

NRM on farms



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

February 2016

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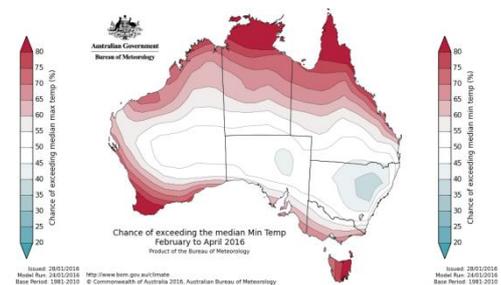
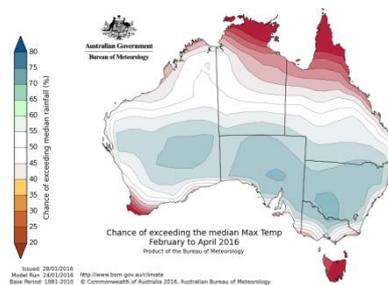
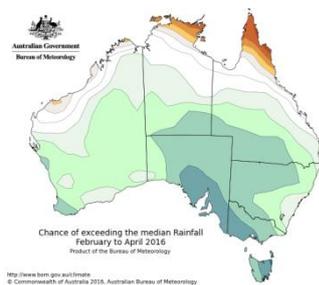
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CLIMATE

NSW seasonal outlook



Over the next three months NSW is likely to have average to above rainfall and cooler than average temperatures due to record warmth in the Indian Ocean, a weakening El Niño and warm sea surface temperatures around much of the Australian coastline, particularly near Tasmania. The warm waters are likely to drive warmer than average temperatures in nearby regions, and enhance rainfall systems.

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

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

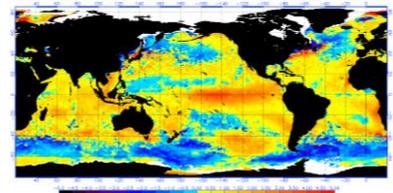
Ocean temperatures

Temperatures have cooled in the Pacific, and off the WA coast.

Warm temperatures continue in the Indian Ocean and off southern Australia.

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

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



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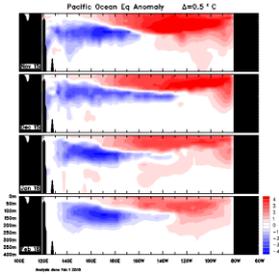


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Subsurface temperatures

Warm anomalies in the eastern Pacific and cool anomalies in the west have strengthened. The cool anomalies are expected to migrate eastwards and cool the surface of the equatorial Pacific in coming weeks, in line with the expected eventual return to a neutral ENSO.

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

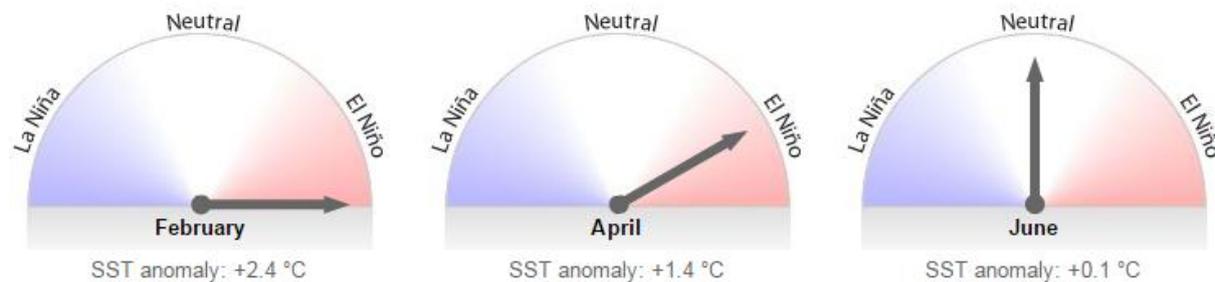


El Niño continues to decline

El Niño continues its gradual decline, possibly to neutral levels by autumn/winter. Historically, the breakdown of strong El Niño events brings above-average rainfall to some, but not all, parts of Australia in the first half of the year. Based on the 26 El Niño events since 1900, around 50% have been followed by a neutral year, and 40% have been followed by La Niña. Models suggest the neutral state is most likely for the second half of 2016, followed by La Niña, with a repeat El Niño assessed as very unlikely.

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

Model outlook

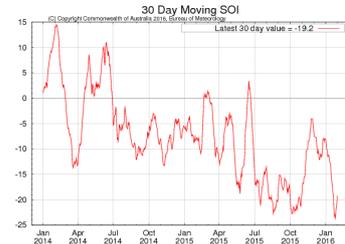


<http://www.bom.gov.au/climate/model-summary/>

SOI still negative

The SOI remains strongly negative, but during Australia's northern wet season it is not unusual to see SOI fluctuations due to the passage of tropical systems, and hence its value may not be representative of the overall ENSO state. 90-day values can provide a more reliable guidance. While the 30 day SOI to 31 January was -19.2 the current 90-day SOI is -11.9.

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



Warm Indian Ocean makes southern rain more likely

The Indian Ocean Dipole (IOD) is neutral, but sea surface temperatures remain warm, with a large part of the Indian Ocean measuring warmest on record for this time of year. This unusually warm ocean is likely to increase the available moisture for weather systems travelling across Australian in the coming weeks and months, increasing the likelihood of good falls occurring across southern Australia.

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

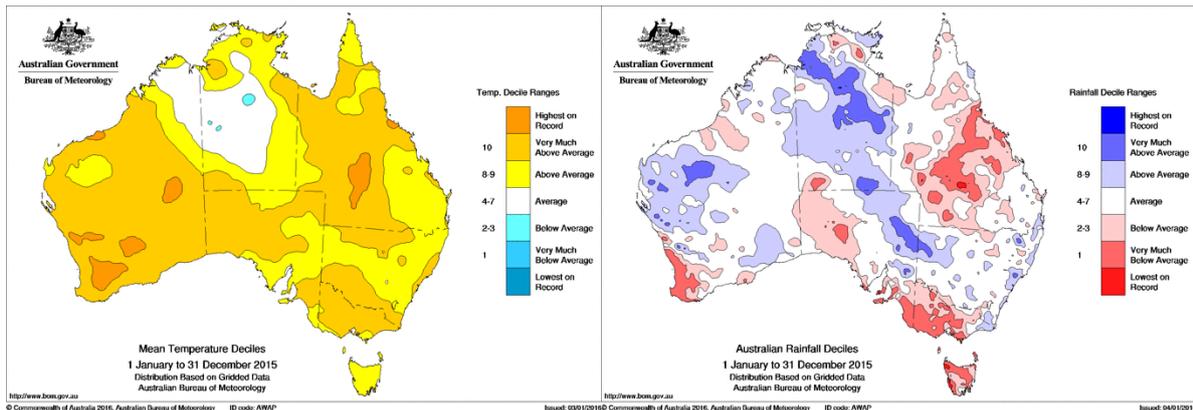
NSW's climate in 2015

NSW's mean temperature during 2015 was 1.00°C above the historical average, the equal seventh-warmest year on record, and the sixth-warmest year on record for minimum temperatures. The state's total rainfall was close to the historical average.

<http://www.bom.gov.au/climate/current/annual/nsw/summary.shtml>

Australia's climate in 2015

The most significant El Niño in nearly two decades dominated Australia's climate in 2015. Temperatures were the fifth warmest on record, 0.83°C above average, and rainfall was 5% below average, at 443.7 mm. Nationally, Australian temperatures have warmed approximately one degree Celsius since 1950, consistent with global climate trends.



<http://www.bom.gov.au/climate/current/annual/aus/2015/>

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

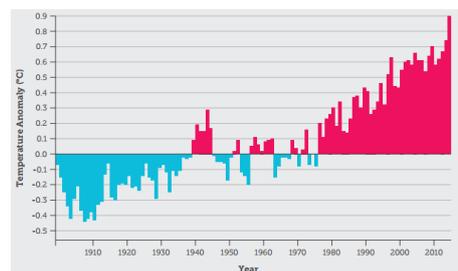
2015 hottest year on global record

2015 was the hottest year on record globally, with the global average temperature 0.90°C above the 20th century average. 2015 is the 39th consecutive year with above-average global temperatures, and the world's 10 warmest years have occurred since 1998. Nine months in 2015 broke global heat records with July 2015 the hottest month ever on Earth since records began in 1850.

<https://www.climatecouncil.org.au/hottestyear2015>

<http://www.carbonbrief.org/analysis-how-2015-became-the-hottest-year-on-record?>

<http://theconversation.com/its-official-2015-was-the-hottest-year-ever-recorded-53283>



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Warm years almost certainly due to human activity

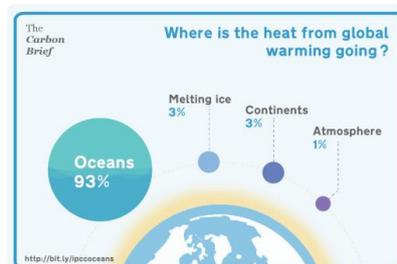
Analysis of recent record warm years, including 2015 temperatures, has found that natural climate variations cannot account for the fact that 13 out of the 15 warmest years ever measured have happened in the 21st century. The chance of experiencing the recent runs of record temperatures without accounting for human-caused greenhouse gases, are between 1 in 27 million and 1 in 650 million.

<http://www.sciencedaily.com/releases/2016/01/160125090611.htm>

Deep ocean is absorbing heat

New research concludes that the ocean is taking up twice as much heat now as it was two decades ago. As much heat entered the oceans in the last 18 years as in the previous 130 years, and a third of that heat – and rising – is finding its way into the deep ocean below 700m, which is temporarily slowing warming at Earth's surface.

<https://www.llnl.gov/news/livermore-scientists-find-global-ocean-warming-has-doubled-recent-decades>



Europe's summers are the warmest since Roman times

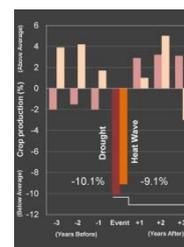
Using tree-ring information and historical documentary, researchers have calculated that Europe has almost certainly experienced warmer summers in the last three decades than at any other time since the Roman empire.

<http://iopscience.iop.org/article/10.1088/1748-9326/11/2/024001>

Droughts and heatwaves reduce yields by 10%

Over the past 50 years, droughts and heatwaves around the world caused an average annual drop in national crop production of around 10%. On average, crop production dropped by 10% in a drought and 9% in a heatwave, but usually returned to normal the following year.

<http://www.carbonbrief.org/droughts-and-heatwaves-cause-10-drop-in-annual-crop-harvests>



Higher CO2 increases wheat and lentil yields

Victorian trials have demonstrated a yield increase of 26 per cent in wheat under elevated carbon dioxide levels, but higher temperatures may offset this benefit. There is also a drop in protein content of about one percent, but varietal differences and agronomic practices may be able to minimise this loss. Early trials have indicated that lentils could have a stronger reaction to elevated CO2, with a 30 to 40 per cent yield increase at 550ppm, so may have a role in profitable cropping rotations.

<http://carbonfarmingknowledge.com.au/1585-2/>

Extreme fires: interaction between fire and atmosphere

The 2003 Canberra bushfire created its own tornado due to interactions between the atmosphere and fire leading to vortex effects and lateral fire spread across slopes. UNSW is researching the fires to develop new guidelines for firefighters.

https://www.youtube.com/watch?v=Xn_hBltGSA0&feature=em-subst_digest

Weather was dominant cause of insurance claims in 2015

Insurers paid out around \$27 billion for natural disaster claims last year with weather causing 94 percent of incidents. El Niño reduced hurricane activity in the North Atlantic, but brought major floods, heatwaves, drought and fires to many countries.

<http://www.munichre.com/en/media-relations/publications/press-releases/2016/2016-01-04-press-release/index.html>

Countries' adaptation and mitigation measures

Analysis of 160 countries' intended reductions in greenhouse gas emissions provided for the Paris climate change conference in December shows that 102 submissions include agricultural adaptation measures and 103 include agricultural mitigation priorities.

<https://cgspace.cgiar.org/bitstream/handle/10568/69115/CCAFS%20INDC%20info%20note-Final.pdf?sequence=3&isAllowed=y>

Main adaptation measures	Mitigation measures
Livestock management	Livestock
Crop management	Croplands
Fisheries and aquaculture management	Grasslands
Irrigation management	Rice
Water management ¹	Manure management
Knowledge transfer (e.g. extension)	Agricultural residue management
Agricultural diversification	Fertilizer
Soil and land management	Agroforestry
Climate-smart agriculture ²	Climate-smart agriculture ¹
Early warning systems (e.g. seasonal forecasts)	Agricultural intensification ¹
Agroforestry	
Agro-ecology ²	
Indigenous knowledge	
Financial mechanisms (e.g. crop insurance)	

Climate videos for horticulture

The Victorian government has produced several videos on climate risk management as part of its Farmview video series for horticulture producers.

<http://agriculture.vic.gov.au/agriculture/horticulture/farmview-videos>

NCCARF library

The NCCARF Adaptation Library holds and provides links to research reports and information to help support decision makers throughout Australia as they prepare for and manage the risks of climate change and sea-level rise.

www.nccarf.edu.au/adaptation-library

Australian CEO guide to climate action

This guide states that business strategies need to drive energy productivity, responsible energy supply solutions, water management, support for ecosystems and biodiversity, the emerging circular economy, and sustainable lifestyles and transport.

<http://www.sba.asn.au/sba/pdf/20151110-CEOGUIDE.pdf>

EMISSIONS

Australia's agricultural emissions down in 2014-15

Agriculture emissions decreased 3.4% compared with the previous twelve months, due mainly to declining beef cattle populations (from 26.3 to 24.2 million). A 1.3 million reduction in sheep numbers and reduced production of many key crops during this period have also contributed to the reduction in emissions. Australia's total 2014-15 emissions are estimated

to be 549.3 Mt CO₂-e, a 1.3 per cent increase over the previous year. Emissions per capita have fallen 28.4 per cent since 1990, while the emissions intensity of the economy has fallen 53.2 per cent since 1990.

<https://www.environment.gov.au/climate-change/greenhouse-gas-measurement/publications/quarterly-update-australias-national-greenhouse-gas-inventory-june-2015>

Australian dairy emissions down 40% in 30 years

Methane emissions from Australian milk production have declined by 40% over the past 30 years to approximately 20g per kg of milk, due mainly to increased milk yield per cow from improved feeding and breeding practices. Options currently available to further reduce the carbon footprint of Australian milk production include the feeding of lipid-rich supplements such as cottonseed, brewers grains, cold-pressed canola, hominy meal and grape marc, and feeding of higher rates of wheat. Future technologies include genetic selection of cows for improved feed conversion to milk or low methane intensity, vaccines to reduce ruminal methanogens and chemical inhibitors.

<http://www.publish.csiro.au/?paper=AN15222>

New method means Australian cattle methane 24% lower

Methane emissions from cattle in Australia are 24 per cent lower than previously estimated, equivalent to 12.6 million tonnes of carbon dioxide a year, following analysis of new Australian research data. A new methodology based on improved ways of estimating ruminant methane emissions from forage-fed beef and dairy cattle has been tested against international defaults provided by the IPCC and found to give consistent methane yields.

<http://www.publish.csiro.au/?paper=AN15365>

Grass fed beef may reduce emissions

New research has calculated that increasing grass fed beef production in Brazil could actually lower national emissions by maximising the carbon stored by pasture, as long as more forests aren't cleared for rearing cattle. Most Brazilian pastures are planted with tropical grasses of the genus *Brachiaria*, which are very effective at absorbing CO₂ from the atmosphere and storing it as organic carbon in its roots. When well managed, these grasslands can sequester carbon in the soil.

<http://www.ed.ac.uk/news/2016/meatconsumption-180116>

Biochar and N₂O mitigation

A review paper on the role of biochar in mitigating soil greenhouse gas emissions from agriculture, has found that N₂O emissions from soil were found to be lowered by 49% on average following biochar amendments.

http://www.biochar-international.org/sites/default/files/December_2015_final.pdf

Clean Energy Regulator emissions updates

The Clean Energy Regulator now publishes a monthly update on the Carbon Abatement Statement, including project registrations, fund facts, ACCU issuance and a national snapshot of projects by method type and position statements that provide accumulative overview of the scheme to date.

<http://www.cleanenergyregulator.gov.au/Infohub/Media-Centre/Resources/erf-media-resources>

Global nitrogen emissions

A Sydney University study of global nitrogen use has found that the US, China, India and Brazil are responsible for 46 percent of the world's nitrogen emissions. Most emissions come from industries such as agriculture, transport and energy generation. Emissions from consumers-end use were mostly from sewage. Australia, New Zealand, and Argentina export significant nitrogen embodied in livestock products.

<http://sydney.edu.au/news-opinion/news/2016/01/26/global-nitrogen-footprint-mapped-for-first-time.html>

Boosting farm yields to restore habitat and cut emissions

A UK study suggests that if farmers increased yields using available or soon-to-be-available technologies this would free up land for tree planting and peatland restoration which would help the farming sector deliver its contribution to UK emissions targets. By upping forest cover from 12% to 30% of UK land over the next 35 years, and restoring 700,000 hectares of wet peatland, these habitats would store enough carbon meet government targets of 80% greenhouse gas reduction by 2050 for the farming industry.

<http://www.cam.ac.uk/research/news/boosting-farm-yields-to-restore-habitats-could-create-greenhouse-gas-sink>

UK food emissions located

Analysis of the global cropland and greenhouse gas impacts of the UK's food and feed supply shows that the nation is currently importing over 50% of its food and feed, whereas 70% and 64% of the associated cropland and GHGE impacts, respectively, are located abroad. These results imply that the UK is increasingly reliant on external resources and that the environmental impact of its food supply is increasingly displaced overseas.

<http://rsif.royalsocietypublishing.org/content/13/114/20151001>

Dietary choices affect emissions and water footprint

Life Cycle Assessment of the water use and greenhouse gas emissions associated with the production, manufacture and distribution of UK potatoes, Italian pasta and Indian rice found that dietary choices within a food groups (in this case starchy carbohydrates) have a significant impact on an individual's contribution to greenhouse gas emissions and water footprint.

<http://www.sciencedirect.com/science/article/pii/S0959652615011993>

WATER

COFFIE funding for irrigators

The new Commonwealth On-Farm Further Irrigation Efficiency program (COFFIE) provides funding to irrigators through a delivery partner. Delivery partners will have a critical role in developing and managing projects. They will talk with irrigators about the options available under the program, assist irrigators to develop their project proposals and manage the administration of the project. There is \$1.575 billion of funding available for irrigation infrastructure upgrade programs, with up to \$35 million available for pilot programs to test the design of the COFFIE program. The program will be rolled out from July 2016, with pilot programs to occur before then. The program will run until June 2024.

<https://www.environment.gov.au/water/rural-water/coffie>

Irrigated agriculture in the Murray-Darling Basin

This new ABARES report presents key farm performance measures for irrigated horticulture, dairy, cotton and rice farms in the Basin, including data on water trading and use of irrigation technologies.

http://www.agriculture.gov.au/abares/display?url=http://143.188.17.20/anrdl/DAFFService/display.php?fid=pb_iamdbd9absf20151218.xml

Water trends are not sustainable

International analysis suggests that on current trends, domestic and industrial water demand will more than double by the year 2050, unless water use efficiency and water saving increases. Current water use habits increase the risk of being unable to maintain sustainable food production and economic development.

<http://www.iiasa.ac.at/web/home/about/160125-water.html>

Lakes are warming rapidly

Twenty-five years of monitoring 235 lakes representing more than half of the world's freshwater supply has found the lakes are warming faster than the ocean or the atmosphere at an average rate of 0.34°C each decade. Algal blooms are projected to increase 20 percent as warming rates increase.

<https://news.wsu.edu/2015/12/16/study-climate-change-rapidly-warming-worlds-lakes/>

SOILS

Aridity reduces microbial diversity

A new study drawn from more than 80 dryland sites across the world indicates that increasing aridity reduces abundance and diversity of microbial communities responsible for ecosystem services such as primary production, water filtration and climate regulation. The reduction is thought to be due to reduced soil carbon and increased daytime temperatures.

<http://phys.org/news/2015-12-aridity-microbial-diversity.html#jCp>

Subsoil manuring is worth the effort

Victorian trials of subsoil manuring to improve heavy clay soils have found that manure placed at around 40-50 cm also increases the plant available water capacity, reduces the need for nitrogen inputs and increases yields.

<https://www.youtube.com/watch?v=uthmHmyYaW0&feature=youtu.be>

https://www.agrifood.info/AFBM/2015/Sale_Malcolm.pdf

Fertiliser impacts on SOC

Analysis of the impact of 25 years of fertiliser application on soil organic carbon pools found that inorganic NPK plus farmyard manure strongly increased SOC storage due to enhanced recalcitrant and labile carbon. Adding straw to NPK did not increase SOC due to the fast decay rates of soil carbon. NPK on its own did not increase SOC storage due to the offsetting effects of enhanced recalcitrant carbon and decreased labile carbon.

<http://www.nature.com/articles/srep19061>

Anti-erosion cultivation

This geometric pattern was cultivated after SA's devastating November bushfires to prevent the bare soil eroding. The cultivation pattern, used in the 1940s drought, reduces soil loss from wind erosion.

<http://www.weeklytimesnow.com.au/agribusiness/cropping/vintage-cultivation-pattern-used-to-save-topsoil-after-bushfire/news-story/57450e876216a3d63e0308eeb36ef9ac>



Interpreting soil test results

Yea River Landcare group has produced a step-by-step guide to understanding and interpreting soil test results.

http://www.gbcma.vic.gov.au/news_events/simple-guide-helps-farmers-understand-soil-tests.html

Australian Soil Classification online and in print

CSIRO has released the second edition of the Australian Soil Classification. It is available free online, and a print version can be brought from CSIRO Publishing.

http://www.clw.csiro.au/aclep/asc_re_on_line_V2/soilhome.htm

Importance of soil research

The Victorian Government has produced a video 'The soil story' about the importance of investing in soil RD&E.

<https://youtu.be/ABQ8j0sTTao>

Vienna Soil Declaration

The 'Vienna Soil Declaration: Soil matters for humans and ecosystems', proclaimed on World Soils Day 2015, sets the framework for future research in soil science, and links achievements to the UN Sustainable Development Goals and global endeavours to combat climate change.

<http://www.fao.org/ag/portal/age/age-news/detail/en/?uid=379452>

Key messages from the International Year of Soils

The six key messages to take away from IYS2015 are that soils store and filter water; play a key role in the carbon cycle; provide the foundation for vegetation; host a quarter of our planet's biodiversity; are the basis for healthy food production; and are a non-renewable resource. Their preservation is essential for food security.

<http://www.fao.org/zhc/detail-events/en/c/345543/>

Soil: The foundation of nutrition

This FAO poster shows how to reverse the increasing trend of nutrient-depleted soil by adopting sustainable soil management practices.

<http://www.fao.org/resources/infographics/infographics-details/en/c/358223/>



BIODIVERSITY

LLS weed committees

In response to the Natural Resource Commission's Weeds Review, LLS is establishing 11 regional weed committees to replace 14 existing weed advisory committees. The new committees will include local control authorities, public and private landholders and community members. Local government's role in planning weed management activities and enforcing weed declarations will remain unchanged. LLS will deliver regional strategic weed management plans, coordinate regional strategic weed planning and assist with education and community outreach programs.

<http://www.lls.nsw.gov.au/biosecurity/weed-control/nsw-weed-reforms>

Wild dog research at Coffs Harbour

Over the past year North Coast LLS has been studying wild dogs and other ground animals near Coffs Harbour to understand how to manage wild dogs in these areas. The project uses remote cameras, GPS tracking, diet analysis, and DNA sampling to assess hybridisation between dingoes and domestic dogs.

<http://northcoast.lls.nsw.gov.au/resource-hub/media-releases/2015/wild-dogs-research-coffs-harbour>

Native vegetation insects benefit cotton

A recent survey of cotton industry consultants found that 89-90 percent of respondents agreed or strongly agreed that fields of cotton adjacent to native vegetation tend to have higher populations of beneficial insects; and have lower populations of insect pests.

http://www.crdc.com.au/sites/default/files/pdf/CCC15010%20CCA%20survey%202013%20-%202014_web.pdf

Birds on cotton farms

Birds on cotton farms is a new app to help cotton growers identify the common bird species found on cotton farms by sight and sound, and understand how to manage their habitats. Growers can monitor diversity and abundance of birds on their farms and surrounding landscapes.

<https://itunes.apple.com/au/app/birds-on-cotton-farms/id1047051624?mt=8>

Protect small patches of vegetation

Research into Australian vegetation communities has found that at least 22% of major vegetation communities in Australia have more than 50% of their remaining extent in patches of less than 1000 ha. For many communities, protecting and managing small patches is crucial for their persistence.

<http://onlinelibrary.wiley.com/doi/10.1111/1365-2664.12547/abstract>

Intact ecosystems are best climate change defence

Functioning and intact forests, grasslands, wetlands and coral reefs represent our greatest protection against floods and storms according to new Australian research. Adaptation strategies such as using conservation reserves to feed livestock, and clearing forests for agriculture in response to drought, may have a negative impact on nature which in turn will impact people in the long-term.

<http://www.sciencedaily.com/releases/2016/01/160128113840.htm>

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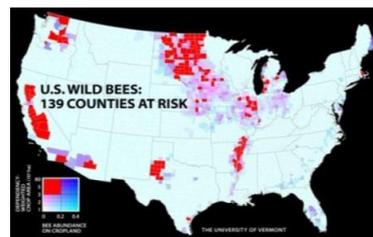


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US bees disappearing from farmland

A US study of wild bees suggests they're disappearing from the country's most important farmlands. If losses continue, the problem may destabilise the nation's crop production.

<http://www.uvm.edu/~uvmpr/?Page=news&=&storyID=22053>



Sparing land for nature

UK and Brazilian scientists have identified several mechanisms with supporting case studies to spare land for nature: producing more food per hectare, designating land use zones, incentivising higher yields, encouraging use of agroecological methods, minimising pollutions and improving farming practices.

<http://www.cam.ac.uk/research/news/how-more-food-per-field-could-help-save-our-wild-spaces>

Biodiversity schemes need to be more targeted

UK research into the effectiveness of its government schemes to encourage farmers to help wildlife highlights the need for more targeted government schemes and for consumers to support farmers and brands that are wildlife-friendly.

<http://www.sciencedaily.com/releases/2015/11/151118071308.htm>

GLAD: Global ants database

Ever wondered about the ants on your land? GLAD is a global collaboration among ant ecologists bringing together data on the abundance and traits of ants.

<http://globalants.org>

ENERGY

RIRDC to develop a database of biomass for bioenergy

Rural Industries Research and Development Corporation is developing the first central and national source of biomass resources. It will include interactive tools to enable better access to information. The project outputs will include a detailed analysis of the types, volumes and locations of potential bioenergy feedstocks in each state.

<http://arena.gov.au/project/the-australian-biomass-for-bioenergy-assessment-project/>

Poultry wastewater used for power

Baiada Poultry Ltd plans to cap wastewater ponds in its processing plants and use the trapped methane, blended with natural gas, to power and heat the plants.

<http://www.cospp.com/articles/2015/12/biogas-chp-from-wastewater-for-australia-poultry-plant.html>

Bioenergy conference presentations

Presentations from the 2015 Bioenergy Australia conference are available on line.

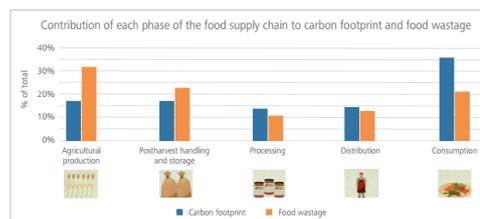
<http://www.bioenergyaustralia.org/pages/bioenergy-australia-conference-2015.html>

FOOD

Food wastage and climate change

This FAO report concludes that in high income regions, food waste is highest in the processing, distribution and consumption stages; in low-income countries, most losses occur in production and post-harvest.

<http://www.fao.org/documents/card/en/c/7338e109-45e8-42da-92f3-ceb8d92002b0/>



Organic food on the NSW north coast

North Coast LLS commissioned this report to assist the region's organic farming sector.

http://northcoast.lls.nsw.gov.au/_data/assets/pdf_file/0008/587195/nclls-organic-farming-north-coast.pdf

LAND USE

NRM Spatial Information Hub for rangelands

The Hub provides rangeland managers with access to property-scale information to encourage better management decisions. Users have secure on-line access to time series satellite imagery products, and tools to analyse land condition, water access and plan infrastructure. They will also have the ability to capture supporting information in the field, using hand held devices such as GPS and smart phones.

<http://www.nrmhub.com.au/>

SUSTAINABILITY

Positive Farming Footprints

In this report, 2014 NSW and national Rural Woman of the Year Pip Job concludes that families will struggle to leave a healthy, functional asset to the next generation without improvement in their social capacity and business acumen, and an overall increase in the resilience of family-owned farm businesses,

http://www.rirdc.gov.au/docs/default-document-library/2014-rural-womens-award_final-report_pip-job_positive-farming-footprints.pdf?sfvrsn=2

EVENTS

- | | |
|----------------|--|
| February 14-16 | 2nd National EcoArts Australis Conference, Wollongong
http://www.ecoartsaustralis.org.au/events-and-projects/conference-2016 |
| February 14-18 | 6th Greenhouse gas and animal agriculture conference, Melbourne
http://www.ggaa2016.org/ |
| March 14-16 | National Seed Science Forum, Mt Annan NSW
http://seedpartnership.org.au/seedscienceforum |
| April 27-28 | Climate Change Research Strategy for Primary Industries, Sydney
http://www.ccrspi.net.au/event/ccrspi-2016-primary-industries-striving-climate-resilience |

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Department of
Primary Industries

May 1-3	PIEFA food and fibre matters conference, Canberra http://www.piefa.edu.au/conference2016/
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 conference, Brisbane http://www.fireandbiodiversity.org.au/bushfire-2016
December 4-8	7th International Nitrogen Initiative Conference, Melbourne http://www.ini2016.com/

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