



Summer 2013

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allthedirt.newsletter@industry.nsw.gov.au

In this edition:

Welcome to the new year of All the Dirt (ATD). There seems to have been an explosion of on-line activity regarding soil so this section is longer than usual and it was hard to decide what to leave out. Closer to home we have local observations of the recent soils events and a novel way to present soil biology information using role play. Also ATD has hit the 500+ subscriber's mark which is fantastic. Happy

reading and please remember to email if you ever want to contribute.

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Observations from the Australian and New Zealand soils Conference 2012: Hobart

Justine Cox, NSW DPI

The cool weather of Tasmania welcomed us as we flew in from all over Australia and New Zealand to talk soil. The welcome function on the banks of the Derwent River was a vibrant affair, with great food, music and catching up with colleagues, friends and making new connections, setting the tone for the week.

With a packed program, I decided to split my time between soil carbon and climate change, soil fertility, the living soil, soil forensics and of course my session in "Soil Philosophy, Soil Education and the Future of Soil".

More than a quarter of the total presentations were on aspects of soil carbon and climate change, such as the flurry of activity and funding in this area. We heard talks on calculating carbon stocks over different land uses, effects of agricultural practices on soil carbon sequestration, variations in the mass of carbon in soil according to core diameter, effects of compost and biochar on soil properties and many talks on modelling soil carbon.

A highlight of the week was a combined talk by Judy Tisdall and Malcom Oades, yes the authors of that famous paper on organic matter and soil aggregates from 1982. They took us on a journey showing the model system they devised on the levels of aggregation, and how it developed since they published.

My favourite talk was by Dr Henry Janzen, the keynote speaker from Agriculture and Agri-Food Canada, titled Soil – the long continuum. Despite the presentation looking as though it was created for the attention span of generation now, it was inspiring and well delivered. Essentially, he wants us to think of ourselves as storytellers to inform land managers and the public about how soil works, its wonder, its complexities and its resilience.

The field trip I chose included a winery (or course), an apple orchard and a grazing property. My highlight was the monitoring system in the apple orchard, where many soil properties were being continuously logged in real time, such as soil moisture using TDR probes, temperature and soil nutrient status in the solution with fluxmeters where the researchers could manipulate fertigation levels and soil amendments to assess effects on soil, plant and apple yields.

ASSSI awards 2012

Congratulations to the following scientists who were recognised at the recent Soils conference;

- **Vanessa Wong**; winner of the Australian Society of Soil Science Publication Medal
- **Sally Smith**; winner of the JA Prescott Medal of Soil Science for an outstanding contribution to soil science
- **Raj Setia**; winner of the CG Stephens PhD Award in Soil Science
- **Judith Tisdall and Malcolm Oades**; joint winners of the John K Taylor, OBE, Gold Medal in Soil Science for excellence in both research and its communication
- **Mark Imhof**; winner of the LJH Teakle Award for outstanding effort in promoting and raising the awareness of soil science in Australia via the Society and the wider community
- **Henry Janz**; winner of the Johan Bouma Award for the best oral presentation integrating 'hard' and 'soft' sciences
- **Joshua Scarrow**; winner of the most meritorious poster presentation by a scientist under 35
- **Timothy Overheu**; of the most meritorious poster presentation by a scientist over 35
- **Louise Fisk**; winner of the most meritorious oral presentation by a scientist under 35
- **Seth Laurenson**; winner of the most meritorious oral presentation by a scientist over 35



Vanessa Wong receives her award from outgoing ASSSI president Richard MacEwan

Using role play in soils education

David Hardwick

There are a number of challenges to effective soil extension. Too often soil workshops are either highly technical or they do not address the information needs of the participants. Another challenge is trying to ensure a learning outcome within a very short time. One method to overcome these issues when trying to provide soil science information, and especially soil biology information, to farmers is to use role play games.

Because they are informal and participatory, role plays usually break down the barrier between the teacher and the learners. This helps

greatly with learning. Humour often plays a large part as the role play



Watershed Landcare Members live the life of a soil bug.

unfolds, not only helping relax participants but building group trust. Group trust is critical for the peer to peer learning that comes out during well facilitated soils workshops. Landholders and farmers often have vast experience in soil management and when people feel trust in the group they are more confident to share knowledge and experiences. This adds greatly to the learning for all participants.

Role plays are a much better tool for matching information to the needs of any learning group, allowing flexibility to follow the interests of the group rather than the more traditional structured powerpoint presentation. Using role play to investigate soil biology topics allows everyone to explore it down to a microscopic and molecular level. In addition role plays allow participants to clearly see the interactions between soil chemistry and soil biology, often a major deficiency at “Soil Biology” and “Soil Health” workshops.

Finally role plays can be done anywhere and with almost any number of participants. In a farm shed with no power, out in the paddock, at a soil pit site or in a large hall with over 80 people in attendance. They are especially useful at a soil pit site where participants can correlate their role play activities to a living soil ecosystem. . Ideally more than 8 people are needed but with less than this you can still use the basic approach to achieve soils extension.

The “Day in the Life of a Soil” role play activity has been adapted and used widely across many Landcare groups, as well as at a number of Catchment Management Authority and landholder field days. I have successfully conducted the activity internationally to participants for whom English was not their first language

The first key requirement when using role play to discuss soil biology is to have the basic props to ensure it can be done effectively. Role play cards, outlining the key soil organisms and microbes, along with a cube of topsoil and roots, a couple of buckets, rocks, a bag of lollies and some local organic matter are all that is needed. The second key requirement is to be well prepared. The facilitator needs to have a good knowledge of their extension topic.

David Hardwick is an agricultural ecologist who specialises in soils. He currently works as an independent consultant and trainer. He has previously worked in Landcare in Qld and NSW, as an agronomist, as a Technical Manager in the bio-fertiliser industry and as a Branch Manager for a national horticultural company

Border Rivers Gwydir roll out their soil health kit

Luke Beange, NSW DPI

NSW DPI has assisted the Border Rivers-Gwydir CMA (BRGCMA) in developing a package of soils advisory material. The Border Rivers Gwydir Soil Health Kit contains lots of information to help you analyse your soil health plus a range of case studies featuring local farmers. The actual kit contains an array of material covering all aspects of on-farm soils observation and measurement.

As part of the package NSW DPI is rolling out a series of workshops. The first workshop was held in Warialda just before Christmas last year for CMA staff, attracting staff from Goondiwindi to Inverell. A first rate cast of experts presented on the day, with

- Mark Blair (soil scientist BRG CMA) covering local soil formation and classification
- Bob McGufficke (retired DPI district agronomist) covering agricultural capabilities of Inverell region soils
- Rebecca Byrne (DPI agronomist Moree) covering agricultural capabilities of plains region soils
- George Truman (local salinity expert formerly with Namoi CMA & DNR, and now a private consultant) covering local salinity
- Luke Beange (DPI soils officer Dubbo) covering soil carbon.

Soil health kit contents

- Ground cover and plant litter
- Level of surface sealing and crusting
- Infiltration capacity
- Stable pore spaces at depth
- Soil erosion
- Soil texture
- Depth of moist soil
- Evidence of compaction
- Depth and observation of plant roots
- Soil stability: Slaking
- Soil stability: Dispersion
- Soil colour and mottles
- Water ponding
- Available soil nutrients
- Soil pH
- Symptoms of nutrient toxicities
- Soil salinity
- Extent of plant litter/stubble
- Topsoil organic carbon (SOC) level
- Topsoil colour
- Nodulation of legume roots
- Diversity of Soil Organisms
- Earthworms
- Dung Beetles
- Presence of pests and diseases

A series of workshops will now be held for interested landholders in 2013 to coincide with publication of the kit and case studies in both print and electronic formats on the BRGCMA's website

Soil security: A grand narrative and global agenda

A McBratney and A Koch, University of Sydney

Soil security refers to the maintenance and improvement of soils worldwide so that they can continue to provide food, fibre and fresh water, contribute to energy and climate sustainability and help to maintain biodiversity and protect ecosystem goods and services. It is a realisation that soil has an integral part to play in addressing the major existential issues facing the world today, and in fact Soil Security is, and has to be recognised as, one of those issues.

When an international coalition of scientists got together to form the Soil Carbon Initiative (see go.nature.com/onhgcv), convened by the United States Studies Centre and the Faculty of Agriculture and the Environment at the University of Sydney in early 2011, they realised that carbon may be part of a solution to climate change but Soil Security itself is the keystone issue. It is more than simply soil quality or soil health and currently research is focussing on its scientific, economic, social and policy dimensions and how they can be evaluated (quantitatively).

Discussion has widened in an attempt to bring policy on soil security in line with that on food and water security. In April 2012 the Australian government held a workshop on Soil Security at the UN in New York in relation to the Rio+20 negotiations. This event, hosted very ably by the Australian Ambassador to the UN, Gary Quinlan included presentations by Neil McKenzie, Rattan Lal and Alex McBratney. Then in July 2012 The University of Sydney held a much publicised one-day symposium. Speakers included Rattan Lal and Johan Bouma. A short symposium during Global Soil Week was organised in Berlin in late November (see www.globalsoilweek.org). The first global conference on soil security is tentatively planned for April 2014. Robert Hill, former environment minister and UN ambassador, has been integral to the organisation of all of these meetings.

The Australian government has played a key role in bringing Soil Security to world attention. Both Kevin Rudd and Bob Carr, as foreign ministers, have been briefed on the subject. Of course, the recent statement by Prime Minister Gillard and her appointment of ex-Governor-General Michael Jeffrey as the official national advocate on soil, shows that soil policy has reached a level of importance in government circles. Currently through the DAFF Primary Industries Steering Committee (PISC) process a National Soil Research Development and Knowledge Exchange Strategy is being developed for discussion and publication in 2013. One of its aims may well be securing Australia's soil.

Grass roots movements have brought soil to national attention. We are fortunate at the present time to have advocates like Michael Jeffrey, Penny Wensley and Robert Hill. Soil science has been searching for a grand narrative that plays out globally, Soil Security provides that, and places soil scientists in a key position for contributing to the earth's future sustainability.

Ed note: Background and context to the PISC process is given at <http://www.npirdef.org/> Those interested in receiving the Soils RD and E strategy communiqué can email soilsRDE@daff.gov.au with subscribe in the subject line or see [http://www.daff.gov.au/natural-resources/soils/national soil rd and e strategy](http://www.daff.gov.au/natural-resources/soils/national_soil_rd_and_e_strategy)

Australian terrain group mapping meeting Canberra

Simon Proust NRCMA

The Prime Minister gave a speech to the National Farmers Federation Congress in October in Canberra. The speech among other things mentioned the importance of soils and how "it underpins biodiversity and the provision of ecosystem services". This seemed to be a catalyst for a workshop hosted by the National Committee on Soil and Terrain (ACLEP) which invited about forty soil scientists, researchers, extension officers, policy officers and consultants from CSIRO, State agencies, CMAs, consulting firms and DAFF. The aim of the workshop was to develop a report to be put to the Commonwealth to ensure we have a completed soils inventory across the nation with a view to make better informed land and soil management decisions.

The workshop was opened by former Governor General Major General Michael Jeffrey, the National Advocate for Soil Health whose principal role is to raise awareness and improve the communities understanding of soil. No mean feat.

The two day workshop hosted and facilitated by Neil McKenzie, CSIRO Land & Water division at Black Mountain in Canberra, and commenced with a discussion on our incomplete set of national soils data. The national dataset varies widely from stat to state- for example NSW has an inventory of 1100 soil sampling sites which ideally should cover 3200 sites. Participants and speakers went on to discuss and identify priority areas, data management and soils information accessibility and the current coverage of data. Other issues were the areas that needed research and development and very importantly extension, engagement and education.

The differing soil information needs of Commonwealth and State governments for making soil security and land use planning policy decisions were highlighted. This contrasted with the needs of farmers who want pertinent information that is readily digestible and accessible at a farm scale level. Somewhere in the middle sit the needs of state and local government agency staff, planners, consultants and developers who want soil information at a local, catchment and landscape level. Finally there are the soils needs of research scientists who, for example, require data whilst developing soil carbon sequestration models. Like soil, it is complex. The report to be forwarded to DAFF in February and presented to the national Soil Strategy RD&E Reference Panel in April aims to cover all the needs mentioned and if given the resources is up to the challenge. Watch this space.

Ed note: presentations from this event are available at:

<http://www.clw.csiro.au/aclep/documents/NationalSoilProgramWorkshop.zip>

Nimbin Preschool celebrates World Soil Day

S Alt, NSW DPI

Nimbin preschool helped celebrate world soils day with a soil texturing activity. The children looked at two local volcanic derived soils, comparing the differences between soil from the top of the hill and from down by the creek.

One of the parents taught the children to make a 'bolus' of soil by kneading up a handful of soil with water, and making ribbons and rods to check the clay content. They also talked about living things in the soil and read a book about life in the leaf litter.

World Soil Day aims to draw more attention for the natural resource on which all life depends: the soil!
World Soil Day falls on the 5th of

December each year on the birthday of the King of Thailand, in honour of his great efforts to promote soil science and the conservation of soil resources conservation. All the Dirt would love to hear about your world soils day activities you can email alldirt@industry.nsw.gov.au



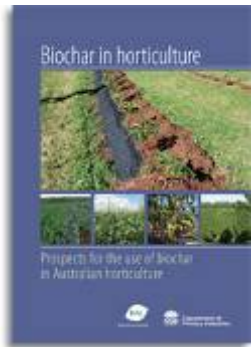
"The soil is the great connector of lives, the source and destination of all. It is the healer and restorer and resurrector, by which disease passes into health, age into youth, death into life. Without proper care for it we can have no community, because without proper care for it we can have no life."

— Wendell Berry, *The Unsettling of America: Culture and Agriculture*

New Publications

Biochar in Horticulture: Prospects for the use of biochar in Australian horticulture.

J Cox, Dr A Downie, A Jenkins, M Hickey, R Lines-Kelly, A McClintock, J Powell, Dr BP Singh, Assoc Prof L Van Zwieten



Biochar in horticulture was commissioned by Horticulture Australia Ltd to help horticultural industries assess the potential of biochar for use in their crops.

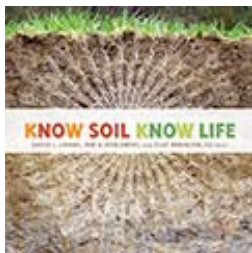
A team of experts have reviewed the scientific literature to provide up to date, peer-reviewed

information on soil carbon science and policy, biochar production and risks, biochar's influence on soils and plants, and economics of its use.

<http://www.dpi.nsw.gov.au/agriculture/resources/soils/soil-carbon/biochar-in-horticulture>

Know Soil, Know Life

David L. Lindbo, Deb A. Kozlowski, and Clay Robinson, editors



High school or undergraduate students will find this book an easily accessible resource. But it is for all ages. Everyone interested in being more environmentally conscious—the urban

dweller, the young naturalist, the home gardener—can learn about the diversity of soils and their importance in our environment. View contents at

<https://portal.sciencesocieties.org/Downloads/pdf/B60991.pdf>

NSW/ACT Trends in land management practices



A series of *fact sheets* capturing the changes in farm practice in 5 major industry sectors in 14 NSW & ACT natural resource management regions. Similar fact sheets are being prepared for other states. Compiled using the Australian Bureau of Statistics' Agricultural

censuses for 1995–96, 2000–01 and 2010–11 (which survey all agricultural businesses), and the biennial ABS' Agricultural Resource Management Surveys.

The fact sheets will assist regions and project proponents to develop proposals for the new Caring for our Country program.

<http://www.daff.gov.au/natural-resources/soils/reporting-on-trends-in-improved-land-management-practices>

The relationship between land management practices and soil condition and the quality of ecosystem services delivered from Agricultural land in Australia

S Cork, L Eadie, P Mele, R Price and D Yule



This new publication concludes that even modest improvements in soil condition can be significant in economic terms, both private and public. Addressing soil carbon, acidity and erosion results in better yields of agricultural products and public benefits such as clean

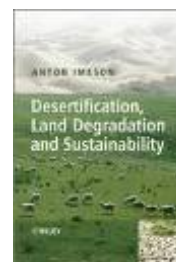
water, protection from wind and water erosion and floods, reduced risks from pests and diseases and reduced need to use agricultural chemicals. See <http://daff.gov.au/natural-resources/ecosystem-services/relationships-between-land-management-practices-soil-condition>

Developments in Soil Classification, Land Use Planning and Policy Implications.

Shahid, Shabbir A.; Taha, Faisal K.; Abdelfattah, Mahmoud A. (Eds.).

Recognising the dearth of scientific soil inventories for arid areas, this new text provides a storehouse of information on soil that includes inventories, material on databases, and details of policy developments, detailing soil classification from many countries

Desertification, land degradation and sustainability



The theme of this book is human impact on the earth from the perspective of the soil and its functions, covering geology, culture and historic and present day desertification.

<http://www.wiley-vch.de/publish/en/books/ISBN978-0-470-71449-2>

Web resources

Terms of reference for newly appointed soils advocate can be viewed at http://www.daff.gov.au/natural-resources/soils/advocate-for-soil-health/terms_of_reference_for_the_advocate_for_soil_health

SoilMapp

as showcased in All the Dirt winter 2012 is now up and running for *ipad* users see <http://www.csiro.au/soilmapp>

Feel like expressing yourself publicly for soils check out how you can contribute to the **European geosciences union (EGSU) blog** at <http://egusssd.wordpress.com/participate/>
The EGSU also have interesting stories about using photography in teaching geosciences (<http://egusssd.wordpress.com/2012/12/20/photography-as-a-tool-for-teaching-support-in-geosciences-an-example-for-soil-sciences-the-colour-of-the-age/>), teaching primary school students about soils (<http://egusssd.wordpress.com/2012/12/26/little-soil-scientists/>) and images of soil erosion (<http://egusssd.wordpress.com/2012/10/02/images-of-soil-erosion/>)

US soil health initiative

The USDA has launched a national soil health initiative 'Unlock the secrets in the soil', to educate farmers and the public about the positive impact healthy soils can have on productivity, conservation and food security. The website includes a healthy productive soils checklist for growers. <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/soils/health>

Victoria DPI has produced an interactive webpage illustrating the **greenhouse gas cycles in agriculture**, which outlines the main sources of each gas, and mitigating activities available to producers. <http://www.dpi.vic.gov.au/agriculture/farming-management/weatherclimate/understanding-carbon-andemissions/greenhouse-gas-cycles>

Common Ground 191 is a large scale art project by artist Gary Simpson. His vision involves creating a large series of 196 abstract panels created with a mixture of soil collected from 193 countries. <http://www.commonground191.com/>

Ground cover is now a **National Indicator of Sustainability** See: <http://www.environment.gov.au/sustainability/measuring/indicators/index.htm>

The **International Union of Soil Scientists (IUSS)** regular bulletin can now be viewed online at <http://www.iuss.org/>

Simply sustainable soils

This UK brochure outlines six simple steps to improve the performance, health and long-term sustainability of soils, covering soil structure, drainage, compaction, soil organic matter, pH and nutrients and biological health. http://www.leafuk.org/resources/000/595/601/LEAF-Simply_Sustainable_Soils.pdf

Pictorial history of Queensland soil conservation

To view retired soil scientist Bruce Careys e-book go to https://dl.dropbox.com/u/47871336/achieving%20soil%20conservation%20in%20queensland_pictorial%20history.pdf

A new fact sheet on **rhizobial inoculants** from Grains Research and Development Corporation (GRDC) is available online at <http://www.grdc.com.au/Resources/Factsheets/2013/01/Rhizobial-Inoculants>

Founded in 2008 the **Global Phosphorus Research Initiative (GPRI)** is collaboration between European, Australian and North American research institutes. The main objective is to facilitate quality interdisciplinary research on global phosphorus security for future food production <http://phosphorusfutures.net/>

The conundrum of carbon farming and measuring soil C. Listen to recent ABC radio interview at <http://www.abc.net.au/radionational/programs/backgroundbriefing/the-carbon-conundrum/4532742>

Videos online

The **global soils week** video **Lets talk about soil** can be viewed at www.globalsoilweek.org

The Soil Science Society of America has made a series of soil videos named **The Story of Soil**, check them out at www.iheartsoil.org

Students from Technical University in Berlin have created short videos to raise the awareness of soil. They produced several videos, including **The day soil died**; Check out www.youtube.com/user/mediasoil <http://www.youtube.com/watch?v=D50s34iHdYc>

FAO has produced a video titled **Soils**, see here www.youtube.com/watch?v=l8TYaL2DAPA and another named **Let's Talk About Soil** <http://vimeo.com/53618201>

FAO celebrating **World soils day** and **international year of soil 2017** view the You Tube video at <http://www.fao.org/globalsoilpartnership/news/detail/en/c/166808/>

The Dust Bowl documentary chronicles the man-made ecological disaster in the USA. To view on the web go to <http://www.pbs.org/kenburns/dustbowl/>

Soil Secrets, a recent landline story focuses on the last frontier, most diverse habitat around, the soil. To watch this half an hour documentary click here <http://www.abc.net.au/landline/content/2012/s3630158.htm>

Undercover farmers a new you Tube video <https://www.youtube.com/embed/nWXCLVCJWTU>

Research Papers

Volume 69 (9) of **Crop and Pasture Science** is a special issue dedicated to the **Australian legume symposium**. Papers cover temperate and subtropical pasture legumes, contribution to soil nitrogen, new cultivars and pre-inoculated rhizobia survival and factors affecting successful establishment.

Field studies research summary for biochar has been published by the International Biochar Initiative (IBI). It includes peer reviewed and published literature. View the document at http://www.biochar-international.org/sites/default/files/IBI_Field_Studies_Research_Summary_final.pdf.

Biochar and Earthworm Effects on Soil Nitrous Oxide and Carbon Dioxide Emissions
C A. Augustenborg, S Hepp, C Kammann, D Hagan, O Schmidt and C Müller
Journal of Environmental Quality 2012 41: 4: 1203-1209

Biosolids can boost soil phosphorus levels for years.
United States Department of Agriculture - Research, Education and Economics.
ScienceDaily, 23 Jan. 2013. Web. 30 Jan. 2013.
<http://phys.org/news/2013-01-biosolids-boost-soil-phosphorus-years.html#nwl>

Broiler Litter Type and Placement Effects on Corn Growth, Nitrogen Utilization, and Residual Soil Nitrate-Nitrogen in a No-Till Field
A Adeli, H Tewelde and JN. Jenkins
Agronomy Journal 2012 104: 1: 43-48

Can a Labile Carbon Test be Used to Predict Crop Responses to Improve Soil Organic Matter Management?
S. T. Lucas and R. R. Weil
Agronomy Journal 2012 104: 4: 1160-1170

Characterization of Slow Pyrolysis Biochars: Effects of Feedstocks and Pyrolysis Temperature on Biochar Properties
S Kloss, F Zehetner, A Dellantonio, R Hamid, F Otner, V Liedtke, M Schwanninger, MH. Gerzabek and G Soja
Journal of Environmental Quality 2012 41: 4: 990-1000

Crops' water use efficiencies in temperate climate: Comparison of stand, ecosystem and agronomical approaches

T Tallec, P Béziat, N Jarosz, V Rivalland, E Ceschia.

Agricultural and Forestry Meteorology, 168 69-81 January 2013.

The paper indicates how the environmental impact of agriculture can be reduced by cropping practices, as crops such as maize or rapeseed have been found to act as carbon sinks, extracting CO₂ from the atmosphere. While, others like sunflower and silage maize are carbon sources.

Effects of Glyphosate and Two Herbicide Mixtures on Microbial Communities in Prairie Wetland Ecosystems: A Mesocosm Approach

S Sura, M Waiser, V Tumber, JR. Lawrence, AJ. Cessna and N Glozier

Journal of Environmental Quality 2012 41: 3: 732-743

Effect of subtropical perennial grass pastures on nutrients and carbon in coarse-textured soils in a Mediterranean climate

R. A. Lawes A B and M. J. Robertson A

Soil Research 50 2012

Environmental Benefits of Biochar

JA. Ippolito, DA. Laird and WJ. Busscher

Journal of Environmental Quality 2012 41: 4: 967-972

Riparian Buffer Strips as a Multifunctional Management Tool in Agricultural Landscapes: Introduction

MI. Stutter, WJ. Chardon and B Kronvang

Journal of Environmental Quality 2012 41: 2: 297-303

Relations between Retired Agricultural Land, Water Quality, and Aquatic-Community Health, Minnesota River Basin

VG. Christensen, KE. Lee, JM. McLees and SL. Niemela

Journal of Environmental Quality 2012 41: 5: 1459-1472

A Review of the Cost-Effectiveness and Suitability of Mitigation Strategies to Prevent Phosphorus Loss from Dairy Farms in New Zealand and Australia

RW. McDowell and D Nash

Journal of Environmental Quality 2012 41: 3: 680-693

Securing soils for sustainable agriculture: A science led strategy

Published by the royal society of chemistry this report can be viewed at

http://www.rsc.org/images/081203%20OSCAR%20web_tcm18-222767.pdf

Soil Microbiology in Glyphosate-Resistant Corn Cropping Systems

NZ. Lupwayi and RE. Blackshaw

Agronomy Journal 2012 104: 4: 1041-104

The temperature response of soil microbial efficiency and its feedback to climate

S D. Frey, J Lee, J M. Melillo & J Six.

Nature Climate Change (2013) DOI:doi:10.1038/nclimate1796

<http://www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate1796.html>

Three long-term trials end with a quasi-equilibrium between soil C, N, and pH: an implication for C sequestration

M Conyers, P Newton, J Condon, G Poile, P Mele and G Ash

Soil Research 50 2012

The 127th volume of **Soil and tillage research** was a special edition dedicated to **Application of visual soil assessment**. There are two Australian papers included in the volume.

The use of visual soil assessment schemes to evaluate surface structure in a soil monitoring program

BW Murphy, MH Crawford, DA Duncan, DC McKenzie and TB Koen

Soil and tillage research 127 3-12 2013

Visual soil examination techniques as part of a soil appraisal framework for farm evaluation

DC McKenzie
Soil And Tillage 127 26-33 2013

Events

First International Controlled Traffic Farming Conference

25 - 27 February 2013
Toowoomba, Empire Theatre.
to express interest www.actfa.net

North Coast Regional Landcare Forum

7-8 March
Yamba
Program at [http://www.soilcare.org/North Coast Landcare Forum 2013 Program %20.pdf](http://www.soilcare.org/North_Coast_Landcare_Forum_2013_Program_%20.pdf)

13th International Symposium in Soil and Plant Analysis

9-12 April 2013
Queenstown New Zealand
<http://www.isspa2013.com/>
Symposium theme is New Opportunities for Soil and Plant Testing.
Abstract submission deadline 30 October 2012. Send abstracts to admin@isspa2013.com

The IUSS Global Soil C Conference

3-6 June 2013
Madison, Wisconsin, USA.
The IUSS Global Soil Carbon Conference is the first IUSS interdivisional and intercommissional conference that focuses on soil C in space and time, soil C properties and processes, soil C in relation to soil use and management, and the role of soil C in sustaining society and the environment. Abstracts are due by 1 Feb 2013 and can be submitted at <http://iuss-c-conference.org/>

5th International Contaminated Site Remediation Conference,

15-18 September 2013
Melbourne, Australia
Call for Papers <http://www.cleanupconference.com/call%20for%20papersc.html>
www.cleanupconference.com

The 11th International Conference of the East and Southeast Asia Federation of Soil Science Societies (ESAFS)

21 - 24th October 2013.
Bogor - West Java, Indonesia at the IPB International Conference Center (IPB-ICC),
The conference theme is: Land for Sustaining Food and Energy Security.
www.esafs11ina.org

Soil Change Matters' a symposium on understanding and monitoring soil change

25-26 March 2014.
Bendigo
The event is hosted and led by DPI Victoria

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