NRM on farms

A monthly news summary about climate and natural resources in agriculture. **September 2016**

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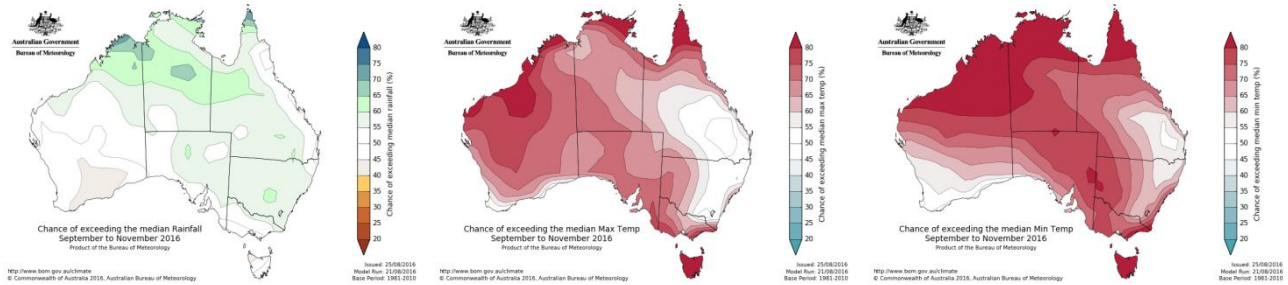
CLIMATE

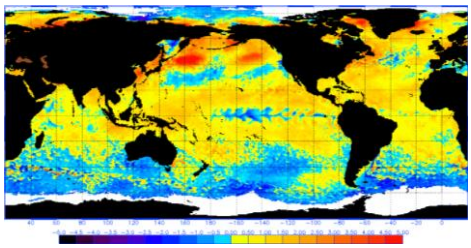
NSW seasonal outlook



NSW's spring outlook from September to November features average rainfall and average to warmer temperatures. Climate influences include a weakening negative IOD, and tropical Pacific Ocean temperatures which may near La Niña thresholds.
http://www.bom.gov.au/climate/outlooks/#/overview/summary/
http://www.bom.gov.au/climate/outlooks/#/overview/video

Ocean temperatures

Sea surface temperatures remain slightly cooler than average along parts of the central equatorial Pacific and warmer than average in the western Pacific, SE Asia, north west of Australia and along the east coast.
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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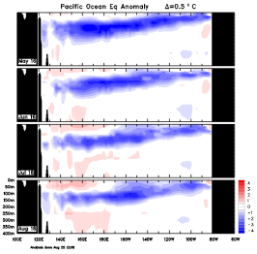
Pacific subsurface temperatures

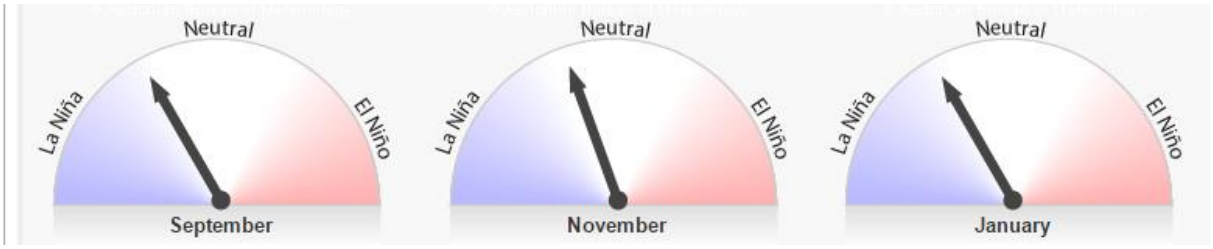


Cool anomalies span the equatorial Pacific Ocean, apart from warming temperatures in the top 50m of water in the west.
http://www.bom.gov.au/climate/enso/

Weak La Nina likely

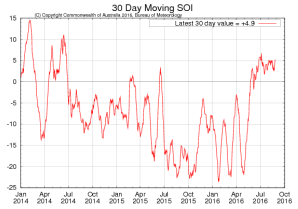
ENSO remains neutral, but a late and weak La Niña remains possible. International climate models suggest neutral to weak La Niña levels for the remainder of the year, so a La Niña WATCH remains in place. During La Niña, northern and eastern Australia typically experience above average spring rainfall, with the first rains of the wet season typically arriving earlier than normal in northern Australia. Some La Niña-like effects can still occur even if thresholds are not exceeded.
http://www.bom.gov.au/climate/enso/

Model outlook



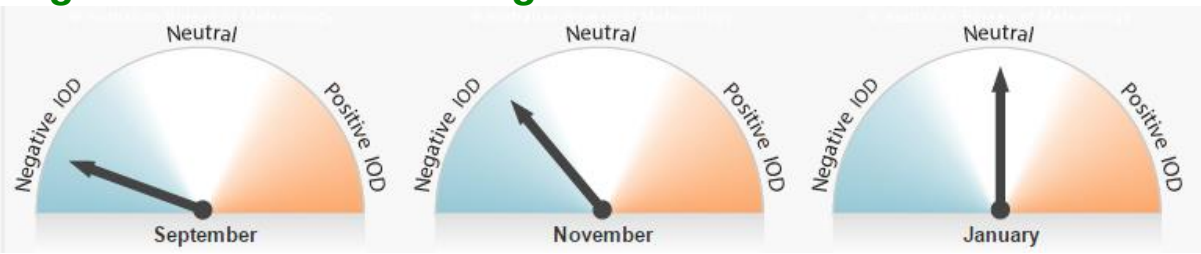
http://www.bom.gov.au/climate/model-summary/

SOI remains neutral



The Southern Oscillation Index remains within the neutral ENSO range, reaching 4.9 at the end of last month. Sustained positive values of the SOI above +7 typically indicate La Niña
http://www.bom.gov.au/climate/enso/#tabs=SOI

Negative IOD is weakening



The IOD continues negative but has weakened from the record July values. International climate models suggest the negative IOD will weaken during spring and end in November. This means its influence on Australia's spring rainfall may not be as strong as it has been during this winter, when wetter conditions prevailed in the east.
http://www.bom.gov.au/climate/enso/#tabs=Indian-Ocean

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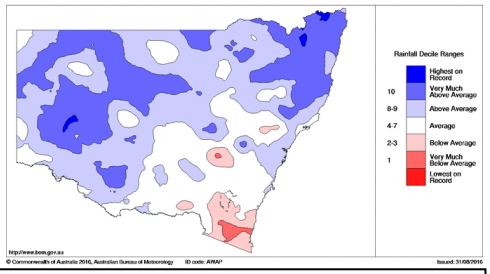
Wettest NSW August since 2003

Several rain events in August, including an East Coast Low on 3-4 August, and low pressure systems on 24th, contributed to rainfall 44% above average. Temperatures were slightly above average.
http://www.bom.gov.au/climate/current/month/nsw/summary.shtml



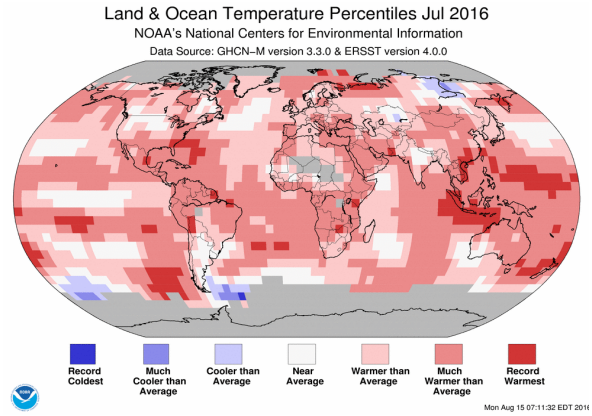
NSW DPI seasonal conditions report

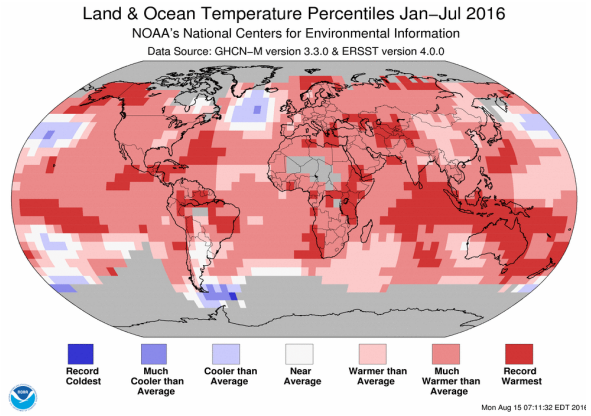
Subscribe to NSW DPI's seasonal conditions report, and the climate summary which provides a snapshot of the monthly report in an easy to read four-page format with additional graphs and charts.
http://www.dpi.nsw.gov.au/agriculture/emergency/seasonal-conditions/regional-seasonal-conditions-reports

CLIMATE RESOURCES

Earth's warmest July in 136 years

July 2016 was the warmest July in 137 years of modern record-keeping, according to NOAA analysis. For the 15th consecutive month, temperature anomalies were the highest since global records began in 1880, the longest streak in NOAA's 137 years of record keeping.





http://www.ncdc.noaa.gov/sotc/global/201607

Record-breaking 2015

2015 was a record year according to the 2015 State of the Climate, published in August:

- Hottest year on record, with the global temperature 1°C above preindustrial times.
- Annual mean carbon dioxide concentration greater than 400 ppm.
- Methane levels 1834.0 parts per billion; nitrous oxide levels 328.2 parts per billion.
- Almost twice the number of warm days than the annual average for 1961-90.
- Global sea surface temperatures 0.33-0.39°C above the 1981-2010 average.
- Global sea level 70mm higher than 1993 when the satellite record began.

https://www.ametsoc.org/ams/index.cfm/publications/bulletin-of-the-american-meteorological-society-bams/state-of-the-climate/

Impacts of 1.5 and 2 degrees of warming

A new report from The Climate Institute has found the difference between 1.5 and 2 degrees of warming would be much greater in terms of extreme events and disasters than previously believed. In southern Australia, heatwaves would be on average 13 or 20 days longer. Dry spells would be 3.5 or 6 days longer. Water availability through run-off after rain would be down 7 per cent and 13 per cent. The report concludes that emissions reduction targets to limit global temperatures to 1.5°C will require transformation; not achieving them will require even greater transformation.
http://www.climateinstitute.org.au/articles/media-releases/national-agenda-climate-analytics-1.5.html

BMP can manage climate risks to 2030

USQ research has found that climate risks for wheat, sorghum and grazing industries in eastern Australia to 2030 can largely be managed by continuing to implement best management practices. Existing climate variability poses more immediate challenges to ongoing viability and sustainability of primary industries than any anticipated changes to the region's climate to 2030.
http://link.springer.com/article/10.1007/s10584-016-1732-z

Dairying in future climates

Results from a three year project Dairy Business for Future Climates found that systems changes to align with projected changes in climate are realistic alternatives to the long-term trend for intensification for dairy businesses. 'Intensify' options had the greatest year-to-year variability in profit due to high reliance on purchased feed, while 'Simplify' options generally had the lowest average profit but the least year-to-year variability in profit and were generally less impacted by the 2040 climates.
http://www.dairyclimatetoolkit.com.au/adapting-to-climate-change/adapting-the-dairy-industry

Peanut industry transformational adaptation

Transformational adaptation involves large-scale, novel responses to reduce vulnerability to climate risks. This case study of the Peanut Company of Australia's expansion into NT after decades of below-average rainfall in south-east Queensland, illustrates that transformational adaptation in agriculture is difficult, complex, risky and costly and sometimes unsuccessful, and reveals some of the challenges and barriers to organisational adaptation in agriculture, especially when moving to a new location.
http://link.springer.com/article/10.1007/s10584-016-1698-x

Australian cotton industry resilience

This assessment of factors affecting cotton industry resilience identified climate change and climate variability as two of five key drivers. Regional water availability, infrastructure,and farm water availability thresholds are among the highest priorities for future resilience.
http://www.crdc.com.au/sites/default/files/pdf/Resilience%20Assessment%20Cotton%20May%202016%20Final.docx_0.pdf

New ANU-CSIRO lab to develop climate-ready crops

A new collaborative plant research centre in Canberra, the ANU-CSIRO Centre for Genomics, Metabolomics and Bioinformatics, will focus on development of crops able to

withstand the rigours of a changing climate, resist the ravages of disease, and utilise water, sunlight, and nutrients more efficiently.
http://science.anu.edu.au/whats-on/all-news/anu-and-csiro-open-new-agriculture-research-lab

Changes to FMD scheme to better prepare for drought

The federal government's Farm Management Deposits scheme now allows farmers to deposit up to $800,000, use the deposits as loan offsets and, in drought times, withdraw the deposits early without losing tax concessions already claimed. Primary producers are also allowed accelerated depreciation (over three years) for expenditure on silos and tanks to encourage drought preparedness.
http://www.agriculture.gov.au/ag-farm-food/drought/assistance/fmd/tax-legislation

Managing drought: learning from Australia

This report, developed as a resource for Californian water planners and managers, reviews key events and initiatives implemented in Australia to survive its worst drought in recorded history, the Millennium Drought, which lasted from 1997 until it officially ended in 2012.
http://pacinst.org/publication/managing-drought-learning-from-australia/

Communicating drought risk

This UK report offers several ideas for communicating drought risk.

- The effectiveness of any message will be affected by timing.
- People are more likely to engage with drought messages if they trust the 'messenger'.
- Scientific facts alone are not sufficient to engage people with drought risk – it is important to provide a compelling narrative, grounded in people's values.
- Focusing on local climate impacts can help some audiences engage with narratives about drought risk and climate change more broadly.
- Connecting drought risks to health impacts can make the issue more personally relevant.
- Avoid doom and gloom and focus on the opportunities and benefits of taking action.

http://climateoutreach.org/resources/drought-briefing-paper/

Climate impacts of land revegetation

University of Queensland modelling of impacts of revegetation of less productive land found that restoring trees to parts of Australia would reduce surface temperatures by up to 1.6°C, especially in western Queensland and NSW, and that more trees reduced the overall climate-induced warming from 4.1°C to 3.2°C between 2050 and 2100. Replanting trees could increase summer rainfall by 10% overall and by up to 15.2% in the southwest. Soil moisture would increase by around 20% in replanted regions.
https://theconversation.com/stopping-land-clearing-and-replanting-trees-could-help-keep-australia-cool-in-a-warmer-future-63654

Forest flammability model

Australian analysis of eucalypt forest fires suggests that species of plants present, rather than the surface fuel load, are the primary drivers of fire severity. University of Wollongong research has developed a forest flammability model that could help with planning prescribed burns, assess the effects of logging or grazing, and decide where it's safe to build.
https://theconversation.com/new-modelling-on-bushfires-shows-how-they-really-burn-through-an-area-63943

Natural hazards in Australia

A special issue of Climatic Change journal on climatic changes and Australian natural hazards provides a comprehensive review of many hazards affecting agriculture. Chapters on drought and bushfire will also be published.
Floods: http://link.springer.com/article/10.1007/s10584-016-1689-y
Frost: http://link.springer.com/article/10.1007/s10584-016-1763-5
Heatwaves: http://link.springer.com/article/10.1007/s10584-016-1650-0
Sea level and coastal extremes: http://link.springer.com/article/10.1007/s10584-016-1647-8
Storms, wind and hail: http://link.springer.com/article/10.1007/s10584-016-1737-7

Free online climate course wins Eureka Prize

Ecologist Lesley Hughes has been awarded the Australian Government Eureka Prize for her work to explain the impact of climate change. Her free online course explains the science of climate change in straightforward terms for non-scientists – and has even received praise from some climate sceptics, who found they had been lacking a clear explanation of the science. The next course begins on 12 September.
https://theconversation.com/plain-talker-on-climate-change-among-eureka-prize-winners-31461
https://www.open2study.com/courses/climate-change

Climate change and rural communities

The Climate Council report summarises the issues facing Australia's rural communities due to climate change, including opportunities for renewable energy.
http://www.climatecouncil.org.au/ruralreport

Climate change science and Victoria

BoM summarises the state of the science regarding the climate of Victoria, including climate variability, on-going trends and projected future changes.
http://www.bom.gov.au/research/publications/researchreports/BRR-014.pdf

High impact weather project

This international collaboration aims to improve forecasting and communications to increase community resilience. BoM is involved and other Australian researchers and users of weather forecasts are invited to contribute their expertise.
https://www.wmo.int/pages/prog/arep/wwrp/new/high_impact_weather_project.html

Comments wanted on CoastAdapt

A beta version of CoastAdapt is now open for review and feedback until November 2016. CoastAdapt is an online decision support system with maps, guidance, and international and Australian examples of coastal adaptation. An online forum allows users to share problems, news and ideas, including asking questions of a panel of experts. The final version of CoastAdapt will be launched in 2017.
https://www.nccarf.edu.au/CoastAdapt-beta-release

EMISSIONS

Climate Change Authority emissions recommendations

The Climate Change Authority's final report on Australia's future emissions reduction targets recommends a 2025 target of 30 per cent below 2000 levels, and further reductions by 2030 of 40 to 60 per cent below 2000 levels. The report recommends continuing with the ERF, and introducing an intensity-based emissions trading scheme for the electricity sector, baselines for other emissions-intensive industries such as cement, steel and natural gas, and five-yearly reviews of Australia's climate policies from 2022.
http://climatechangeauthority.gov.au/reviews/special-review/final-report-australias-future-emissions-reduction-targets
https://theconversation.com/climate-change-authority-suggests-emissions-trading-but-no-new-climate-targets-64675

4th ERF auction in November

The Clean Energy Regulator will hold its fourth ERF auction on 16-17 November 2016. Guidelines for the auction are published on the Clean Energy Regulator's website.
http://www.cleanenergyregulator.gov.au

Comments wanted on direct abatement offers

The Clean Energy Regulator is exploring an alternative process to purchase low cost abatement and would like to hear from stakeholders with possible large abatement projects at a single site that may be more suited to being brought forward through a direct abatement offer. Comments on the consultation paper can be submitted until 14 October 2016.
http://www.cleanenergyregulator.gov.au/DocumentAssets/Documents/Market%20sounding%20paper%20-%20Direct%20abatement%20offers.pdf

Wheat crop emissions lower after break crops

NSW DPI research into greenhouse gas emissions found emissions of 225 kg (CO2-e)/t grain for wheat following wheat, compared with 199 and 172 kg for wheat following canola and field peas, respectively. The lower emissions for wheat after break crops were associated with higher yields, improved use of fertiliser nitrogen, and reduced fertiliser nitrogen inputs for wheat after field peas. Highest emissions were associated with the production and transport of fertilisers and their use in the field.
http://www.publish.csiro.au/paper/CP15260.htm

Measure livestock emissions intensity

Advanced greenhouse gas inventories that report on reductions in emissions intensity are essential if the sector is to contribute effectively to climate and development outcomes, according to the Global Research Alliance on Agricultural Greenhouse Gases. Basic inventories use an emissions factor per animal rather than an emissions intensity factor based on productivity improvements.
https://cgspace.cgiar.org/handle/10568/76520

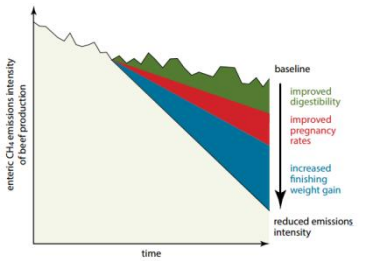


Figure 4: Reduction in emissions intensity from increasing productivity in a beef system

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Pyrolysed chicken litter helps reduce N2O emissions

DPI research into minimising soil nitrous oxide emissions suggests that both woody biochar and woody mulch can play a role. However, the greatest reduction in cumulative N2O emissions was observed when woody biochar was applied with pyrolysed poultry manure, confirming that pyrolysing poultry litter prior to soil amendment is an important mechanism for lowering N2O emissions from this valuable agricultural resource.
http://www.sciencedirect.com/science/article/pii/S0167880916302407

Nitrous oxide emissions in Australian soils

The latest edition of CSIRO's Soil Research journal provides a comprehensive understanding of the soil biogeochemical processes underpinning N2O emissions from Australian soils and how these are influenced by soil management and climate.
http://www.publish.csiro.au/nid/85/issue/8011.htm

SOILS

Carbon reduces nitrogen leaching in paddocks

Queensland research into nitrogen losses from cattle urine found that grass was more effective than microbial processes in using and storing nitrogen, but the addition of carbon C appeared to enhance microbial processes, with a short-term reduction in N leaching loss.
http://www.abc.net.au/news/2016-08-17/researcher-finds-way-keep-cow-urine-out-of-waterways/7747554
http://www.sciencedirect.com/science/article/pii/S0301479716301153

Crop diversity influences soil bacteria

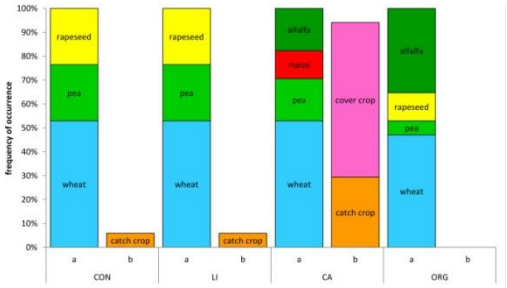
US analysis of microbial diversity in soils found that crop diversity significantly influenced bacterial community composition. Crop rotations decreased bacterial diversity by 4% on average compared to monocultures, but increased disease suppressive gene abundance in the more diverse rotation by about 9% compared to monocultures.
http://biorxiv.org/content/early/2016/08/04/030528

Microbes burp after drought-breaking rain

The smell of soil after drought-breaking rain is caused by a small group of bacteria called actinomycetes. Another group of bacteria, acidobacteria, also respond quickly to rain by giving off huge CO2 'burps' which may have implications in calculating soil carbon emissions.
http://www.abc.net.au/radionational/programs/scienceshow/soil-microbes-burp-co2-after-drought-breaking-rain/7652800#transcript

SOIL carbon in different farming systems

A 16-year experiment in northern France comparing the development of soil organic carbon levels for conventional, low-input, organic, and conservation agriculture found that only conservation agriculture and organic cropping systems significantly increased soil carbon storage by 24% and 12% respectively, possibly due to C inputs from cover crops.
http://www.sciencedirect.com/science/article/pii/S0167880916303760



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Soil carbon feedbacks

Understanding the role of soil carbon turnover is crucial for meaningful climate projections, according to new US research. There is growing consensus that carbon is more likely to remain in the soil if it enters through more digestible plant matter, and awareness is shifting from above ground biomass to carbon entering through plant roots and to soil organisms.
https://www.sciencedaily.com/releases/2016/08/160802125603.htm

Churchill Fellowship compost videos

Gippsland Churchill Fellowship traveller Jon Craven now has seven Youtube videos of compost making in Canada, US, UK, Europe and Israel as he investigates how agriculture can get greater benefit from recycling of organic nature wastes.
https://www.youtube.com/channel/UCzcLRD4uOu5PBEWaXgAKorQ

DPI webinar: Soil biology for crop and soil health.

In this month's webinar, Nikki Seymour, senior soil microbiologist with Qld Dept of Agriculture and Fisheries will outline the benefits of soil biology for crop and soil health, and the impacts of agricultural practices on soil biological components and hence crop productivity. The free one hour webinar will begin at 9.30am on Thursday 8 September. To register, email webinar organiser, Abigail Jenkins.
abigail.jenkins@dpi.nsw.gov.au

Virtual soil museum

The World Soil Museum's collection of soil profiles from around the world can now be visited online so that you can view profiles by country or soil type.
http://wsm.isric.org/#tourGoogle

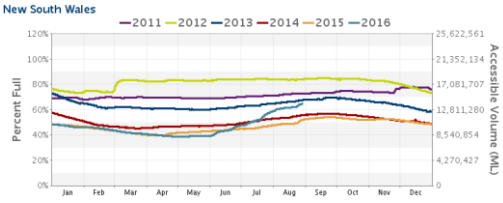
Definition of soil

What is soil? This paper reviews how the definition of soil has changed over the past 200 years, and suggests new scientific and lay definitions.
http://www.sciencedirect.com/science/article/pii/S0065211315300018

WATER

NSW's water storages

NSW water storages are now over 64% full, an increase of 6.7% over the previous month, and 12.7% over August 2015.
http://water.bom.gov.au/waterstorage/awris/#urn:bom.gov.au:awris:common:codelist:region.state:newsouthwales



IPART review of bulk water pricing

The Independent Pricing and Regulatory Tribunal is reviewing the maximum prices that WaterNSW can charge for its monopoly bulk water services in rural areas. The prices IPART sets will apply from 1 July 2017.
http://www.ipart.nsw.gov.au/Home/Industries/Water/Reviews/Rural_Water

Reward for improving water trading

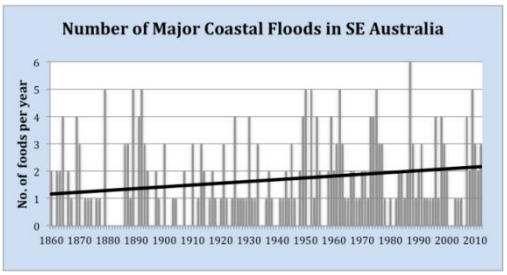
The Australian government is seeking ways to improve transparency and reliability of water market information. Up to $100,000 is now available to successful applicants to test their ideas, and applicants may be eligible for a further grant of up to $1 million to develop and commercialise their proposed technology. Applications close on 30 November 2016.
https://www.business.gov.au/Assistance/Business-Research-and-Innovation-Initiative/Improve-transparency-and-reliability-of-water-market-information

Drones help monitor Darling River release

Drones and state-of-the-art modelling technology are being used to monitor water quality following the first release of water into the lower Darling River since mid-December 2015.
http://www.dpi.nsw.gov.au/about-us/media-centre/releases/2016/drones-deployed-to-manage-water-quality-in-darling-river

More severe coastal flooding on east coast

BoM analysis of flood events between Brisbane and Eden shows that there has been a statistically significant 50 per cent increase in the frequency of major floods since the late 19th century. La Niña increases flood frequency by 92 per cent and associated death tolls by 220 per cent, relative to El Niño years.
http://www.bom.gov.au/jshess/docs/2016/Power.pdf



Channel by channel assessment for Connections project

Goulburn Murray Irrigation District landowners strongly support a channel-by-channel assessment and a fit-for-purpose approach to irrigation upgrades as part of the Victorian Government's $2 billion Connections irrigation modernisation project in the irrigation district where there are 1168 channels.
http://www.premier.vic.gov.au/landowners-have-their-say-on-connections-project/

Australian groundwater insight

The Australian Groundwater Insight has been updated with 2014–15 data and new features, making it easier to access and understand groundwater information. The Insight provides broad scale, nationally consistent information on groundwater for non-technical users.

http://www.bom.gov.au/water/groundwater/insight/#/overview/summary

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Reducing energy usage in irrigation pumps

A new NSW DPI Primefact outlines how variable speed drives can reduce the energy usage of irrigation pumps, and includes two case studies from the Darling River. It is one of several new and recently updated irrigation PrimeFacts available online.
http://www.dpi.nsw.gov.au/content/agriculture/resources/water/irrigation/systems/pumps/variable-speed-drives
http://www.dpi.nsw.gov.au/content/agriculture/resources/water/irrigation

Drinking water quality report

Sydney Water now has an online portal using real-time data for residents in Sydney, Blue Mountains and Illawarra to check their drinking water quality.
http://www.sydneywater.com.au/SW/water-the-environment/how-we-manage-sydney-s-water/safe-drinking-water/daily-drinking-water-quality-report/index.htm

BIODIVERSITY

Pollination research fund established

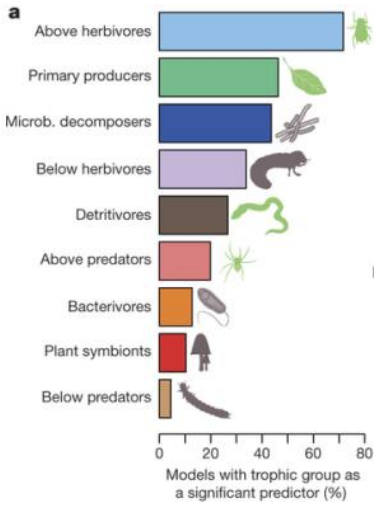
Horticulture Innovation Australia has launched a major pollination research investment fund to investigate more effective pollination for key crops, including the use of alternative pollinators, promote understanding of pollinator activities; and safeguard bee health.
http://aginnovators.org.au/news/major-new-pollination-research-investment-fund-win-fruit-veg-and-nuts

Priority issues for pollinators

Priority pollinator issues identified by a team of international researchers include corporate control of agriculture at the global scale; sulfoximine group of insecticides; new viruses; increased diversity of managed pollinator species; effects of extreme weather under climate change; and reductions in chemical use in non-agricultural settings. Homogenisation of agriculture means that blanket production systems are applied to vastly different landscapes, significantly reducing the diversity and number of native pollinators.
https://www.sciencedaily.com/releases/2016/08/160809095646.htm

Insects, plants, soil microbes underpin ecosystem services

The more an ecosystem swarms, crawls and flies the better it is for humans conclude European researchers. The most important groups for ecosystem services are above-ground herbivorous insects, plants, and soil microbial decomposers. Management strategies focused on them may foster synergies between biodiversity conservation and high ecosystem multifunctionality.
http://www.tum.de/en/about-tum/news/press-releases/short/article/33329/
http://www.nature.com/nature/journal/vaop/ncurrent/full/nature19092.html



UK wild bee decline linked to neonicotinoid insecticides

Research into population changes in 62 wild bee species in England between 1994 and 2011 suggests that neonicotinoid insecticides applied to oilseed rape seed before planting is linked to large-scale and long-term decline in the bee species distributions and communities. The active compound can lead to potential ingestion where pollinators feed on the pollen and nectar of treated crops.
http://www.ceh.ac.uk/news-and-media/news/new-study-neonicotinoid-insecticides-linked-wild-bee-decline-across-england

Bitterns in rice booklet

This new booklet summarises what the Bitterns in Rice project has learned since 2012. The rice attracts approximately 750 Australasian bitterns (500-1000) each year, which equates to between 19% and 50% of the total global population. The birds arrive about two months after sowing and begin nesting once there is sufficient cover. Rice growers in the NSW Riverina are custodians of the largest known breeding population in the world.
http://www.bitternsinrice.com.au/summary-booklet-2015/

New rabbit disease reporting app

Nearly 1000 landholders and community groups from around Australia have registered to be involved in the national release of the RHDV1 K5 rabbit virus proposed for 2017. DPI's vertebrate pest research unit has developed a new mapping program and app for landholders to report rabbit disease to map the spread and effectiveness of several biocontrol agents or viruses. This can then be used to plan follow-up control.
www.rabbitscan.org.au

Put your pests on the map

You can now post photos of pest animals, pest impacts or pest control activities on FeralScan.
www.feralscan.org.au

Feral cat control survey

RMIT researchers are investigating the extent of feral cat control in Australia and the number of feral cats removed each year. This project also seeks to understand how control efforts are changing over time. The anonymous survey will take around five minutes.
https://rmit.au1.qualtrics.com/jfe/form/SV_6SArCuGiGitdi6h

Agriculture intensification threatens fauna

According to Nature's analysis of the IUCN red list, overexploitation and agricultural intensification are the two largest threats to the biodiversity of fauna. Fortunately, some solutions are already making headway, including establishment of protected areas to safeguard key biodiversity areas, management of agricultural systems to allow threatened species to persist within them, regulation of pesticide and fertiliser use, certification of agricultural sustainability, and reduction of food waste.
http://www.nature.com/news/biodiversity-the-ravages-of-guns-nets-and-bulldozers-1.20381

NSW GOVERNMENT Department of Primary Industries

ENERGY

Comments wanted on wind energy planning framework

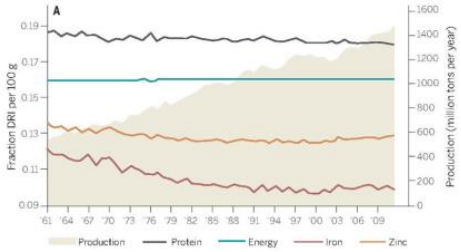
The NSW Government has released a new wind energy planning framework for comment, due by 16 September. The most contentious issues in dealing with wind projects are noise and visual impacts, and the framework will provide guidance to the industry on how to better design their projects with these impacts in mind.
http://planspolicies.planning.nsw.gov.au/index.pl?action=view_job&job_id=7859

Victoria bans onshore unconventional gas

The Victorian government will introduce legislation this year to ban onshore unconventional gas and fracking. Its 2015 Parliamentary inquiry found significant community concern about social and environmental impacts of onshore unconventional gas, particularly those associated with fracking. Future economic benefits did not appear to outweigh risks, and any development would be highly likely to have a dramatic effect on agriculture and tourism.
https://theconversation.com/victoria-bans-fracking-but-leaves-questions-over-gas-supply-64600
http://www.premier.vic.gov.au/victoria-bans-fracking-to-protect-farmers/

FOOD

Nutrition metrics needed for cereal yields



A new Science paper recommends that nutritional content of cereals be added to agricultural yield metrics. Between 1961 and 2011, the proportion of the global agricultural area for cereals used for rice, wheat, and maize production increased from 66% to 79%, while the area used for barley, oats, rye, millet, and sorghum declined from 33% to 19%. Millet has four times higher iron content per unit than rice, and oats contain four times more zinc than wheat. The changes in crop area for respective cereals have resulted in the decline of protein (4%), iron (19%), and zinc (5%) content in the global, directly consumed cereal supply.
http://science.sciencemag.org/content/349/6245/238

Eat more vegetables for health and the economy

If Australians ate just 10 percent more vegetables a day, federal, state and local governments could reap $100 million annually in combined health savings and growers netting an estimated $23m more each year according to this new report from Deloitte. Australia currently ranks 63rd in the world by apparent consumption of vegetables per capita.
https://www2.deloitte.com/au/en/pages/economics/articles/increasing-vegetable-consumption-health-expenditure-impact.html

Where does Australia import its food from?

This story map shows the location and value of Australia's food imports.
http://storymaps.arcgis.com/en/app-list/map-series/gallery-series/#s=0&q=australia&md=storymaps-apps:map-series

Crawford Fund food waste conference

The Crawford Fund's annual conference last month focussed on food loss and waste issues along the supply chain—in production, in getting product to market, and in the management and reuse of waste, with a special presentation on the role of supermarkets.
https://www.crawfordfund.org/events/2016-conference/

LAND USE

Govt buyback of Liverpool Plains exploration licence

The NSW Government has reached a commercial agreement with BHP Billiton to buy back the Caroona exploration licence issued in 2006 for underground coal mining covering approximately 344 square kilometres in the Liverpool Plains. The government has determined that coal mining under the fertile black soil plains poses too great a risk for the future of the food-bowl and the underground water sources that support it.
https://www.nsw.gov.au/media-releases-premier/farming-future-liverpool-plains-secured

NSW rural land use returns

Analysis of NSW rural land sale transactions 1990-2014 shows that established mixed farming and irrigation areas have the most consistent average annual returns, and the pastoral areas having the highest capital growth over the past three years.
http://eprints.qut.edu.au/97694/3/97694.pdf

Land use under global change and domestic policy

CSIRO research into future land use under climate change has found substantial potential for land-use transition from agriculture to carbon plantings, environmental plantings, and biofuels cropping under certain scenarios, but land-use responses and their impacts are highly dependent on global outlook and emissions abatement effort, domestic land-use policy settings, land-use change adoption behaviour, productivity growth, and capacity constraints.
http://www.sciencedirect.com/science/article/pii/S0959378016300231

SUSTAINABILITY

Enhancing food and fibre productivity in Victoria

An audit of Victorian agricultural RD&E has recommended external performance measures to provide assurance that changes in agricultural practices and productivity are not affecting the long-term sustainability of the natural resource base.
http://www.audit.vic.gov.au/reports_and_publications/latest_reports/2016-17/20160817-food-fibre.aspx

Agricultural policy models in different parts of the world

This informative summary of agricultural policy in the developed world shows that environmental protection is a feature of all policies reviewed.
http://www.ahdb.org.uk/documents/Horizon_Brexit_Analysis_08_Aug2016.pdf

EVENTS

September 21-23	National Landcare conference, Melbourne http://landcareaustralia.org.au/our-programme/national-landcare-conference/
September 28-30	Bushfire 2016, Brisbane http://www.bushfire2016.org/
October 28-30	Pay dirt: National biological farming conference, Cairns http://www.nationalbiologicalfarmingconference.org.au/welcome.html
December 4-8	7th International Nitrogen Initiative Conference, Melbourne http://www.ini2016.com/
February 5-9 2017	Restoring ecological processes, ecosystems and landscapes, Armidale http://conferencecompany.com.au/revegconf2017/

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.