

Pilbara soils indicate post-wildfire recovery timeline

Written by [Sally Wilkinson](#)



Although the study's findings relate to the semi-arid soils of the Pilbara region, the methodology—including the use of the one-day CO₂ test—could be applied to other regions and ecosystems. *Image: [Stu Rapley](#)*

- **Soils start to be viable roughly five years post-fire**
- **Research will aid land managers to restore Pilbara landscapes**
- **New test employed to measure soil microbial activity**

SOILS affected by wildfires undergo significant changes within one year after a fire with that same soil partially regenerating after around five years, according to a study examining how semi-arid soils recover from natural fire events.

<http://www.sciencewa.net.au/topics/environment-a-conservation/item/4039-pilbara-soils-indicate-post-wildfire-recovery-timeline>

Ecologist's warning on earth's imperiled soils



aridsoilinmauritania.jpg

Neglect of the soil beneath our feet could have far-reaching consequences for future generations in the UK and the rest of the world, an ecologist from The University of Manchester has warned.

In a new book, *Earth Matters*, published by Oxford University Press, Professor Richard Bardgett argues it is vital for the future of humanity to protect our soils.

He said: “Neglect of soil is common, and in the same way as humans are causing the extinction of plant and animal species, they also are causing the extinction of soils.”

<http://www.manchester.ac.uk/discover/news/ecologists-warning-on-earths-imperiled-soils>

Integrity of lunar soil samples

- [Lawrence A. Taylor](#)¹,
- [Yang Liu](#)²,
- & [Gary Lofgren](#)³.

Nature Geoscience **9**, 87 (2016) doi:10.1038/ngeo2637

Published online 02 February 2016

To the Editor —

We disagree with the conclusion by Cooper *et al.*¹ that stored lunar soils from the Apollo missions have significantly degraded over time. Specifically, they directly compared particle size distributions of lunar soils obtained by two different techniques — a wet-sieving technique applied several decades ago versus a recent...

<http://www.nature.com/ngeo/journal/v9/n2/full/ngeo2637.html>

Lithium Battery Catalyst Found to Harm Key Soil Microorganism

Released: 4-Feb-2016 1:05 PM EST

Source Newsroom: [University of Wisconsin-Madison](#)

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Citations *Chemistry of Materials* Feb 4-2016

Newswise — MADISON, Wis. — The material at the heart of the lithium ion batteries that power electric vehicles, laptop computers and smartphones has been shown to impair a key soil bacterium, according to new research published online in the journal *Chemistry of Materials*.



Illustration: Ella Marushchenko/University of Minnesota
Shewanella oneidensis is a ubiquitous, globally distributed soil bacterium. In nature, the microbe thrives on metal ions, converting them to metals like iron that serve as nutrients for other microbes. The bacterium was shown to be harmed by the compound nickel manganese cobalt oxide, which is produced in nanoparticle form and is the material poised to become the dominant material in the lithium ion batteries that will power portable electronics and electric vehicles.

The study by researchers at the University of Wisconsin-Madison and the University of Minnesota is an early signal that the growing use of the new nanoscale materials used in the rechargeable batteries that power portable electronics and electric and hybrid vehicles may have untold environmental consequences.

Researchers led by UW-Madison chemistry Professor Robert J. Hamers explored the effects of the compound nickel manganese cobalt oxide (NMC), an emerging material manufactured in the form of nanoparticles that is being rapidly incorporated into

lithium ion battery technology, on the common soil and sediment bacterium *Shewanella oneidensis*. <http://www.newswise.com/articles/view/647426/>

State soils library catalogues samples for future science

Written by [Geoff Vivian](#)



Most samples have accurate global positioning tags, so a paddock sampled 20 or 30 years ago can be re-sampled in order to study trends such as pH or nutrient content. *Image: [USDA NRCS South Dakota](#)*

- **30 years' worth of soil samples centralised for education and research benefits**
- **Historical samples can be compared with new ones to study trends**
- **Facilities not yet equipped to preserve samples for microbiology**

MORE than 150,000 soil samples collected over the last 30 years will be brought together this year to form the nucleus of a state soils archive to benefit student learning and agricultural research efforts

<http://www.sciencewa.net.au/topics/agriculture/item/4037-state-soils-library-catalogues-samples-for-future-science>

Oregon Organic Farmer Unlocks Soil Health Secrets

By: Spencer Miller

For agricultural producers, it's an age-old question: How do you grow the largest, healthiest, most-profitable crops possible?

Oregon organic farmer Chris Roehm says the secret is in the soil.

Roehm is among a growing number of producers, both conventional and organic, who are realizing the benefits of improving the health and function of their soil through working with USDA's Natural Resources Conservation Service (NRCS).

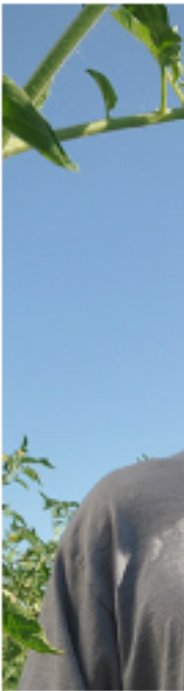
"Investing in soil health is fundamental to good organic growing. They are essentially one in the same," he says.

The co-owner and operator of Square Peg Farm in Forest Grove, Roehm says he and his wife Amy Benson plan for the long-term, and he thinks healthy soil is the best way to maximize their returns over time.

Farmers like Roehm realize that healthy soil is a complex ecosystem teeming with life. The healthy soil nourishes and

<http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/newsroom/features/?cid=NRCSEPRD427099>

Save our soils! New report outlines 7 ways farmers and the Government can help rebuild British soil and protect UK farming industry



*Becoming a
unique set o
Farmer Chri
with the hel
Video ↗ Ph*

05 February 2016

The Soil Association is releasing a new document calling on policy makers and farmers to do their bit to protect UK soils. In 2014 researchers estimated that the country will only see 100 more harvests if soil loss and degradation continues at its current rate [1]. The report, entitled '**Seven Ways to Save our Soils**' [2], outlines seven key ways to increase soil organic matter (SOM) in UK arable and horticultural soils by 20% over the next 20 years.

Increasing SOM is not only important for protecting agricultural productivity: healthy soils are also better at locking up carbon, therefore helping mitigate climate change, and are more resilient to both floods and droughts. They are more able to absorb excess rainfall and therefore have the potential to reduce flooding downstream. In turn, these effects all protect land from unpredictable weather events which are increasingly affecting farmers.

<http://www.sacert.org/news/newsandfeatures/articleid/8755/save-our-soils-new-report-outlines-7-ways-farmers-and-the-government-can-help-rebuild-british-soil-a>

Maps of forests, fields and soils to aid climate change forecasts

Posted By News On 2 February 2016 - 3:00pm

Detailed maps of the world's natural landscapes could help scientists to better predict the impacts of future climate change.

The complex charts of forests, grasslands and other productive ecosystems provide the most complete picture yet of how carbon from the atmosphere is reused and recycled by Earth's natural habitats.

Although it is well known that these landscapes absorb and process massive amounts of carbon dioxide, little is known about where exactly the carbon is stored or how long it remains there.

Using satellite images and field study data covering a 10-year period from 2000 to 2010, researchers have constructed maps that show where - and for how long - carbon is stored in plants, trees and soils.

http://www.sciencecodex.com/maps_of_forests_fields_and_soils_to_aid_climate_change_forecasts-174667

Fungi aids plants in scavenging nutrients from ancient soils

Written by [Jo Fulwood](#)



Mycorrhizal fungi, which often manifest above the soil as mushrooms, can be critical to the survival of plants in impoverished soils.

- **Plant fungi keeps plants alive by bartering for nutrients with carbon**
- **Even fungi feels the pink in nutrient poor soils**
- **Jurien bay research points to “super fungi” and future research is justified**

A SUPER fungi subset, discovered by scientists in two-million year old soils along WA’s coastal plains, may be the key to plant survival in nutrient deficient soils.

Scientists now know the survival of plants in even the most impoverished soils is often based on the co-existence between mycorrhizal fungi and the roots of a plant.

<http://www.sciencewa.net.au/topics/environment-a-conservation/item/3916-fungi-aids-plants-in-scavenging-nutrients-from-ancient-soils>

Control erosion, protect our reefs

Mohammad H. Golabi 10:58 p.m. ChST 20 January 2016



In this file photo, volunteers carry black netting, or sock filled with mulch and other material, to create filters for a project to prevent soil erosion and sedimentation.(Photo: Courtesy Roy Quinata)

As the last article in these series, I would like to introduce the 12th soil order, the vertisols. Vertisols are known as shrinking and swelling dark clay soils. The most common features of the vertisols is their cracking and expanding, due to the seasonal wetting and drying cycles associated with these soils.

During the dry season, the soil shrinks and forms cracks. The cracks usually extend to a depth of one meter or more. Some of these cracks will open and close periodically. Evidence of these movements can often be seen in the soil's profile. For example, while the soil is dry and cracks are open, surface soil material may fall into them. These soil materials can then be dislodged from the cracks by several mechanisms such as animal activities, wind, or rainwater at the onset of the rainy season.
<http://www.guampdn.com/story/opinion/2016/01/20/control-erosion-protect-our-reefs/79045486/>

Casino course to dish dirt on soils

3rd Feb 2016 11:00 AM



HANDS ON: Land managers can learn more about their soils at a course starting in Casino today.

Related Items

- [Soils are in poor shape, survey says](#)
- [Workshop targeting soil health](#)
- [Digging in at living food festival](#)

LAND managers in the Richmond Valley looking to improve the health and productivity of their soil are invited to take part in a new project in Casino today.

The North Coast Local Land Services will launch the Understanding Our Soils project at 1pm today.

Delivered by Judi Earl and Lewis Kahn from Agricultural and Information Monitoring Service (AIMS), the project aims to help land managers better understand their soil and provide options for improving soil health and productivity.

<http://www.northernstar.com.au/news/casino-course-to-dish-dirt-on-soils/2916973/>

Paving the way for irrigated agriculture in the Pilbara

Written by [Samille Mitchell](#)



Rio Tinto's Hamersley Agricultural Project in the central Pilbara. *DAFWA*

- **Warrawagine research site uses surplus dewater which involves removing water from solid materials**
- **Investigations utilise computer-driven way to 'see inside' traditional landform mapping**
- **Underground surface water storage to eliminate evaporation**

IRRIGATED agriculture in the Pilbara may be in the not-so-distant future if Department of Food and Agriculture scientists get their way as part of an ambitious project aimed at growing crops in suitable parts of the arid zone.

The \$12.5 million Pilbara Hinterland Agricultural Development Initiative (PHADI) will assess the potential of irrigated agriculture in the Pilbara using surplus water from mines and surface water resources.

<http://www.sciencewa.net.au/topics/agriculture/item/3754-paving-the-way-for-irrigated-agriculture-in-the-pilbara>

Organic Agriculture Key to Feeding the World Sustainably

Study analyses 40 years of science against 4 areas of sustainability

Released: 4-Feb-2016 11:05 AM EST

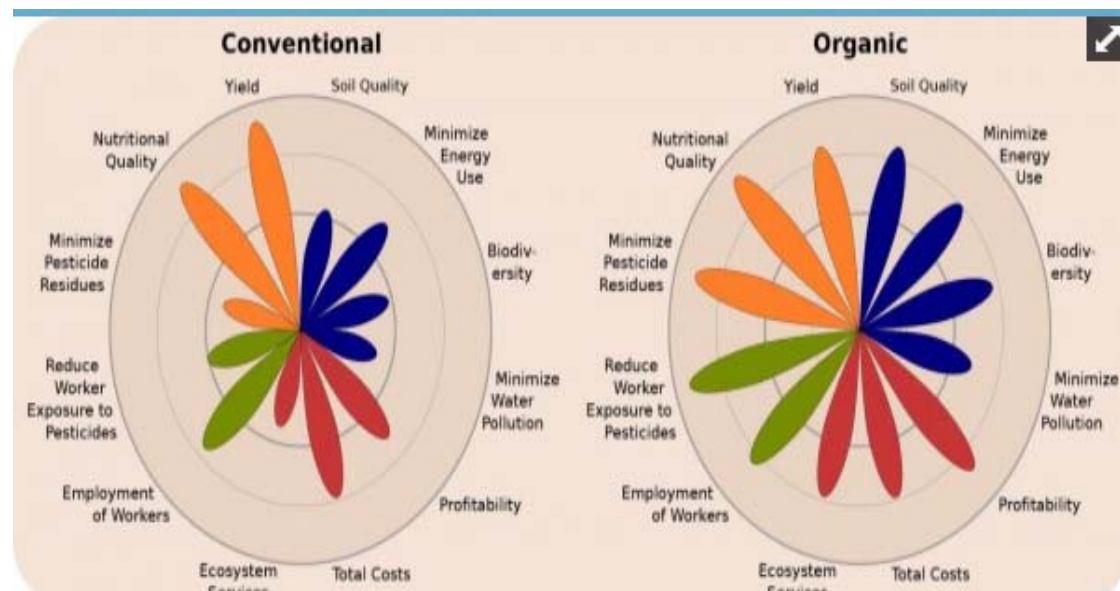
Source Newsroom: [Washington State University](#)

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Citations [Nature Plants](#)

Newswise — PULLMAN, Wash.--Washington State University researchers have concluded that feeding a growing global population with sustainability goals in mind is possible. Their review of hundreds of published studies provides evidence that organic farming can produce sufficient yields, be profitable for farmers, protect and improve the environment and be safer for farm workers.



Reganold and Wachter

An assessment of organic farming relative to conventional farming illustrates that organic systems better balance the four areas of sustainability.

The review study, "Organic Agriculture in the 21st Century," is featured as the cover story for February issue of the journal *Nature Plants* and was authored by John Reganold, WSU regents professor of soil science and agroecology and doctoral candidate Jonathan Wachter. It is the first such study to analyze 40 years of science comparing organic and conventional agriculture across the four goals of sustainability identified by the National Academy of Sciences: productivity, economics, environment, and community well being.

Diagnosing and managing acid soils

Acidic soils can restrict plant growth. Learn how to recognize and manage these soils on your farm

4



By **Ross McKenzie**

Columnist

Published: 2 February 2016

Columns, Crops

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Photo: Thinkstock

Soils with a pH ranging between 6.0 and 8.0 are suitable for most crops on the Prairies. Soils with a pH range between 6.5 to 7.5 are considered to be near neutral. Soil pH between 6.0 to 5.6, 5.5 to 5.1 and < 5.0 are considered to be moderately acidic, strongly acidic and very strongly acidic, respectively.

<http://www.grainews.ca/2016/02/02/diagnosing-and-managing-acid-soils/>

How to prepare soils in 4 steps for flowering high-yield plants in spring

Written by **Cody Blowers**

3 February 2016

SOUTHERN UTAH — The end of winter brings warmer weather to Southern Utah, so the beginning of February is the best time to start the important process of preparing the soil for planting, Jared Hurst from **Hurst General Store** said. Whether it's a new garden or an existing one, soil preparation ensures a beautiful garden and bountiful harvest.



Pulling weeds

Step one: Clear it

Clear any weeds and debris from your chosen garden site. Refrain from using any commercial weed control, which is an enzyme inhibitor and will prevent new seeds from germinating and prevent growth, Hurst said.

<http://www.stgeorgeutah.com/news/archive/2016/02/03/cgb-how-to-prepare-soils-in-4-steps-for-flowering-high-yield-plants-in-spring/#.Vrp8Nj9f1aQ>

Stalagmites and fossils reveal the Nullarbor's lush history

Written by **Tony Malkovic**



According to Dr Sniderman, the Nullarbor forests basically disappeared about three millions years ago, apparently in response to the drying of Australia's climate as global ice ages began. *Image: Chris Fithall*

- Ancient climate conditions supported flourishing trees and flowers
- Nullarbor climate was once two to four times wetter than current conditions
- Ancient clues inform contemporary climate change research

THE Nullarbor Plain, an arid, tree-less expanse of low shrubs, was once home to thriving forests of gum trees (*Eucalyptus* and *Corymbia*) and banksias (*Proteaceae*) until Australia's climate started to dry out.

<http://www.sciencewa.net.au/topics/environment-a-conservation/item/4050-stalagmites-and-fossils-reveal-the-nullarbor-s-lush-history>

Ancient soils considered for impact on diverse flora

Written by [Teresa Belcher](#)



The only species in WA known to hyperaccumulate nickel is the shrub violet (*Hybanthus floribundus*) which is present and widespread across the south-west. *Image: Jean and Fred*

- Knowledge gained from review should aid rehabilitation programs
- WA's ancient soils in the Gascoyne-Murchison and Goldfields aid biodiversity
- On-going research will help build the picture of this biodiversity hot-spot

UNDERSTANDING how WA plants live and thrive in a certain soil type has been the focus of a recent review by scientists and the findings may help rehabilitate the environment, especially mined areas.

The **review** examined ultramafic soils which are derived from bedrock low in silica, calcium, potassium and phosphorus but rich in magnesium and iron, and other metals such as nickel, chromium and cobalt.

<http://www.sciencewa.net.au/topics/environment-a-conservation/item/3847-ancient-soils-considered-for-impact-on-diverse-flora>

Long-Term Study Shows Impact of Humans on Land

Released: 29-Jan-2016 12:05 PM EST

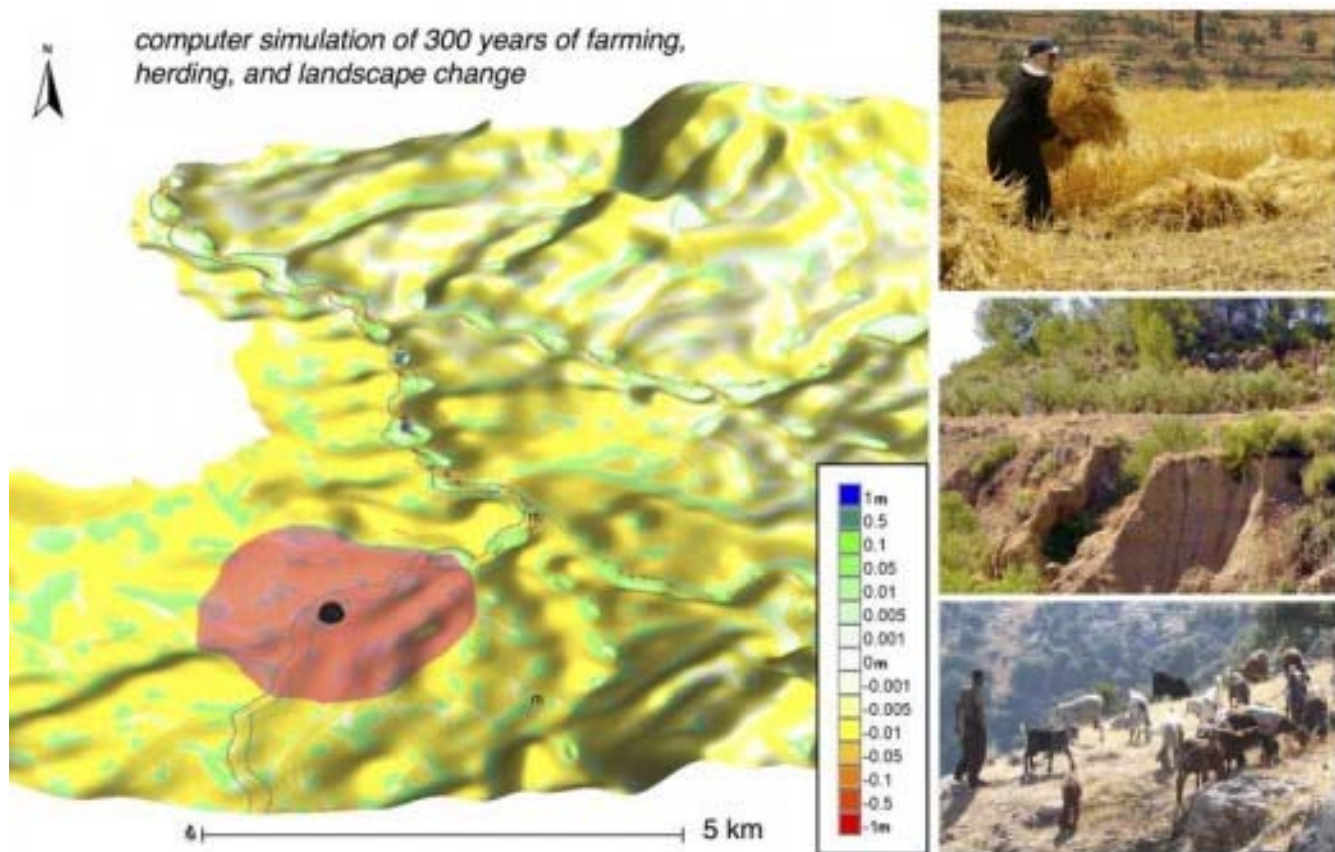
Source Newsroom: [Arizona State University](#)

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Citations [Anthropocene](#)

Newswise — Humans have been working the land for millennia, cultivating plants or herding animals.



Graphic by Michael Barton/ASU and Isaac Ullah/MedLand Project

The image on the left is a computer-generated landscape with the colors indicating the meters of soil lost or deposited in different places at the end of a simulation of 300 years of farming and herding. On the right are images of modern Mediterranean landscapes: (from top) wheat farming in Jordan, an olive grove at the edge of an eroded barranco (ravine) in eastern Spain and goat herding in Jordan. Graphic by Michael Barton/ASU and Isaac Ullah/MedLand Project

Now researchers from Arizona State University are reporting on a 10-year project that studies the long-term effects humans have had on the land — and the consequences for the communities whose livelihoods depend on the land. Their research has led to some surprising reasons why communities survive or fail.

The Mediterranean Landscape Dynamics Project, led by Michael Barton, a professor ASU's School of Human Evolution and Social Change is an academic unit of ASU's College of Liberal Arts and Sciences., studied human interaction with the land in the Mediterranean region since 2004 to understand how human and natural forces, like climate, began to interact to create socio-ecological landscapes, like the terraced fields, orchards and pastures found throughout the region today.

<http://www.newswise.com/articles/view/647006/>



Microbes Alive in Antarctic Soils, How Can That Be?

Released: 1-Feb-2016 11:05 AM EST

Source Newsroom: [American Society of Agronomy \(ASA\)](#), [Crop Science Society of America \(CSSA\)](#), [Soil Science Society of America](#)

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Newswise — Feb. 1, 2016 - The polar regions of the globe are often very cold for the most of the year. In the dead of winter, air temperatures well below -50°F ! The coldest temperature on record (-128°F) was measured in Antarctica in 1983. (SSSA) February 1 Soils Matter blog post explains even though Antarctica a lifeless, barren area, scientists have

According to blog writers Mary Tiedeman and Ed Gregorich, microbes are able to survive by living in microscopic water films (adherence). The bond energy between water molecules and soil particles is so great that it prevents the thin layer of water from freezing at temperatures. Microbes live in this unfrozen water, which allows them to stay alive even during the long deep freeze.

<http://www.newswise.com/articles/microbes-alive-in-antarctic-soils-how-can-that-be>

Predicting soil nitrogen supply

By [Farmers Journal](#) on 30 January 2016



Leon Tengert, Kilmacow, spreading 26-2.5-5 on cow paddocks at Aylwardstown, Co. Kilkenny.

Recent research at Johnstown Castle has been trying to find a breakthrough for a problem that has eluded soil scientists for decades – how to estimate how much N that different soils will release.

For decades, farmers in Ireland have been able to have good information on their **soil fertility** regarding phosphorous (P), potassium (K), pH and lime status from soil test results. This estimate of nutrient levels is the foundation that is necessary for good fertiliser planning that will allow a farmer to:

<http://www.farmersjournal.ie/predicting-soil-nitrogen-supply-199382/>

Researchers Find Microbial Heat Islands in the Desert

Released: 20-Jan-2016 12:05 PM EST

Source Newsroom: [Arizona State University](#)

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Citations *Nature Communications*

Newswise — TEMPE, Ariz., (Jan, 20, 2016) - Deserts are often thought of as barren places that are left exposed to the extremes of heat and cold and where not much is afoot. But that view is being altered as new research keeps revealing the intricate ecological dynamics of deserts as they change responding to the elements.



Ferran Garcia-Pichel, Arizona State University

The desert outside Chandler, Ariz., shows a darkening of the biocrust (left) over its surface

New research from Arizona State University now reveals how microbes can significantly warm the desert surface by darkening it, much in the same way that dark clothes will make you feel warmer in sunlight. These desert-darkening organisms make a living basking in the sun and form a mantle that covers the landscape.

Such mantles, called biological soil crusts, or biocrusts, provide important ecosystem services, like fighting erosion and preventing dust storms, or fertilizing the ground with carbon and nitrogen. <http://www.newswise.com/articles/view/646391/>

Radar Reveals the Hidden Secrets of Wombat Warrens

Released: 5-Feb-2016 1:05 AM EST

Source Newsroom: [University of Adelaide](#)
more news from this source

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Citations *Wildlife Research*

Newswise — For the first time ever, researchers from the University of Adelaide have been able to non-invasively study the inner workings of wombat warrens, with a little help from ground-penetrating radar.



Despite being the faunal emblem of South Australia, very little is known about the burrowing habits of the southern hairy-nosed wombat.

As part of a larger study into wombat conservation, Mr Michael Swinbourne, PhD candidate in the University's School of Biological Sciences, set out to test a new way of mapping wombat warrens. His research has been published in the peer-reviewed journal *Wildlife Research*. <http://www.newswise.com/articles/view/647468/>

UF/IFAS Researchers Find Shallow Flooding Reduces a Major Rice Pest

University of Florida scientists at the Everglades Research and Education Center have found an important way to control the destructive rice water weevil, one of the major pests in rice production.

Released: 29-Jan-2016 3:05 PM EST

Source Newsroom: **University of Florida Institute of Food and Agricultural Sciences**

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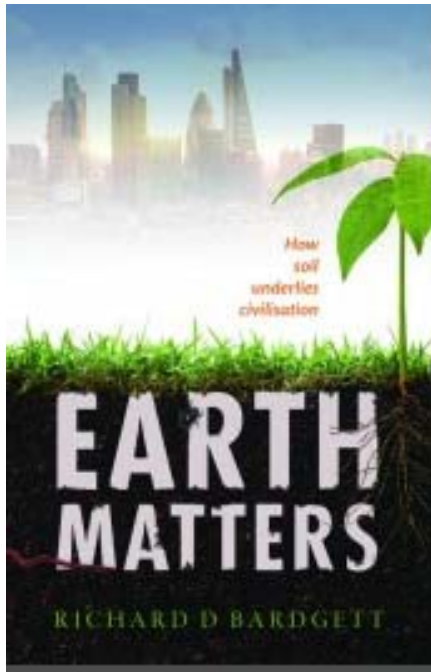
Newswise — BELLE GLADE, Fla. --- University of Florida scientists at the Everglades Research and Education Center have found an important way to control the destructive rice water weevil, one of the major pests in rice production.

UF Institute of Food and Agricultural Sciences researcher Ron Cherry and his team discovered that shallow flooding of rice fields can help reduce rice water weevil populations during Florida's growing season, between April and September. Previous studies of the effect of flood depth on the pest have been inconsistent.

“Application of this permanent flood is the most important external influence on the interaction between the rice water weevil and rice,” said Cherry, a professor of entomology and nematology. <http://www.newswise.com/articles/view/647040/>

Why soil matters more than we realise Earth Matters: How soil underlies civilization

By Richard Bardgett 29th January 2016



The soils surrounding the village where I live in the north west of England have abundant fertility. They mostly formed in well-drained, clay-rich debris left behind by glaciers that retreated from the area some ten thousand years ago, and they now support lush, productive pasture, semi-natural grassland and woodland. Although the pastures are managed more intensively than they were in the past, most of them are well drained, and receive regular dressings of manure along with moderate fertiliser, and are regularly limed, which keeps the land productive and the soil in good health. Sadly, the same can't be said about soils in most parts of the world. The United Nations recently published a report on the status of the world's soils with the headline message that the majority of soils are in a poor state and urgent action is needed to redress this. But why would the United Nations concern itself with soil, which, for most, is largely out of sight and mind? Put simply, healthy soils are of vital importance for human life, and we are not paying enough attention to their health. - See more at: <http://blog.oup.com/2016/01/the-importance-of-soil/#sthash.jmPTSXCv.dpuf>

Soil productivity cut by climate change, making societies more marginal: studies

Date

January 28, 2016



Peter Hannam



Ethiopia, one fragile dryland nation, is in the grip of its worst drought in 50 years. *Photo: Jay Court*

The health of the world's soils hinges on the abundance and diversity of the microbes and fungi they contain, and environmental changes including from global warming will undermine their ability to support humans and other species, according to two new studies.

While animal and plant diversity has long been understood to be important, the multiple roles of soils – from the decomposition of organic matter to nutrient cycling and carbon fixing – have been less researched.

One of the studies, published in *Nature Communications* on Thursday, examined microbial diversity in 78 drylands on all inhabited continents and 179 sites in Scotland. It found that the loss of varieties – such as from climate change increasing arid zones – undermined the services the soils provided.



A property at Brewarrina in October 2013: as much as 75 per cent of Australia is arid. *Photo: THE LAND*

"As the aridity of soils goes up, the microbial diversity and abundance is reduced," Brajesh Singh, a professor at Western Sydney University and an author of both papers, said. "As the soils' multi-functions are reduced, so there are social and economic consequences."

Read more: <http://www.smh.com.au/environment/climate-change/soil-productivity-cut-by-climate-change-making-societies-more-marginal-studies-20160128-gmfykc.html#ixzz3zilLBBaQ>

In the Dietary Guidelines for Soil, Pass the Carbon, S'il vous plaît

Marcia DeLonge, agroecologist | 20 January 2016, 2:55 pm EST

Between New Year's resolutions and the recent release of the [US Dietary Guidelines](#), a lot of us have healthy foods on our minds. In that spirit, I'd like to give a shout out to the **real hero** behind healthy food: soil. Although eating dirt may not be trendy, there's more and more evidence that [healthy soils](#) actually do [produce healthy humans](#).



Building healthier soils affects a lot of life, because in just 2.5 cups of soil (only as much volume as **your recommended daily vegetable intake**) there can be **over 500 billion organisms** (compare to the relatively measly US population of less than **325 million**). Science indicates that there is a lot to gain from feeding this population well. **So do the French**, for that matter. When it comes to diets, I'll always listen to their two cents (ahem, *centimes*).

So, what's on the menu?

1. More low C, less high C

<http://blog.ucsus.edu/marcia-delonge/in-the-dietary-guidelines-for-soil-pass-the-carbon-sil-vous-plait>

"Investing in soil health is fundamental to good organic growing. They are essentially one in the same." organic farmer, Chris Roehm