



## National Soil and Landscape Grid launched!

26 November 2014

Knowledge of Australia's diverse soil and landscape attributes is vital to enable informed use and management of our soils and landscapes. As of today, comprehensive nation-wide information about important soil and landscape attributes is now readily available via TERN's [Soil and Landscape Grid of Australia](http://www.tern.org.au/soil-and-landscape-grid). The Grid was launched today in Melbourne at the [National Soil Science Conference](#).

The Soil and Landscape Grid offers a step-change in the way we can view and access the best available information about Australian soils and landscapes, and makes the most of significant past investments in soils information by drawing historical data together with new data generated from sampling, modelling and remote sensing.

*Watch the video for more information about the Soil and Landscape Grid of Australia*

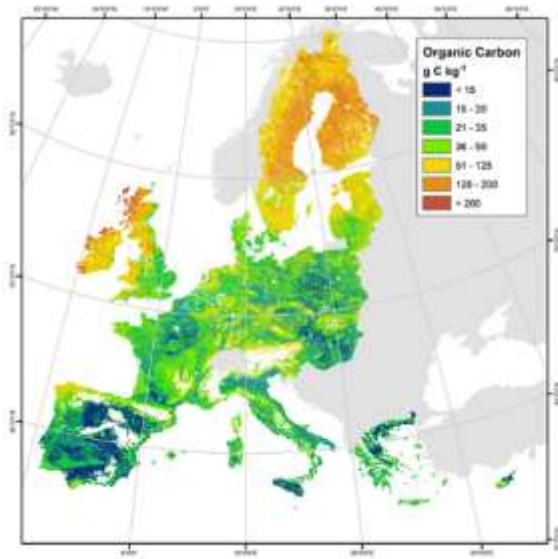


Mike Grundy launching Soil&Landscape Grid of Australia

<http://www.tern.org.au/Newsletter-2014-Nov-Soil-and-Landscape-Grid-pg29954.html>

## Map of predicted topsoil organic carbon content (g C kg<sup>-1</sup>)

The map was produced by fitting a generalised additive model between organic carbon measurements from the LUCAS survey (dependent variable) and a set of selected environmental covariates; namely slope, land cover, annual accumulated temperature, net primary productivity, latitude and longitude. (format GeoTIFF)



**Fig 1:** Map of predicted topsoil organic carbon content (g C kg<sup>-1</sup>)

<http://eusoiils.jrc.ec.europa.eu/library/Themes/SOC/LUCASSOC/>

## Unbelievable underworld and its impact on us all

A new study has pulled together research into the most diverse place on earth to demonstrate how the organisms below-ground could hold the key to understanding how the worlds ecosystems function and how they are responding to climate change.



Soil fauna from a soil in Alabama, USA is depicted.

*Credit: Valerie Behan-Pelletier/TheUniversity of Manchester*

A new study has pulled together research into the most diverse place on earth to demonstrate how the organisms below-ground could hold the key to understanding how the worlds ecosystems function and how they are responding to climate change.

**Journal Reference:**

1. Richard D. Bardgett, Wim H. van der Putten. **Belowground biodiversity and ecosystem functioning**. *Nature*, 2014; 515 (7528): 505 DOI: [10.1038/nature13855](https://doi.org/10.1038/nature13855)

<http://www.sciencedaily.com/releases/2014/11/141126132704.htm>

## Researchers collect soil samples from around the globe in effort to conduct fungi survey

28 Nov 2014 by [Bob Yirka](#)



The Fungal World. Credit: Siiri Jüris ja Leho Tedersoo

(Phys.org)—A large team of researchers with members from around the world has conducted a global survey of soil fungi by collecting thousands of soil samples from sites all around the world. In their paper published in the journal *Science*, the team describes their survey, how they performed DNA analysis on the specimens they found, and what they learned in doing so. David Wardle and Bjorn Lindahl of the Swedish University of Agricultural Sciences offer a Perspectives piece on the work done by the team in the same journal issue.

Read more at: <http://phys.org/news/2014-11-soil-samples-globe-effort-fungi.html#iCp>



<https://www.facebook.com/SSSA.soils/photos/pb.100139413226.-2207520000.1415495996./10152427628638227/?type=1#!/SSSA.soils/photos/pb.100139413226.-2207520000.1415495996./10152395860393227/?type=1&permPage=1>

## Satellite and aerial imagery used in down-to-earth farming decisions

Satellite and aerial mapping is becoming so sophisticated that, with additional development by researchers and commercial mappers, it is already starting to help farmers make decisions about fertilising or harvesting crops, moving livestock, and other typical economic and land-management decisions.

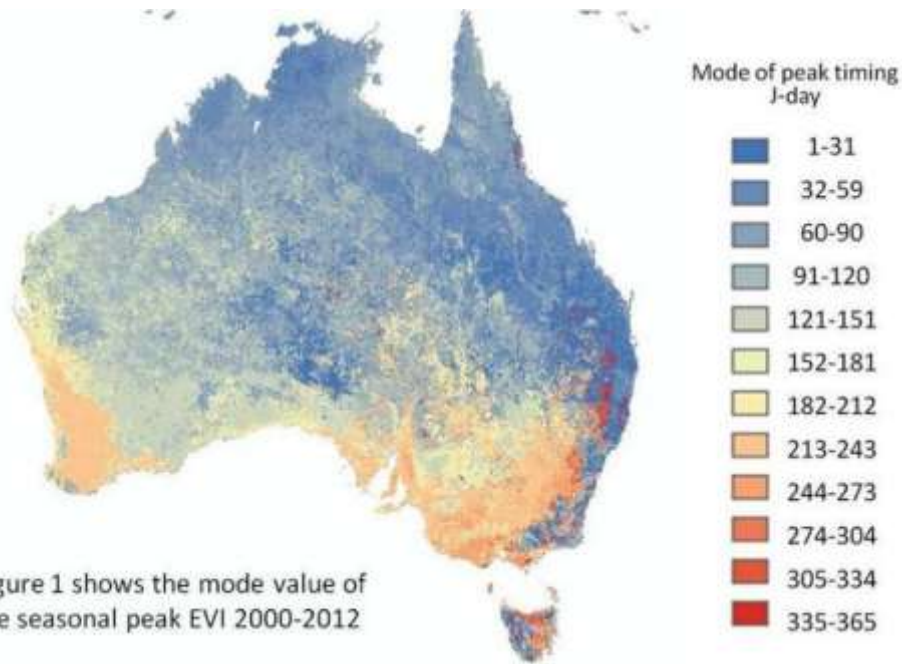


Figure 1 shows the mode value of the seasonal peak EVI 2000-2012

Mode values of seasonal peak Enhanced Vegetation Index (EVI) calculated using an algorithm designed to accommodate Australian conditions. The product can be used to characterize phenological cycles of greening and browning and quantify the cycles' inter and intra annual variability from 2000 to 2012 across Australia.

<http://www.tern.org.au/Aerial-imagery-used-in-down-to-earth-farming-decisions-bgp1781.html>

## Soil health driving crop improvement

23 Nov, 2014 03:00 AM A+ A-

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“  
For me it's all about getting the soil right – the plant just utilises what's available in the soil  
”

John Alexander.

JANDOWAE farmer John Alexander is on a quest to improve his soil health and unlock the potential for growing high-yielding and more profitable crops.

Mr Alexander, who farms the 400-hectare block "Walmer" and a second

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<http://www.theland.com.au/news/agriculture/cropping/general-news/soil-health-driving-crop-improvement/2716961.aspx>

# Resilient wheat crucial in waterlogged soils

Written by [Steven White](#)



The conventional measures that farmers have at their disposal include spreading lime to deal with acidic soils and using raised beds to counteract waterlogging. *Image: [International Maize and Wheat Improvement Center](#)*

**WHEAT strains tolerant to toxic ions in waterlogged soils, such as those from base metals, are key to improved crop yields in the Wheatbelt, according to continuing UWA research.**

UWA School of Earth and Environment and Institute of Agriculture Assistant Research Professor Hossein Saberi says his is the first group to quantify the effect of [ion toxicity](#) on wheat growth in transiently waterlogged areas.

"Much of Western Australian wheat-growing areas are affected by acidic soils that require remedial action to successfully grow cereal crops," A/Prof Saberi says.

<http://www.sciencewa.net.au/topics/agriculture/item/3174-resilient-wheat-crucial-in-waterlogged-soils>

## Polyethylene mulch, glazing create optimal conditions for soil solarization

Researchers raised soil temperatures in high tunnels in southern Arizona to determine the efficacy of soil solarization using clear mulch on the soil surface and with tunnel glazing or with no glazing. Outcomes showed that producers using high tunnels in the region can complete solarization in less than a week during summer when the soil is fallow using glazing on the high tunnel and polyethylene mulch on the soil surface.

Soil solarization, a process that uses solar radiation to rid the soil of pests, is most common in regions with high solar radiation and high temperatures during the summer season. An alternative to soil fumigation, the process is used either alone or in combination with fumigants. To accomplish solarization, solar radiation is used to passively heat moist soil covered with clear plastic sheeting, with the goal of increasing soil temperatures to the point where they are lethal to soilborne organisms. The

effectiveness of solarization is based on the actual maximum soil temperature reached and the amount of time the high temperatures can be sustained.

**Journal Reference:**

1. Kristen Hanson, Tilak Mahato And Ursula K. Schuch. **Soil Solarization in High Tunnels in the Semiarid Southwestern United States**. *HortScience*, September 2014

<http://www.sciencedaily.com/releases/2014/11/141121102917.htm>

# New Hydraulic Pedotransfer Functions for Europe

A series of statistical methods were tested and applied for the development of hydraulic PTFs based on the recently established European Hydropedological Data Inventory (EU-HYDI). The most reliable methods are presented, as a new set of hydraulic PTFs. Data and explanatory information are available for download.

Tested input combinations	Reference number and name of the recommended PTF					
	$\theta_s$ / cm <sup>3</sup> cm <sup>-3</sup>	$\theta_{rc}$ / cm <sup>3</sup> cm <sup>-3</sup>	$\theta_{wp}$ / cm <sup>3</sup> cm <sup>-3</sup>	$K_s$ / log <sub>10</sub> (cm day <sup>-1</sup> )	MRC / cm <sup>3</sup> cm <sup>-3</sup>	HCC / cm day <sup>-1</sup>
FAO_MOD+T/S	(1) FAO_MOD+T/S_RT_θ <sub>s</sub>			(13) FAO_MOD+T/S_RT_K <sub>s_log10</sub>		
FAO_MOD+T/S+OC	(2) FAO_MOD+T/S+OC_RT_θ <sub>s</sub>	(7) FAO_MOD+T/S_RT_θ <sub>rc</sub>	(10) FAO_MOD+T/S_RT_θ <sub>wp</sub>	(14) FAO_MOD+T/S+OC_RT_K <sub>s_log10</sub>	(18) FAO_MOD+T/S_MS_MRC	(18) FAO_MOD+T/S_MS_HCC
USDA+T/S	(3) USDA+T/S_RT_θ <sub>s</sub>	(8) USDA+T/S_RT_θ <sub>rc</sub>	(11) USDA+T/S_RT_θ <sub>wp</sub>	(15) USDA+T/S_RT_K <sub>s_log10</sub>	(19) USDA+T/S_MS_MRC	
PSD+T/S+OC				(16) PSD+T/S+OC_RT_K <sub>s_log10</sub>		
PSD+T/S+OC+pH+CaCO <sub>3</sub> +CEC	(4) PSD+T/S+OC_RT_θ <sub>s</sub>			(17) PSD+T/S+pH+CEC_LR_K <sub>s_log10</sub>	(20) PSD+OC+pH+CEC_LRt_MRC <sup>a</sup>	
PSD+T/S+OC+BD	(5) PSD+T/S+OC+BD_LRt_θ <sub>s</sub>	(9) PSD+OC_LRt_θ <sub>rc</sub>	(12) PSD+OC_LRt_θ <sub>wp</sub>	(16) PSD+T/S+OC_RT_K <sub>s_log10</sub>	(21) PSD+T/S+OC+BD_LR_MRC <sup>a</sup>	(19) USDA+T/S_MS_HCC
PSD+T/S+OC+BD+pH						
PSD+T/S+OC+BD+pH+CaCO <sub>3</sub> +CEC	(6) PSD+T/S+BD+pH_LRt_θ <sub>s</sub>			(17) PSD+T/S+pH+CEC_LR_K <sub>s_log10</sub>	(22) PSD+T/S+OC+BD+pH_LRt2_MRC <sup>a</sup>	

<sup>a</sup>θ<sub>s</sub> is derived from RT model using sand content.

[http://eusoils.jrc.ec.europa.eu/library/themes/Hydraulic\\_PTFs/](http://eusoils.jrc.ec.europa.eu/library/themes/Hydraulic_PTFs/)

# Organic Matter May be on Mars: Scientists Discover Martian Soils Hold Carbon

1 comment



14



14



8



2



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Catherine Griffin

First Posted: Nov 14, 2014 08:11 AM EST




Could there be organic matter on Mars? The organic matter that was recently detected by NASA's rover Curiosity probably isn't due to contamination brought from Earth, as originally thought. (Photo : NASA/JPL-Caltech)


Could there be organic matter on Mars? The organic matter that was recently detected by NASA's rover Curiosity probably isn't due to contamination brought from Earth, as originally thought. Scientists now suggest that the gaseous chlorinated organic compound, chloromethane, may come from the Martian soil.

<http://www.scienceworldreport.com/articles/18908/20141114/organic-matter-mars-scientists-discover-martian-soils-hold-carbon.htm>



# Soil survey of the Cardwell-Tully-Innisfail Area, Far North Queensland - CWL-CTI

 Publication set

 Activity stream

This publication set is a soil survey of the Cardwell-Tully-Innisfail area, Far North Queensland. The study area covers parts of the Ingham and Innisfail (SE55-10, SE55-6) 1:250,000 map sheets. Approximately 284,000 hectares of land were mapped at 1:50,000 scale and land suitability for agriculture was evaluated. Sites were assessed using the free survey method and 53 soil series were identified.

Note that this project built upon previous work in the region (project code CWL), extending the mapped area north from Cardwell and Tully to include Innisfail and completing an agricultural land class assessment for the entire area. Hardcopy maps and reporting from both projects are contained in this publication set.

View more on [soil and land management](#).

## Resources



### Soils report

This PDF report discusses the soils of the Cardwell-Tully area of North...  
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
### Soils map 1

This PDF is a soils map of the Cardwell-Tully area of North Queensland

<https://publications.qld.gov.au/dataset/soils-cardwell-tully-innisfail-cti>

# Soil survey of the Burdekin River Irrigation Area, North Queensland, Haughtons area Stages II and III - HTC/HTN

 Publication set

 Activity stream

This publication set is a soil survey of the Burdekin River Irrigation Area, Haughtons area Stages II and III, North Queensland. The study area covers part of the Giru (8358-4) 1:50,000 map sheet. Approximately 9,400 hectares of land were mapped at a scale of 1:25,000 and land suitability for a range of crops was evaluated. Approximately 1300 sites were assessed using the free survey method and 78 soils were identified. This project is part of a series conducted across the Burdekin River Irrigation Area.

View more on [soil and land management](#).

## Resources



### Soils report

This PDF report discusses the results of the Burdekin River Irrigation Area...

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### Soils map

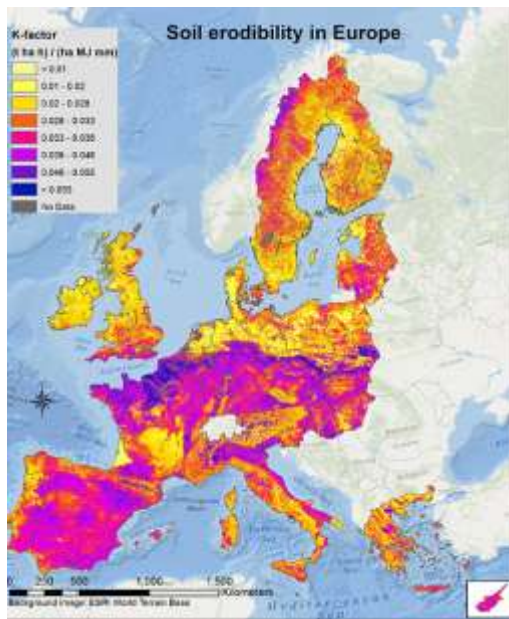
This PDF is a soils map of the Burdekin River Irrigation Area, Haughton

<https://publications.qld.gov.au/dataset/soils-bria-haughtons-north-htn>

## Soil Erodibility K-Factor

The Soil Erodibility Dataset is in Raster format. The public user can download 3 different datasets: a) Soil erodibility in Europe (K-factor), b) Soil Erodibility incorporating Stoniness (Kst Factor) and c) the Effect of Stoniness in K-factor (% reduction).

To get access to the data, please compile the [online form](#); instructions will then follow how to download the data .



**Fig. 1:** K-factor high resolution(2014)

## IUCN Red List Shows the Appetite for Resources Pushes New Species to the Brink

Written by IUCN

Published: 18 November 2014

Sydney, Australia —Fishing, logging, mining, agriculture and other activities to satisfy our growing appetite for resources are threatening the survival of the Pacific Bluefin Tuna, Chinese Pufferfish, American Eel and Chinese Cobra. The destruction of habitat has caused the extinction of a Malaysian mollusc and the world’s largest known earwig, and threatens the survival of many other species – according to the latest update of the IUCN Red List of Threatened Species™ released today at the IUCN World Parks Congress taking place in Sydney, Australia

<https://sensorsandsystems.com/news/top-stories/biodiversity/35226-iucn-red-list-shows-the-appetite-for-resources-pushes-new-species-to-the-brink.html>

## Contaminants in Groundwater Linked to Agricultural Land Use

Written by USGS

Published: 12 November 2014

McBEE, S.C., 11 Nov. 2014—Groundwater contamination that was first detected in Chesterfield County in the early 2000s has been linked to historical agricultural land use, according to a recent U.S. Geological Survey [study](#).

Scientists used water-quality data, numerical simulations and historical aerial photographs to link three major contaminants found in local aquifers to the agricultural land use. The three contaminants exceed the Environmental Protection Agency's maximum allowed levels in groundwater pumped from public-supply wells in the Crouch Branch and McQueen Branch aquifers.

<https://sensorsandsystems.com/news/top-stories/water/35200-contaminants-in-groundwater-linked-to-agricultural-land-use.html>

## UW trick with plants could be answer to cleaning toxics from soil

Posted on November 19, 2014 | By **Jake Ellison**



## Food Hoarding For Pennies

[criseducation.com](http://criseducation.com)

The sneaky prep work trick to hoard massive amounts of food super cheap



Willow treated with microbe from eastern cottonwood Sharon Doty Lab/U of Washington



Willow cuttings without the treatment ceased growing, lost leaves and died when grown in solution with phenanthrene. Sharon Doty Lab/U of Washington

It's a bit of a wonky tale, but the promise for cleaning up toxic waste in soil is actually quite gripping.

It goes a little like this: Take a microbe that occurs naturally in eastern cottonwood trees, sprinkle it on lawn grass or willow tree roots and then plant them in contaminated soil. Toxins are removed from the soil, the plant lives longer and the toxins are not only absorbed by the plant, but the microbe actually breaks down the toxins. Using plants this way is called "phytoremediation."

"When the endophyte in these experiments was given to willow and grasses, it reduced the phytotoxic effects of phenanthrene compared to the control plants that did not receive the endophyte and died," said lead author [Zareen Khan](#), a UW research scientist in environmental and forest sciences, in a [news release](#).

Okay, let's break it down. What's a endophyte?

UW: Microbes that take up residence in the inner tissue of plants and don't cause negative symptoms are called endophytes. In nature, endophytes have a welcomed, symbiotic relationship with plants. In polluted soil, for instance, if the right endophytes are

<http://blog.seattlepi.com/bigscience/2014/11/19/uw-trick-with-plants-could-be-answer-to-cleaning-toxics-from-soil/#26099103=0&28037101=0>

**NZFarmer**.co.nz

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## Acid soils blamed for high country productivity fall



Last updated 05:00, November 20 2014

Widespread concern over the rapid decline in productivity of the South Island high country was a recurring theme at the Grasslands' annual conference in Alexandra.

The issue was raised by a former NZ Grasslands Association president, Pat Garden, chairman of the Otago Conservation Board and a high country farmer from Millers Flat.

He identified exciting opportunities and significant economic benefits to the region from irrigation, including a major scheme planned for the Manuherikia Valley. That development came with important provisos that on-farm costs allowed viable land use and that intensification of land use did not compromise water quality.

<http://www.stuff.co.nz/business/farming/agribusiness/63265010/Acid-soils-blamed-for-high-country-productivity-fall>

## Soil microbes can help tackle climate change

BY TIM SANDLE 22 NOV 2014 IN **ENVIRONMENT**

Researchers have developed a new climate change modeling tool. The tool shows that carbon dioxide removal from the atmosphere, as result of greater plant growth can be offset by changes in the activity of soil microbes.

Soils contain more carbon than all of Earth's plant biomass and atmosphere combined. Research suggests that the chemicals and microorganisms in the rhizosphere (the soil that surrounds roots) is one of the reasons for increased carbon emissions.

<http://www.digitaljournal.com/news/environment/soil-microbes-can-help-tackle-climate-change/article/416757>

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## Keeping crucial carbon in soils

Friday, 14 November 2014, 11:29 am

Article: [Bala Tikkisetty](#)

### Keeping crucial carbon in soils

*Bala Tikkisetty*

Recent research has been showing that some pastoral soils are losing more crucial carbon and nitrogen than others.

The reason isn't known precisely yet but it's a potentially important issue. Ongoing research is trying to find out more.

What is known is that pastoral farms on certain soils (allophonic and gley soil orders) have lost an average of one tonne of soil carbon per hectare a year in some parts of the country.

<http://www.scoop.co.nz/stories/SC1411/S00046/keeping-crucial-carbon-in-soils.htm>

## January-October 2014 temperatures highest on record

29 November 2014

The global average temperature over land and ocean surfaces for January to October 2014 was the highest on record, according to the U.S. National Oceanic and Atmospheric Administration. It said October was the hottest since records began in 1880.

The global average temperature over land and ocean surfaces for January to October 2014 was the highest on record, according to the U.S. National Oceanic and Atmospheric Administration (NOAA). It said October was the hottest since records began in 1880. <http://www.sciencedaily.com/releases/2014/11/141129075729.htm>

# Study finds way to conserve soil and water in world's driest wheat region

24 Nov 2014 by Sylvia Kantor



Wheat yields in Eastern Washington's dry Horse Heaven Hills can be a fraction of those further east but can still be profitable with the right management. Credit: Washington State University

In the world's driest rainfed wheat region, Washington State University researchers have identified summer fallow management practices that can make all the difference for farmers, water and soil conservation, and air quality.

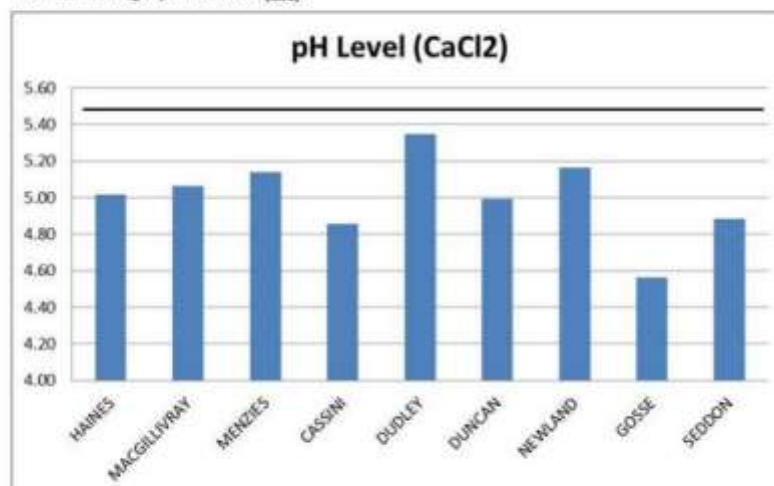
Read more at: <http://phys.org/news/2014-11-soil-world-driest-wheat-region.html#jCp>

## Study: KI soils under threat

By The Islander

13 Nov. 2014, 11:42 a.m.

FIGURE 1: Average soil pH<sub>(CaCl2)</sub> results for each hundred during the 2012 - 2013 season. The black line indicates the target pH level of 5.5<sub>(CaCl2)</sub>.



Study: KI soils under threat

In 2012/13, Agriculture Kangaroo Island received funding through a Caring for our Country Community Action Grant to assist landholders to undertake soil testing on their properties.

<http://www.theislanderonline.com.au/story/2694063/study-ki-soils-under-threat/?cs=12>

Soil Science Society of America's Photos

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<https://www.facebook.com/SSSA.soils/photos/pb.100139413226.-2207520000.1415495996./10152351618453227/?type=1&permPage=1#!/SSSA.soils/photos/pb.100139413226.-2207520000.1415495996./10152351618243227/?type=1&permPage=1>

**The first law of intelligent tinkering is to save all the parts ~ Aldo Leopold**