Saline And Sodic Soils Can Be Fixed

Gil Gullickson

Rain makes grain. There can be too much of a good thing, though. Year after year of rampant rainfall has fueled saline and sodic soils in eastern South Dakota and eastern North Dakota.
In South Dakota alone, it's estimated these soils tally 7.6 million acres. Crops struggle or surrender on these white-caked soils. In many cases, farmers simply give up. Don't.

"Except for the sodium, these areas are the best soils on my farm," says David Gillen, White Lake, South Dakota.
http://www.agriculture.com/crops/corn/production/saline-sodic-soils-c-be-fixed_137-ar45740

Only 100 harvests left in UK farm soils, scientists warn

Philip Case

Tuesday 21 October 2014 08:51

The UK only has 100 harvests left in its soil due to intensive overfarming, a study has claimed.

Scientists are warning that the UK is facing an "agricultural crisis" unless dramatic action is taken to reverse the depletion in soil nutrients.

Researchers from the University of Sheffield found that soils under Britain's allotments were significantly healthier than soils that have been intensively farmed.
http://www.fwi.co.uk/articles/21/10/2014/147229/only-100-harvests-left-in-uk-farm-soils-scientists.htm

Soils: compaction

Module for **Soil Management** course

Posted: **Thursday 07 August 2014**

Fraser Milne

Soil compaction restricts yield and causes other problems, such as run-off and erosion. Independent consultant Fraser Milne examines the causes and what can be done to alleviate the problem.

What is compaction?

Compaction is over-consolidation of soils resulting in a layer of reduced soil porosity. This restricts water and air movement in the soil profile.

It affects seed germination, impedes root growth, restricting nutrient and water uptake, leading to a reduction in crop canopy area which then affects yield and quality. http://academy.fwi.co.uk/Courses/Arable/Soil-Management/Soils-1-Compaction

Cover crop: prescription for healthy soils

26 Oct 2014 **Doreen Muzzi | *Delta Farm Press***

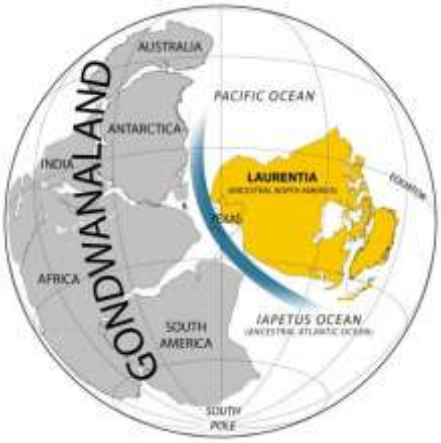
YAZOO CITY, MISS., farmer Rob Coker is utilizing Delta F.A.R.M.'s technical assistance program to get the most benefit from his winter cover cropping system.

Planting a winter cover crop has meant healthier soils with less compaction, decreased weed pressure and better internal drainage for one Mississippi farmer.

http://deltafarmpress.com/management/cover-crop-prescription-healthy-soils

Massive geographic change may have triggered explosion of animal life

31 Oct 2014



A new analysis from The University of Texas at Austin's Institute for Geophysics suggests a deep oceanic gateway, shown in blue, developed between the Pacific and Iapetus oceans immediately before the Cambrian sea level rise and explosion of …more

A new analysis of geologic history may help solve the riddle of the "Cambrian explosion," the rapid diversification of animal life in the fossil record 530 million years ago that has puzzled scientists since the time of Charles Darwin.

Read more at: http://phys.org/news/2014-10-massive-geographic-triggered-explosion-animal.html#jCp

Variation in antibiotic bacteria in tropical forest soils may play a role in diversity

Variation in antibiotic-producing microbes in tropical forest soils has been discovered by scientists, who not that this research represents a step toward better understanding of the role they play in diversity.

Streptomyces are diverse soil bacteria known for their prolific production of antibiotics. Antibiotics can inhibit the growth of diverse plant pathogens in soil. Each clear area is the “kill zone” of an antibiotic-producing Streptomyces colony (which can be seen in the center) against the specified pathogen target, which has been spread over the surface of the growth medium.

Credit: Nuttapon Pombubpa and Kinkel Research Group

Antibiotic-producing bacteria in soil are the source of many antibiotics used to combat diseases in humans and plants. But, surprisingly little is known about how these microbes impact tropical plant communities and ecosystems, where plant diversity, competition, and pathogen pressures are high.
http://www.sciencedaily.com/releases/2014/10/141028082642.htm

Sediment supply drives floodplain evolution in Amazon Basin

2 Nov 2014


Solimões, the section of the upper Amazon River. Image: Wikipedia.

A new study of the Amazon River basin shows lowland rivers that carry large volumes of sediment meander more across floodplains and create more oxbow lakes than rivers that carry less sediment.

Read more at: http://phys.org/news/2014-11-sediment-floodplain-evolution-amazon-basin.html#jCp

UK soil crisis hitting crop yields, warns expert

Richard Allison

British soils are reaching crisis point and it isn't being helped by the shortage of soil scientists, says Shane Ward, the first director of the Soil and Water Management Centre. He outlines how the centre can help reverse this

Challenges for UK farmers

Why does soil and water management warrant greater attention?
http://www.fwi.co.uk/articles/10/02/2014/142962/uk-soil-crisis-hitting-crop-yields-warns-expert.htm

Strips of Native Prairie Protect Farm Soil

by Bob Wise, originally published by Eclectications.com | 24 OCT 2014

A new conservation practice reduces cropland erosion to sustainable levels even on moderately sloping land: contoured strips within corn and bean fields, planted to native prairie grasses. The deep rooted grasses slow runoff, trapping suspended soil and nutrients. They also provide habitat for insects and wildlife. No more than 10% of a field need be put in prairie strips to gain full benefits from the practice.

Researchers in the STRIPS project (Science-based Trials of Row-crops Integrated with Prairie Strips) developed the "prairie strips" practice in an ongoing experiment using flume-metered test fields. The test fields lie on slopes of 6-10%, in soils moderately damaged by previous erosion. http://www.resilience.org/stories/2014-10-24/strips-of-native-prairie-protect-farm-soil

Soils: poaching

Module for **Soil Management** course

Posted: **Thursday 07 August 2014**

Mark Tripney

Poaching can dramatically reduce sward productivity, but a little basic management will easily alleviate the problems involved, writes independent consultant Mark Tripney

What is poaching?

Poaching is the damage caused to turf or sward by the feet of livestock. Hooves cause compaction of the soil surface, leaving depressions which can be 10cm to 12cm deep. This can form an almost continuous layer of grey anaerobic soil, where natural activity, carried out by soil micro-organisms, is low.
http://academy.fwi.co.uk/Courses/Arable/Soil-Management/soils-poaching

Applying Compost To Soil Can Help Cut Carbon Pollution

BY KATIE VALENTINE POSTED ON 22 OCTOBER 2014 AT 10:22 AM

Share this:

People stroll past a pile of organic products at Grow Compost of Vermont, Tuesday, June 17, 2014, in Moretown, Vt.

CREDIT: AP Photo/Lisa Rathke

Applying compost to farmland, even once, increases the soil's ability to store carbon, according to experiments conducted at a ranch in California
http://thinkprogress.org/climate/2014/10/22/3582563/compost-soil-carbon-storage/

Top GeoShot 2014

Geoscience Australia's Photo Competition

The winners of the Top GeoShot 2014 photographic competition were announced on Wednesday 15 October 2014. Geoscience Australia received 364 entries from all over Australia. The photographs were judged on quality, creativity, aesthetics and fit with the "Great Southern Land" theme. The quality of work submitted was exceptional and a selection of the photographs will be displayed in Geoscience Australia's foyer for the next 12 months.

An Overall Winner, a 'People's Choice' and a Student Winner were selected, as well as nine other finalists. Congratulations to the winners and thank you to everyone who entered this year's competition. Watch out for the competition again next year.

http://www.ga.gov.au/news-events/events/public-events/top-geoshot?utm_source=promotion&utm_medium=media-release&utm_content=2014&utm_campaign=top-geoshot

Soils: capping and slumping

Module for **Soil Management** course

Posted: **Thursday 07 August 2014**

Nick Caspell

Some soils are particularly vulnerable to capping and slumping. As ADAS consultant Nick Caspell explains, this can damage productivity and lead to erosion and run-off.

What are capping and slumping?

Capping occurs where the surface soil particles bind together creating an impermeable layer. This reduces the ability of soils to absorb water, leading to surface waterlogging and increasing the risk of run-off and erosion, even on very gentle slopes. The impermeable layer can also deprive seed of moisture and oxygen and can impede germinating shoots.

http://academy.fwi.co.uk/Courses/Arable/Soil-Management/Soils-2-Capping-and-slumping

Angola: Sustainable Soils Management Mitigates Climate Problems - Minister of Science

Luanda — The minister of Science and Technology, Maria Candida Teixeira, reiterated on Tuesday in Luanda that the Angolan Government continues to work for the scientific projects of the Southern African Centre for Science and Services for Adaptation to Climate Changes and Sustainable Soils

Management "SASSCAL", aimed for the mitigation of the problems associated to these environmental problems.

This information was given by the incumbent minister while addressing the opening act of the 4th Annual Meeting of the Managing Board of the SASSCAL.
http://allafrica.com/stories/201410211396.html

Mountains and winds confound particle distribution

Nov 05, 2014

Dense layers of smog from forest fires and pollution frequently hang over the Sierra Nevada Mountains in California. Scientists are working to identify and describe the atmospheric particles forming these layers and how they interact to …more

Untangling complex relationships requires understanding and facts. Applying both, Pacific Northwest National Laboratory led research finding the true culprits instigating layers of tiny atmospheric particles above California's central valley. Contrary to previous assumptions, local recirculation patterns, affected by winds interacting with the unique topography of the Sierra Nevada Mountains, create these particle layers. Global model simulations had incorrectly tied the layers to a mix of long-range transport of pollution from Asia and local emissions of soot and particles from burning fossil fuels. This research improves understanding of how the particles impact the regional climate and policy makers' decisions on how to regulate these emissions.

Read more at: http://phys.org/news/2014-11-mountains-confound-particle.html#jCp

Conventional tillage harvests a haboob, unhealthy soils haboob

25 October 2014 8:00 am • By Jim Armstrong, Spokane County Conservation District, Washington

Photo courtesy of Susan DeWald.

A powerful dust storm, known as a haboob, blankets a farm near Ritzville, Wash.

Haboob: a funny word, but its meaning is far from laughable. Defined as a type of intense dust storm carried on an atmospheric current, haboobs can have catastrophic effects on both land and life.

Dry August winds often stir up dust clouds in central and eastern Washington, but 2014 was exceptional. On Aug. 12, an enormous, miles-wide haboob, which was reminiscent of those from the Dust Bowl era, descended upon eastern Washington. Two weeks later, another dust cloud caused a 50-car pile-up in the southern part of the state, sending multiple people to the hospital and shutting down Interstate 82. http://www.theprairiestar.com/agweekly/news/crop/conventional-tillage-harvests-a-haboob-unhealthy-soils/article_70671bcc-5bb3-11e4-9b31-03c99e1c4edf.html

Population boom, droughts contributed to collapse of ancient Assyrian Empire

Nov 05, 2014

There's more to the decline of the once mighty ancient Assyrian Empire than just civil wars and political unrest. Archaeological, historical, and paleoclimatic evidence suggests that climatic factors and population growth might also have come into play. This is the opinion of Adam Schneider of the University of California-San Diego in the US, and Selim Adali of the Research Center for Anatolian Civilizations in Turkey, published in Springer's journal *Climatic Change*.

Read more at: http://phys.org/news/2014-11-population-boom-droughts-contributed-collapse.html#jCp

Soil To The Rescue

by Kris Boyd, originally published by Think! | MAR 26, 2014

00:00 48:28

The answer to many environmental problems – including drought, erosion, air pollution and climate change – might be right under our feet. We'll learn about the importance of healthy soil this hour with Kristin Ohlson, author of *The Soil Will Save Us: How Scientists, Farmers, and Foodies are Healing the Soil to Save the Planet* (Rodale Books).

What do you think? Leave a comment below.

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Make connections via our GROUPS page.
Start your own projects. See our RESOURCES page.
Help build resilience. DONATE NOW.

http://www.resilience.org/stories/2014-03-26/soil-to-the-rescue

Managing Soil Organic Matter: A Practical Guide

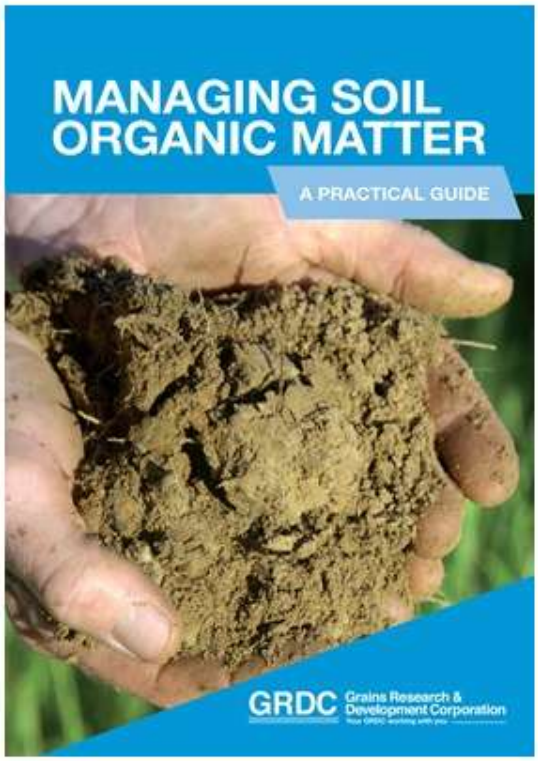
The one constant in agriculture is uncertainty and Australian grain growers are known globally for being ahead of the curve when it comes to adopting new farming practices to meet every challenge.

Climate change is already having a significant effect on how we farm today and how we adapt to future challenges will define what it means to farm sustainably this century. One of the biggest influences on farm productivity and its resilience to climate variations is soil health.

Soil organic matter contributes to a range of biological, chemical and physical properties of soil and is essential for soil health. This publication is a practical guide to understanding what soil organic matter is, why it's important as well as how you can manage it on-farm to increase soil functionality and enhance production benefits.

When selecting farming practices to maximise the benefits of soil organic matter it is important to consider the most important functions that soil organic matter provides to your crop and how that will bring benefits to your soil health and future crops.

Under the federal government's commitment to the Kyoto protocol, farmers can potentially earn credits by storing carbon in their soil, or in trees by reducing greenhouse gas emissions on-farm. This allows the grains industry to play a vital role in contributing to positive change in Australia's environmental performance.



Want to link to this publication?

Use www.grdc.com.au/GRDC-Guide-ManagingSoilOrganicMatter to ensure your link remains current and up-to-date!

GRDC Project Code KDI00023

Region National, North, South, West

http://www.grdc.com.au/GRDC-Guide-ManagingSoilOrganicMatter

Proposed Changes to the National Soil Survey Handbook (NSSH)

31/10/2014

You are subscribed to HQ Soils - Technical References for USDA Natural Resources Conservation Service. This information has recently been updated, and is now available.

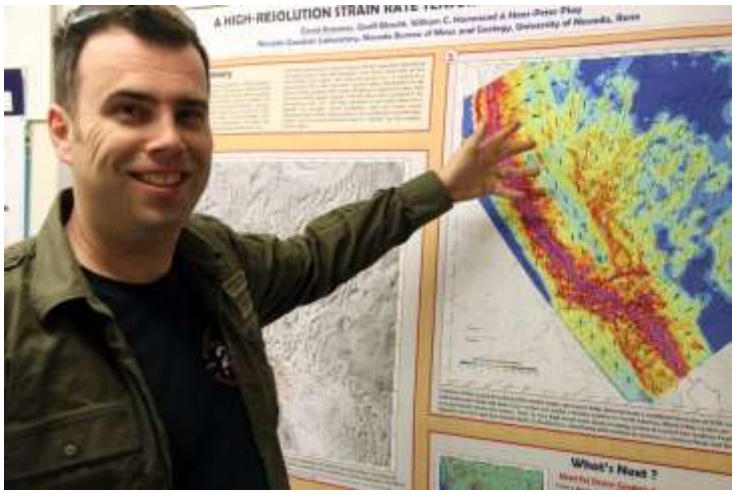
Proposed changes to the Parts of the National Soil Survey Handbook (NSSH) to be issued as Amendment #29 are posted to the soils web page at http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_054243. Included in Amendment #29 are changes to the following Parts:

Part 608 – Program Management
Part 614 – Applying Soil Taxonomy
Part 617 – Soil Survey Interpretations
Part 627 – Legend Development and Data Collection
Part 644 – Soil Survey Investigations

These proposals will be posted for a 30-day review until November 30, 2014. Comments and suggestions should be sent to Dave Hoover, acting national leader for soil survey standards at dave.hoover@lin.usda.gov.

Study shows tectonic plates not rigid, deform horizontally in cooling process

4 Nov 2014



Corné Kreemer, associate professor in the College of Science at the University of Nevada, Reno, conducts research on plate tectonics and geodetics. His latest research shows that oceanic tectonic plates deform due to cooling, causing …more

The puzzle pieces of tectonic plates that make up the outer layer of the earth are not rigid and don't fit together as nicely as we were taught in high school. A study published in the journal *Geology* by Corné Kreemer, an associate professor at the University of Nevada, Reno, and his colleague Richard Gordon of Rice University, quantifies deformation of the Pacific plate and challenges the central approximation of the plate tectonic paradigm that plates are rigid.

Read more at: http://phys.org/news/2014-11-tectonic-plates-rigid-deform-horizontally.html#jCp

Earthworms, ants, termites: The real engineers of the ecosystem

New the research has focused on the study of soil invertebrates because they are indicators of its quality, scientists say. "These organisms fulfill various functions,like allowing the soil to absorb processed organic matter such as leaves, wood, trunks and branches and with this nourishing crops; they also maintain an ecological balance capable of preventing the invasion of pests and provide greater fertility without using chemicals. This happens when growing different types of plants, allowing the existence of a wide variety of soil invertebrates" researchers explain.

The contribution of home gardens in the preservation of biodiversity, economics and human health prompted a multidisciplinary group at the South Border College (Ecosur) in Mexico to work on a project in Tabasco, a south state of the country, with the aim to improve the production and environmental management of these plantations.

Credit: Image courtesy of Investigación y Desarrollo

The contribution of home gardens in the preservation of biodiversity, economics and human health prompted a multidisciplinary group at the South Border College (Ecosur) in Mexico to work on a project in Tabasco, a south state of the country, with the aim to improve the production and environmental management of these plantations.
http://www.sciencedaily.com/releases/2014/10/141023154945.htm

Interior, Agriculture Departments Partner To Measure Conservation Impacts On Quality

Written by U.S. Dept. of Interior

Published: 22 October 2014

water conservation

ALTON, Ill., Oct. 21, 2014—The United States Department of the Interior (DOI) and the U.S. Department of Ag
(USDA) announced a new partnership agreement today that will provide a clearer picture of the benefits of farm
conservation practices on the quality of our Nation's water. Working together, USDA's NRCS and DOI's USGS
quantify the benefits of voluntary agricultural practices at a watershed scale. This information will strengthen th
effectiveness of state and federal nutrient reduction strategies while protecting the privacy of individual farmers
agreement was announced at the Mississippi River Gulf of Mexico Watershed Nutrient Task Force Meeting.

https://sensorsandsystems.com/news/top-stories/food/35121-interior-agriculture-departments-partner-to-measure-conservation-impacts-on-water-quality.html

Soils: husbandry

Module for **Soil Management** course

Posted: **Thursday 07 August 2014**

Stuart Moss

A good knowledge of your soil is essential to optimise production. So how do you monitor it to ensure you are getting the best results? Stuart Moss, Catchment Sensitive Farming explains.

Soil is the basic building block of farming. Every farming operation depends on getting soil management right, and everything you do has an impact on the soil. http://academy.fwi.co.uk/Courses/Arable/Soil-Management/Soil-husbandry

Geologists reveal correlation between earthquakes, landslides

4 Nov 2014

Devin McPhillips is a research associate in the Department of Earth Sciences. Credit: Syracuse University

A geologist in Syracuse University's College of Arts and Sciences has demonstrated that earthquakes—not climate change, as previously thought—affect the rate of landslides in Peru.

Read more at: http://phys.org/news/2014-11-syracuse-geologist-reveals-earthquakes-landslides.html#jCp

Massachusetts Department of Environmental Protection (MassDEP) Explores Suitability of Soil for Use in Reclamation of Quarries, Sand Pits, and Gravel Pits

posted on: Thursday, 23 October 2014

As part of the fiscal year 2015 budget, **MassDEP has been charged by the legislature to determine** what **soils should be used as fill material for reclamation of quarries, sand pits and gravel pits** by June 30, 2015. The legislature requires that MassDEP, through regulation, standards or procedures, ensure that the reuse of soil pose no significant risk to human health, safety, public welfare, and the environment taking into account transportation, placing of the material, and future use of the reclaimed land. Several communities in Massachusetts have grappled with quarry reclamation issues. Most recently, West Roxbury has been evaluating the appropriate level of local control over the import of soil and/or other fill materials to reclaim a 350-foot deep quarry. http://www.natlawreview.com/article/massachusetts-department-environmental-protection-massdep-explores-suitability-soil-

USGS
science for a changing world
Hawaiian Volcano Observatory

5 November 2014 — Kīlauea

27th June lava flow remains active behind stalled flow front

The June 27th lava flow remains active above Pāhoa. The tip of the flow remains stalled about 155 meters (170 yards) from Pāhoa Village Road, which crosses the photo at very bottom right. Smoke plumes are visible above town, caused by burning vegetation at the site of lava breakouts. All breakouts are above Apaʻa Street, except for three small breakouts near Pāhoa cemetery. The largest plume in the top left of the photo is located several hundred meters (yards) above the transfer station. Other breakouts even further upslope were also producing smoke plumes, barely visible through the mist.

Left: Looking roughly northeast, along the flow path, towards Pāhoa (just visible at the top of the photo). Brown scars in the forest on the left of the photo mark previous brush fires, sparked by the heat of the lava. The largest smoke plume at middle left of the photo is from a lobe of pāhoehoe lava, about 2.5 km (1.5 miles) above Apaʻa Street, that has been advancing to the north. **Right:** Closer view of breakout described in photo to the left.
http://hvo.wr.usgs.gov/multimedia/index.php?newSearch=true&display=custom&volcano=1&resultsPerPage=20

Hawaii lava's slow forward creep stalls—for now

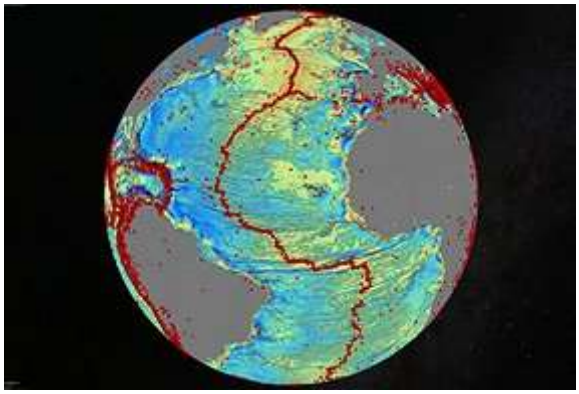
24 minutes ago

This photo taken on Nov. 1, 2014, and released by the U.S. Geological Survey shows a "toe" of Pahoehoe lava oozing out of the edge of the main flow, about 328 yards upslope of the leading edge of the flow, near the town of Pahoa, Hawaii

Read more at: http://phys.org/news/2014-11-hawaii-lava-stallsfor.html#jCpS

Satellite map reveals secrets of the sea floor

Friday, 3 October 2014 Stuart Gary
ABC



A new satellite gravity map of the ocean floor has revealed many of the hidden secrets of the Earth's tectonic history (David Sandwell/Scripps Institution of Oceanography)

Exploring the abyss An ancient sea floor rift and an extinct mid-ocean ridge hot spot have been discovered using new satellite technology that maps the sea floor in unprecedented detail.

The high-resolution digital global marine gravity map is twice as accurate as previous models, says one of the study's authors, Professor Dietmar Muller of the University of Sydney.

The research, reported in the journal *Science*, will help researchers explore the 80 per cent of Earth's ocean floor that is still unmapped.
http://www.abc.net.au/science/articles/2014/10/03/4099260.htm

IPCC report warns greenhouse gas levels at highest point in 800,000 years, identifies fossil fuels as cause of recent increases

By environment and science reporter Jake Sturmer

Updated Mon at 8:15pmMon 3 Nov 2014, 8:15pm

Photo: The IPCC report found recent increases in greenhouse gas levels are mostly due to the burning of fossil fuels. (freefoto.uk)

The world's top scientists have given their clearest warning yet of the severe and irreversible impacts of climate change.

The United Nations Intergovernmental Panel on Climate Change (IPCC) has released its synthesis report, a summary of its last three reports. http://www.abc.net.au/news/2014-11-02/ipcc-say-greenhouse-levels-highest-point-in-thousands-of-years/5861314

Rare 2.5-billion-year-old rocks reveal hot spot of sulfur-breathing bacteria

5 hours ago

Gold miners prospecting in a mountainous region of Brazil drilled this 590-foot cylinder of bedrock from the Neoarchaean Eon, which provides rare evidence of conditions on Earth 2.5 billion years ago. Credit: Alan J. Kaufman

Read more at: http://phys.org/news/2014-11-rare-billion-year-old-reveal-hot-sulfur-breathing.html#jCp

Cover crops good for the soil, livestock, wildlife, farmers

28 October 2014 2:44 pm • By MICHAEL ROSMANN, PhD

The mostly cool and moist summer enabled my turnips to grow bigger than softballs this year. They would fill our basement storage area if I harvest and store all that I planted. Marilyn would have a fit.

She says, “I’m not eating them.” I and a couple other folks with whom I’ve shared the turnips have been relishing them all summer long.

Served with cream cheese and a little salt and pepper melted into them after they are fully cooked and peeled, “Yum!”
http://www.theprairiestar.com/entertainment/columnists/farm_and_ranch_life/cover-crops-good-for-the-soil-livestock-wildlife-farmers/article_d9d68c13-ec02-59d4-94e6-736a9266ec26.html

New pasture varieties could 'soup up' weeds

Tuesday, 4 November 2014 Anna Salleh
ABC

Dr Don Driscoll and team member Dr Jane Catford in paddock of phalaris grass (ANU: Stuart Hay)

Weedy pastures New varieties of existing pastures designed to meet the world's growing demand for milk and meat could create major weed problems, say ecologists.

And, they suggest, those who profit from the development and use of the new pastures should be held responsible for dealing with the problems they produce.
http://www.abc.net.au/science/articles/2014/11/04/4120713.htm

Small islands may amplify tsunamis

Wednesday, 5 November 2014
ABC/AFP

A tsunami that hit the Mentawai islands off Sumatra in 2010 caused the most severe flooding in areas on the coastline behind offshore islands (iStockphoto: tropicalpixsingapore)

Wave break Small islands do not provide natural tsunami barriers for coast-dwellers, in fact they amplify the waves, a new study has found.

The findings are of concern, for many coastal communities have settled in areas traditionally believed to be shielded from waves by offshore islands.
http://www.abc.net.au/science/articles/2014/11/05/4121984.htm

The art of composting animal manure

20 October 2014 10:07 am • By DALE HILDEBRANT Farm & Ranch Guide

CARRINGTON, N.D. - Livestock producers have a valuable asset at their disposal - the manure produced from their animals.

And by taking a little extra time and putting that manure through the composting process, they can reduce the amount of material they have to spread on the field, reduce the likelihood of pollution and benefit the crops and soils.

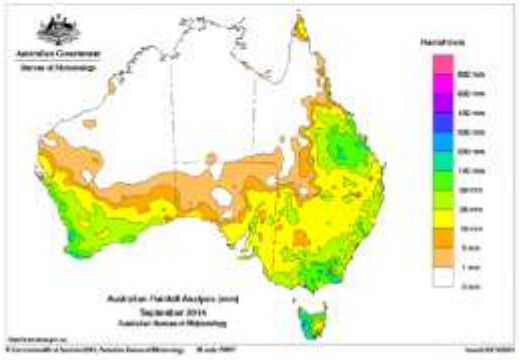
Producers recently had a chance to brush up on their composting skills at a Nutrient Management Day at the Carrington Research Extension Center. Ryan Odenbach, watershed coordinator for the Stutsman County Soil Conservation District led the discussion on proper composting methods.
http://www.theprairiestar.com/agweekly/news/livestock/the-art-of-composting-animal-manure/article_332ead1a-5546-11e4-8bc2-eb2fecd137be.html

Rainfall Totals

Rainfall in September 2014 was limited to the southern half of the continent (Figure 4). North western **Queensland**, most of the **Northern Territory** and northern **Western Australia** recorded no rain at all.

With temperatures increasing and the BoM still forecasting above average temperatures and below average rainfall for the remainder of 2014 (http://www.bom.gov.au/climate/), the active growing season where rainfall will make a substantial difference to groundcover growth in the southern Australian rangelands is coming to an end fast.

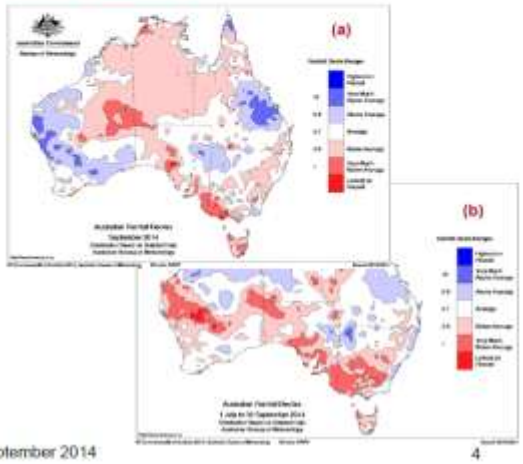
Figure 4. Rainfall totals for September 2014



Rainfall Deciles

Both the monthly and three monthly rainfall deciles show an mixed result for the southern half of the continent. The northern border area between **New South Wales** and **South Australia** and large parts of western **Western Australia** received well above rainfall in September 2014 (Figure 5a). Large areas have recorded very much below average rainfall (Figure 5b).

Figure 5. Rainfall deciles for September 2014 (a) and 1 July 2014 to 30 September 2014 (b)



http://www.environment.nsw.gov.au/resources/dustwatch/140781DWNL.pdf

Arid climate decimated ancient devils

Wednesday, 5 November 2014 Anna Salleh
ABC

In the past El Nino and glaciations have created genetic bottlenecks in the Tasmanian devil population, say researchers (Georgina Andersen)

Devil genetics Tasmanian devil numbers have crashed twice in the past 30,000 years, likely due to climate change, a new study has found.

The findings suggest that the current low genetic diversity among devils occurred long before European settlement, say researchers writing today in the Royal Society journal *Biology Letters*.

http://www.abc.net.au/science/articles/2014/11/05/4121261.htm

A guide to fertilisers and soil treatments for beef and sheep meat production systems

Meat & Livestock Australia (MLA) has supported a number of Producer Demonstration Site projects that were designed to investigate the effects of alternative soil treatments on soil chemistry and biology and pasture and livestock production. These projects, with the addition of another, supported by Binalong Landcare and NSW Department of Primary Industries, formed the basis of Section 1 of this report and were used to provide an across-project assessment of the efficacy and cost effectiveness of alternative soil treatments for improving the biology and productivity of soils, pasture and livestock. Section 2 of this report includes a review of the published evidence on the benefit of alternative soil and pasture treatments for pasture growth and quality. This includes the development of a set of principles for producers to use when making an assessment of particular products.

http://www.mla.com.au/Research-and-development/Final-report-details?projectid=15572

Salt-loving plants may be key to global efforts for sustainable food production

Farmland is vanishing in part because the salinity in the soil is rising as a result of climate change and other human-made phenomena. Researchers propose a new concept for breeding salt- tolerant plants as a way to contribute to global efforts for sustainable food production.

Farmland is vanishing in part because the salinity in the soil is rising as a result of climate change and other human-made phenomena. In an Opinion piece publishing in the Cell Press journal *Trends in Plant Sciences*, researchers propose a new concept for breeding salt- tolerant plants as a way to contribute to global efforts for sustainable food production.

Journal Reference:

1. Sergey Shabala, Jayakumar Bose, Rainer Hedrich. **Salt bladders: do they matter?** *Trends in Plant Science*, 2014; DOI: 10.1016/j.tplants.2014.09.001

http://www.sciencedaily.com/releases/2014/10/141028122600.htm

Fracture-controlled erodibility, great rock climbing

3 Nov 2014

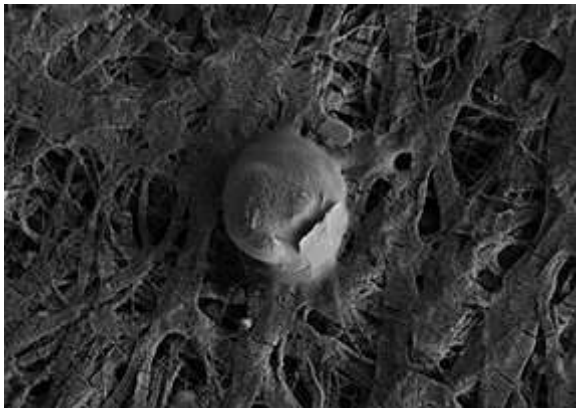
Matthes Crest, just south of Tuolumne Meadows, is a famous climbing locality. The ridge owes its prominence to the glacial erosion of tabular fracture clusters lying on either side of it. Credit: Frank Klein.

Tuolumne Meadows in Yosemite National Park is an iconic American landscape: It is a sub-alpine meadow surrounded by glacially sculpted granitic outcrops in the Sierra Nevada Mountains. Because of its accessibility and aesthetic appeal, it is a focal point for both vacationers (up to 4,200 people per day) and geoscientists. It also has historical significance: The idea for a Yosemite National Park came to John Muir and Robert Underwood Johnson over a campfire there.

Read more at: http://phys.org/news/2014-11-fracture-controlled-erodibility-great-climbing.html#jCp

Rock-eating microbes found buried in Antarctic lake

Thursday, 21 August 2014 Irene Klotz



Electron microscope image showing a coccoid shaped microbial cell with an attached sediment particle from the subglacial Lake Whillans water column (Trista Vick-Majors)

Extreme microbes A large and diverse family of hearty rock-eating bacteria and other microorganisms live in a freshwater lake buried a half-mile beneath Antarctic ice, new research confirms.

The finding not only adds another extreme environment where life thrives on Earth, but raises the prospect that similar species could have lived or are still living on Mars.
http://www.abc.net.au/science/articles/2014/08/21/4071556.htm

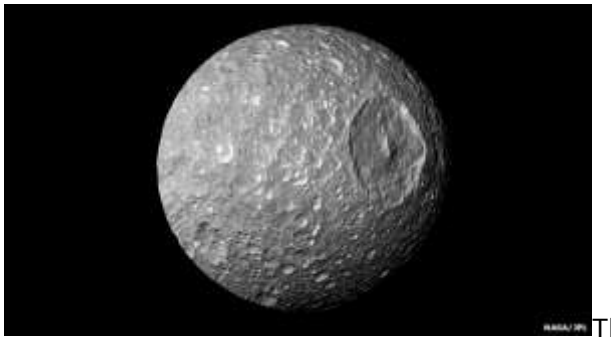
Multiple origins of serpentine-soil endemism explained by preexisting tolerance of open habitats

W. Scott Armbruster

Plant specialization on soils derived from unusual parent materials is an important contributor to regional biodiversity. These stressful substrates include serpentine, gabbro, and other ultramafic rocks rich in heavy metals. The effect of substrate on plant diversity is illustrated by serpentine soils in California: they comprise less than 1% of the surface of the state (1), but serpentine endemics (species restricted to serpentine soils) make up about 10% of the flora (2). How such “edaphic endemics” (plants restricted to stressful soils) evolve is a long-standing question that remains largely unresolved. For example, plant tolerance of serpentine soils may often involve tradeoffs in competitive ability, and restriction to serpentine soil may reflect poor competitive ability on less stressful soils rather than obligate association (3⇓–5), although possible counter-examples exist (6). A common feature of plant communities on stressful soils is the wide spacing of plants and openness of the habitat. Openness may itself be stressful for a variety of reasons (detailed below) (7⇓–9). In PNAS, Cacho and Strauss (10) use a novel comparative experimental approach to explicitly assess the role of openness vs. soil chemistry as factors in the evolution of plant tolerance of, and endemism to, serpentine soils.
http://www.pnas.org/content/111/42/14968.extract

Death Star moon may be 'wonky or watery'

By Jonathan Webb Science reporter, BBC News

 The enormous Herschel Crater makes Mimas look rather like the Death Star space station from Star Wars

The internal structure of one of Saturn's moons is either wonky or awash with water, according to a new study.

Mimas is nicknamed the Death Star because it resembles the infamous Star Wars space station.

It has a tell-tale wobble that is twice as big as expected for a moon with a regular, solid structure. http://www.bbc.com/news/science-environment-29613671

Ancient fish reveals the roots of sex

Monday, 20 October 2014 Stuart Gary
ABC

Scientists have uncovered the earliest example of internal fertilisation by copulation (Dr Brian Choo/Flinders University)

Origins of life The sexual act where two creatures physically join together to create new life first began 385 million years ago, according to a new fossil study.

The extinct Devonian-age armoured fish *Microbrachius dicki*, a kind of antiarch placoderm (the first jawed animals), had genital structures that enabled it to reproduce by internal fertilisation -- where the male inserts semen into the female.

The findings, reported in the journal *Nature*, place the origins of internal fertilisation far earlier than previously thought -- at the beginning of vertebrate evolution.
http://www.abc.net.au/science/articles/2014/10/20/4109305.htm

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"This is the rollcall of evolution happening in the space of a few generations, the greatest loss of living things that make up our biodiversity since the disappearance of the dinosaurs." ***PETER GARRETT***