## COP Land and Soil Management Community of Practice





Posted by Justin Fritscher, Natural Resources

Conservation Service, on 14 April 2015 at 1:00 PM Barnegat Bay is one of 28 estuaries across the country classified as nationally significant. Soil scientists don't just map what's under our feet but what's below the water's surface, too. Scientists with USDA's Natural Resources Conservation Service (NRCS) are mapping and documenting the permanently submerged subaqueous soils of Barnegat Bay, a troubled estuary in New Jersey that is home to environmentally-sensitive habitats. - See more at: http://blogs.usda.gov/2015/04/14/usda-scientists-volunteers-map-soils-under-new-jerseys-barnegat-bay/#sthash.uBXFoAJQ.dpuf

### Fertility of world's soil reaching peak that will threaten food supplies, scientists warn



## More must be done to preserve the long-term viability of existing farmland, the group of leading scientists argue

Steve Connor

The fertility of the world's soil is reaching a peak that will threaten global food supplies this century unless more is done to preserve the long-term viability of existing farmland, according to a group of leading scientists.

http://www.independent.co.uk/environment/fertility-of-worlds-soil-reaching-peak-that-will-threaten-food-supplies-scientists-warn-10233660.html

#### Rain wakes your senses and your soil

Autumn rains are more than just relief after a long, hot summer. The Geeky Gardener explains how rain triggers that delicious smell, and turns your soil into a carbon factory.

By Anna Evangeli



Water mobilises carbon and nutrients in the soil (Source: amenic181/iStockPhoto)

Autumn rains after a dry summer trigger an instant transformation of our surroundings. If you have a backyard, you don't have to step too far to appreciate it.

One of the first things you notice — apart from puddles, darkened soil and wet, glossy leaves — is the distinctive smell.

We talk about the scent of newly fallen rain but it's not the rain itself that smells. It's the interaction between rain and the soil that releases volatile compounds into the air. http://www.abc.net.au/science/articles/2014/05/14/4004155.htm

### Study shows widespread contamination in central NSW and other areas from use of lead in water supply pipelines

13 May 2015 by Amy Macintyre



A new study has found use of lead solder joints in an above ground water supply pipeline has resulted in environmental contamination across a 70km stretch of land in central New South Wales. http://phys.org/news/2015-05-widespread-contamination-central-nsw-areas.html

## Rain brings Red Centre's desert landscape to life

ABC Rural

By Lauren Fitzgerald

🛆 Print 🖾 Email 🖪 Facebook 💿 More 27

Updated 8 May 2014, 8:54amThu 8 May 2014, 8:54am

Normally known as the Red Centre, parts of Central Australia are covered in a blanket of green at the moment.

The recent rain filled usually dry rivers and the ongoing balmy weather is allowing all kinds of grasses and plants to flourish.



Wild flowers are popping up all over Central Australia. (Lauren Fitzgerald)

Image 1 of 11



Waterholes right across Central Australia are full of fresh water. (Lauren Fitzgerald)

http://www.abc.net.au/news/2014-05-08/central-australia-rain-grass/5437134

#### UN official stresses link between healthy soils, sustainable development as Global Soil Week starts



Healthy soils are essential to food security and play a critical role in the carbon cycle. Photo: FAO/Olivier Asselin

20 April 2015 – As Global Soil Week began in Berlin today, a United Nations agricultural agency official used his opening address to stress the significance of healthy soils to global food production and the importance of prioritizing soil health in public policy. http://www.un.org/apps/news/story.asp?NewsID=50632



### <sup>22</sup> Milan and Ispra (IT) <sup>2015</sup> Giving soils a voice - JRC-European Network for Soil Awareness Conference

This two-day conference brings together soil scientists and specialists in in the areas of communication and education in order to understand how best to raise awareness among an increasingly urbanised public and policy makers of the lifecritical ecosystems services that are provided by soil.



The first day to be held in the EU

https://ec.europa.eu/jrc/en/event/conference/giving-soils-voice-jrc-european-network-soil-awareness-conference

#### **The Science Behind Healthy Soil**

The information in the Soil Health Literature files offered below is compiled from peer-reviewed papers relating to the impact of conservation practices on soil physical and chemical properties important for soil health, as summarized by our soil health specialists. Please note that the peer-

reviewed papers and conservation practices included are not exhaustive and will be added to periodically. The current focus of the literature review is on soil physical and chemical properties. The intent is to address soil biology and economics in future revisions.



http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/soils/health/?cid=stelprdb1257753

### Five key measures for productive soils

By AgSource



Soil test reports hold a key to farm profitability and environmental stewardship but interpreting the results can be confusing. Dr. Jim Friedericks, Laboratory Manager at AgSource Laboratories in Ellsworth, Iowa, offers five top measures to focus on when reading a soil test report.

1. Soil pH rules.

http://www.agprofessional.com/news/five-key-measures-productive-soils

#### Geothermal energy can help developing countries boost food security, says UN agency report



Geothermal energy is converted into electricity and used to heat the Gourmet Mokai glasshouse in New Zealand which grows tomatoes and peppers. UN Photo/Evan Schneider

7 April 2015 – A new report released today by the United Nations agricultural agency says that the heat energy generated by the earth's core can be used for cost efficient, sustainable food production and processing in developing countries. http://www.un.org/apps/news/story.asp?NewsID=50510

## Corn and soybeans can survive in saturated and flooded soils

Heavy rains on 6-7 May in southeast Nebraska resulted in ponding and flooded areas of some fields. As of May 3, USDA-NASS reported that 57 percent of Nebraska's corn was planted, ahead of the 41 percent last year and 38 percent average. We've had a good planting season to date with more than 9 percent of the corn crop emerged. USDA-NASS also reported that 12 percent of our soybeans were planted, a bit ahead of last year's 10 percent and the five-year average of 9 percent. But, will these saturated/flooded soils affect germination and plant viability? They certainly could.

 $http://www.midwestproducer.com/news/crop/corn-and-soybeans-can-survive-in-saturated-and-flooded-soils/article_be18532e-f9a4-11e4-b408-4f0b35a7335c.html$ 



"It's important to know how these safety levels are calculated," she explained. "A person isn't going to be eating those carrots for every meal 365 days a year. In the grand scheme personally I wouldn't worry much about the possibility of contaminants in carrots because I know I'm not readly eating that much carrot."

She added that, as a precaution, concerned gardeners could grow carrots in containers filled with clean soil.

https://www.soils.org/story/gardening-polluted-paradise

Pattern From Nex non-proof a operation table of Respiring indexaged in Designed a stating the last pilot. Photo could Virginian Genryl Patterne Names Virginian Cooperative Estension Service, Marten County Office

#### Holistic soil to boost productivity





"Soil constraints don't occur in isolation, so we need to understand how individual constraints interact in order to create the best management systems for the long-term," Mr Belford says. Credit: Natural Resources Conservation Service Soil Health Campaign Western Australia has launched Soil Constraints – West, a flagship initiative bringing together research on a range of farming problems that limit agricultural production. http://phys.org/news/2015-04-holistic-soil-boost-productivity.html

## Farmland management changes can boost carbon sequestration rates

12 May 2015 by J. Merritt Melancon



Converting to pastures managed using intensive grazing principles can capture up to 8 metric tons of carbon per hectare, or 3.6 tons per acre, per year in the soil. This makes the soils more nutrient-rich and allows them to hold more water. Credit: Dennis Hancock/UGA

Well-maintained pastures prevent erosion, protect water and, as it turns out, can restore the soil's organic matter much more quickly than previously thought, according to a team of researchers from the University of Georgia and the University of Florida.

Read more at: http://phys.org/news/2015-05-farmland-boost-carbon-sequestration.html#jCp

### Monitor Soil Degradation or Triage for Soil Security? An Australian Challenge

Andrea Koch  $^{1,\star}$  , Adrian Chappell  $^{2,\dagger}$  , Michael Eyres  $^{3,\dagger}$  and Edward Scott  $^3$  Abstract

The Australian National Soil Research, Development and Extension Strategy identifies soil security as a foundation for the current and future productivity and profitability of Australian agriculture. Current agricultural production is attenuated by soil degradation. Future production is highly dependent on the condition of Australian soils. Soil degradation in Australia is dominated in its areal extent by soil erosion. We reiterate the use of soil erosion as a reliable indicator of soil condition/quality and a practical measure of soil degradation. We describe three key phases of soil degradation since European settlement, and show a clear link between inappropriate agricultural practices and the resultant soil degradation. We demonstrate that modern agricultural practices have had a marked effect on reducing erosion. Current advances in agricultural soil management could lead to further

stabilization and slowing of soil degradation in addition to improving productivity. However, policy complacency towards soil degradation, combined with future climate projections of increased rainfall intensity but decreased volumes, warmer temperatures and increased time in drought may once again accelerate soil degradation and susceptibility to erosion and thus limit the ability of agriculture to advance without further improving soil management practices. Monitoring soil degradation may indicate land degradation, but we contend that monitoring will not lead to soil security. We propose the adoption of a triaging approach to soil degradation using the soil security framework, to prioritise treatment plans that engage science and agriculture to develop practices that simultaneously increase productivity and improve soil condition. This will provide a public policy platform for efficient allocation of public and private resources to secure Australia's soil resource.

http://www.mdpi.com/2071-1050/7/5/4870

### Common mechanism for shallow and deep earthquakes proposed



Deep-earthquake expert Harry W. Green II is a distinguished professor of the Graduate Division in UC Riverside's Department of Earth Sciences.

Credit: I. Pittalwala, UC Riverside.

Earthquakes are labeled "shallow" if they occur at less than 50 kilometers depth. They are labeled "deep" if they occur at 300-700 kilometers depth. When slippage occurs during these earthquakes, the faults weaken. How this fault weakening takes place is central to understanding earthquake sliding.

A new study published online in *Nature Geoscience* today by a research team led by University of California, Riverside geologists now reports that a universal sliding mechanism operates for earthquakes of all depths -- from the deep ones all the way up to the crustal ones.

#### Journal Reference:

1. H. W. Green Ii, F. Shi, K. Bozhilov, G. Xia & Z. Reches. **Phase transformation and nanometric flow cause extreme weakening during fault slip**. *Nature Geoscience*, 2015 DOI: 10.1038/ngeo2436 http://www.sciencedaily.com/releases/2015/05/150518121652.htm

## Researcher's "soil trek" concludes in final season of The Science of Soil Health





#### Home (Training and Events)

#### The biodiversity of soils and how to conserve it, for domestic and public gardens, parks and community organisations"

#### Event date:

Wednesday, June 24, 2015

#### Event venue:

Flett Lecture Theatre, Natural History Museum, London United Kingdom

#### Event description:

The Wildlife Gardening Forum (WLGF) is a group of organisations and individuals who share a passion for the wildlife which enlivens our gardens, and who want more people to understand how important gardens are for wildlife, human health and wellbeing, and for a sustainable future.

Their next Forum Conference is being held in London and Speakers so far include:

- + Emma Sherlock NHM (Senior Curator, Free-living worms and Porifera)
- · Senior Curator) on earthworms
- · Martin I. Bidartondo (Imperial) on aspects of mycorrhizae
- Caroline Corsie Worcestershire Wildlife Trust soils and agriculture/horticulture
- · Matthew Shepherd Natural England on soils and conservation

More details can be found here

#### http://www.soils.org.uk/event/518

### New Japan volcano island 'natural lab' for life

17 May 2015 by Kyoko Hasegawa



The newly-created Nishinoshima island at the Ogasawara island chain, 1,000 kilometres south of Tokyo, pictured on March 25, 2015

A brand new island emerging off the coast of Japan offers scientists a rare opportunity to study how life begins to colonise barren land—helped by rotting bird poo and hatchling vomit. http://phys.org/news/2015-05-japan-volcano-island-natural-lab.html

## Lime treatment tests crops and soil nutrients

12 May 2015 by Lisa Morrison



DAFWA research officer Craig Scanlan in a soil pit at an experimental site in 2014. Credit: Liam Ryan

Applying lime to acidic soils may offer a way to improve crops yield and boost soil nutrient availability, according to research in the Wheatbelt. http://phys.org/news/2015-05-lime-treatment-crops-soil-nutrients.html

#### For the dirt on soils, check out "Dig It!"

Date posted: 8 May 2015



Courtesy of North Carolina Museum of Natural SciencesThe Dig It! exhibit engages all ages in its exploration of the world underneath our feet.

Soil: It's much more than dirt. It's a dynamic resource that supports nearly every form of life on Earth, and an exhibit on display this month at a Raleigh museum is aimed at raising the public's awareness of its value and complexity.



http://www.cals.ncsu.edu/agcomm/news-center/perspectives/for-the-dirt-on-soils-check-out-dig-it/

### Study shows widespread contamination in central NSW and other areas from use of lead in water supply pipelines

13 May 2015 by Amy Macintyre



A new study has found use of lead solder joints in an above ground water supply pipeline has resulted in environmental contamination across a 70km stretch of land in central New South Wales. http://phys.org/news/2015-05-widespread-contamination-central-nsw-areas.html

## Signs of ancient earthquakes may raise risks for New Zealand

12 hours ago



Seismogram being recorded by a seismograph at the Weston Observatory in Massachusetts, USA. Credit: Wikipedia

Researchers have uncovered the first geologic evidence that New Zealand's southern Hikurangi margin can rupture during large earthquakes. The two earthquakes took place within the last 1000 years, and one was accompanied by a tsunami, according to the study published in the *Bulletin of the Seimological Society of America (BSSA)*. http://phys.org/news/2015-05-ancient-earthquakes-zealand.html

#### Sentinel satellite reveals Nepal quake

#### movement

By Jonathan AmosBBC Science Correspondent

- 29 April 2015
- From the section Science & Environment



Europe's Sentinel-1a satellite has got its first good look at the aftermath of Saturday's big quake in Nepal.

The radar spacecraft is able to sense ground movement by comparing before and after imagery acquired from orbit.

Scientists turn this information into an interferogram - a colourful, but highly technical, representation of the displacement that occurs on a fault.

The new data confirms an area of 120km by 50km around Kathmandu lifted up, with a maximum of at least 1m. http://www.bbc.com/news/science-environment-32515059

#### Poster of the Nepal Earthquake of 25 April 2015 - Magnitude 7.8

#### **Tectonic Summary**

The April 25, 2015 M 7.8 Nepal earthquake occurred as the result of thrust faulting on or near the main frontal thrust between the subducting India plate and the overriding Eurasia plate to the north. At the location of this earthquake, approximately 80 km to the northwest of the Nepalese capital of Kathmandu, the India plate is converging with Eurasia at a rate of 45 mm/yr towards the north-northeast, driving the uplift of the Himalayan mountain range. The preliminary location, size and focal mechanism of the April 25 earthquake are consistent with its occurrence on the main subduction thrust interface between the India and Eurasia plates. Although a major plate boundary with a history of large-to-great sized earthquakes, large earthquakes on the Himalayan thrust are rare in the documented historical era. Just four events of M6 or larger have occurred within 250 km of the April 25, 2015 earthquake over the past century. One, a M 6.9 earthquake in August 1988, 240 km to the southeast of the April 25 event, caused close to 1500 fatalities. The largest, an M 8.0 event known as the 1934 Nepal-Bihar earthquake, occurred in a similar location to the 1988 event. It severely damaged Kathmandu, and is thought to have caused around 10,600 fatalities.

Earthquake Report

#### Downloads



Low | Medium | High JPG
PDF

#### 2. D. C. MARK

Settings

The posters may be downloaded for viewing or for printing on a color plotter. Adobe PDF (.pdf) format files are provided. Adobe Acrobat 6.0 or higher is required for viewing the PDF file on a computer monitor and for printing the PDF map graphic.

Attention MAC users: If you have problems viewing the pdf files, please download the pdf file and view it in the lastest verion of Adobe Acrobat.

#### http://earthquake.usgs.gov/earthquakes/eqarchives/poster/2015/20150425.php





#### Sunflowers can help manage soil

Story Comments

Print 📳 Font Size: 🗖 🚺

Posted: Monday, May 11, 2015 12:00 am | Updated: 2:04 pm, Mon May 11, 2015.

Producers know all too well the challenges that come with saline and sodic soils. The two soils are two different problems: saline soils have too much salt, while sodic soils have too much sodium. Some soils can be both saline and sodic. Planting sunflower can help reduce soil salinity and bring soil back into production. North Dakota State Universtiy Extension specialist in soil health Chris Augustin says if the soil is saline, crops that are salt tolerant and are high water users, like sunflower, should be planted. Sunflower's deep-roots can pull salts down as they use water. Also, sunflowers planted as a late season cover crop (following winter wheat or barley harvest) can use about six inches of additional soil moisture.

http://www.hpj.com/crops/sunflowers-can-help-manage-soil/article\_0270b678-17ea-5968-a33d-9a3189c6351d.html

## New material to enhance soils using manure waste

#### 06 May 2015

Researchers at Universidad Politécnica de Madrid have obtained biochar using manure waste, a new material that can improve soil properties and increase crop yields. The results of a research group from the Universidad Politécnica de Madrid suggest an optimal solution to manage the manure from chicken and cattle. Biochar, a material obtained after thermal treatment of waste through pyrolysis, is an organic fertilizer that not only has positive effects on crop yields, but also represents a significant reduction of CO<sub>2</sub> emissions compared to the direct application of manure waste on soils. http://phys.org/news/2015-05-material-soils-manure.html

## Study proposes common mechanism for shallow and deep earthquakes

13 hours ago



Deep-earthquake expert Harry W. Green II is a distinguished professor of the Graduate Division in UC Riverside's Department of Earth Sciences. Credit: I. Pittalwala, UC Riverside.

Earthquakes are labeled "shallow" if they occur at less than 50 kilometers depth. They are labeled "deep" if they occur at 300-700 kilometers depth. When slippage occurs during these earthquakes, the faults weaken. How this fault weakening takes place is central to understanding earthquake sliding.

Read more at: http://phys.org/news/2015-05-common-mechanism-shallow-deep-earthquakes.html#jCp

### Soil Biology

The creatures living in the soil are critical to soil health. They affect soil structure and therefore soil erosion and water availability. They can protect crops from pests and diseases. They are central to decomposition and nutrient cycling and therefore affect plant growth and amounts of pollutants in the environment. Finally, the soil is home to a large proportion of the world's genetic diversity.



http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/biology/

#### Local soils ripe for landslides



Last spring, we saw extremely high amounts of rainfall, leading to 2014 being the wettest year on record for the metro area. As a result of all the rain, we saw overflowing creeks and other flooding, no-wake restrictions on lakes, and bluff failures in the form of landslides.

 $http://www.swnewsmedia.com/chaska\_herald/news/opinion/columnists/seveland\_madeline/comment~ary-local-soils-ripe-for-landslides/article\_73e81c2f-c906-5e8a-a640-70d5fb474f82.html$ 

# Organic or chemical fertiliser? African soils need both



http://www.scidev.net/global/agriculture/multimedia/organic-or-chemical-fertiliser-african-soils-need-both.html

#### Organic matter critical for productive soil

Our property in southern Titus County has hundreds of pine trees, sandy soil, and an average soil pH of 4.8. Soil pH is the measure of hydrogen ions in a soil or growth medium. Scientists use a scale of 0-14, with 7 indicating neutral. Values less than 7 are acidic (with more hydrogen ions available), and those over 7 are alkaline (with fewer available hydrogen ions.) Since the scale is logarithmic, our 4.8 pH soil is greater than 100 times more acidic than soil at 7.0 pH. The 4.8 pH acidity level place our soil between the acidity of tomato sauce and coffee! You can imagine the challenges we have to garden in our acidic, sandy soil. http://www.dailytribune.net/opinion/organic-matter-critical-for-productive-soil/article\_5cab5f36-f5d1-11e4-90bd-0f90e64df46f.html

#### Human health depends on soil fertility

By Tom Bruulsema, Ph.D., director, North American Program, International Plant Nutrition Institute 06 May 2015 | 7:12 am EDT



2015 is the International Year of Soils. Organizations around the world are drawing attention to the critical role that soils play in sustaining human health. Most of our food is grown on soil. The soil's fertility determines a large part of the nutritional value of that food.

Human nutrition remains in crisis. While world hunger has declined by 21 percent since 1990, at least 805 million people still go hungry. Among children under five, 161 million are estimated to be stunted, having low height for their age.

Micronutrient deficiencies due to lack of dietary vitamins and minerals af fect around 2 billion people, with multiple adverse health impacts, often impairing both physical and mental development of children.

http://www.agprofessional.com/resource-centers/crop-fertility/human-health-depends-soil-fertility

## Online platform expresses the importance of the soil

#### May 4, 2015

Last week, the International Fertilizer Industry Association (IFA) launched an online platform as a contribution to the International Year of the soil. This platform Growing Smart Together 'contains a collage of 40 video interviews of scientists, farmers, policy makers, NGOs and industry representatives. In those interviews, they address the importance of soil for the sustainable intensification of food production and achieve food security. The also discuss the role of soils in other essential ecosystem services such as carbon sequestration and thus climate mitigation. One of the



## http://www.wageningenur.nl/en/newsarticle/Online-platform-expresses-the-importance-of-the-soil.htm

Science			Soils S		
Discover Soils Science F	Policy Publicat	ions N	Membership	Certifications	Meetings
Home				and the second	
TIONE					
SOIL SCIENCE F	ROGRAM	15	1922		
Share <b>Tweet</b>					
Below is a list of Colleg and/or degrees confirm	es and Unive ed by the Col	rsities ti lege De	hat offer Soi partment He	l Science co ad.	ourses
UNIVERSITY	BACH	ELORS	MASTERS	PHD	
UNIVERSITY	BACH	ELORS MAJOI	MASTERS	PHD	
UNIVERSITY ALABAMA	BACH	elors Majoi	MASTERS	PHD	
UNIVERSITY ALABAMA Auburn University	BACH MINOR Yes	ELORS MAJOI Yes	MASTERS R Yes	PHD Yes	
UNIVERSITY ALABAMA Auburn University ARIZONA	BACH MINOR Yes	ELORS MAJOI Yes	MASTERS R Yes	PHD Yes	
UNIVERSITY ALABAMA Auburn University ARIZONA University of Arizona	BACH MINOR Yes Yes	ELORS MAJOI Yes Yes	MASTERS Yes Yes	PHD Yes Yes	
UNIVERSITY ALABAMA Auburn University ARIZONA University of Arizona	BACH MINOR Yes Yes	ELORS MAJOI Yes Yes	MASTERS Yes Yes	PHD Yes Yes	
UNIVERSITY ALABAMA Auburn University ARIZONA University of Arizona ARKANSAS University of Arkansas	BACH MINOR Yes Yes	ELORS MAJOI Yes Yes Yes	MASTERS Yes Yes	PHD Yes Yes	
UNIVERSITY ALABAMA Auburn University ARIZONA University of Arizona ARKANSAS University of Arkansas	BACH MINOR Yes Yes	ELORS MAJOI Yes Yes	MASTERS Yes Yes Yes	PHD Yes Yes	
UNIVERSITY ALABAMA Auburn University ARIZONA University of Arizona ARKANSAS University of Arkansas CALIFORNIA Cal Poly	BACH MINOR Yes Yes Yes	ELORS MAJOI Yes Yes Yes	MASTERS Yes Yes Yes	PHD Yes Yes No	
UNIVERSITY ALABAMA Auburn University ARIZONA University of Arizona ARKANSAS University of Arkansas CALIFORNIA Cal Poly CONNECTICUT	BACH MINOR Yes Yes Yes	ELORS MAJOI Yes Yes Yes	MASTERS Yes Yes Yes	PHD Yes Yes No	

https://www.soils.org/careers/soil-programs

## New microorganism may be missing link in evolution of life

Thursday, 7 May 2015 Stuart Gary ABC



'Loki' was found in marine sediments near hydrothermal vents along the Arctic Mid-Ocean Ridge (Centre for Geobiology (University of Bergen, Norway): R B Pedersen)

### Ancient relatives **Scientists have discovered a microorganism that may bridge the gap between simple and complex cellular life forms.**

The discovery, reported in the journal <u>*Nature*</u>, will have far-reaching implications in our understanding of the evolution of life on Earth, including humans.

Despite life's diversity, all living things can be classified into two basic groups: simple cell organisms known as prokaryotes, which include bacteria and archaea; and eukaryotes, which are complex cellular organisms that contain nuclei, other internal structures or organelles, and cytoskeletons. http://www.abc.net.au/science/articles/2015/05/07/4230721.htm



#### **Almost all other issues are superficial by comparison to soil loss. So why don't we talk about**

it?" George Monbiot, published in the Guardian 25th March 2015