yield calculator and a rainfall to date calculator.

<https://www.agric.wa.gov.au/news/media-releases/updated-climate-tools-aid-crop-management>

Climate adaptation messages for different audiences

An Australian survey of best adaptation messages for people dismissive, uncommitted or alarmed about climate change found that messages with strong negative emotive content or specific adaptation advice increased adaptation intentions in all three audience segments. Messages not mentioning climate change and highlighting local impacts were effective for dismissives. Highlighting collective responsibility and financial impact were not effective strategies for increasing adaptation intentions for any of the segments.

<http://research.usc.edu.au/vital/access/manager/Repository/usc:17729>

Motivating resilience in the agricultural community

US researchers investigating the connection between extreme climate events and climate change adaptation found increased concerns about drought, extreme heat, and weeds/pests increased after the 2012 drought. At the same time, concerns about flooding, ponding, and nutrient runoff decreased. Well-timed messages about specific climate risks may be more effective for building agricultural resilience than attempting to address the full range of potential climate change impacts at once.

<http://toolkit.climate.gov/taking-action/motivating-agricultural-community-build-climate-resilience>

Coastal Risk Australia

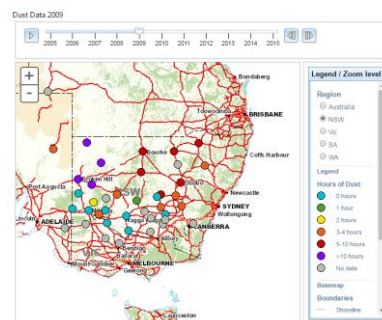
Coastal Risk Australia is an interactive map tool using the latest 3D models of the Australian coastline to illustrate coastal inundation associated with sea level rise to the year 2100.

<http://coastalrisk.com.au/>

DustWatch data explorer

DustWatch's new interface provides access to summarised data from 44 DustWatch instruments across Australia.

<http://www.environment.nsw.gov.au/dustwatchapp/Default.aspx>



South West WA NRM

The South West Regional NRM strategy website has been recently updated to capture a wide range of climate change projection data based on the latest CMIP5 models.

<http://www.swnrmstrategy.org.au/>

We need a new drought CoP

This article from The Conversation suggests that a new community of practice for drought is needed to integrate models, data and knowledge on the complex interactions between climate, soil, water, ecosystems and society so we are better prepared for the next big dry.

<https://theconversation.com/drought-forecasting-isnt-just-about-water-to-get-smart-we-need-health-and-financial-data-too-57068>

Weather and climate risk management

The Bureau of Meteorology is offering a professional development course in Weather and Climate Risk Management. The course will help with: using seasonal outlook information for short to medium term decisions; weather information and real time data and alerts for short term decisions and using local historical weather to understand local climatology, historical risk of extremes and any trends. The course is an approved professional development activity as part of the NSW Drought Strategy.

<http://www.raa.nsw.gov.au/assistance/professional-development-program/pd-activities>

Farmer blog on drought management

This blog from the Alliance for Regenerative Landscapes and Social Health (ARLASH) outlines one farmer's system for managing grazing during drought.

<http://www.arlash.com/2016/04/15/managing-drought-for-positive-outcomes-for-people-businesses-and-landscapes/>

Balkan flooding linked to airstream slowdown

Disastrous floods in the Balkans two years ago are linked to the temporary slowdown of giant airstreams. East moving winds that circle the globe between the Equator and the North Pole stopped for several days at the same time as a weather system halted over the Balkans and poured out record amounts of rain. The study adds evidence that such slowdowns are a key mechanism for causing extreme weather events in the northern hemisphere summer such as the European heat waves of 2003 and 2010 and the catastrophic Elbe flooding in 2002.

<http://advances.sciencemag.org/content/2/4/e1501428.full>

Key to drought resistant trees

A US study has found that trees most resistant to drought are those that are better at withstanding stress to the water transport system that carries water from the roots to the crown. Water inches up the xylem to replace water evaporating from the leaf surface. When water is scarce, the trees have to pull much harder on the water in the xylem, which allows air bubbles to infiltrate. The bubbles cause blockages, or embolisms, that clog the pipes the way a blood clot blocks flow through an artery.

<https://www.sciencedaily.com/releases/2016/04/160418161353.htm>

World Bank climate action plan

The World Bank has launched a new Climate Change Action Plan for renewable energy, sustainable cities, climate smart agriculture and green transport. Climate-smart agriculture programs include hybrid seeds, carbon capture practices; high efficiency/low-energy use irrigation programs; livestock productivity; energy solutions for agribusiness; and mainstreaming of risk management. There will be large-scale national and transboundary programs to promote water efficiency across sectors, and improved water management. <http://pubdocs.worldbank.org/pubdocs/publicdoc/2016/4/677331460056382875/WBG-Climate-Change-Action-Plan-public-version.pdf>

Climate Smart Agriculture guide

The new CSA guide offers detailed guidance on planning, finance, and case studies from around the world. The website was developed by the CGIAR Research Program on Climate Change, Agriculture and Food Security with contributions from experts at the World Bank, CGIAR and many other institutions working on these issues. <http://csa.guide>

Climate uncertainty handbook

This handbook offers 12 practical and easy-to apply principles for smarter communication about climate change uncertainties. <http://climateoutreach.org/resources/uncertainty-handbook/>

EMISSIONS

RDA Orana carbon farming guide

Regional Development Australia Orana, based at Dubbo, is providing extension and outreach to encourage regional participation in the Emissions Reduction Fund to add competitive scale. The RDA is also collecting evidence to demonstrate the economic impacts of successful projects and developing models to ensure the region is able to actively participate in any subsequent carbon markets. This work has led to the creation of a key case study on the economics of integrating carbon and traditional farming income streams. <http://www.rdaorana.org.au/our-initiatives.htm>

PICCC emissions research results

Recent emissions research at Victoria's Primary Industries Climate Challenges Centre has found conclusive evidence for farmers in high rainfall zones that maximising nitrogen fertiliser efficiency and delaying the timing of pasture termination prior to planting winter crops will minimise nitrous oxide emissions. Zero tillage, stubble retention and crop rotations with legumes all have potential to increase soil carbon, but only conversion from cropping to pasture will consistently increase soil carbon. Inhibitor-amended fertilisers and other nitrification inhibitor products are financially unviable for most Australian production systems. Mitigation strategies focused on emissions intensity and profitability instead of net emissions are the most effective way to reduce emissions and improve farm efficiency and profitability. Whole farm systems analyses demonstrate that while many strategies can reduce emissions, very few are profitable under current carbon policies. <http://www.piccc.org.au/news/highlights-piccc%E2%80%99s-recently-completed-projects>

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Emissions mitigation through soils practices

A new Nature review says mitigation of existing and future soil management practices could be as high as 8 petagrams per year, but depends on implementation strategies, and socio-economic and policy constraints. Current soil management practices to minimise greenhouse gas emissions include reducing tillage, improving grazing management, crop rotation and nutrient management, applying biochar, adding cover crops, and providing perennial vegetation for inactive production fields.

<http://news.cornell.edu/stories/2016/04/climate-smart-soils-may-help-balance-carbon-budget>

<http://dx.doi.org/10.1038/nature17174>

Native forest methodology changes

The ERF methodology for human-induced regeneration of a permanent even-aged native forest now uses the Full Carbon Accounting Model (FullCAM) instead of the Reforestation Modelling Tool (RMT) to more accurately reflect tree growth, management and disturbance..

<http://environment.gov.au/climate-change/emissions-reduction-fund/methods/human-induced-regeneration-native-forest>

Video on tree planting to reduce emissions

A new Emissions Reductions Fund video showcases how companies can partner with farmers to plant trees to reduce greenhouse gas emissions and earn Australian carbon credit units.

<http://environment.gov.au/climate-change/emissions-reduction-fund/publications>

ERF opportunities and results

The Department of the Environment has released a factsheet on opportunities available to business, farmers, land owners and others to help reduce Australia's emissions. The factsheet summarises results achieved to date.

<http://www.environment.gov.au/climate-change/emissions-reduction-fund/publications/factsheet-erf-opportunities>

Teabag decomposition research

The EU Soil Data Centre is seeking citizen scientists around the world to bury teabags as part of its research to measure rates of plant decomposition globally. Find out how you can participate at the website below.

<http://esdac.jrc.ec.europa.eu/networkcooperations/tea-bag-index>

SOILS

Dairy management and soil carbon

NZ research has found that pugging of soil by cows in winter did not affect short-term carbon dynamics at one site, but intensive strip-grazing in winter caused a 0.3 tonne/ha loss. Periodic pasture renewal including herbicide spraying and either ploughing and sowing or direct drilling led to short-term soil carbon losses between 0.8 and 4 tonne/ha for six different pasture renewal events. On one site, the soil carbon initially lost was recovered within a year due to good growing conditions and effluent application. Supplementary feeding to allow for less intensive grazing after pasture renewal also helped avoid long-term losses of soil carbon.

<http://www.stuff.co.nz/business/farming/77884918/the-swings-and-roundabouts-of-soil-carbon>

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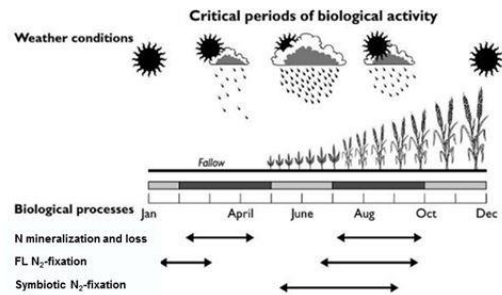


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Factors influencing soil nitrogen supply

GRDC research has found that nitrogen mineralised from soil organic matter and crop residues is more than 50% of crop nitrogen uptake. Management strategies such as stubble retention, tillage, fertiliser application and green manuring, and crop and variety selection can help manipulate microbial communities and influence fertiliser nitrogen use efficiency

<https://grdc.com.au/Research-and-Development/GRDC-Update-Papers/2016/02/Factors-influencing-nitrogen-supply-from-soils-and-stubbles>



Pilot plant to process manure to fertiliser

A pilot processing plant in Europe can convert 50 kilograms of pig manure to 500 grams of mineral phosphate fertiliser, 500 grams of mineral nitrogen fertiliser and 900 grams of organic biochar in an hour. The fertilisers and biochar can be used directly in agriculture. The plant is part of a EU-funded research project to deal with the huge supplies of manure from intensive farming, reduce nitrate pollution, and reduce truck transport of bulk manure.

<http://www.igb.fraunhofer.de/en/press-media/press-releases/2016/livestock-manure-provides-mineral-fertilizers.html>

Review: The nature and dynamics of soil organic matter

This review covers historical perspectives, the role of plant inputs, and the nature and dynamics of soil organic matter (SOM), often known as humus. Humus has similar, worldwide characteristics, but varies with soil type, vegetation inputs and composition, and soil biota. It contains carbohydrates, proteins, lipids, phenol-aromatics, protein-derived and cyclic nitrogenous compounds, and some still unknown compounds.

<http://www.sciencedirect.com/science/article/pii/S0038071716300281>

Soils webinar: Soil profiles and soils of NSW

Soil scientist Roy Lawrie discusses the main features of a soil profile, how the horizons or layers are derived, and what they mean from the land management perspective.

<https://www.youtube.com/watch?v=tVQEVDsVIQI>

Best soil in show

Scotland's Royal Highland Show has introduced a category for Best Soil in Show. Farmers are invited to enter samples of their own soils for both organic and non-organic management techniques. Entrants identify what they are growing in the soil, what they are adding, and the rotations they are using. Soils are judged on their physical and chemical properties and winners receive full compositional, structural and chemical analyses of their soil.

<http://www.hutton.ac.uk/news/best-soil-show-2016-ready-steady-dig>

The soil story

This short animation from US group Kiss the Ground outlines the link between carbon, soil, regenerative agriculture and climate.

<http://www.thesoilstory.com/>

WATER

Murray algal bloom

A red alert warning is currently in place for 800 km of the Murray River from Hume Dam to Red Cliffs, as well as the Edward and Wakool river systems. The bloom is due to high temperatures, nutrient levels and low water flows, and is expected to disperse with cooler temperatures and rainfall.

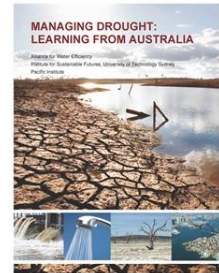
http://www.water.nsw.gov.au/_data/assets/pdf_file/0009/639495/160427-algal-alert-murray-river-swan-hill-to-red-cliffs.pdf



Managing drought: Learning from Australia

This report outlines the successful strategies that helped Australia weather the decade-long Millennium Drought, including investment in water conservation and efficiency; innovative water-pricing mechanisms; flexible, modular and adaptable supply options including dams, major pipelines, desalination plants, and recycling; community support for lower household water demand; and clear, credible communication about the drought situation and response needed.

<http://www.allianceforwaterefficiency.org/AWE-Australia-Drought-Report.aspx>



NSW water accounting reports

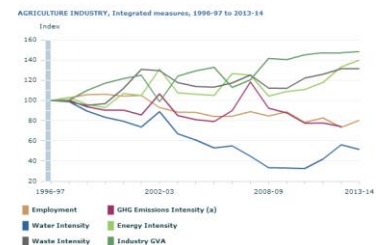
NSW's water accounting reports cover the state's major catchments and include climatic conditions, water resources, water distribution, environmental water, water trading and future prospects.

<http://www.water.nsw.gov.au/water-management/water-availability/water-accounting>

ABS environmental-economic accounts 2016

Agriculture witnessed a steady trend downwards in water intensity between 1996 and 2010, decreasing 67% over the period due to infrastructure improvements, technology advancements and changes to crop selection. Between 2010 and 2014, however, increased water availability, resulting from higher rainfall, accompanied a 56% rise in the volume of water consumed per unit of economic output produced by the agriculture industry.

<http://www.abs.gov.au/ausstats/abs@.nsf/mf/4655.0>



Groundwater in NSW

DPI Office of Water has a real time data website to view groundwater data from a network of NSW Government monitoring bores showing groundwater level information and water quality information. Information on individual bores includes bore depth, geologist/driller log, and bore construction details.

<http://allwaterdata.water.nsw.gov.au/water.stm>

Victorian Floodplain Management Strategy

The Victorian Floodplain Management Strategy clarifies the roles and responsibilities of government agencies and authorities involved in flood management. It encourages communities and individuals to work with their council and catchment management authorities to decide on the level of flood mitigation that best suits their locality.

<http://www.delwp.vic.gov.au/water/new-victorian-floodplain-management-strategy>

Produce magazine: Water use and water efficiency

The autumn issue of Westpac Agribusiness magazine Produce focuses on water use and water access in Australia. It features several case studies of water efficient farmers.

<http://www.westpac.com.au/business-banking/industries/agribusiness/produce-magazine/>

World Bank report on water scarcity

A new World Bank reports finds that water scarcity, exacerbated by climate change, could hinder economic growth, spur migration, and spark conflict. However, most countries can neutralise the adverse impacts of water scarcity by taking action to allocate and use water resources more efficiently.

<http://www.worldbank.org/en/topic/water/publication/high-and-dry-climate-change-water-and-the-economy>

BIODIVERSITY

Proposed reforms to NSW land management

The NSW Government is proposing reforms to land management and conservation including a new Biodiversity Conservation Act, a regulatory map identifying areas where clearing is unregulated, an expanded range of allowable clearing activities, and a framework for regulating clearing. Also proposed is a single method for biodiversity impact assessment, a Biodiversity Conservation Trust to deliver biodiversity offsets, and support for identifying and managing threatened species. Comments on the proposed reforms are due on 28 June.

<https://www.landmanagement.nsw.gov.au/>

Draft biodiversity plan for Victoria

The Victorian Government is developing a 20 year plan to stop the decline of the state's biodiversity. The draft plan includes themes on health, economy, investment, management and leadership.

<http://haveyoursay.delwp.vic.gov.au/biodiversity-plan>

National Biosecurity Act 2016

The national Biosecurity Act comes into force on 16 June 2016, replacing the Quarantine Act 1908. It will be co-administered by the Ministers responsible for Agriculture, Water Resources and Health.

<http://agriculture.gov.au/biosecurity/legislation/new-biosecurity-legislation>

Pest animal management review

The NSW Natural Resources Commission is calling for comment by 18 May on its draft report on pest animal management. The report recommends focusing on risk pathways and

surveillance, supporting local communities through strengthened governance and planning, on-ground coordinators, stronger enforcement and expanding research efforts, and improved management approaches for feral deer, cats and horses.

<http://www.nrc.nsw.gov.au/pest-animal-management>

Biocontrol project for 10 national weeds

NSW DPI is a partner in RIRDC-funded research into biocontrol solutions for 10 highly invasive and damaging weeds: African boxthorn, cabomba, prickly acacia, sagittaria, silverleaf nightshade, fleabane, sowthistle, mother-of-millions, giant rat's tail grass and ox-eye daisy. The weeds, selected after extensive consultation with industry and farmer groups, cost Australia around \$400 million each year.

<http://www.rirc.gov.au/news/2016/04/15/government-funding-announced-for-weed-biocontrol-r-d-project>

Cochineal bug released on coral cactus

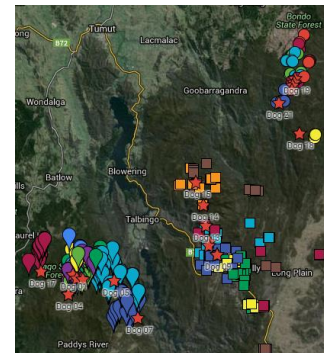
Biosecurity Queensland and NSW DPI's Weed Research Unit have released a sap-sucking bug to control coral cactus around Longreach and at Hebel, on the NSW border. Dense infestations of the cactus endanger landholders and livestock and reduce access to feed. The cochineal bug has been very effective in controlling coral cactus in South Africa.

<http://www.abc.net.au/news/2016-04-01/coral-cactus-bug-released-queensland/7291116>

Wild dog monitoring in the Riverina

Riverina LLS wild dog tracking project is monitoring over 20 dogs in the ranges near Canberra. The dogs have been trapped, weighed, a DNA sample taken, fitted with a GPS collar and released back into the wild. The collar emits a signal which is tracked via satellite giving an insight into the dogs' behaviour and movement patterns.

<http://riverina.lls.nsw.gov.au/biosecurity/pest-control/wild-dogs/monitoring>



NSW bee biosecurity officer appointed

NSW now has a bee biosecurity officer to train beekeepers, demonstrate best practice beekeeping at field days and other agricultural events, raise awareness of pests and diseases that can harm honeybees, and promote the National Bee Biosecurity Code of Practice.

<http://beeaware.org.au/archive-news/bee-biosecurity-officer-appointed-in-nsw/>

Grassland diversity encourages pollinator diversity

A study on working farms in southwest England found that the range of pollinators with different roles (functional diversity) significantly increased with an increase in grassland diversity. When strawberry plants were planted on the edge of paddocks, pasture plant species richness was significantly and positively associated with strawberry fruit weight and quality. Researchers' recommendations for species to encourage pollinators include chicory (*Cichorium intybus*) because it acts as a pollinator resource and has high agronomic value.

<http://onlinelibrary.wiley.com/doi/10.1111/1365-2664.12608/full>

Diverse bee populations benefit apple orchards

US analysis of wild and managed bee abundance near apple orchards found that seed set increased and pollen limitation decreased with increasing wild bee species richness, functional group diversity (based on nesting, sociality, and size traits), and abundance, demonstrating the importance of diversity to crop pollination even in the presence of large populations of managed honey bees. The results suggest that management of diverse pollinator communities may decrease reliance on managed honey bees for pollination services and enhance crop yields.

<http://www.sciencedirect.com/science/article/pii/S0167880916300020>

Landscape simplification reduces natural pest control

US and European researchers have found a consistent negative effect of landscape simplification on the level of natural pest control. The average level of pest control was 46% lower in homogeneous landscapes dominated by cultivated land, as compared with more complex landscapes. The researchers conclude that preserving and restoring semi-natural habitats emerges as a fundamental first step to maintain and enhance pest control services provided by predatory arthropods to agriculture.

<http://www.sciencedirect.com/science/article/pii/S0167880916300512>

C4 photosynthesis boosts plant growth

A UK study has found that plants using C4 photosynthesis grow 20-100 per cent faster than more common C3 plants by altering the shape, size and structure of their leaves and roots. Only three per cent of existing plant species have C4 lineages but they account for 25 per cent of carbon fixation by vegetation on Earth. C4 grasses include some of the world's most important food and energy crops and C4 grassy savannas provide critical ecosystem services for more than a billion people.

<https://www.sciencedaily.com/releases/2016/04/160418130654.htm>

Crop Trust gene banks

The Crop Trust was established in 2004 to ensure the conservation and availability of plant diversity essential for food and agriculture. It has oversight and financial responsibility for eleven global gene banks through the CGIAR research program for managing and sustaining crop collections.

<https://www.croptrust.org/>

Bush regeneration resources

The Australian Association of Bush Regenerators is developing a series of videos and worksheets on trusted techniques for bush regeneration. The first resources, on reference ecosystems and seed for revegetation projects, will be available in July. A sample of the videos being produced is now available on the AABR website.

<http://www.aabr.org.au/regentv/>

National standards for ecological restoration

The Society for Ecological Restoration Australasia has published national standards to increase the likelihood of successful restoration. The standards are relevant for all scales of

restoration, from minimally resourced community projects to large-scale industry or government projects.

<http://www.seraustralasia.com/standards/contents.html>

ENERGY

Dubbo BioHub project

Regional Development Australia Orana is currently working with local councils, business and industry to progress investment in a regionally-based BioHub. A BioHub receives biomass such as agricultural and urban wastes, and transforms it into value-added products such as industrial reductants, biochar-based fertilisers and bioenergy. A business viability study into the region's first network of hubs is currently underway.

<http://www.rdaorana.org.au/our-initiatives.htm>

QUT project to convert cane trash to bioenergy

QUT is developing technologies to integrate bioenergy from sugarcane trash into the sugarcane production, transport and milling process. Sugarcane trash and bagasse will be converted to biogas and upgraded to biomethane. Solids from biogas production will be converted via hydrothermal liquefaction to biofuels and chemicals.

<http://arena.gov.au/project/utilising-biogas-in-sugarcane-transport-and-milling/>

Proposed bioenergy plant for Queensland

A proposed renewable biofuel production facility near Charters Towers in North Queensland will process sugarcane and sweet sorghum to produce up to 350 million litres of fuel grade bio-ethanol per annum. A 'lignin' by-product would fuel a co-generation power plant, with excess lignin sold as biofuel pellets.

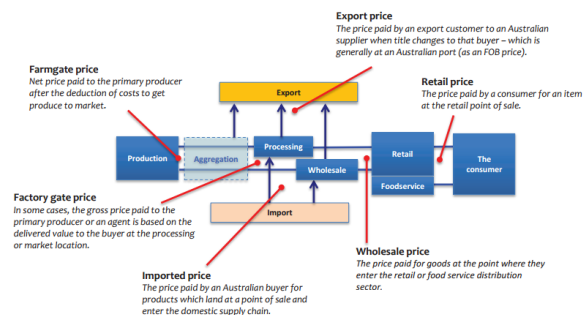
<http://arena.gov.au/media/arena-supporting-australias-largest-bio-energy-project/>

FOOD

How food prices are determined in Australia

This RIRDC study looks at the agri-food industry from farm-gate to food product to see where value is captured and how participants perform over time. The study also looks into the quality of intelligence available to food producers on market conditions that affect their decisions, and where improvements may be possible.

<https://rirdc.infoservices.com.au/items/16-013>



Food values research

The Food Values Research Group at the University of Adelaide is undertaking research projects that explore the historical, social, cultural, and political aspects of food production and consumption. Some projects require participation from the general public.

<https://arts.adelaide.edu.au/history/food-values/>

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Department of
Primary Industries

New food origin labels from 1 July

New food labelling indicating whether food is grown in Australia will be introduced from 1 July with a two year transition period. The new labels are:

- **Grown in Australia**
100 per cent of the ingredients are Australian grown.
- **Product of Australia**
100 per cent of the ingredients are Australian and all major processing has been done here.
- **Made in Australia**
Major processing has been done here. (Imported foods that are only sliced, canned, reconstituted or packaged in Australia cannot make this claim.)
- **Packed in Australia**
Shows the percentage of Australian ingredients.
- **Country of origin**
All imported foods produced, made, grown or packed outside Australia are shown with their country of origin on the label.
- **No logo**
Seasonings, confectionery, biscuits and snack food, bottled water, soft drinks and sports drinks, tea and coffee, and alcoholic beverages won't be required to use the kangaroo logo or show the percentage of Australian ingredients, but will still have to state where they were grown, produced, made or packed.



<http://foodlabels.industry.gov.au/>

LAND USE

New LandSmart app for sustainable property management

This app provides information about smart land management practices on rural properties to help land managers - particularly city-based landholders - look after their land sustainably and responsibly. Landholders can access expert advice, resources and information on sustainable property management from their smartphone.

<http://landsmart.lis.nsw.gov.au/>

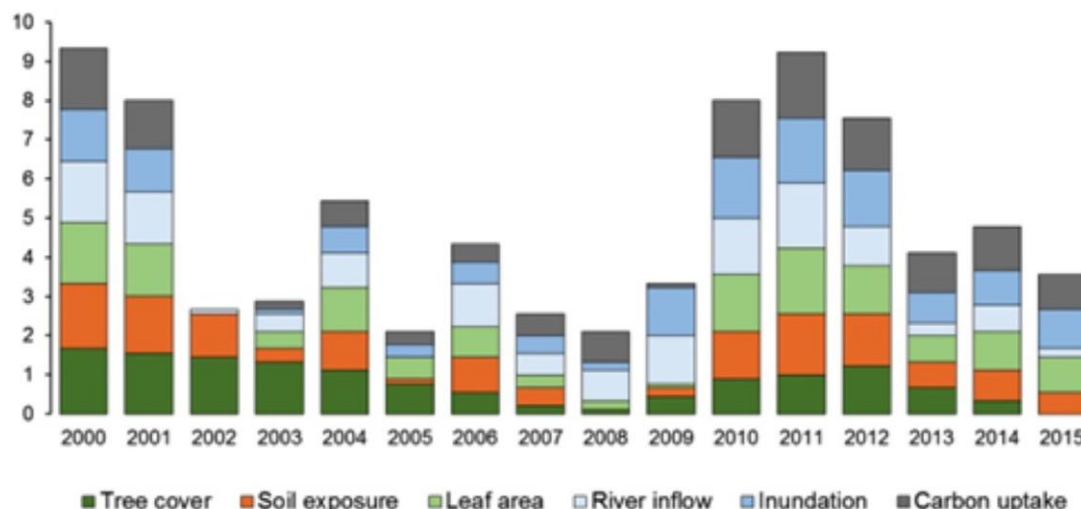
EU brief: No net land take by 2050?

This brief builds details how, by 2020, EU policies will take into account their direct and indirect impact on land use in the EU and globally, to achieve no net land take by 2050, reduced soil erosion, increased soil organic matter, and remediation of contaminated sites.

http://ec.europa.eu/environment/integration/research/newsalert/pdf/no_net_land_take_by_2050_FB14_en.pdf

SUSTAINABILITY

Australia's environmental scorecard



ANU analysis of satellite imagery, ground data and landscape modelling concludes that Australia's landscape and ecosystems have returned to poorer conditions that were last experienced during the Millennium Drought.

http://wenfo.org/wald/wp-content/uploads/2016/05/AusEnv2015_summary.pdf

Environmental impacts of beef production

A study of beef cattle impacts in eastern Australia found that most beef production utilised non-arable land unsuitable for most alternative food production systems. Fresh water consumption varied significantly depending on climate, farm water supply efficiency and the use of irrigation. Weaning rate and average daily gain explained 80% of the variability in supply chain greenhouse gas emissions.

<http://www.publish.csiro.au/nid/72/paper/AN14687.htm>

FORAGE grazing management tool

FORAGE is an on-line property-based information system developed for the northern Australia beef industry to help landholders manage changes in ground cover and pasture growth. It is supported by the best available science including climate projections. Users can track ground cover over time and compare ground cover for their dominant land types with the same land types within a 50-kilometre radius of their properties.

<https://futurebeef.com.au/resources/newsletters/futurebeef-ebulletin/forage-a-new-tool-to-help-your-grazing-management/>

Human activity leading to phosphorus buildup

Researchers have found that massive amounts of phosphorus have accumulated in the landscape due to the human impact of trade, food waste, human waste and agricultural runoff. Of three rivers studied, only the UK's Thames has shown improvement due to more efficient fertiliser use and modern wastewater treatment. The Maumee River Basin in the mid-western section of the US and the Yangtze River Basin in China are accumulating

'legacy P' that may affect aquatic ecosystems for decades or even centuries. New technologies and policies are needed to recycle phosphorus for re-use as fertiliser, rather than allowing it to escape and build up in the landscape.

<https://www.sciencedaily.com/releases/2016/04/160411134325.htm>

Agricology website

Agricology is a collaborative venture between organisations that support sustainable farming in the UK. It provides access to world-class information resources and champions good farming practice based on ecological principles.

[Http://www.agricology.co.uk/](http://www.agricology.co.uk/)

EVENTS

May 24-26	Irrigation Australia International Conference and exhibition, Melbourne http://irrigationaustralia.com.au/
June 6-8	6th National NRM Knowledge conference, Coffs Harbour http://conference.nrmregionsaustralia.com.au/
July 5-7	Climate change adaptation 2016 conference, Adelaide http://climate-adaptation.org.au/events/climate-adaptation-2016/
September 28-30	Bushfire 2016, Brisbane http://www.bushfire2016.org/
December 4-8	7th International Nitrogen Initiative Conference, Melbourne http://www.ini2016.com/
March 26-28, 2017	2nd Agriculture and Climate Change Conference, Barcelona http://www.agricultureandclimatechange.com/

SUBSCRIBE

NRM on Farms is a monthly NSW DPI newsletter that summarises recent information about climate and natural resource management relevant to agriculture to keep farmers and agricultural and NRM advisors and researchers up to date. It is freely available to anyone interested or involved in agriculture or NRM. To subscribe, email Rebecca Lines-Kelly at rebecca.lines-kelly@dpi.nsw.gov.au.