



CoP

Land and Soil Management
Community of Practice



Growing crops in salty soils gets easier one step at a time

1 Jun 2015 by David Stacey



A team of researchers from The University of Western Australia has made a breakthrough that could assist the future development of crops to cope with production in salty soils worldwide

Soil salinity impedes crop production in many parts of the world, including large areas of farming land in Australia.

Professor Timothy Colmer from UWA's School of Plant Biology and Institute of Agriculture, who led the study, said his team studied how [salt](#) affects the reproductive processes in chickpea plants.

Read more at: <http://phys.org/news/2015-06-crops-salty-soils-easier.html#jCp>

New beetle emerges from Gran Canaria's subsoil

3 Jun 2015



The new beetle *Oromia thoracica*. Credit: Heriberto López

Thanks to research carried out since 2003 on the subsoil of Gran Canaria (Spain), two Spanish scientists have discovered a new species of beetle, which they have called *Oromia thoracica*. This blind weevil shares the same brownish-grey colour as the subsoil fauna and has a flattened body and thorax almost covering its head, an adaptation to life underground.

Read more at: <http://phys.org/news/2015-06-beetle-emerges-gran-canaria-subsoil.html#jCp>

Restoration of species diversity in dike grasslands makes dikes more resistant



Decreased species diversity in the grasslands on dike slopes leads to a dramatic increase in soil erosion and dike deterioration. This was shown in a multi-year research project carried out by the Nature Conservation and Plant Ecology Group and the Soil Physics and Land Management Group at Wageningen University, under the leadership of Frank Berendse. The results have now been published in the international journal *Ecosystems*.

Read more at: <http://phys.org/news/2015-06-species-diversity-dike-grasslands-dikes.html#jCp>

Soil erosion contributes significantly to global carbon emissions

1 Jun 2015

Soil erosion that occurs in rainy seasons leads to a significant amount of carbon being released into the atmosphere, a new study shows.

Read more at: <http://phys.org/news/2015-06-soil-erosion-contributes-significantly-global.html#jCp>

Threats to soil productivity threaten food security



The soils of the world, including those critical for food production are at risk.

Credit: © Biletskiy Evgeniy / Fotolia

A group of leading soil scientists, including the University of Delaware's Donald L. Sparks, has summarized the precarious state of the world's soil resources and the possible ramifications for human security in a paper published Thursday, May 7, in the journal *Science*.

In a review of recent scientific literature, the article, titled "Soil and Human Security in the 21st Century," outlines threats to soil productivity -- and, in turn, food production -- due to soil erosion, nutrient exhaustion, urbanization and climate change.

1. R. Amundson, A. A. Berhe, J. W. Hopmans, C. Olson, A. E. Sztein, D. L. Sparks. **Soil and human security in the 21st century**. *Science*, 2015; 348 (6235): 1261071 DOI: [10.1126/science.1261071](https://doi.org/10.1126/science.1261071)
<http://www.sciencedaily.com/releases/2015/05/150507165404.htm>

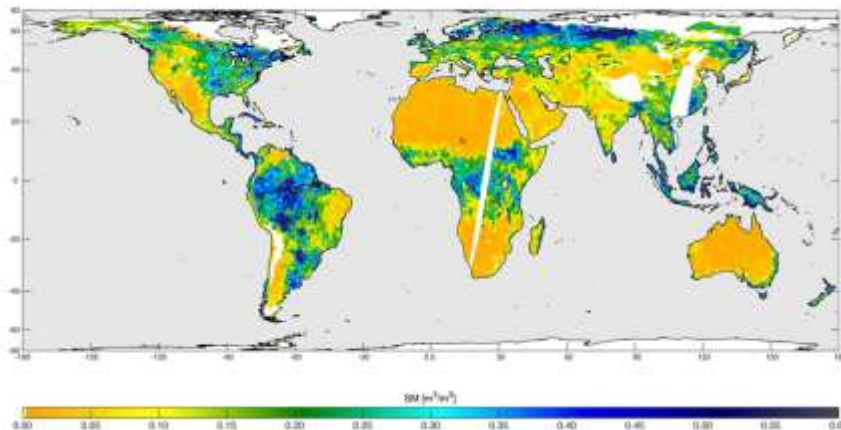
Wellington coastal plant could hold key to improving crop resistance



A chance observation along Wellington's south coast has led a Victoria University of Wellington PhD student to make a scientific breakthrough that could change the way other countries deal with increasingly saline soils devastating traditional crops.

<http://phys.org/news/2015-05-wellington-coastal-key-crop-resistance.html#nRlv>

High-Resolution Global Soil Moisture Map



High-resolution global soil moisture map from SMAP's combined radar and radiometer instruments, acquired between May 4 and May 11, 2015 during SMAP's commissioning phase. The map has a resolution of 5.6 miles (9 kilometers). The data gap is due to

turning the instruments on and off during testing.

<http://www.jpl.nasa.gov/spaceimages/details.php?id=PIA19337>

Lime treatment tests crops and soil nutrients



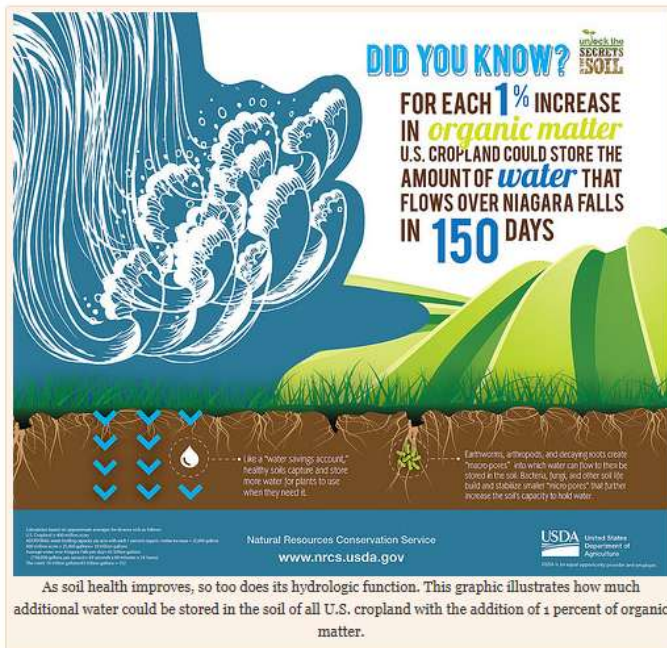
DAFWA research officer Craig Scanlan in a soil pit at an experimental site in 2014. Credit: Liam Ryan

Applying lime to acidic soils may offer a way to improve crops yield and boost soil nutrient availability, according to research in the Wheatbelt.

Read more at: <http://phys.org/news/2015-05-lime-treatment-crops-soil-nutrients.html#jCp>

A Hedge against Drought: Why Healthy Soil is ‘Water in the Bank’

Posted by Ron Nichols, Natural Resources Conservation Service, on May 12, 2015 at 10:00 AM



While most look to the sky for drought relief, an increasing number of farmers are looking to the soil. And for good reason: Healthy soils capture and store much more water – which can come in handy during dry spells.

Through its “Unlock the Secrets in the Soil” campaign, USDA’s Natural Resources Conservation Service is leading the effort to get more farmers and ranchers to adopt soil health management systems for a wide range of on- and off-farm benefits – including drought resiliency.

So what’s the water-banking secret in healthy soil?

<http://blogs.usda.gov/2015/05/12/a-hedge-against-drought-why-healthy-soil-is-water-in-the-bank/>

Fish declines linked to effects of excess nutrients on coastal estuaries



Excess nutrients stimulate the growth of algae in Elkhorn Slough, leading to the formation of green algal mats on the surface. Credit: Brent Hughes

A comprehensive study of a major California estuary has documented the links between nutrient runoff from coastal land use, the health of the estuary as a nursery for young fish, and the abundance of fish in an offshore commercial fishery. The study, published the week of June 8, 2015, in *Proceedings of the National Academy of Sciences*, focused on Elkhorn Slough and Monterey Bay on California's central coast.

<http://phys.org/news/2015-06-fish-declines-linked-effects-excess.html>

Increased atmospheric carbon dioxide limits soil storage

15 April 2015

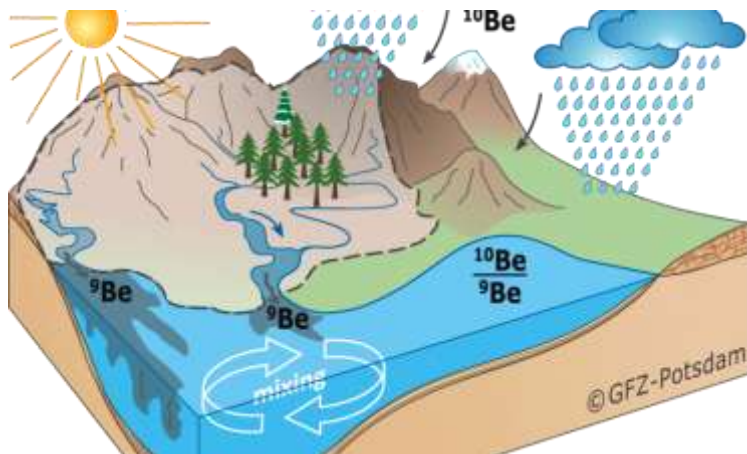
Summary:

Soil carbon may not be as stable as previously thought, scientists report, adding that soil microbes exert more direct control on carbon buildup than global climate models represent. This study, researchers say, provides insight into the mechanisms determining long-term soil carbon storage, knowledge that can be used to improve climate model representations of the global carbon cycle.

Increased plant growth caused by rising atmospheric carbon dioxide is associated with higher rates of carbon dioxide release from soil. If rising carbon dioxide enhances soil carbon storage at all, the effect will be small. Soil carbon may not be as stable as previously thought, and soil microbes exert more direct control on carbon buildup than global climate models represent.

1. K. J. van Groenigen, X. Qi, C. W. Osenberg, Y. Luo, B. A. Hungate. **Faster Decomposition Under Increased Atmospheric CO₂ Limits Soil Carbon Storage**. *Science*, 2014; 344 (6183): 508 DOI: [10.1126/science.1249534](https://doi.org/10.1126/science.1249534)
<http://www.sciencedaily.com/releases/2015/04/150415090022.htm>

Weathering and river discharge surprisingly constant during Ice Age cycles



Fluxes of beryllium from rivers and cosmogenic nuclide deposition are mixed in ocean basins before being deposited in chemical sediments. Credit: GFZ-Potsdam

Over geologic time, the work of rain and other processes that chemically dissolve rocks into constituent molecules that wash out to sea can diminish mountains and reshape continents.

Read more at: <http://phys.org/news/2015-06-weathering-river-discharge-surprisingly-constant.html#jCp>

Soils support buildings and infrastructure

By Katie Allen, Kansas State University 1 June 2015 | 4:00 pm EDT



Soils provide the foundation for buildings and other important structures, including levees.

Soils are a crucial component for agriculture and food production. Soils support all kinds of life. From an engineering perspective, soils are also important, as they provide the groundwork for any type of building or structure.

“No matter if it’s a road, a building, a bridge or a levee, it’s supported on the native soils you have available,” said Stacey Kulesza, a geotechnical engineer who is an assistant professor in the Department of Civil Engineering at Kansas State University. <http://www.agprofessional.com/news/soils-support-buildings-and-infrastructure>



Soils Support Recreation

Released: 27-May-2015 2:05 PM EDT

Source Newsroom: [American Society of Agronomy \(ASA\)](#), [Crop Science Society of America \(CSSA\)](#), [Soil Science Society of America \(SSSA\)](#) [more news from this source](#)

Contact Information

Available for logged-in reporters only

Newswise — May 27, 2015 — In celebration of the International Year of Soil 2015 (IYS), the Soil Science Society of America (SSSA) is coordinating a series of activities throughout the year to educate the public about the importance of soil. June's theme is "Soils Support Recreation."

Translate article text: [new](#) [Select Language](#)

Sections: Science

Keywords: Sport, Recreation, soil, TURF, forest soil



Soils in forests keep the trees and other plants alive; it's important to stay on marked paths and be prepared for some challenging terrain.

<http://www.newswise.com/articles/soils-support-recreation>

EPA: No widespread harm to drinking water from fracking (Update)

4 Jun 2015 by By Matthew Daly



In this June 25, 2012 file photo, a crew works on a gas drilling rig at a well site for shale based natural gas in Zelienople, Pa. The oil and gas drilling method known as hydraulic fracturing, or "fracking," mobilizes thousands around the ... [more](#)

Hydraulic fracturing to drill for oil and natural gas has not caused widespread harm to drinking water in the United States, the Environmental Protection Agency said Thursday in a report that also warned of potential contamination of water supplies if safeguards are not maintained.

Read more at: <http://phys.org/news/2015-06-epa-widespread-fracking.html#jCp>



Glaucozystis sp. Image: Wikipedia.

Thousands of samples at the UK's 'algae bank' will need to be re-labelled as a ground-breaking new screening tool has revealed greater diversity than was previously known within the collection

Analysing the protein 'fingerprint' of 32 [algae](#) which had all previously been catalogued under the same heading, experts from Newcastle University and the Scottish Association for Marine Science (SAMS) found they actually divided into four distinct sub-groups and that one was apparently a completely new species.

Now scientists at the Culture Collection of Algae and Protozoa (CCAP) in Oban, Scotland, are preparing to embark on the mammoth task of analysing and re-labelling the 3,000-strong collection in light of the new research which is published this month in the academic journal *Scientific Reports*.

Read more at: <http://phys.org/news/2015-06-biotyping-tool-reveals-hidden-diversity.html#jCp>

Interactive Map Compares Past and Present Snowpack – Western Snowpack Levels Very Low

Posted by Spencer Miller, Natural Resources Conservation Service, on May 8, 2015 at 1:00 PM



The new, interactive map lets you compare current snowpack data to historical records.

Western snowpack, where it remains, is in full melt.

All along the Cascades and Sierra Nevada are ski courses that never opened, bare mountains and snowless SNOTEL sites where snowpack is measured. Where snow accumulated, it melted prematurely during a warm March. One of the most common questions for snow surveyors has been: how does this winter compare to the past?

<http://blogs.usda.gov/2015/05/08/interactive-map-compares-past-and-present-snowpack-western-snowpack-levels-very-low/>

Farmland management changes can boost carbon sequestration rates



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>



https://www.youtube.com/watch?v=BB1nmzGt_u8&list=PL4J8PxoprGa3wFYsXFu-BW_mMatleIt0&index=2

ASEAN economic integration means huge challenges for trees, farmers and food supply



Delegates at 6th ASEAN Social Forestry Network conference, Inle Lake, Shan State, Myanmar, 1-3 June 2015. Photo: World Agroforestry Centre/Robert Finlayson

Ten Southeast Asian nations will form a single economic bloc at the end of 2015. Agroforestry, forestry and agricultural policies, implementation and law enforcement are lagging behind. The gap threatens millions of livelihoods, environmental safety and national abilities to adapt to climate change, despite some inspiring progress.

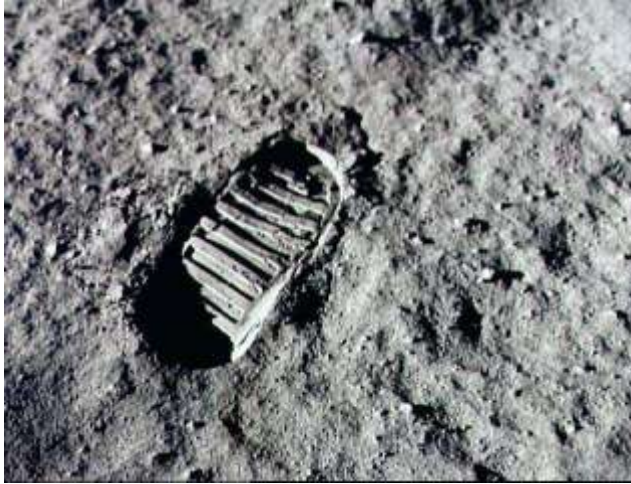
Read more at: <http://phys.org/news/2015-06-asean-economic-huge-trees-farmers.html#jCp>

26 - 30 June 2016 - Adelaide Convention Centre

Home	The Geological Society of Australia invites you to participate in the Australian Earth Sciences Convention 2016 in the city of Adelaide. <p>The AESC 2016 will showcase the latest geoscience research, provide opportunities for professional development and the space to connect and collaborate with your peers.</p> <p>Adelaide is a vibrant coastal city surrounded by interesting geology on the door-step. A city that is easy to get to and easy to get around. Adelaide is the city that offers world class food and wine at easy to digest prices.</p> <p>In the coming months we will be advising our Themes and Symposia, Outreach activities and announcing the full committee.</p>
Call for Abstracts	
Registration	
Supporters & Exhibitors	
Program & Keynote Speakers	
Themes	
Symposia	
Field Trips & Workshops	
Outreach	
Social Program	

<http://aesc2016.gsa.org.au/>

What is lunar regolith?



The famous Apollo 11 boot print on the lunar surface, which left a deep indentation in the regolith. Credit: NASA

When you're walking around on soft ground, do you notice how your feet leave impressions? Perhaps you've tracked some of the looser earth in your yard into the house on occasion? If you were to pick up some of these traces – what we refer to as dirt or soil – and examine them beneath a microscope, what would you see?

Read more at: <http://phys.org/news/2015-05-lunar-regolith.html#jCp>

Fix non-wetting soils for weed control

KEN WILSON

27 May, 2015 01:00 AM



Scaddan farmer Kim Jones has employed a spader to incorporate clay with deep sand to overcome non-wetting issues and enhance his ability to better control weed germinations.



Checking soil hardpans with a penetrometers shows the delver has done its job.



Ready for seeding and controlled traffic farming which is another tool in the toolbox to put more pressure on weed seed burdens.

ARGUABLY the four biggest issues facing WA farmers, in no particular order are weeds, non-wetting sands, soil pH and costs.

And therein lies the diversity of activity throughout the Wheatbelt as each farmer tackles his own problem area in a way he believes will hopefully put him on a sustainable and profitable pathway. <http://www.farmweekly.com.au/news/agriculture/general/news/fix-nonwetting-soils-for-weed-control/2733304.aspx>

Saturated soils impact area crops

[Saturated soils impact area crops](#) by Josh Coltrain Crop Production Agent Wildcat Extension District

“Rain, rain, go away, come again another day, little Johnny wants to play,” is a common refrain from my children on rainy days. As it applies to agriculture, the last line should be more like “little corn and beans may decay.”

Four K-State Research and Extension specialists — Ignacio Ciampitti, Doug Jardine, Doug Shoup, and Dorivar Ruiz-Diaz — recently released an update concerning cropping issues created by saturated soils which I thought I would summarize.

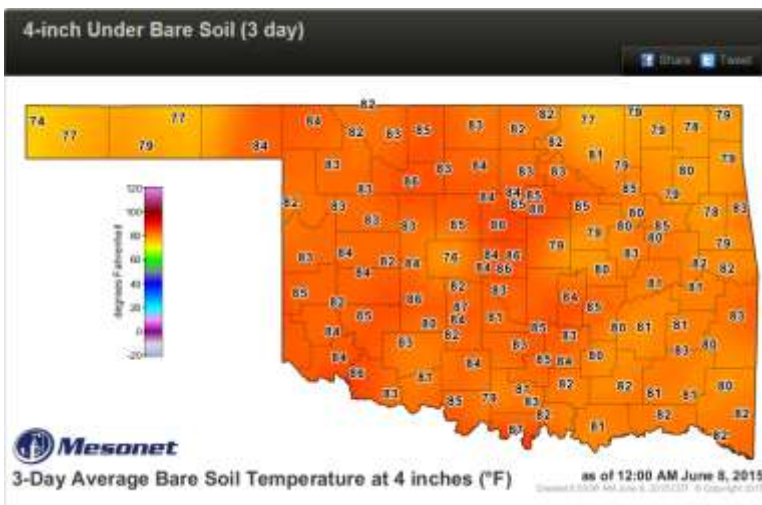
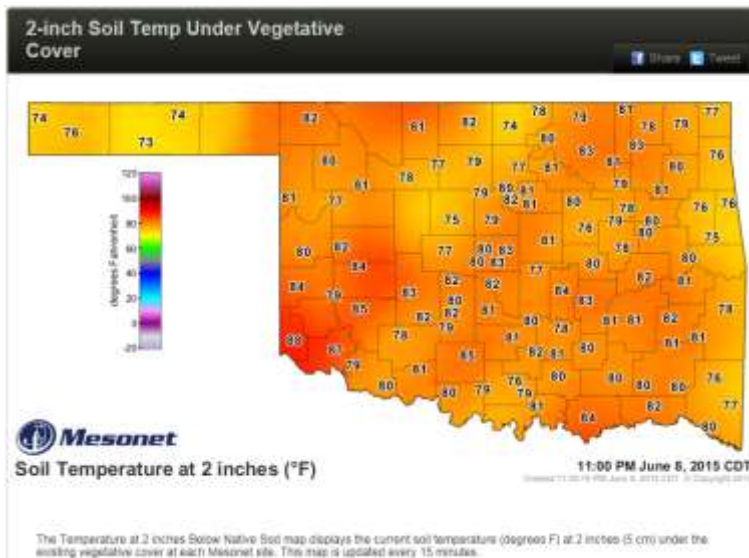
First, the scenario: I think most would agree that we have been fairly wet (excluding a 10 day window at the end of April) since the end of March in our area. According to the Kansas and Oklahoma Mesonet websites (mesonet.k-state.edu/ and www.mesonet.org/) since the first of April, in Chautauqua, Cherokee, Labette, and Woodson counties, an average of 9.2 inches of rain has fallen on 26 rainy days while in four northeast Oklahoma

locations (Craig, Nowata, Ottawa, and Washington counties) an average of 10.5 inches has fallen on 26 days. http://www.farmtalknewspaper.com/news/crops/saturated-soils-impact-area-crops/article_7a430fa6-0474-11e5-95d3-5f2b3fe2ef37.html

Mesonet



The Oklahoma Mesonet is a world-class network of environmental monitoring stations. The network was designed and implemented by scientists at the [University of Oklahoma \(OU\)](http://www.ou.edu) and at [Oklahoma State University \(OSU\)](http://www.osu.edu).



Cuba Hosts Workshop on Regional Alliance for Soils



Havana, Jun 1 (Prensa Latina) The Workshop of the Regional Alliance for Soils for Central America, Mexico and the Caribbean, to promote sustainable management of that resource in the region, is taking place as of today in this capital.

This workshop, running prior to the Soils Congress 2015, is an initiative by the Food and Agriculture Organization (FAO), aimed at analyzing the implementation plan of actions in the area between 2015 and 2019.

http://www.plenglish.com/index.php?option=com_content&task=view&id=3854131&Itemid=1

Guide to nutrient deficiencies depending on soil factors and visual symptoms and suggested treatments required

Nutrient	Soil Factors	Soil Analysis	Visual Symptoms	Soil treatments	Foliar treatments
Sulphur	Light textured soils / Continuous tillage rotations / low soil organic matter	Poor Indicator	Slight yellowing of youngest leaf / no leaf necrosis	Apply 15 – 20kg S as compound fertilizer apply by GS 28-31	Apply as part of N fertiliser programme
Magnesium	High soil pH / High soil K / Light textured soils / cold soils / compaction / drought	Good Indicator	Intervensal chlorosis of older leaves / "beading" effect of chlorophyll on leaf	Magnesium limestone / magnesium sulphate (Kiesente)	Apply based on soil test levels
Copper	Low or high soil pH / Light textured soils / Soils over granite or sandstone / Peaty soils	Good Indicator	Yellowing / withering leaf tips & spiraling of leaves / Secondary tillering	Apply copper sulphate 15-20kg/ha & incorporate	Foliar application GS 12/14-25
Manganese	High soil pH (<7.0) / High soil P (>15ppm) Light textured / peaty soils / unconsolidated seedbeds / dry soils / poor rooting	Poor Indicator	Intervensal chlorosis / patches of pale green limp growth / oldest growth affected first / greening of tram lines	Soil Mn application is ineffective. N, P, K placement will reduce Mn deficiency. Seedbed consolidation	Seed treatments on very deficient soils Foliar application GS 14 / 21 - 31
Zinc	Light textured soils with high soil pH (>7.0) + P (>15ppm) or Low soil (<5.0) / High organic matter soils. Clay soils with high Mg can fix Zn	Good Indicator	Leaf chlorosis with pale green, yellow color / leaf bleaching	Seedbed application 20-30kg/ha zinc sulphate & incorporate	Apply during early tillering (GS 22-25)

Soil levels for a range of nutrients (mg/l)

Soil Index	Magnesium	Copper	Manganese	Zinc
1	0 to 25	<1.0	<90	<1.0
2	25 to 50	1.01 – 1.5	90.1 – 120	1.01 – 1.5
3	50 to 100	1.51 – 3.0	>120	1.51 – 3.0
4	>100	>3.0	–	>3.0

*Guideline range values considered satisfactory for plant growth

Plant Nutrient levels (mg/kg)

Nutrient	Deficient	Low	Sufficient
Copper	<4	5-10	10-20
Manganese	<20	20-30	30 - 100
Zinc	<20	20-30	30-60
Magnesium	*Guideline 0.1 to 0.4		
Sulphur	*Guideline 0.25 to 0.35		



May, 2015 Adapted from the Food and Agriculture Organization

<http://www.teagasc.ie/soil/docs/Nutrients-Table-2015.pdf>

Soils can affect global warming



Mohammad H. Golabi

Following up on my previous articles about soils, and for the purpose of contributing to the public knowledge about the different soils while we are celebrating the Year of Soil in 2015, I would like to introduce the fifth soil order, gelisols.

Gelisols (from the Greek "gelid," or "very cold") are soils that contain permafrost within 2 meters of the ground surface and you may find evidence of frost churning and/or ice segregation on them. Gelisols are quite common in the higher latitudes or at high elevations. These soils have persisted in polar and alpine regions of the world for millions of years. Gelisols make up to about 9 percent of the world's land space. <http://www.guampdn.com/article/20150528/OPINION02/305280012/Soils-can-affect-global-warming>



The screenshot shows a webpage from the Australian Government's Department of Infrastructure and Regional Development. The header includes the coat of arms and the text 'Minister for Infrastructure and Regional Development' on the left, and 'Warren Truss Minister' and 'Jami Briggs Assistant Minister' on the right. A breadcrumb trail reads: 'Home > Truss > Media Releases > 2015 > May > Contracts awarded for Woolgoolga to Ballina soft soils work'. The main heading is 'Contracts awarded for Woolgoolga to Ballina soft soils work' with three small 'A' icons for font size. Below the heading, it says 'Media Release WT1562015 27 May 2015' and 'Joint release with: Duncan Gay NSW Minister for Roads and Freight'. The body text states: 'The first soft soils works contracts have been awarded for the final 155 kilometres Woolgoolga to Ballina section of the Pacific Highway upgrade. Deputy Prime Minister and Minister for Infrastructure and Regional Development Warren Truss said Golding Contractors was the successful tenderer for the first wave of works, which are critical in preparing the ground before construction of a four-lane divided road can commence. "Soft soils work will be carried out from 1.9 kilometres north of Farlows Lane to Yamba Road, as well as locations at Harwood and through to Chatsworth Road," Mr Truss said.'

http://www.minister.infrastructure.gov.au/wt/releases/2015/May/wt156_2015.aspx

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Science staff dig deep to strengthen core supply

Getting soil ready for the cropping season has taken on a whole new meaning for the soils research team at Department of Economic Development, Jobs, Transport and Resources (DEDJTR) Horsham.

As well as routine soil sampling and testing and field trial establishment the team has used a truck-mounted crane, barrel augur and PVC pipes to collect large, intact soil cores for a very different cropping study.



The study is part of the six-year-old Soil, Free Air Carbon Dioxide Enrichment (SoilFACE) project which is assessing how crops grown in soils collected from the Wimmera, Mallee, and Western District will respond to future elevated atmospheric carbon dioxide concentrations (eCO₂).

Soils are collected as 105 cm deep, 30 cm diameter cores, weighing up to 150 kg each. These are placed into a series of specially designed bunkers sunk into the ground in a paddock at the SoilFACE project site near Horsham.

<http://economicdevelopment.vic.gov.au/news-and-media-releases/science-staff-dig-deep-to-strengthen-core-supply>

Facts About Soil...

- Nearly 20,000 different soils have been identified and mapped in the United States.
- Soils vary from location to location. Even in a 5 acre area, a number of different soil types may be present.
- Soil qualities and properties differ significantly, depending on the makeup and structure of each particular soil.
- Soils are a natural fabric, similar to a sponge, which contains many pore spaces for air and water movement. Bulldozing, grading, scraping and stockpiling soil can destroy the soil's natural ability to absorb and hold water.
- Some soils are physically stronger than others, some are better drained due to their position on the landscape and soil forming materials, while some are too shallow or too wet for certain uses.
- For soils with specific limitations, special practices or engineering can overcome the limitation, improve suitability, and ensure proper performance and success.
- Soils exhibit differences in slope, stoniness, salinity, wetness, degree of erosion, ability to support vegetation and trees, and tendency to corrode underground metals and structural materials.
- Some soils are not well suited to the foot traffic associated with recreational facilities like camping areas, paths and trails, playgrounds or parks, and golf fairways.
- In August 2001, the State of Illinois declared an official State Soil—Drummer silty clay loam. As a rich and fertile prairie soil, Drummer is a true representative of the productivity found in the Prairie State.

USDA-NRCS is an equal opportunity provider and employer. Revised 5/09

Consider Soils For Better Planning

Soils data and interpretations are available from USDA's **Natural Resources Conservation Service (NRCS)** whose technical specialists, soil scientists, and federal and state partners can provide valuable information and assistance in land use planning to ensure the best decisions for the future.

Detailed soils maps in NRCS Soil Survey reports show soil boundaries on aerial photos. Information is available in book or map format and for many counties may be available on CD ROM. Information on each soil type describes suitability, limitations, and specific* recommendations for a variety of potential uses:

NRCS Soil Surveys provide information on:

- Windbreaks & environmental planting
- Construction materials
- Recreational development
- Water management
- Wildlife habitat
- Engineering notes, properties
- Building site development
- Physical & chemical properties
- Sanitary facilities
- Soil & water features

*Soil Survey interpretive information is recommended for broad land use planning only. For site-specific information and recommendations, an onsite soils investigation may be needed.

For more information on soils in your area, erosion control on development sites, land use planning, or other natural resource related issues, visit the Illinois NRCS website at:

www.il.nrcs.usda.gov

For easy access to all NRCS erosion control standards and specifications, visit **e-FOTG** at www.nrcs.usda.gov/technical/efotg/

For urban erosion control standards, visit NRCS' **Urban Manual** on the Illinois NRCS Home Page.

Land Use Planning:

It All Comes Down To Soil

Building a comprehensive, sustainable community plan with NRCS soils data and other natural resource information



NRCS: Helping People Help The Land

Land Use Planning: A Complex Issue

An effective land use plan addresses and incorporates all significant local issues and priorities but must also be based on the land and its natural resources. Land use planning is both a social science and a physical and biological science. Failure to consider the natural environment can result in cost overruns, increased runoff and flooding, environmental degradation, construction delays, and expensive planning mistakes.

Most land use plans begin with an inventory that profiles the community's infrastructure, population, industry, current problems, issues, and existing obstacles and opportunities. A plan that addresses these issues is a good plan, but not a complete one—not one that can stand the test of time and the forces of nature.

What Elements Are Often Left Out?

Community planning efforts are *not* complete without an evaluation of community needs and future conditions against the natural layers of the landscape and the environment. Land use planning must incorporate the foundation on which every element rests: natural resources, and more specifically, the **SOIL**.

The soil is the *fundamental basis* for nearly every land use project. It is the base we build upon; the medium we plant into. Soils determine the long-term success of land use planning efforts. Unfortunately, soils and natural resources are often overlooked.

- Are the soils beneath a proposed roads strong enough to support heavy traffic without special engineering?

Why Consider Soils In Land Use Planning?

- Are the soils in and around the new subdivision well drained or are they prone to flooding?
- Will poorly planned development reduce the soil's absorption of water and increase flooding?
- Will soils in a newly planned school yard or city park be well suited to the landscaping plan or will plants die and ball fields stay wet?

Addressing questions like these and incorporating soil suitability information into land use planning initiatives will save time and money, and can help ensure quality communities for years to come.

Natural Factors To Consider for Ecological Planning:

- Soils
- Geology
- Groundwater hydrology
- Physiography
- Surface hydrology
- Vegetation
- Wildlife
- Surface geology
- Climate

Soils, GIS, and GPS

Many county and community governments have invested in Geographic Information Systems (GIS) and Global Positioning Systems (GPS) to build comprehensive databases of specific community/county features. GIS data layers contain information on community characteristics essential for planning—parcel divisions, utilities, flood classifications, topography, transportation, soil types, fire protection, water sources, etc. Global Positioning Systems ensure the accurate location of these features on the data layers. Most GIS platforms use **soils** as a primary information layer because soils are crucial for determining land use suitability.

Plan in Harmony with the Land

Land use planning is a complex process that balances technical, social, and political issues with community needs and values. Developing these core elements in harmony with the natural environment, the foundation for every rural and urban community, is a balancing act.

Let NRCS share nearly 70 years of natural resource planning experience and natural resource data with you and help you create a comprehensive plan for the future of *your* community.



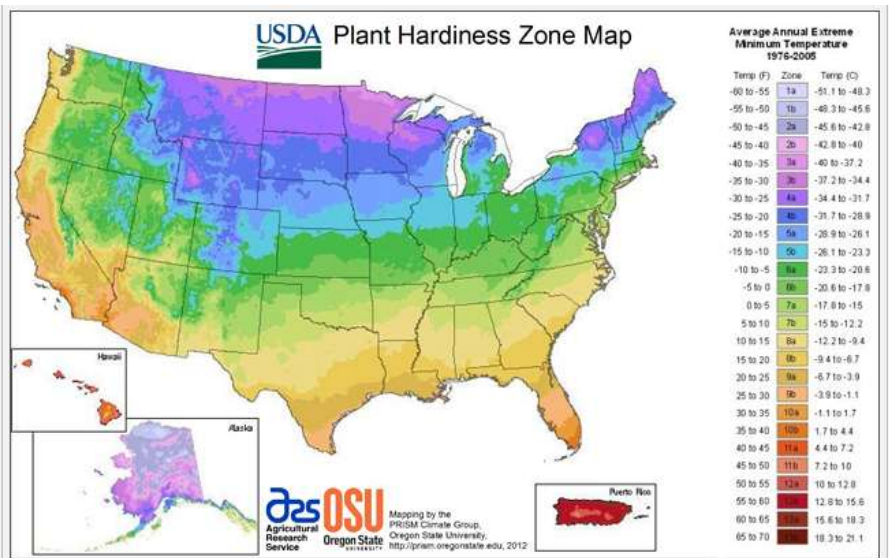
http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs141p2_029651.pdf

USDA Plant Hardiness Zone Map

The 2012 USDA Plant Hardiness Zone Map is the standard by which gardeners and growers can determine which plants are most likely to thrive at a location. The map is based on the average annual minimum winter temperature, divided into 10-degree F zones.

For the first time, the map is available as an interactive GIS-based map, for which a broadband Internet connection is recommended, and as static images for those with slower Internet access. Users may also simply type in a ZIP Code and find the hardiness zone for that area.

No posters of the USDA Plant Hardiness Zone Map have been printed. But state, regional, and national images of the map can be downloaded and printed in a variety of sizes and resolutions.



<http://planhardiness.ars.usda.gov/PHZMWeb/>



[download large image](#) (1 MB, JPEG, 1920x1080)

acquired April 20, 2015

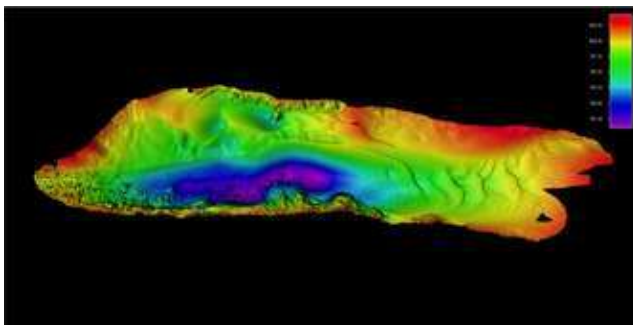
On May 18, 1980, Mount St. Helens gave way to a cataclysmic flank collapse, avalanche, and explosion that killed 57 people and displaced many others. The event dramatically reshaped the volcano and surrounding land in southwest Washington.

Now, 35 years later, satellites in orbit and scientists on the ground still monitor the mountain and [track its recovery](#). The image above shows a three-dimensional view the mountain, looking toward the southeast, as it appeared on April 30, 2015. The image was assembled from data acquired by the [Operational Land Imager](#) on Landsat 8 and the [Advanced Spaceborne Thermal Emission and Reflection Radiometer \(ASTER\)](#) on Terra.

<http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=85880&src=eorss-nh>

Building decades of sandbar knowledge one grain of data at a time

16 hours ago



A sandbar image produced from bathymetric data.

Beneath long-term work to rebuild sandbars in the Grand Canyon lies a legacy of river-running data collection that tells the story of Northern Arizona University researchers, highlighting their persistence and innovations.

Read more at: <http://phys.org/news/2015-06-decades-sandbar-knowledge-grain.html#jCp>



<https://www.youtube.com/watch?v=PeRyWGHDXU&index=13&list=PL4J8PxopprGbRi3gZ-fWN0dGD8bnnq3wM>

Nishinoshima island: New volcanic island off Japan an opportunity to study emergence of life

Updated 18 May 2015, 6:51am



PHOTO: Scientists say Nishinoshima, which has formed in the Pacific Ocean off Japan, is a "natural laboratory". (AFP/Japan Coast Guard)

A brand new island emerging off the coast of Japan is offering scientists a rare opportunity to study how life begins to colonise barren land — helped by rotting bird poo and hatchling vomit.

RELATED STORY: [Japan volcanic isle may collapse and create tsunami](#)

RELATED STORY: [First pictures of Tonga's newly formed volcanic island](#)

MAP: [Japan](#)

Researchers say bird waste will be the secret ingredient to kickstart Mother Nature's grand experiment on what is a still active volcano that only poked its head above the waves in November 2013.

<http://www.abc.net.au/news/2015-05-17/new-volcanic-island-off-japan-a-natural-lab-for-life/6476036>

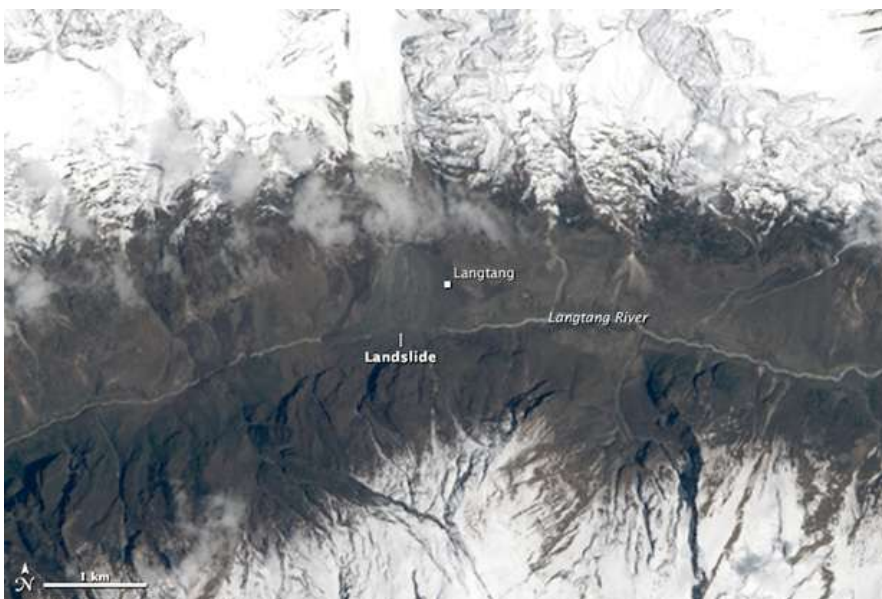
Nepal's Langtang village from space: before and after

Wednesday, 13 May 2015 EARTH IMAGE by Stuart Gary
ABC



BEFORE: The Langtang region before the quake struck. (NASA/LandSat8)

Earth image



AFTER: a mixture of snow, ice, and debris, which originated in snowfields on the slopes above Langtang, slid downhill completely covering the Langtang River and burying the village (Source: NASA/LandSat8)

The village of Langtang is gone, wiped of the face of the Earth by the first of the recent devastating Nepalese earthquakes.

The small village - shown in the BEFORE image - was located on a popular trekking route near the base of Mount Langtang.

On April 25 2015, it was buried under an avalanche of ice and rock, shaken loose by the massive 7.8 magnitude quake that struck the central Nepalese Himalayan Mountains northwest of the capital Kathmandu.

The AFTER image shows the path of the avalanche that slid downhill, [covering the Langtang River and destroying the village](#). While cloudy conditions hampered satellite observations of Nepal in the days following the initial earthquake, the Operational Land Imager on LandSat 8 captured this view on 30 April 2015.

<http://www.abc.net.au/science/articles/2015/05/13/4232448.htm>

Top 10 new species list includes cartwheeling spider

Friday, 22 May 2015 Sharon Begley

Reuters



Threatening behaviour by the cartwheeling spider. (Technical University Berlin : Ingo Rechenberg)

New species Some 18,000 species - great and small - were discovered in 2014, adding to the 2 million already known, say scientists.

The scientists released a 'Top 10' list of new species that serve as "a reminder of the wonders awaiting us," said Quentin Wheeler, president of the [SUNY College of Environmental Science and Forestry](#), which issues the list.

An estimated 10 million species are still unknown to science.

But researchers have to move fast: development, poaching, and climate change are driving plants and animals to extinction faster than science can discover them.

<http://www.abc.net.au/science/articles/2015/05/22/4240679.htm>

The sound of a plant dying of thirst

THE SOUNDS OF SCIENCE with Bernie Hobbs
ABC

Thursday, 21 May 2015



(Source: jbkrcmar/iStockphoto)



Available Formats

• **MP3** (00:02:16; 1.9Mb)

That is the sound of a plant dying of thirst. Heartbreaking isn't it?

As a plant's water source dries out, small bubbles form in the xylem — the hollow strands that carry water from the soil to the leaves of vascular plants.

The recording was made 30 years ago by Dr Kim Ritman, using a very low-fi phone receiver with a pin soldered onto it to amplify the sound.

<http://www.abc.net.au/science/articles/2015/05/21/4239360.htm>



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<https://soilscienceaustralia.memnet.com.au/MemberSelfService/NewMemberForm/soil/NewMemberForm.aspx>



“Our industrial systems are taking carbon from the soil instead of building carbon in the soil. *Slow Money*

founder Woody Tasch at Food + Enterprise, 28 February 2015 in Brooklyn, NY