

NRM on farms



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

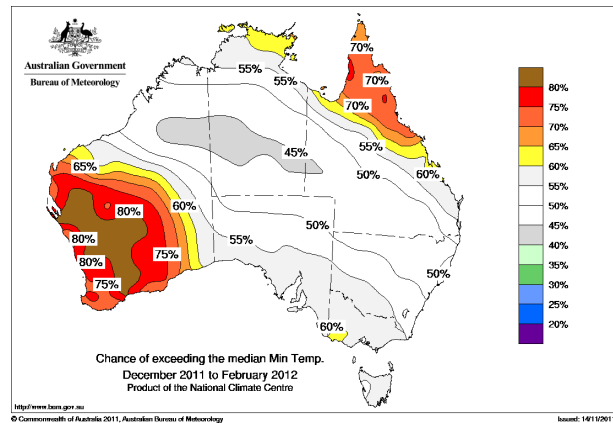
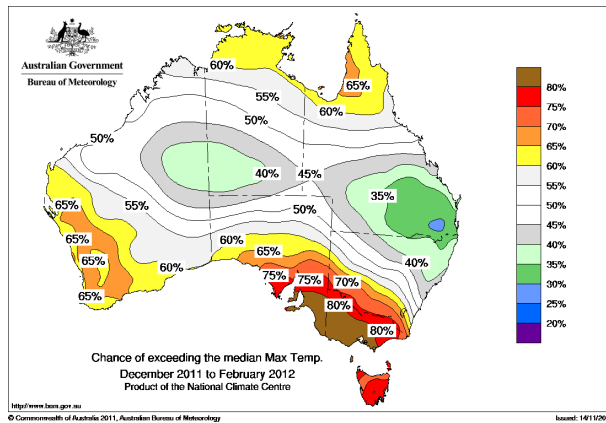
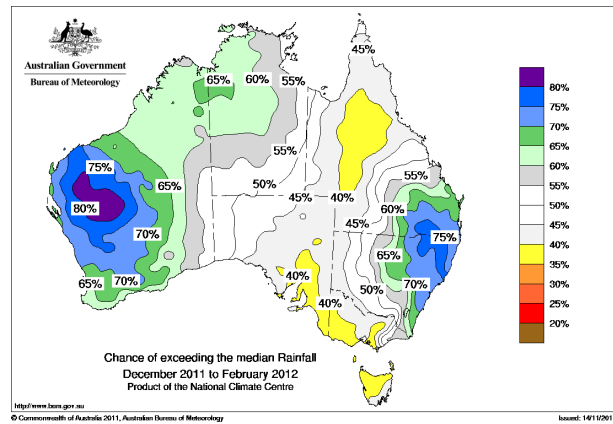
December 2011

CLIMATE

Wet summer for NSW

The current three month outlook indicates a wet summer for eastern NSW and WA (right), mainly due to a persistently warm Indian Ocean and cooler conditions in the tropical Pacific Ocean. NSW daytime temperatures (below) are likely to be average to cool apart from southern NSW. NSW night-time temperatures (below right) are likely to be around average.

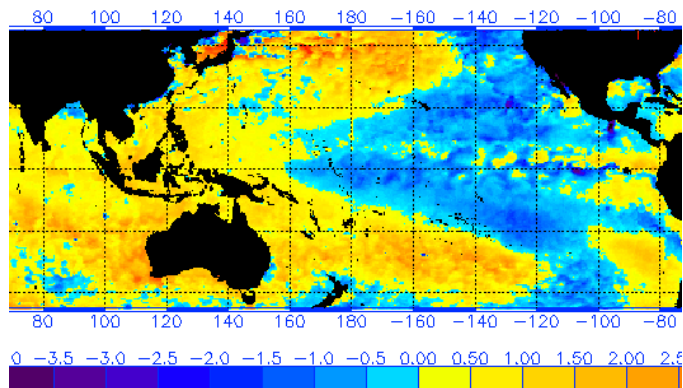
http://www.bom.gov.au/climate/ahead/rain_ahead.shtml
http://www.bom.gov.au/climate/ahead/temps_ahead.shtml



La Nina to strengthen and last over summer

Cool La Niña conditions strengthened across the tropical Pacific Basin during November, and are likely to peak during the next month and last at least until the end of summer. Sea surface temperatures around Australia are warm, as shown in the map at right <http://www.osdpd.noaa.gov/data/sst/anomaly/2011/anomg.12.5.2011.gif>

NOAA/NESDIS SST Anomaly (degrees C), 12/5/2011



International climate change conference in Durban

The 17th Conference of the Parties (COP17) to the United Nations Framework Convention on Climate Change and the meeting of the Parties to the Kyoto Protocol were held in Durban, South Africa, 28 November - 9 December. The discussions aimed to advance the implementation of the Convention and the Kyoto Protocol, as well as the Bali Action Plan agreed at COP 13 in 2007, and the Cancun Agreement reached last December. Decisions made at the COP17 will be listed on the COP website.

<http://www.cop17-cmp7durban.com/index.html>

Air pollution affects cloud formation and rainfall

A new study has found that long-term aerosol pollution affects cloud formation and rainfall. The aerosols increase the size of clouds that contain water and ice and have low, warm bases, but do not affect clouds with cold bases and no ice. The study also found that aerosols increase rainfall frequency in clouds with higher water content, and decrease rainfall frequency in clouds with low water content.

<http://www.nature.com/ngeo/journal/v4/n12/full/ngeo1313.html>

Climate change and extreme events

A new IPCC report evaluating the role of climate change in extreme events says there have been statistically significant trends in the number of heavy rainfall events in some regions and there is medium confidence that anthropogenic influences have contributed to this. It is also likely that there has been a poleward shift in the main Northern and Southern Hemisphere extra-tropical storm tracks and an increase in extreme coastal high water related to increases in mean sea level. Economic losses from weather- and climate-related disasters have increased. The full report will be published in February 2012.

<http://ipcc-wg2.gov/SREX/>

CLIMATE RESOURCES

Climate change and human health

A new report into the impacts of climate change on human health says we face significant risks to our wellbeing and survival due to exposure to extreme weather events and heatwaves, increases in some infectious diseases, and reduced access to fresh water.

http://climatecommission.gov.au/wp-content/uploads/111129_FINAL-FOR-WEB.pdf

Barriers to climate change adaptation: Issues paper

The Productivity Commission has released an issues paper on regulatory and policy barriers to effective climate change adaptation, and options for addressing these barriers.

<http://www.pc.gov.au/projects/inquiry/climate-change-adaptation/issues>

Agriculture and climate change papers

The latest issue of the International Journal of Sociology of Agriculture and Food is a Special Issue about agriculture and climate change.

<http://ijsaf.org/contents/18-3/index.html>

Futurewise website

The FutureWise website, developed by Grain Growers Limited's Commercial Services Division, provides rural landholders with information about Australia's climatic history, current season conditions and long term climate prospects at regional to national scales.

<http://www.futurewise.net.au/>

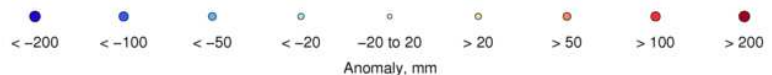
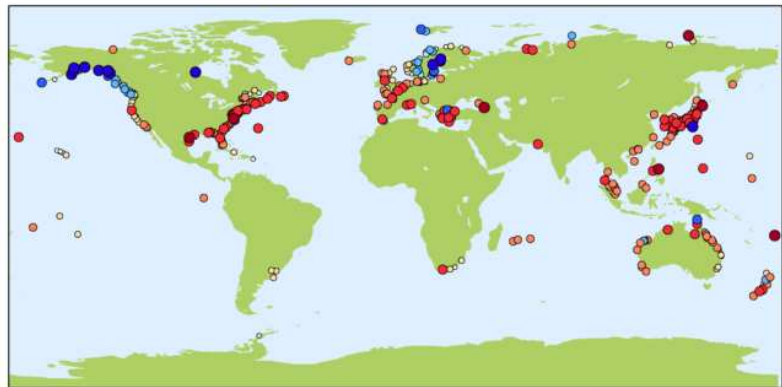
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Interactive map of sea level change

The UK's Permanent Service for Mean Sea Level, established since 1933, has interactive maps showing anomalies and trends in sea levels around the world. The anomalies are compared against the 1960-1990 average.

<http://www.psmsl.org/products/anomalies/>

Level for 2009 relative to 1960-1990



EMISSIONS

Record greenhouse gases

The latest greenhouse gas bulletin from the World Meteorological Organisation says globally averaged mixing ratios of carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) reached new highs in 2010, with CO₂ at 389.0 ppm, CH₄ at 1808 ppb and N₂O at 323.2 ppb. These values are greater than those in pre-industrial times (before 1750) by 39%, 158% and 20%, respectively. From 1990 to 2010 radiative forcing by long-lived greenhouse gases increased by 29%, with CO₂ accounting for nearly 80% of this increase. Radiative forcing of N₂O exceeded that of CFC-12, making N₂O the third most important long-lived greenhouse gas.

http://www.wmo.int/pages/prog/arep/gaw/ghg/documents/GHGbulletin_7_en.pdf

Global abundances of and increases in key greenhouse gases from the GAW global greenhouse gas monitoring network. Global abundances for 2010 are calculated as an average over 12 months.

	CO ₂ (ppm)	CH ₄ (ppb)	N ₂ O (ppb)
Global abundance in 2010	389.0	1808	323.2
2010 abundance relative to year 1750*	139%	258%	120%
2009-2010 absolute increase	2.3	5	0.8
2009-2010 relative increase	0.59%	0.28%	0.25%
Mean annual absolute increase during last 10 years	1.97	2.6	0.75

* Assuming a pre-industrial mixing ratio of 280 ppm for CO₂, 700 ppb for CH₄ and 270 ppb for N₂O.

Record increase in carbon dioxide in 2010

The annual growth rate of atmospheric carbon dioxide in 2010 was 2.36±0.09 ppm, one of the largest growth rates in the past decade. Annual averages for previous decades were 1.9±0.1 ppm per year during 2000-2009, 1.5±0.1 ppm during 1990-1999, and 1.6±0.1 during 1980-1989. The 2010 increase brought the atmospheric CO₂ concentration to 389.6 ppm, 39% above the concentration at the start of the Industrial Revolution (about 278 ppm in 1750). The present concentration is the highest during at least the last 800,000 years.

<http://www.globalcarbonproject.org/carbonbudget/10/hl-full.htm#AtmosphericEmissions>

Clean Energy legislation passed

On November 8 the Senate passed Clean Energy legislation which means a fixed carbon price of \$23 a tonne will apply from 1 July, 2012, moving to a flexible price after three years. Farmers will not have to pay for greenhouse gas emissions from agricultural activities and the fuel they use for farm equipment and personal vehicles will not be covered under the carbon price. For full details of the Clean Energy Plan, including a series of plain English fact sheets, go to the website.

<http://www.cleanenergyfuture.gov.au/clean-energy-future/our-plan/>

Carbon Farming Initiative now operational

The Carbon Farming Initiative scheme is now operational. Landholders can receive carbon credits for reducing emissions from agriculture and land use, increasing the carbon stored in soils and vegetation, and Kyoto and non-Kyoto activities. Landholders who want to participate in the scheme need to apply to open a registry account. Once their account is opened they can apply to get a project approved, undertake the project, submit offset and audit reports and apply for carbon credits. All information on CFI operations, including the list of eligible and excluded activities, is on the CFI administrator website.

<http://www.climatechange.gov.au/government/initiatives/carbon-farming-initiative/cfi-administrator.aspx>

CFI approval for manure methane methodology

The first methodology to be approved under the Carbon Farming Initiative will enable pig farmers to earn carbon credits for reducing methane emissions from manure. The approved methodology requires methane from manure to be captured and either flared or used to generate heat and electricity. The methodology was developed in collaboration with the Australian Government, the pork industry and scientists, and assessed by the independent Domestic Offsets Integrity Committee.

<http://www.climatechange.gov.au/government/initiatives/carbon-farming-initiative/methodology-development/methodologies-under-consideration/destruction-of-methane-from-manure-in-piggeries.aspx>

The carbon price and the Australian wool industry

This report prepared for Australian Wool Innovation provides modelled data on the potential impact of a carbon price on the Australian sheep industry.

http://images.wool.com/pub/GHD_Carbon_Tax_Report_AWI_disclaimer.pdf

CFI opportunities for woolgrowers

An Australian Farm Institute report on Carbon Farming Initiative opportunities for woolgrowers says farm businesses are unlikely to benefit financially from participating in CFI approved activities apart from single species tree plantations in the high rainfall zone.

<http://images.wool.com/pub/AWI-AFI-GHG.pdf>

The carbon price and the cost of living

An independent analysis of the impacts of the Government's proposed carbon price of \$23 per tonne on Australian households projected impacts are relatively modest, well within the range of recent experience of changes in consumer prices and household living costs.

<http://www.csiro.au/files/files/p12j6.pdf>

IAE calls for action to limit emissions

The world may not be able to limit global temperature rise to safe levels if new international climate action is not taken by 2017, according to the International Energy Agency. If the world is to limit global warming to 2 degrees Celsius, emission volumes must not have more than 450 parts per million (ppm) of carbon dioxide, and with emissions already at 390 ppm of CO₂, time is running out for action. It calls for standards on energy-using equipment such as cars or electric appliances, cost-effective measures for renewables, and a price on carbon.

http://www.iea.org/press/pressdetail.asp?PRESS_REL_ID=429

WATER

Draft Basin plan is released for comment

The Murray–Darling Basin Authority (MDBA) has released a draft Basin plan for public comment. The draft recommends setting a long-term limit of 10,873 gigalitres per year for consumption by irrigation, agriculture, and drinking water to ensure enough water is left in the river system to meet environmental needs. Deadline for submissions is 20 April 2012.

<http://www.mdba.gov.au/draft-basin-plan>

Framework for assessing groundwater impacts of mining

The National Water Commission has released a framework for assessing local and cumulative effects of mining on groundwater resources. The framework and a set of supporting tools will allow jurisdictions and mining companies to perform nationally-consistent, risk based assessments of the cumulative impacts of mining on groundwater resources.

<http://nwc-web01.squiz.net/publications/waterlines/framework-for-assessing-potential-local-and-cumulative-effects-of-mining-on-groundwater-resources>

Free book about Australia's water resources

Water: Science and solutions for Australia is a free online book from CSIRO designed to inform business, government and the community about the importance of water. It provides the latest information on the status of Australia's water resources, their future prospects and the potential for using water more effectively to meet the growing demands of cities, agriculture, heavy industries and the environment.

<http://www.csiro.au/resources/Water-Book>

Airdrop invention helps plants during drought

An Australian invention that harvests air moisture in dry areas to provide subsurface irrigation water has won an international design prize. The Airdrop irrigation concept uses a turbine intake to drive air underground through a network of piping that rapidly cools the air to the temperature of the soil where it reaches 100% humidity and produces water. The water is then stored in an underground tank and pumped through to the roots of crops via sub surface drip irrigation hosing.

<http://www.jamesdysonaward.org/Projects/Project.aspx?ID=1722&RegionId=0&Winindex=4>

SOILS

Stocktake of soils RD&E in Australia

A recent stocktake of Australia's current investment in soils research, development and extension (RD&E) shows significant but largely uncoordinated activity. Soils staff and research provider expenditure is substantially greater than for most primary industry sectors except grains. Soils RD&E is seen as enabling, rather than providing direct and immediately captured benefits to a particular industry or interest group. The stocktake report recommends a cross-sector soils RD&E strategy.

http://www.daff.gov.au/data/assets/pdf_file/0003/2085816/soils-stocktake.pdf

Biosolids provide nutrients but some problems

Trials of biosolids, poppy mulch (PM), and poppy seed waste (PSW) applied to Tasmanian barley and wheat crops found that while the amendments can meet plant nutrient

requirements, release of plant-available N may be too rapid for plant uptake to prevent leaching losses. There is also potential of elevated phosphorus levels and increased soil pH. http://www.publish.csiro.au/index.cfm?act=view_file&file_id=SR11146.pdf

Study into soil biomass and organic matter

An Australian study of relationships between soil organic matter and the soil microbial biomass in semi-arid crop and pasture systems has found that while the size, function, and structure of the soil microbial community were related to total soil carbon, they were better correlated with soil organic matter fractions. Overall, labile fractions of soil organic matter were more strongly related to microbial community structure and function than total SOM. <http://www.publish.csiro.au/nid/84/paper/SR11203.htm>

No safe time to irrigate after P application

A Victorian trial into agronomic effects and runoff losses associated with phosphorus fertiliser on irrigated dairy pasture found that in all runoff events and all treatments P concentrations greatly exceeded water quality guidelines. The results suggest that the current recommendation of withholding irrigation for three days after fertiliser application is insufficient to prevent potentially significant losses occurring. <http://www.publish.csiro.au/nid/84/paper/SR11156.htm>

Fine scale soil mapping for Australia

CSIRO is leading a new soil mapping facility, the Soil and Landscape Grid of Australia (SALGA), to create a fine-scale soil map for all of Australia. SALGA will provide comprehensive Australian soils information, and provide opportunities for 'soil apps' for landholders to guide decisions for irrigation, pesticide use, and fertiliser. <http://www.tern.org.au/Newsletter-November-2011-SoilsFeature-pg19621.html>

Free on-line soil biology book

This book by WA soil scientist Lyn Abbott is intended for anyone interested in the living aspects of soil. It aims to help readers become aware of the fundamental importance of soil organisms, and understand how biological processes in soil are influenced by changes in the soil environment. <http://www.soilhealth.com/soils-are-alive/>

NZ visual soil assessment

This assessment method provides land managers with a simple tool to assess and monitor soil quality. It is based on the visual scoring of key bio-physical indicators of soil quality, and incorporated on an easy to use scorecard. The soil indicators are supported by plant 'performance' indicators that link soil condition to crop production. <http://www.landcareresearch.co.nz/research/soil/vsa/>

Story of soil campaign

The Soil Science Society of America (SSSA) has launched a Story of Soil campaign to educate the general public about the importance of healthy soils as well as introduce them to the soil science profession. <http://www.iheartsoil.org/home>

Soil Stories video

This US video provides a comprehensive introduction to soil science through a series of short visual explanations. <http://www.youtube.com/watch?v=Ego6LI-ljbY>

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Primary
Industries

New soils publications

Sustaining soil productivity in response to global climate change

Brings together the latest research in soil science and climatology and the ethical, political and social issues surrounding soil stewardship. Chapters include scientific studies on microbial function, maintaining fertility, and the effects of greenhouse gas emissions, as well as ethical issues ranging from allocation of land use to policies needed for conservation.

<http://au.wiley.com/WileyCDA/WileyTitle/productCd-047095857X.html>

Soil carbon in sensitive European ecosystems: From science to land management.

Focuses on research into soil carbon stocks in Mediterranean forest and agricultural systems, mountains and peatland.

<http://onlinelibrary.wiley.com/book/10.1002/9781119970255>

Soil genesis and classification

Includes information on new classification systems and emerging technologies.

<http://au.wiley.com/WileyCDA/WileyTitle/productCd-0813807697.html>

ENERGY

NSW extends 'fracking' moratorium

The NSW Government has extended its moratorium on coal seam gas fracking until April 2012 pending the completion of an independent review process. The moratorium, previously scheduled to end on 31 December 2011, will allow for the review and strengthening of existing standards for fracking in NSW, as well as the development of technical guidelines.

http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0019/419032/Minister-Hartcher-Fracking-moratorium-extended.pdf

Contaminated water found at discharge site

Independent testing has found high levels of ammonia, methane, carbon dioxide, lithium, cyanide, bromide and boron around a water discharge point near a Santos coal seam gas operation in the Pilliga forest, near Narrabri. The state government will conduct its own investigation and testing of the site.

<http://www.smh.com.au/environment/water-issues/tests-reveal-contaminated-water-near-gas-site-20111208-1oldj.html#ixzz1g05YYxrb>

AGL suspends drilling

Natural gas company AGL says it will suspend drilling at a northern NSW farm to allow community consultation to take place. The company has permission from the landowner to begin exploration on the property, but farmers on surrounding land want seismic and water studies done first.

<http://news.smh.com.au/breaking-news-national/agl-suspends-drilling-for-gas-at-nsw-farm-20111208-1ol0j.html>

Senate report recommends moratorium for coal seam gas

An interim Senate committee report into the impact of mining coal seam gas on the Murray Darling Basin recommends a moratorium on most of the biggest new coal seam gas drilling plans in eastern Australia, and tightening of regulations governing pollution, land access and water extraction. The 24 recommendations include: suspension of all coal seam gas projects in southern Queensland and northern NSW where the Murray-Darling Basin and the Great Artesian Basin overlap, pending new research into water pollution and the effects of fracking - hydraulic rock seam fracturing; all future CSG development approvals to be preceded by modelling of effects of multiple developments; and independent monitoring for subsidence.

http://www.aph.gov.au/senate/committee/rat_ctte/mdb/interim_report/report.pdf

Expert committee to provide advice on coal seam gas

The Australian Government will establish an independent expert scientific committee to provide scientific advice on coal seam gas and large coal mining approvals where they have significant impacts on water resources.

<http://www.pm.gov.au/press-office/new-focus-scientific-evidence-build-confidence-coal-seam-gas-and-coal-mining>

Coal seam gas well code of practice

The Queensland government has released a code of practice for constructing and abandoning coal seam gas wells to ensure long term well integrity, containment of gas and protection of groundwater resources.

http://mines.industry.qld.gov.au/assets/petroleum-pdf/csg_code_of_practice.pdf

Coal seam gas map

The ABC has produced an interactive map of Australia's coal seam gas activities to date. Users can click on individual wells to see their status, depth, the name of the company that owns the well, and exact geographical coordinates. The 'leases' button shows where coal seam gas companies have the right to look for more gas.

<http://www.abc.net.au/news/specials/coal-seam-gas-by-the-numbers/>

Renewable energy provides 10% of Australia's electricity

Renewable energy provided almost 10 per cent of Australia's electricity in the last 12 months with more than 500,000 household solar systems in place, and wind energy supplying enough electricity to power the equivalent of around 900,000 homes.

<http://apo.org.au/research/clean-energy-australia-report-2011>

BIODIVERSITY

Eastern Australia forests are a biodiversity hotspot

The forests of eastern Australia that stretch from south of Sydney to north of Cairns have been identified as the world's 35th biodiversity hotspot. Hotspots have exceptional concentrations of endemic species that are undergoing exceptional loss of habitat. The only other Australian hotspot is in southwest Australia, near Perth.

<http://www.springer.com/life+sciences/ecology/book/978-3-642-20991-8>

Carbon and biodiversity board appointed

The Australian Government has appointed an independent Land Sector Carbon and Biodiversity Board to advise on ways to increase the land sector's resilience to climate change and improve long-term farm productivity. The Board will advise the Government on the implementation of the land sector package of the Clean Energy Plan. Board members are chair Bob Debus, Lesley Hughes (Macquarie University), David Crombie (former NFF president), Joe Ross (Kimberley region), and Anna Skarbek (Climate Works Australia).

<http://www.cleanenergyfuture.gov.au/land-sector-carbon-biodiversity-board/>

Benefits of Bush Heritage

The recently published report 'Their future in our hands' outlines the effects of Australia's Bush Heritage program in protecting native biodiversity over the past 20 years.

<http://www.bushheritage.org.au/their-future-in-our-hands.html>

FOOD

Canberra food security symposium

Food regimes and food security were the focus of the 2011 symposium of the Academy of Social Sciences in Australia held in Canberra in November. Topics included an appraisal of Australia's food system, climate change and food production, pressures on inputs to food production, and the role of supermarkets in food distribution. UK food policy academic Tim Lang gave a lecture titled 'Living with an unsustainable food system: Can food democracy resolve the dilemmas?'

http://www.assa.edu.au/programs/forums/cunningham_lectures/2011.php

http://www.assa.edu.au/programs/forums/annual_symposiums/2011.php

Global food insecurity is an opportunity for Australia

A recent Australian Farm Institute paper on food security says that global food insecurity represents a major opportunity for Australian agriculture because Australia is a major net food exporter and is closely tied to the Asian economies where most growth in food demand is anticipated in the future. Sustainably maintaining and improving Australian agricultural output in the future will require renewed and vigorous efforts to enhance agricultural productivity, but Australia currently expends the lowest amount of public funding on agriculture as a percentage of GDP (0.12%) of any nation globally.

http://www.farminstitute.org.au/newsletter/November_featurearticle.html

Global food losses could feed the world

Almost one-third of food produced for human consumption—approximately 1.3 billion tonnes per year, which could feed the total global population of 7 billion—is either lost or wasted, according to a new report from Future Directions international. In industrialised countries, solving this requires changing consumer behaviour, and maintaining the health and security of the food supply chain. Reporting of food waste statistics and law reform to reduce litigation fears may also be necessary.

<http://www.futuredirections.org.au/publications/food-and-water-crises/315-on-overview-of-global-food-losses-and-waste.html>

Achieving food security in the face of climate change

This policy summary from the Commission on Sustainable Agriculture and Climate Change says food systems must shift to better meet human needs and balance with planetary resources. Greatly expanded investments in sustainable agriculture, including improving supporting infrastructure and restoring degraded ecosystems, are an essential component of long-term economic development.

http://ccafs.cqjar.org/sites/default/files/assets/docs/climate_food_commission-spm-nov2011.pdf

SUSTAINABILITY

Gippsland Water Factory wins Gold Banksia Award

Winner of the overall Gold Award at the 2011 Banksia Environmental Awards was Gippsland Water Factory which recycles domestic wastewater from 11 Gippsland towns for re-use, freeing up water in local rivers and reservoirs. The project removed 40km of open sewers, and incorporates sustainable design and a water education centre. It also won the Banksia Awards water and education categories. The agriculture and farming award went to Queensland's Gaia Farms for their sustainable banana farming system. The built environment award went to the community-owned Hepburn Wind Farm in Victoria. The

environmental research award went to the Institute for Sustainable Futures for its work on peak phosphorus.

<http://www.banksiafdn.com/the-awards/42/215.html>

National approach needed for agricultural land

Protecting prime agricultural land is an issue of national significance that deserves a national approach say parliamentarians Tony Windsor and Barnaby Joyce in the November issue of the Australian Farm Institute newsletter Insights.

http://www.farminstitute.org.au/newsletter/November_instituteinsights.html

Managing grazing lands in Queensland

This 30 page booklet aims to help graziners manage stock numbers to match the current and expected seasonal conditions.

http://www.derm.qld.gov.au/land/state/rural_leasehold/pdf/managing_grazing_lands_in_qld.pdf

EVENTS

March 6-7	3rd national acid sulfate soils conference, Melbourne www.scu.edu.au/nationalassconference
April 10-13	IUSS Fifth Global Workshop on Digital Soil Mapping, Sydney http://www.pedometrics.org/dsm_oz/abstract.html
May 1-3	Water and climate: Policy implementation challenges http://www.climatechange2012.org/index.asp?IntCatId=14
May 1-4	Water and beyond, Griffith NSW www.waterandbeyond.com.au
June 18-20	AWA biosolids and source management, Gold Coast http://www.awa.asn.au/bsmconference/
June 26-28	Climate adaptation in action, Melbourne http://www.nccarf.edu.au/conference2012/
October 14-18	16 th Australian agronomy conference, Armidale http://www.agronomy.org.au/events/2012/
December 2 – 7	Soil solutions for diverse landscapes, Hobart http://www.cdesign.com.au/soilscience2012/

OTHER NRM NEWSLETTERS

ASSAY - acid sulfate soils

<http://www.dpi.nsw.gov.au/aboutus/resources/periodicals/newsletters/assay>

Climate Institute newsletter

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

Murray Darling Basin Commission e-letter

http://www.mdba.gov.au/media_centre/mdba_eletter

Newstreams- aquatic habitat

<http://www.dpi.nsw.gov.au/aboutus/resources/periodicals/newsletters/newstreams>

NRM Notes (invasive animals)

<http://www.invasiveanimals.com/research/goals/goal-11/11t1/>

MAILING LIST

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