

Profile



Newsletter of the Australian Society of Soil Science Inc Issue 153 June 2008

SOIL ART BY PETER KOPITTKE



Peter Kopittke took this photo of a highly saline and sodic (ESP 100%) bauxite residue at Gove Peninsula (Northern Territory). More of Peter's soil art elsewhere in this issue.

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FROM ASSSI PRESIDENT STEPHEN CATTLE



After teeing off in my January Profile column about the lack of collaboration and funding of groups of ASSSI members (ie those employed by State Government departments, the CSIRO and universities), I thought it only proper that I should support these words with some data and observations on the Society's demographics. Utilising the back issues of Profile and Soils News that now grace the ASSSI website, I was able to locate varying amounts of membership data and information for the years 1958, 1968, 1978, 1988 and 1999, to add to our current membership database. Before I get to that data, though, I'd like to slide in a quick infomercial about the ASSSI newsletter archive. By going through all the back issues to track down past Federal office bearers (a full list now appears on the website), it was fascinating to see the evolution of newsletter content, newsletter appearance, the written style, the haircuts, the fashion sense of

Australia's soil scientists and the opining of the Presidents. On the last point, a number of past Presidents have written forcefully about the need for soil scientists to engage more with the community and to raise the profile of our profession. It seems that a lack of community recognition is a continuing burr under the saddle of ASSSI. On the second and third last points, pictures only started to appear in Soils News in the late 1970s, but some of the early photo-spreads of conferences and meetings (eg pages 12 and 13 of Soils News 60, July 1984) provide early clues as to why the 70s and 80s won't be remembered fondly by the fashionistas! So if your email goes down for the afternoon and you're at a bit of a loose end, I recommend a few hours of wistful surfing through this archive.

ASSSI demographics

Getting back to the Society's demographic shifts, I thought I'd kick off by revealing the age profile of our current membership. As can be seen in Figure 1, the Society has now reached the point where the Baby Boomers (born between 1946 and 1964) and the Generation Xers (born between 1965 and 1982) are level-pegging. I haven't drilled down through the data to see the exact numbers, but as ASSSI is receiving a steady influx of new, younger members, it is probably only a matter of months before Generation X is the dominant grouping.

This is a good reflection of the more recent Society meetings such as the 2006 conference in Adelaide, where there appeared to be a large contingent of students and younger soil scientists. I'm not sure why there is a dip in the number of members born in the sixties compared to the fifties and seventies; perhaps it reflects a lack of opportunities for soil science graduates back in the eighties when these people were graduating from universities, or perhaps it represents some sort of Australia-wide fertility decline caused by substance abuse during the 'swinging sixties'. As a child of that decade I'm not prepared to make the call either way...

ASSSI membership

Unfortunately we don't have historic data on the age profile of the ASSSI membership over the last fifty years, but we do have data on how the Branch memberships have ebbed and flowed. Figure 2 shows the current Branch membership, plus those of 1999, 1988, 1978, 1968 and 1958. The one wrinkle with this data is

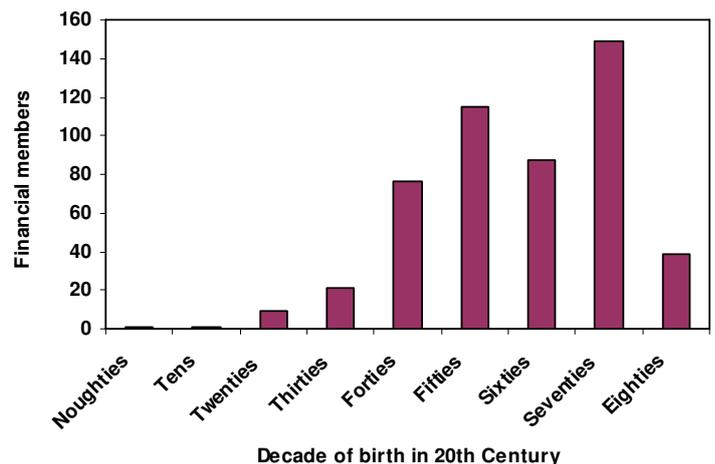


Figure 1. Age profile of financial members of ASSSI, May 2008.

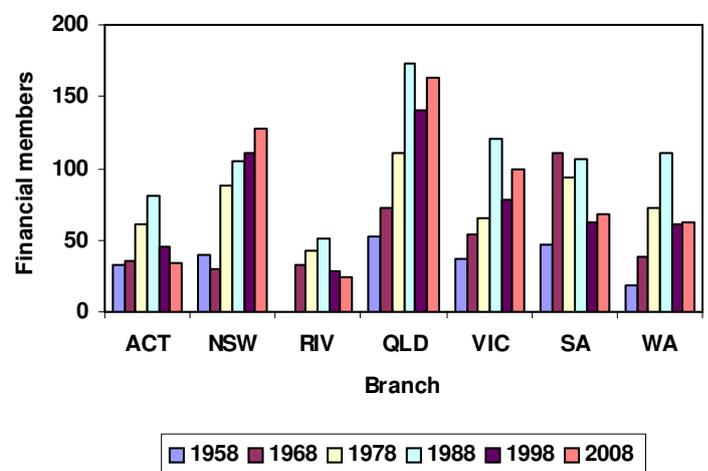


Figure 2. Branch membership over the last 50 years.

that the 1988 numbers are for total member numbers rather than financial members, so these data are over-estimates, but nevertheless they are indicative of the general trends. With the exception of the 1960s, Queensland has been the most populous branch of ASSSI throughout our history, while South Australia and New South Wales have generally fought it out for the number two position. Over the last four decades there has emerged a trend whereby the three eastern state branches of Qld, NSW and Vic have steadily grown their membership, whereas the ACT, Riv and WA branches reached their zenith in the seventies and eighties and have now fallen back to a lower equilibrium. Now that the ACT branch has been disbanded, the NSW branch membership has actually grown by a further 25 or so members, but this is not shown on Figure 2. The SA branch data is a little different in that membership was greatest in the sixties, before steadily declining back to a recent average of 60 or so members.

Employment

Presumably, this shift in SA branch membership fortunes largely reflects the ups-and-downs of the CSIRO-Waite Institute campus. Figure 3, which shows the main employers of ASSSI members over the last twenty years, adds further weight to this argument. Before drawing definitive conclusions from this data, I should point out that these numbers may be a bit rubbery, as I have derived them from the postal addresses given by financial members in 1988, 1998 and 2008. A sizeable proportion of ASSSI members have given their home addresses for correspondence, making identification of employer difficult or impossible, while in other cases the company or institution names given are difficult to categorise. I have also chosen to ignore a few employer categories, such as non-CSIRO Federal Government departments and commercial laboratories. Nevertheless, the resultant Figure 3 makes for dramatic viewing. The decline of CSIRO as an employer of financial members and the upswing of consultancies as employers of financial members are equally stark, while the universities have been consistently supplying around 150 financial members. State Government departments, by far the strongest contributor of members back in 1988, now contribute fewer members than the universities and the consultancies. These figures represent a dramatic shift in the workplaces of our members, and presumably the type of soil science work that they are engaged in. Judging by the sky-rocketing number of consultants joining the Society, the CPSS accreditation scheme must surely have a bright future.

From a strategic point-of-view, such data throws up some challenges for the Federal Council to grapple with; what are the requirements and expectations of our changing Society membership and how do we harness the evolving skill sets and contacts of our members to promote the Society and the Society's objectives? I don't know what all the answers are to these questions, but it looks like I should be asking a 35-year-old from the Queensland Branch who works for a consultant or in a university. If you're out there, Ms/Mr/Dr Average ASSSI Member, give me a call, I'm curious to hear your thoughts.

Until next issue, keep talking up soil science and bye for now

Stephen Cattle CPSS Stage 3

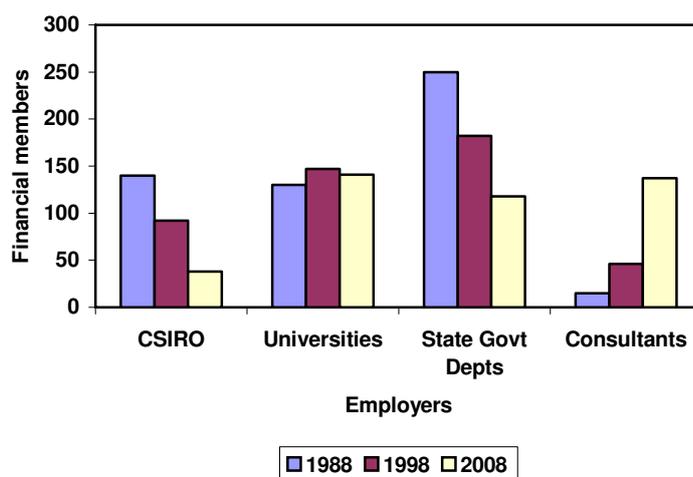


Figure 3. Main employer groups of ASSSI members over the last twenty years.

FROM THE EDITOR

Thanks for the great information Stephen. Thanks too to everyone who contributed to this issue of Profile. Please keep sending in your news and photographs, particularly any soil art pictures, ie any photograph that would make good abstract art on your living room wall! I am also on the hunt for innovative soil education that you may have come across, as I am undertaking a global review to help spread the word on great ways to inspire others about soils. So if you have done anything innovative yourself, or know of other useful techniques, please email me.

Rebecca Lines-Kelly rebecca.lines-kelly@dpi.nsw.gov.au

LETTERS

Soil types: Capitals or no capitals?

We are seeking some guidance on the correct use of soil type names. I would imagine that specific names from the Australian Soil Classification (ASC) should have capitals eg Vertosol, Sodosol, Ferrosol. But if you have a sentence using 'old terminology' such as 'Gullies are often found in solodic soils', I would imagine that would be a small letter. But as well as the ASC we also have names for specific soils in our Qld land management field manual. For instance, the Central Downs manual has soil types like Drayton, Tara, Calingunee - so they would have capitals. The Moreton Region manual has names like Soloths, Lithosols, and Shallow Hillside Soils, so I imagine that in this context they should have capitals. So you could have a sentence like 'Gullies are often found in solodic soils throughout Queensland with the Loamy Solodics as described in the Moreton Land Management Manual providing excellent examples! Any (brief) comments?

Bruce Carey Bruce.Carey@nrw.qld.gov.au

Congratulations

Congratulations on the way you have expanded and presented Profile! Not because you printed my letter, but because of the wealth of interesting material in it. I love the idea of the media release updates on the ASSSI website, and it's exciting to see the attention given to soil carbon. Perhaps we are on the verge of a new phase of interest and innovation in Australian soil science, and those who have kept going the solid progress of our knowledge about our soils - in the teeth of considerable disinterest from most policy makers! - might at last get due recognition.

Ann Young annbob@nsw.chariot.net.au

ASSSI was founded in 1955 to work towards the advancement of soil science in the professional academic and technical fields. It comprises a Federal Council and six branches (Qld, NSW, Riverina, Vic, SA and WA). Liability of members is limited.

ABN: 96 080 783 106

Website: www.asssi.asn.au

ASSSI OBJECTIVES

To promote the field of soil science

To further the expertise in soil science of members

To be a forum for discussion on soil science

To increase government and community awareness of soil science

To liaise and cooperate with other organisations in support of mutual interests

To encourage research and extension in soil science

To promote wise management of the soil resource throughout Australia

MEMBERSHIP

For all membership and CPSS application and renewal enquiries go to

<http://www.asssi.asn.au/members/memberships.htm> or contact the ASSSI executive officer Linda Bennison at office@asssi.asn.au, phone 03 5622 0804 or fax 03 5622 0806.

FEDERAL COUNCIL MINUTES

All minutes of ASSSI Federal Council meetings are available online to members at

<http://www.asssi.asn.au/MO/general/downloads.php>

PROFILE CONTRIBUTIONS

All contributions to Profile are welcome and can be sent to the editor at 02 6626 1319 or

rebecca.lines-kelly@dpi.nsw.gov.au, or PO Box 468 Mullumbimby NSW 2482. Email contributions are preferred. Please email photos as separate attachments.

PROFILE DEADLINES 2008: 15 August, 15 November.

PROFILE ADVERTISING

Advertising in Profile is welcome, and must be relevant to some aspect of soil science.

Rates are: \$220 full page, \$110 half page, and \$55 quarter page.



CHANGING OUR HABITS WITH ONLINE PAYMENTS



AASSI executive officer Linda Bennison reports on what a difference online payments have made to AASSI administration.

In 2007 we trialled an online payment system. A total of 441 members used the system between January and May with a total of \$63,663 received by the end of May 2007.

This year, we continued to offer the service and the results have been encouraging. 532 members have used the online system with a total of \$89,610 received by mid-May. Cheques being processed manually through the federal office have declined from 73 in 2006 to 67 in 2007 and are currently at 39 in 2008.

Feedback has been positive although there are some shortcomings with the system; namely that Conference Online rather than the Australian Society of Soil Science Inc appears on the credit card statement and that members are called registrants. The software was designed for conference registrations, not subscription payments; however Conference Online are in the process of adapting the software for subscription dues collection which we hope will be more 'member friendly' in 2009.

Perhaps the most significant change witnessed with the online system is the increased number of membership applications being received. In 2006 the print version of a membership application form was available on the web. In 2007 an electronic version with online payment was made available. This improved access to the application form, along with the change in membership criteria to include persons interested in soil science, saw membership applications increase from 38 in 2004 and 42 in 2005, to 72 in 2006 and 75 in 2007. This year the trend continues with 48 applications received by mid-May.

Thank you to everyone for being patient with the online system. It isn't perfect but it is saving us a considerable amount of time by reducing manual processing with the end result being more time spent on other Society activities. #

The CPSS Board and members of the Federal Council have been revising the CPSS Handbook and updating the AASSI strategic plan. Both documents are now in the final stages of revision and will be tabled at the June meeting of the Federal Council. Once approved the documents will be circulated to all members of the Society and placed on the Society web site for ready access by members of the Society and the general public.

UPDATE ON SOILS 2008 CONFERENCE



Vince Neall, Chair of the Soils 2008 organising committee, reports on conference progress.

A total of 280 abstracts were received for both oral and poster presentation, and conference symposia will now comprise the following themes and theme speakers: The water crisis (Neil McKenzie); Confronting salinity (Kevin Goss); Soil acidification (Robert White); Valuing natural capital (Murray Patterson); Sustaining soil biological health & function (Richard Bardgett); Soils & the carbon economy (Stewart Ledgard); Integrated environmental management – plant nutrition; Integrated environmental management – soil quality; Integrated environmental management – emission/ runoff/ leaching & mitigation; Education - realising potential; Joint IUSS Commission meeting:

4.1 Soils & the environment & 4.3 Soils & landuse change; Joint IUSS Commission meeting: 4.1 Soils & the environment & 4.2 Soils & human health; Soils - landscape developments & dating; Volcanic soils (poster only).

The Committee has maximised the opportunity for participants to give oral presentations by arranging four concurrent sessions. Daniel Hillel will present an opening plenary address for the Integrated environmental management symposia, and Paul Reynolds (NZ Ministry of Agriculture) will present a closing day plenary on new opportunities and future economies. All abstract submitters will be contacted in the latter part of May to advise of the status of their abstract and its accepted presentation form. Full abstracts of accepted presentations are to be forwarded to the conference organisers by 1 July 2008 & early bird registration closes 22 September 2008. Find out more at <http://conferences.massey.ac.nz/Soils2008/index.htm>. #

VALE JOHN HOLMES 1921-2008

John W. Holmes died on 13 May 2008. A formal obituary will appear in the next issue of Profile. In the meantime, below is a summary of the case made when he was awarded the 2002 Prescott Medal for his outstanding contribution to soil science.

Professor Holmes made a significant impact on soil science during the latter half of the 20th century in Australia, particularly in the area of soil physics. He tackled difficult and highly relevant problems plaguing Australia, notably salinity, ground water contamination, and the highly inefficient use of irrigation water in agriculture. His work on water budgets under different vegetation types, for example, continues to be relevant to our understanding of how soils function in the environment. He did some of the critical early work on neutron moisture meters, which formed the basis for the current widespread use of these instruments today. This technology has withstood the test of time even while newer, dielectric methods for measuring water content flood the market.

He wrote over 70 peer-reviewed papers, chapters and books during his career. His textbook, *Soil Physics*, (co-authored with Tim Marshall and Calvin Rose – now in its 3rd edition) continues to be used as a teaching resource for level-3 university courses across Australia and is widely acknowledged to be an excellent reference book in irrigation technology.

He contributed widely to the natural-sciences community through various organisations: for example, he was president of the Royal Society of SA, Vice-President of Commission 6 of ISSS, and Chairman of the SA Branch of the Geological Society of Australia. #

FROM THE ARCHIVE

In the March issue we featured a quote from the first issue of the society's newsletter, *Soil News*, published in January 1957. Below is an excerpt from a review article 'Soil science in Australia - an appraisal' by JA Prescott published in the second issue of *Soil News* in June 1957.

It is obvious, therefore, that from the beginning of the 20th Century there was an awareness of the importance of chemical, physical and microbiological factors in determining the levels of soil fertility in Australia. The period prior to the First World War saw Guthrie's advocacy of soil surveys, the work of Green and Ampt on soil permeability, and that of Grieg-Smith on soil microbiology.

This background also influenced the University of Adelaide in determining its policy when establishing the Waite Institute. AJ Perkins, who had succeeded Lowrie at Roseworthy and who later became Director of Agriculture in South Australia, played an important part over the period 1915-1921 in assisting the Council of the University to establish its policy in this matter with the result that "agricultural soil problems, chemistry, microbiology, survey of the soils of the State, crop and fodder investigations" were placed first among the possible lines of investigation and guided the University in its search for the foundation staff of the Waite Institute.

The establishment of this Institute in 1921 and of the CSIR in 1926 may be taken as convenient starting points for the modern developments in Soil Science in Australia. Most people will agree that the two most important aspects of this development have been: (1) the recognition of the importance of the trace- or micro-elements, in addition to phosphorus, in determining the fertility levels of many Australian soils, and (2) the achievement in the way of formal soil surveys and their interpretation. There will be unanimity with respect to the need for carrying on soil surveys, and it would be rash to assume that the chapter on micro-elements in plant nutrition is approaching completion in view of the fact that both sodium and chlorine have recently been added to the list. It is one thing, however, to prove that these elements are essential for plant growth and that economic plants respond to their use as fertilisers on appropriate soils. It is another thing altogether to establish their functions in the physiology of plants and to establish the soil factors that determine their availability to plants. Much more is known about the role of phosphorus and nitrogen than in 1925, but little about potassium and varying amounts about the micro-elements. It is in the study of biochemistry of plant growth that progress is called for.

Read more of JA Prescott's overview of Australian soil science's early years at <http://www.asssi.asn.au/MO/profile/profilearchive.php>. #

CPSS BOARD REPORT

Graham Price reports on CPSS developments.

To date 70% of CPSSs have submitted OPD diaries and gained accreditation in 2008. A further 10% have paid their fees and are still to submit their diaries. May I encourage all those with outstanding fees and/or diaries to act urgently, to maintain their accreditation for 2008? The deadline is 30 June. The CPSS Accreditation Board is due to meet again on 30 May. Any Society member interested in gaining CPSS accreditation should submit their CPSS application and OPD diary as soon as possible.



Lapsed CPSS re-admission form available on-line

CPSSs who have allowed their accreditation to lapse are encouraged to renew their accreditation. Arrears do not apply to accreditation and the Society wishes to expand the number of accredited members as part of its professional development focus.

2008 CPSS accreditation approved to new applicants

Applications this year have been of a high standard; delay in processing has been due to not receiving referee reports, and minor revisions with OPD diaries. Congratulations to the following applicants who now have 2008 CPSS accreditation.

| | | |
|--|---|--|
| <p>Dr Chris Dorahy CPSS STAGE 3 ableblue Pty Ltd 450 Haydens Rd NAREEN VIC 3315 Phone: 0428 798 519 dorahy42@hotmail.com</p>  | <p>Mr Faron Mengler CPSS STAGE 2 Otek Australia Pty Ltd Building A Unit 2 661 Newcastle St LEEDERVILLE WA 6007 Phone: 08 9227 9000 fmengler@otek.com.au</p>  | <p>Ms Kelly Baker CPSS STAGE 1 FSA Consulting 11 Clifford St PO Box 2175 TOOWOOMBA QLD 4352 Phone: 07 4632 8230 kelly.baker@fsaconsulting.net</p>  |
| <p>Mr Glenn Marriott CPSS STAGE 1 Ag-Challenge Consulting Pty Ltd PO Box 571 WARRAGUL VIC 3820 Phone: 03 5623 4788 glenn@ag-challenge.com.au</p>  | <p>Mr Joshua Ryan CPSS STAGE 1 URS Level 3 116 Miller St NORTH SYDNEY NSW 2060 Phone: 02 8925 5667 Joshua.Ryan@urscorp.com</p>  | <p>Mr Craig Scanlan CPSS STAGE 1 University of Western Australia MO 87 35 Stirling Highway CRAWLEY WA 6009 Phone: 08 6488 3735 craigs04@student.uwa.edu.au</p>  |

Associate CPSS accreditation

Students studying soil science at a tertiary institution are encouraged to apply for CPSS Associate accreditation. CPSS Associate is a modified version of CPSS accreditation whereby students need to continue to make satisfactory progress with their tertiary study to gain accreditation. It allows students to become familiar with the CPSS scheme and allows them to apply for re-classification at no cost to the relevant CPSS stage after they complete their studies.

There are to advantages to Associate CPSS accreditation. Graduates are aware of the value of ongoing professional development in their soil science career, and they can enter the job market with professional accreditation. Congratulations to Georgina Holbeche from the University of WA who has maintained her Associate CPSS in 2008. #

CPSS NOT ONLY FOR CONSULTANTS

Pam Hazelton

Lecturing in soils in the Infrastructure and Environment School of the Faculty of Engineering at UTS has given me opportunities to work with a variety of professionals, most of whom are accredited in their field. My CPSS accreditation is seen as appropriate by my colleagues and desirable for the prestige of the school and the faculty. Accreditation and membership of CPSS adds status and credibility to my courses. The commercial arm of the university emphasises accreditation of the principals in tender contracts and it is also essential for expert witnesses in specific soil matters in the Land and Environment Court.

RON SMERNIK WINS FREDERICK WHITE PRIZE

Sally Smith, University of Adelaide, reports on Ron Smernik's recent prestigious award.

Ron Smernik (right) was recently awarded the prestigious Frederick White Prize of the Australian Academy of Science. Ron has a postdoctoral position in the School of Earth and Environmental Sciences at the University of Adelaide. The focus of his research is organic matter and he was recently awarded an Australian Research Council QE II fellowship to carry out research on the influence of organic matter on the toxicity and movement of organic pollutants in soils and sediments.



Photo: Irene Dowdy, ID Photographics

Citation

The citation for the Frederick White Prize read:

Ron Smernik is a chemist, whose work focuses on development and application of innovative and sophisticated nuclear magnetic resonance (NMR) techniques to enable accurate and detailed quantitative characterisation of soil properties. He is playing an increasingly significant role in revolutionising our understanding of the chemistry of different organic and inorganic components that determine the role of soils as 'storehouses' for carbon, essential plant nutrients and pollutants. His contributions range from development and enhancement of NMR techniques to application of the results to increased understanding of soil processes and their significance in global carbon cycling and management for sustainable agriculture.

Doing science in the dirt

In his presentation at the peak 2008 Academy event 'Science at the Shine Dome' entitled 'Doing science in the dirt', Ron stressed the vital part played by soils in the economy and the environment. These roles are of no surprise to members of ASSSI and to agricultural scientists, but are generally unappreciated in other disciplines.

His message was that old methods of extracting soil carbon destroyed or altered much of the material and that NMR allows separation without maltreating the soil. In other words what we thought is known about soil carbon turns out to be quite wrong and there is a lot of soil carbon that still needs identifying.

Ron's research involves characterising soil organic matter using these new techniques and determining how

variations in organic matter chemistry affect soil properties and hence lead to new perspectives on a vital global resource.

His talk was very relevant to understanding carbon dynamics in relation to global carbon cycling, which was the topic of the main Academy symposium 'Dangerous climate change: is it inevitable?', but sadly Ron's point that soil organic matter represents a larger pool of carbon than terrestrial biomass and atmosphere combined did not receive much emphasis. Members of ASSS can do much to promote soil science in this regard.

To find out more about Ron and his research and publications, go to his webpage

at <http://www.adelaide.edu.au/directory/ronald.smernik>. #

The Frederick White Prize of the Australian Academy of Science recognises an outstanding contribution by a scientist under 40 engaged in research of intrinsic scientific merit which has an actual or potential contribution to community interests, to rural or industrial progress or to the understanding of natural phenomena. Relevant areas of research are mathematics, physics, astronomy, chemistry; the terrestrial and planetary sciences. (see Academy of Science Web page <http://www.science.org.au/aashome.htm>)

RIVERINA BRANCH NEWS

Riverina Branch reports on their recent activities.

The Riverina Branch met in March at CSIRO Griffith after a long absence. We heard from Jim Ayars, USDA, about the water requirements of vegetables in arid environments. John Hornbuckle and Evan Christen launched their long anticipated compilation of the soil chemical and physical properties of the soils of the Murrumbidgee, Coleambally and Murray irrigation areas, accompanied by Google Earth maps. This invaluable work (see next page) will be available via the Riverina Branch page on the ASSSI website as well as through www.clw.csiro.au/publications/science.

In the afternoon we inspected two field sites in the Griffith area. The first site is developed for the treatment of winery waste water using Subsurface Horizontal Irrigation Technology, a non-patentable acronym. At the second site we saw the impact and monitoring of spatial variation in irrigation efficiency for wine grapes, a site that would be suitable for the 2010 World Soils Congress field tours. #



Kyra Boissery , right, winner of Riverina Branch's 2007 Student Prize in Soil Science at Charles Sturt University, is presented with her certificate (the cheque comes later) by Branch president Jason Condon.

QLD BRANCH PLANS SOIL CONSERVATION HISTORY

Qld branch has submitted an application for Q150 funding (celebrating 150 years since the birth of Queensland in 1859) to support the publication of a book and poster on the history of soil conservation in Queensland. The book will be edited by Branch secretary Bruce Carey who has taken a keen interest in this topic since he presented a series of soil conservation remembrance evenings on the Darling Downs in 2006. While the book will concentrate mostly on the soil conservation effort applied to cropping lands, grazing lands will also be featured as they make up a far higher proportion of land use in Queensland. Bruce welcomes any suggestions on topics that could be included in the book. Email him at Bruce.Carey@nrw.qld.gov.au. #



Above: Sodic soil particles that have eluded erosive rainfall by sheltering underneath a pebble. Photo: Peter Kopittke

NEW MEMBERS

SA

Sean Forrester

Anitha Kunhikrishnan

Narges Milani

Balaji Seshadri

Beng Umali

Samuel Walters

NSW

Alisa Bryce

Andrew Kinsella

Adam Sullivan

Danda Sapkota

Adrienne Ryan

Jason Edwards

RIVERINA

Kenneth Bates

Matthew Gardner

QLD

Tessa Chamberlain

Tami Mills

Timothy Rohde

Denise Batten #

NSW IRRIGATION SOILS

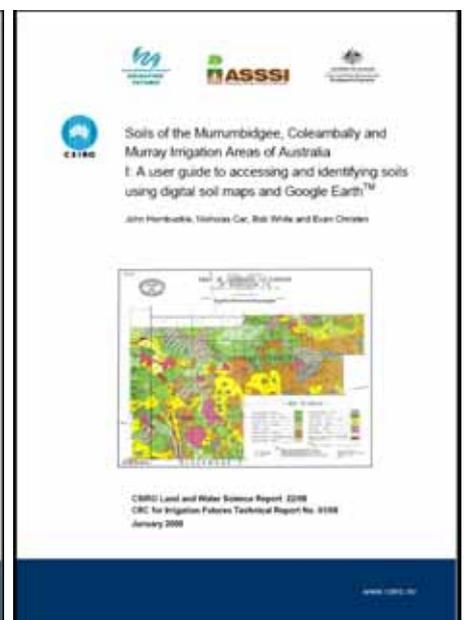
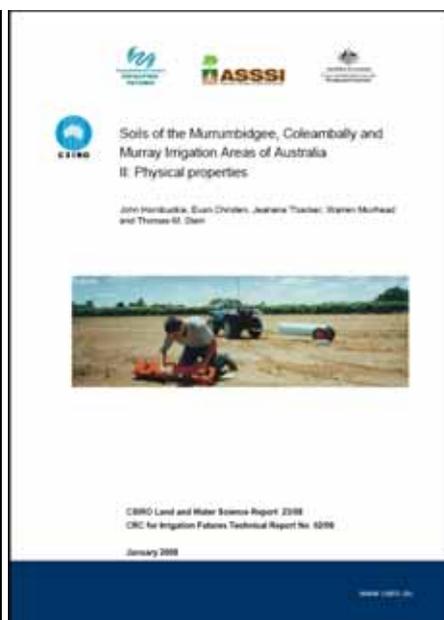
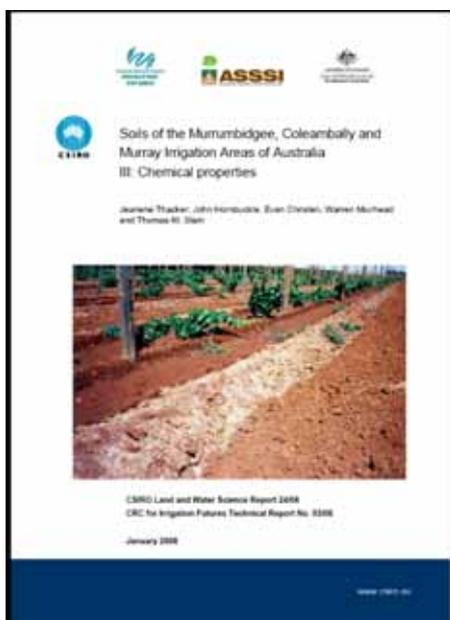


A series of three reports on the soils of the Murrumbidgee, Coleambally and Murray irrigation areas are now available through ASSSI's Riverina Branch webpage at <http://www.asssi.asn.au/MO/riverina/riverinapublic.php>. The first report describes how to access all the available soil maps via Google Earth™ software. Authors are John Hornbuckle, Nicholas Car, Bob White and Evan Christen. The second report covers physical properties; authors are John Hornbuckle, Evan Christen, Jeanene Thacker, Warren Muirhead and Thomas-M. Stein. The third report covers chemical properties: authors are Jeanene Thacker, John Hornbuckle, Evan Christen, Warren Muirhead and Thomas-M. Stein.

The aim of the exercise has been to make the soils information for the Murrumbidgee, Coleambally and Murray irrigation areas easily available to anyone with an interest, whether farmer, agency staff or academic. The 90 individual soil types mapped in these regions have been categorised into six groups to simplify understanding of these soils and allow the relatively sparse available data on each soil type to be drawn together to provide a larger data set for each group and hence greater understanding of the soil properties.

This soils data collation work was started in 1999 with the report 'Physical properties of soils in the Murrumbidgee and Coleambally irrigation areas'. With the support of the Riverina Branch of ASSSI for Jeanene Thacker's studentship this report was updated to include soils of the Murray irrigation area and a report on the chemical properties of the soils was drafted. Support from the CRC for Irrigation Futures enabled the reports to be finalised, and digitised maps prepared and made accessible through Google Earth™.

The report's introduction finishes with these words: 'We dedicate this series of reports to all the soils scientists past and present who have worked in these regions, each adding their contribution to the greater understanding, and to the Riverina Branch of the Australian Soil Science Society which has kept the critical mission of understanding and managing our soils alive.' #



DEVELOPMENTS IN SCIENTIFIC JOURNALS

NZ soil scientist Brent Clothier is also Joint Editor-in-Chief of Elsevier's international journal *Agricultural Water Management*, and earlier this year attended an editors' meeting in Singapore. Key points from the meeting are listed below.



- Publications, and publication quality, from China and Brazil are rising at 10% and 8% respectively per annum, compared to just a 3% rise in publications in the US. China now publishes as many papers as Germany.
- Because of searchable databases, scientists are now spending 5% less time searching for information, and 5% more time reading articles. Furthermore, scientists are now reading 25% more papers, and reading articles from twice as many journals.
- Despite pressures from Open Access (author pays) journals, there is still a strong demand for peer reviewed, subscription journals that Elsevier publishes. Editors and referees are, Elsevier considers, the imprimaturs of quality, and in return Elsevier is increasingly providing them with editorial, database and software support.
- Elsevier is developing blog and social networking tools for they see a future in tapping into the 'wisdom of the crowd'. Elsevier have just established a wiki website for Topic Pages where contemporary issues can be discussed and new knowledge updated through a web portal. As well, they are setting up a live chat on-line forum for discussion of editorial matters between authors and editors.
- Elsevier is developing a PERK website (Publishing Ethics Resource Kit) to assist Editors by provision of policy, software tools and template letters in order to deal with unethical behaviours such as plagiarism, multiple publication, inappropriate authorships, and fraud. #

Source: *New Zealand Soil News* April 2008.

STATE OF QUEENSLAND'S SOILS

Queensland's 2007 State of the Environment report has been released and is available online from the EPA website (www.epa.qld.gov.au).

The report summarises the current condition of the environment and, not surprisingly, has found that the State's current rate of resource consumption is not sustainable in the long term. Several members of the ASSSI QLD Branch were involved in writing the report. The overwhelming theme common to all soil sections of the report was that a lack of reliable, current data made it very difficult to access the current state of Queensland's soils. Furthermore, the actions detailed in the report appeared to be quite limited and fragmented.

Soil fertility

- Typically, sugarcane and horticulture lands have a surplus of nitrogen and phosphorus, while the dryland cropping areas in the Burnett and CQ areas are deficient in these nutrients. Approximately 60 % of sugarcane land is deficient in potassium.
- Best practice nutrient management is being adopted by many industries, but is often not well defined due to a lack of applicable research.

Agricultural soil acidification

- Without adequate liming, it is predicted that more than 20 % of sugarcane, banana, irrigated maize, vegetable, irrigated macadamia, papaya and passionfruit lands will have a one unit decrease in pH in less than 20 years.
- Widespread adoption of reduced tillage systems has resulted in a knowledge gap for the method and frequency of liming applications for these systems.

Soil compaction

- Anecdotal evidence indicates that controlled traffic farming has been implemented on about half of cereal cropping lands in CQ and the Western Downs.

Salinity

- Anecdotal evidence suggests that the current drought has caused a decrease in the area affected by salinity, although a return to 'normal seasons' would result in an increase in the area of saline land.

Contaminated soils

- 180-220 permits are issued each year to dispose of a total of over one million cubic metres of contaminated soil per year

Acid sulfate soils

- There are 14,000 ha of known parcels of acidified land, although the total area of acid sulfate soils is estimated at 2.3 million ha. #

Source: This is an edited version of an article that appeared in Queensland Branch's May newsletter.

FEEDBACK NEEDED ON VICTORIAN RESOURCES ONLINE

Mark Imhof is seeking feedback from users of the Victorian Resources Online website. He provides some background below.



The Victorian Resources Online (VRO) website (www.dpi.vic.gov.au/vro) was initiated in 1987 to provide access to information about Victoria's soil, landforms, water, marine environments, biodiversity and land and water management issues.

The website is the key means for accessing Victorian soil and landscape information including: overview soil maps; soil/landscape mapping; sites of geological and geomorphological

significance; geomorphological mapping, land degradation and soil pit site information. This is presented at varying levels of detail and includes links to appropriate explanatory material. A recently established soil health section provides access to previous reports that are no longer available in hardcopy format. Go to www.dpi.vic.gov.au/vro/soilhealth. The Victorian Resources Online (VRO) project would like to receive feedback from members that have visited the VRO website. Of particular interest is how people are accessing and using information from VRO. Please provide any feedback to: mark.imhof@dpi.vic.gov.au. #

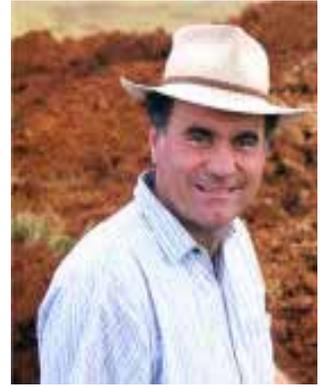
SODIC SOIL ART BY PETER KOPITKE



A highly sodic soil west of Bundaberg

SOILS NEED FEDERAL SUPPORT

What is the most intelligent form of support the Federal Government can provide to ensure the long term sustainability of rural and regional communities, including the fostering of the next generation of Australian farmers? Leadership and direction in soils management, according to Orange soils consultant David McKenzie (CPSS Stage 3).



Healthy soil is the key to the future of rural Australia. It is essential for capture and storage of water, efficient conversion of stored soil water and nutrients into valuable agricultural commodities, storage of carbon, and erosion control. Unfortunately, the current approach to rural soil management across Australia is extremely ad hoc. There is unnecessary duplication between federal, state and regional agencies. Taxpayer dollars often are wasted. Many landholders miss out on urgently needed advice. In NSW, for example, the provision of soil management expertise is dealt with in an uncoordinated and highly inefficient manner by the Dept of Primary Industries, the Dept of Environment and Climate Change, catchment management authorities, universities and private providers. Rural adjustment funding (eg Farmbiz) has been wasted on dubious training providers from overseas. CSIRO Land & Water has provided excellent national leadership with their ASRIS system for regional soil mapping. However, CSIRO and other federal agencies have not given clear and inspiring directions for the assessment and management of soil on farms.

What is needed

The Federal Government needs to correct these deficiencies by urgently pursuing the following objectives.

1. Define the required soil assessment and management competencies of 3 main target groups: farmers, general practitioner (GP) advisers, and soil management specialists.
2. Establish training and assessment procedures for these 3 groups via NTIS, industry training providers and universities.
3. Establish a national soil knowledge bank that includes a comprehensive collection of case studies. This initiative needs to be compatible with world's-best information delivery systems, and must be linked with procedures for the setting of research and development priorities.
4. Engage an independent non-government body, for example, Australian Society of Soil Science Inc (ASSSI), to supervise these processes.
5. Provide funding to landholders, possibly via a food consumption / Landcare tax, to encourage the development of high quality whole-farm soil management plans. Get everyone beyond the zero-to-ten centimetre soil-depth mentality. Think instead about integrated management of soil physical, chemical and biological processes throughout the root zone and beyond.

Potential benefits

If we could follow through on such initiatives, the results could have widespread benefits, such as improved competencies among farmers and service providers in rural Australia. If climate change leads to mass movements of farmers to new locations, their accredited training in soil and landscape management would reduce the pain of re-adjustment. Accredited farmers, GPs and specialists could form teams to provide desperately-needed soil management advice to other parts of the world, eg. Africa, Southeast Asia. The training and accreditation packages for the 3 target groups could be taught overseas via the Internet and earn valuable export dollars for Australia.

The Rudd Government must take the lead with the development and maintenance of an effective human resource network for healthy soil management across rural Australia. A logical starting point would be a meeting between the Federal Minister for Primary Industries and the ASSSI President. But we must be wary of city-based armchair experts and recently arrived opportunists. The Government needs to talk with genuine soil experts who understand farmers, and who have personal experience with soil assessment and management in the field. #

This article first appeared on Science Alert at <http://www.sciencealert.com.au/opinions/20082804-17235.html> and is reproduced here with the kind permission of www.sciencealert.com.au.



2008 KIRKHAM CONFERENCE ON SOIL PHYSICS



Keith Bristow, CSIRO Townsville, was the only Australian to attend the invitation-only Kirkham Conference at the University of California in February. Below, he reports on conference activities.

The Kirkham Conference provides a forum in which researchers can explore and discuss disciplinary and interdisciplinary subjects in soil physics in ways seldom possible at national or international meetings. The aim is to learn from disciplines outside of, but related to soil physics in order to enhance and communicate knowledge of soil physics and its application to increasingly complex challenges in a wide range of areas, including agricultural production and environmental stewardship. Attendance is by invitation and is generally less than 50 people.

Earth's life support system

The conference theme was 'Soil physics: Research on the frontiers of Earth's life support system'. Speakers included Dennis Baldocchi (Why ecologists need soil physics, and vice versa), Gabriel Katul (Implications of projected land cover change on summer time rainfall), Timothy Ginn (Horizontal gene transfer in porous media), John Pomeroy (Snow physics and hydrology), Andre Revil (Measurements to image ground water flow and the transport of contaminants in soils), Muhammad Sahimi (Characterising microstructure of composite and porous media and computing their effective transport properties: application of percolation theory), John Selker (Implications of the limits of predictability in soil physical processes), Murugesu Sivapalan (Predictions of water cycle dynamics in a changing environment: critical role of soils), Ernst Steudle (Pore transport in plants: from molecule to whole plant level), and Graham Weir (Milli-micro-nano scale fluid flows). You can access the recorded lectures at <http://ag.arizona.edu/kirkham/davis.htm>.

Key questions

Discussions following the presentations highlighted the fact that soils are probably the most difficult and complex materials known to man, that their properties are still not well known, that sophisticated instrumentation and measurement capabilities are needed to access and study them, and that some of the most complex and difficult mathematics is needed to help build understanding of them.

Some key questions arising from the conference included:

- How accurately can we measure and model soil respiration?
- Is Darcy's law valid within rooting systems?
- How can the economic value of groundwater versus surface water be used to drive future research in the vadose zone?
- What is the 'natural capital' of soil, and how do we value it?
- How useful are our current soil physics models for making predictions?
- If we could describe (model) infiltration perfectly at a point, how do we apply that knowledge at different scales?
- How do we identify and address the most important questions in soil physics?
- Are there some large international questions (e.g. salinity, changes in land cover) that can be used to foster collaboration and funding?

An innovation at this conference was a half day gathering following conclusion of the main conference involving short presentations and discussion of work being carried out by those participants who were able to stay longer and

spend more time exchanging ideas with colleagues. There was again a range of fascinating work presented and good discussion, resulting in strengthening of existing relationships and networks and formation of new networks and collaborations, all consistent with the aims of the Kirkham Conference.

The energy created and obvious success of the Kirkham Conference has prompted further thought about how to expose more of the soil physics community to its benefits while meeting the original objective of a small, informal and highly interactive gathering. As noted above the presentations were recorded and are available via the web, and while this may help, we are also interested in other ideas you may have to broaden the exposure and benefits, especially using technological advances. Another option that could be considered is introducing an application procedure for mid-career scientists similar to that currently used for postgraduate students. Any thoughts you may have regarding these issues can be sent to David Robinson at darearthscience@yahoo.com.

Further information about the Kirkham Conferences and awards is available at <http://ag.arizona.edu/kirkham/>. #

From left: Jan Hopmans, chair of the 2008 organising committee, Keith Bristow, and Don Nielson, who received the inaugural Don and Betty Kirkham Soil Physics Medal, to be awarded every eight years to someone who has consistently made unique and outstanding contributions to soil physics throughout their career.



BAUXITE ART BY PETER KOPITTKE



Bauxite residue high in iron and aluminium oxides, at Gove Peninsula NT

INCREDIBLE VARIETY OF CARBON COMPOUNDS IN SOIL

When you look at soil organic carbon closely, at a scale of 50 nanometers (1 nanometer equals the width of three silicon atoms), it has an incredible variety of known compounds, according to Johannes Lehmann of Cornell University. His team produced nanoscale soil images at the National Synchrotron Light Source at Brookhaven National Laboratory using an X-ray spectromicroscopy method developed by physicists at the State University of New York, Stony Brook. The method allowed the researchers to identify forms of organic carbon in the samples.

While the composition of organic carbon in soils from North America, Panama, Brazil, Kenya or New Zealand proved remarkably similar within each sample, the researchers found that within spaces separated by mere micrometers, soils from any of these locations showed striking variation in their compositions. For example, the compounds that ‘hang on the right and left of a clay mineral may be completely different’, said Lehmann.

The researchers were also able to identify the origins of some of the nano-sized compounds, determining that some of them, for example, were microbe excretions and decomposed leaves. The researchers also recognised patterns of where types of compounds are likely to be found at the nanoscale.

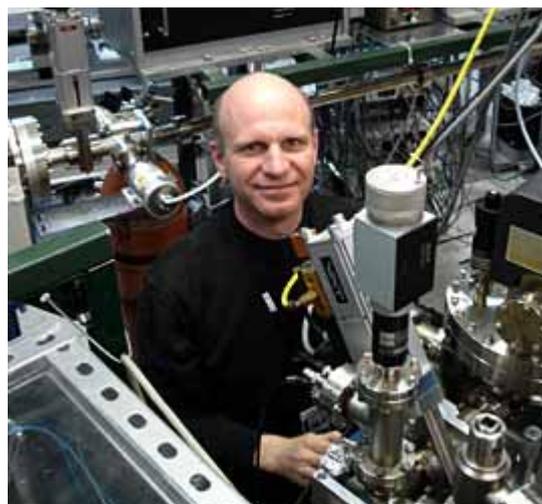
‘Now we can start locating certain compounds,’ Lehmann said. ‘We find black carbon as distinct particles in pores, whereas we find microbial products smeared around surfaces of minerals.’

The method allows researchers to break soil down, separate compounds, conduct experiments on individual compounds and better understand the interactions, Lehmann said. Read his paper in the April issue of Nature Geoscience at

<http://www.nature.com/ngeo/journal/v1/n4/full/ngeo155.html>. #

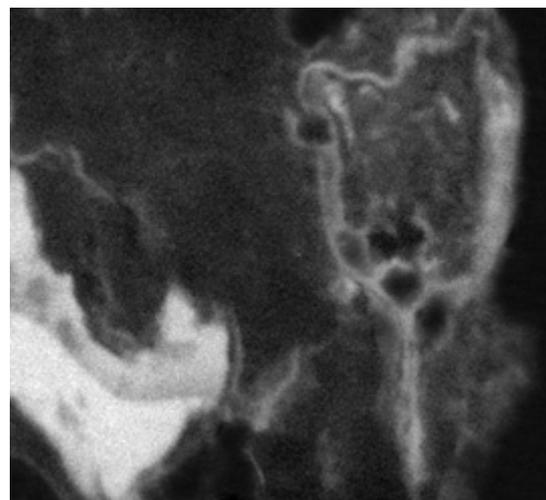
Source:

<http://www.news.cornell.edu/stories/April08/LehmannSoils.kr.html>



National Synchrotron Light Source at Brookhaven National Laboratory.

Below: A nanoscale image of a carbon distribution map in a soil microaggregate.



OLD CARBON NOW MEASURABLE

A joint project between the Macaulay Institute, Aberdeen and Landcare Research, New Zealand, has developed a method to measure the release of old carbon from soils. Their approach is based on the measurement of small differences in the amount isotope carbon-13, which is naturally present in all carbon dioxide, including that released by soils into the atmosphere. The technique will enable scientists to determine the consequences of changed land use for climate change. Read more at <http://www.macaulay.ac.uk/news/newsdetails.php?13/05/08>.

NATIONAL BIOCHAR WORKSHOP?

Johannes Lehmann will be at the international biochar initiative conference in Newcastle UK in September. NSW DPI biochar researchers Lukas van Zwieten and Stephen Kimber are interested in holding an Australian biochar networking workshop in October. For more information, contact Steve at stephen.kimber@dpi.nsw.gov.au or keep an eye on the NSW DPI website www.dpi.nsw.gov.au.

SOIL NOTES

On site sewerage systems conference in October

The Australian Water Association is holding a three day conference in Benalla in October to look at best practice for onsite and decentralised sewerage systems and how to achieve it by 2012. Organisers are calling for abstracts and workshop outlines to be uploaded onto the AWA website by Monday 2 June 2008. All abstracts and papers will be peer reviewed. Details on the AWA website at

http://www.awa.asn.au/AM/Template.cfm?Section=b_Oct_08_b_Onsite_and_Decentralised_Sewerage_Conference&Template=/CM/HTMLDisplay.cfm&ContentID=9092.

Vetch for soil health, profit and environment

A decade of research at Narrabri has found that vetch's ability to fix nitrogen in cotton fields far outweighs other legumes including faba beans, field peas, clovers and medics. The vetch commonly fixes up to 200kg of nitrogen per hectare, reducing the amount of nitrogen fertiliser required for continuous cotton crops by 140kg/ha. In addition, the vetch increased organic matter levels in cotton fields by 14%, and enabled following cotton crops to absorb greater amounts of nutrients, such as nitrogen, phosphorus, potassium, zinc and copper, while sodium uptake was reduced. Soil structure also improved, making cultivation easier and improving the soil's water-holding capacity. Read more at http://www.cottoncra.org.au/content/Industry/Media/Press_Releases.aspx.

Variable rates are more economic on laser levelled soils

Laser levelling and landforming are commonly used in Australian irrigated cotton production to optimise water use efficiency. The landforming process often removes a layer of topsoil and exposes significantly more clayey, alkaline and sodic subsoil material associated with poor crop growth and lower yields. Trials have found that applying lime and gypsum and a fertiliser blend at variable rates is more economic and has greater production benefits than applying a standard lower rate across the whole area. Find out more at

<http://www.cottoncra.org.au/content/Industry/Publications/Soils.aspx>.

Soil strategy for England

England is developing its own soil strategy to both improve the management of soils so that they deliver a wide range of benefits to society, and improve the measures used to achieve this. The new strategy will build on the first Soil Action Plan for England (2004-2006) and is currently out for public consultation. The draft strategy's vision is 'that England's soils will be protected and managed to optimise the varied functions (or ecosystem services) that they perform for society in keeping with the principles of sustainable development and in the context of climate change'. The draft strategy has four main objectives: sustainable soil management in the agriculture & forestry sector, halting the decline of soil carbon, sustainable soil management in the built environment, and protection of soil during the recycling of organic materials to land. Download the draft at

<http://www.defra.gov.uk/corporate/consult/soilstrategy/consultation.pdf>.

New portrait of the Earth

A new global portrait taken from space details Earth's land cover with a very high resolution. ESA, in partnership with the UN Food and Agriculture Organisation, recently presented the preliminary version of the map to scientists in Italy. This map, which will be made available to the public on its completion in July, has a resolution 10 times sharper than any of its predecessors. The map is based on 20 terabytes of imagery – equivalent to the content of 20 million books – acquired from May 2005 to April 2006 by Envisat's Medium Resolution Imaging Spectrometer (MERIS) instrument. All images then undergo a standardised processing technique and will show 22 different land cover types in the map, including croplands, wetlands, forests, artificial surfaces, water bodies and permanent snow and ice. For further information go to http://www.esa.int/esaCP/SEMZ16L26DF_index_0.html.

Scientists focus on making better soil to help with food concerns

An increasing number of scientists are starting to emphasise the extent to which soil - even more than petroleum or water or air - is a limited and fragile resource. Managing it better, and even improving it, will be vital to any equation that allows the earth to support the more than nine billion people the United Nations estimates will live on the planet by mid-century. Read the International Herald Tribune article at

<http://www.iht.com/articles/2008/04/29/healthscience/dirt.php>. #



SOMETHING TO THINK ABOUT

In each issue of Profile we will feature an abstract of a recent paper that gives us something to think about. The abstract selected for this issue is from the April 2008 issue of the European Journal of Soil Science.

Visions of a more precise soil biology

O Andrén, H Kirchmann, T Kätterer, J Magid, EA Paul, DC Coleman

Soils have often been viewed as a black box. Soil biology is difficult to study with the precision we would wish, due to the presence of considerable soil heterogeneity, a huge diversity of organisms, and a plethora of interacting processes taking place in a complex physical-chemical environment. We have isolated a tiny fraction of the known organisms, and the possible interactions of soil parent materials, landscape, land use, depth and time with the biota mean that we are to some extent still fumbling in the dark. There have been great advances, but we argue that the pace of advance could be faster. To progress, science needs new theory and concepts but also acceptable methodologies. Coherent and generally accepted theoretical knowledge exists in many areas, but there is a shortage of valid and exact methods to test new and sometimes even old hypotheses. New methods add knowledge, but they also can add to the confusion if they are not tied to the existing knowledge base. We speculate on how to improve soil biology through improving the way we perform and interpret research. Can we deal with soil variability? Can we measure the critical variables with adequate precision to test our hypotheses? Can we avoid reinventing the wheel? Can we find a balance between the freedom to test new and maybe even controversial ideas and the control and direction of research required by society?

Source: [European Journal of Soil Science](#), Volume 59, Number 2, April 2008, pp 380-390(11). Subscribers can find the article at <http://www.blackwell-synergy.com/doi/pdf/10.1111/j.1365-2389.2008.01018.x>. #

ASSI HATS AT WORK



ASSI's cloth hats came in handy during a recent tour by Indonesians to the NSW north coast as part of an ACIAR-funded joint project with NSW DPI. The project team is helping restore tsunami-affected agricultural soils in Aceh, and while in Australia the Indonesian visitors looked at soybean rotation crops, organic farming, biochar and large-scale composting systems. From left: T. Iskandar, director, Assessment Institute for Agricultural Technology (BPTP) Aceh; Dr Prama Yufdy, director, BPTP North Sumatra; Dr Achmad Rachman, director, Indonesian Soil Research Institute (ISRI); Dr Peter Slavich, director, Wollongbar Agricultural Institute, NSW DPI; Dr Fahmuddin, ISRI; Dr Hasil Sembiring, director, Indonesian Centre for Rice Research; Basri AB, BPTP Aceh.

SOIL SCIENCE PAPERS

Below are papers relevant to soil science published in the latest issues of Australian journals of Soil Research, Experimental Agriculture and Agricultural Research.

Australian Journal of Soil Research 46:3 2008

Effect of soil wetting conditions on seal formation, runoff, and soil loss in arid and semiarid soils - a review

M Ben-Hur, M Lado

Effects of crop and pasture rotations and surface cover on rainfall infiltration on a Kandosol in south-west Queensland

GA Thomas, DN Orange, AJ King

Assessment of spatial variability of penetration resistance and hardpan characteristics in a cassava field

O Mohawesh, T Ishida, K Fukumura, K Yoshino

Deriving point and parametric pedotransfer functions of some gypsiferous soils

M Homae, A Farrokhan Firouzi

Water drawdown by radish (*Raphanus sativus* L.) multiple-root systems evaluated using computed tomography

MA Hamza, SH Anderson, LAG Aylmore

Pasture yield and soil physical property responses to soil compaction from treading and grazing - a review

JJ Drewry, KC Cameron, GD Buchan

Organic anions in the rhizosphere of Al-tolerant and Al-sensitive wheat lines grown in an acid soil in controlled and field environments

CR Scheffe, M Watt, WJ Slattery, PM Mele

Effect of continuous cropping on potassium forms and potassium adsorption characteristics in calcareous soils of Iran

A Samadi, B Dovlati, M Barin

Microbial CO₂ production from surface and subsurface soil as affected by temperature, moisture, and nitrogen fertilisation

X Jin, S Wang, Y Zhou

Short-term effects of wheat straw incorporation into paddy field as affected by rice transplanting time

J Ma, H Xu, Y Han, ZC Cai, K Yagi

To access the abstracts go to

<http://www.publish.csiro.au/nid/85/issue/4145.htm>

Australian Journal of Agricultural Research 59:4 2008

High subsoil chloride concentrations reduce soil water extraction and crop yield on Vertosols in north-eastern Australia

YP Dang, RC Dalal, DG Mayer, M McDonald, R Routley, GD Schwenke, SR Buck, IG Daniells, DK Singh, W Manning, N Ferguson

Testing the primer-plant concept: wheat yields can be increased on alkaline sodic soils when an effective primer phase is used

JG Nuttall, SL Davies, RA Armstrong, MB Peoples

Use of garden organic compost in vegetable production under contrasting soil P status

KY Chan, C Dorahy, T Wells, D Fahey, N Donovan, F Saleh, I Barchia

To access the abstracts go to

<http://www.publish.csiro.au/nid/85/issue/4144.htm>.

If you have had a soil science paper published recently in a national or international journal, send the details to the Profile editor at rebecca.lines-kelly@dpi.nsw.gov.au.

REMEMBER TO BREATHE

After three years of planning, scientists from NZ Landcare Research and the Macaulay Institute in Aberdeen, Scotland, have been able to differentiate and measure respiration rates of carbon dioxide between roots and soil in an undisturbed forest system. It's been possible through international collaboration, support from the Marsden Fund and the use of a new stable isotope tuneable diode laser absorption spectrometer – the only one of its type in the southern hemisphere. Read more at http://www.landcareresearch.co.nz/news/release.asp?Ne_ID=264.

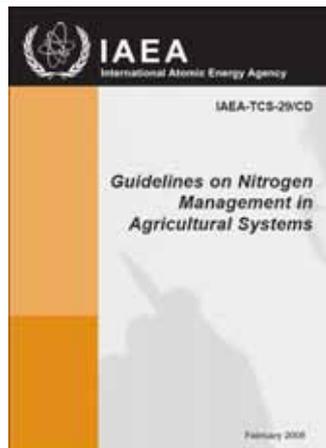


SOIL BOOKS



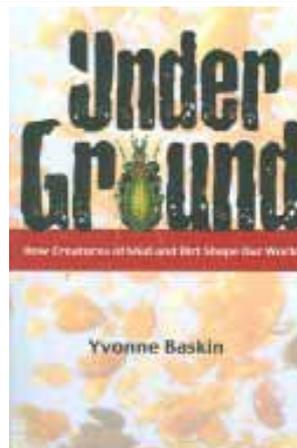
Leaf litter (2006)

This exquisitely illustrated children's picture book is an excellent teaching tool for anyone wanting to learn about the soil's important organic layer. Award-winning botanical illustrator Rachel Tonkin explores a small patch of leaf litter beneath one tree as it changes day by day. It won the Wilderness Society's 2007 non-fiction children's award. Details at <http://www.harpercollins.com.au/book/index.aspx?isbn=9780207198229>.



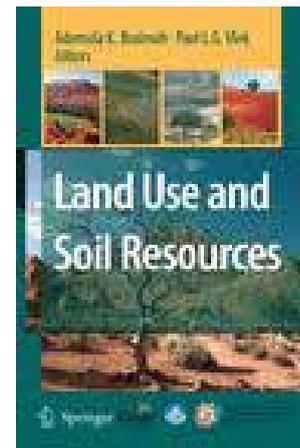
Nitrogen management in agriculture (2008)

This publication is the fourth in the IAEA soil and water training course series. It was conceived as a technically oriented document for anyone involved in sustainable agricultural development at local, national, regional and international levels. The 237 page manual can be freely downloaded at http://www-pub.iaea.org/MTCD/publications/PDF/TCS-29_CD_web.pdf.



Underground: How creatures of mud and dirt shape our world (2005)

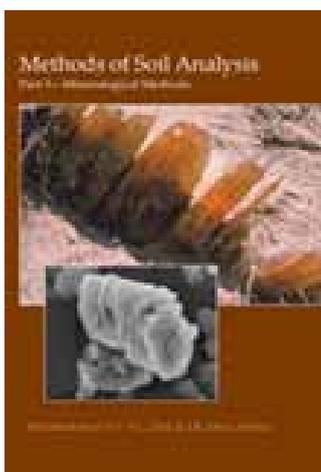
Author Yvonne Baskin reveals the startling ways in which life, whether in our own back yards, in fields and forests, or in the furthest reaches of the Earth, is more numerous, significant and fascinating than we once imagined. Details at <http://www.publish.csiro.au/pid/4950.htm>.



Land use and soil resources (2008)

This book brings together renowned academics and policy experts to analyse the patterns, driving factors and proximate causes, and the socioeconomic impacts of soil degradation. Policy measures to prevent irreversible degradation and rehabilitate degraded soils are also identified. Details at <http://www.springer.com/environment/book/978-1-4020-6777-8>.

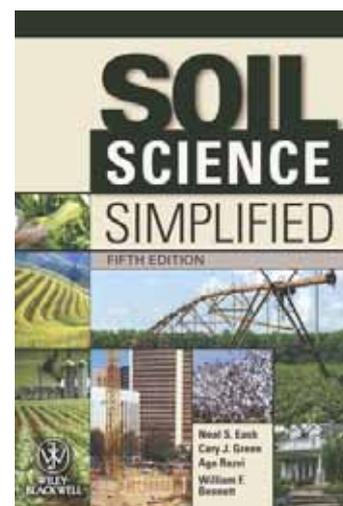
Methods of soil analysis 5: Mineralogical methods (2008)



This Soil Science Society of America book covers techniques such as X-ray absorption, diffuse reflectance spectroscopy, thermal analysis and dissolution methodologies. It includes basic principles of each method, guides the reader through the method itself, and advises on interpretation and analysis of results. Details from <https://portal.sciencesocietys.org/Purchase/SearchCatalog.aspx>.

Soil science simplified 5th edition (2008)

This updated edition includes greater coverage of non-agricultural uses and an expanded discussion on environmental uses of soil and conservation. Details at <http://www.wiley.com/WileyCDA/WileyTitle/productCd-0813818230.html>



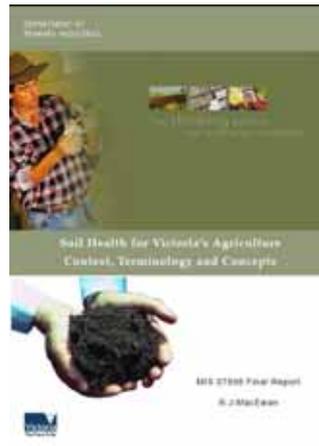
SOIL BOOKLETS



Organic farming and climate change (2008)

This study looks at the contribution of agriculture to climate change; and discusses the potential of organic agriculture for reducing emissions of greenhouse gases, and sequestering carbon.

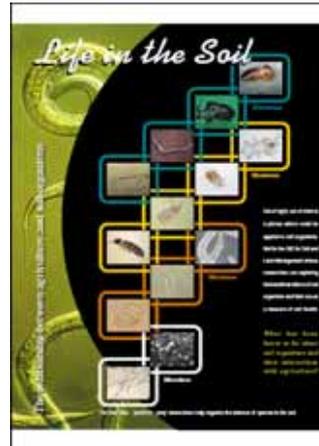
http://www.intracen.org/Organics/documents/Organic_Farming_and_Climate_Change.pdf



Soil health for Victoria's agriculture (2008)

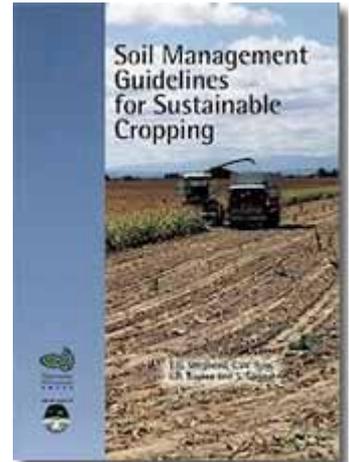
In this review, Victoria DPI soil scientist and ASSSI Federal committee member Richard MacEwan (CPSS 3) reviews available information on soil health from around the world.

Download it at http://www.dpi.vic.gov.au/dpi/vro/vrosite.nsf/pages/soil_health_mis07898



Life in the soil (no date)

This 12-page report details research on the relationship between soil organisms and agricultural systems. It is not new but provides an excellent introduction to soil biology in agriculture. Download at <http://www.csiro.au/resources/pfrc.html>.



Soil management guidelines for sustainable cropping

Devised by experienced Landcare Research soil scientists, this full-colour booklet provides practical visual soil assessment methods to help farmers and vegetable growers gauge soil condition.

Details at <http://www.publish.csiro.au/pid/2924.htm>

SOILS RESOURCES

Contaminated soils sampling guideline

EPA Victoria has published a guideline covering sampling of contaminated soils to enable identification and classification. The guideline includes information on classifying and reusing fill material for offsite reuse, the pattern and number of samples to be taken, and acceptance requirements for disposal facilities receiving contaminated soils to aid such facilities in meeting EPA licence acceptance criteria. Download the guideline at [http://epanote2.epa.vic.gov.au/EPA/Publications.nsf/2f1c2625731746aa4a256ce90001cbb5/11fe9e999f98de62ca25735c0012fe9e/\\$FILE/1178.pdf](http://epanote2.epa.vic.gov.au/EPA/Publications.nsf/2f1c2625731746aa4a256ce90001cbb5/11fe9e999f98de62ca25735c0012fe9e/$FILE/1178.pdf)

Healthy Soils program

Proceedings and presentations from last years Healthy Soils symposium in Queensland are now available at Land and Water Australia's Healthy Soils website at www.healthysoils.gov.au/Healthy_Soils_Symposium/index.aspx. You can keep up to date with the Healthy Soils projects at www.healthysoils.gov.au/projects/index.aspx.

Soil science blog

UWA soils lecturer Andrew Rate runs the online Soil Science Journal Club, a soil science blog for 'anyone interested in recent advances in soil science in all its guises'. Find it at http://myresearchspace.grs.uwa.edu.au/blogs/andrebrates_blog/.

Western Australian soil quality website

The Western Australians continue to update their database on their website for farmers to compare their soil results with regional averages. New factsheets are available, including information on labile carbon and microbial biomass. The website is at <http://www.soilquality.org.au/factsheets.#>

SOIL EVENTS

14th international symposium on society and resource management, Vermont US

June 10-14 2008. www.ISSRM2008.org

10th international meeting on soils with Mediterranean type of climate, Beirut

June 22-26 2008 <http://www.cnrs.edu.lb/10IMSMTTC.pdf>

International workshop on post-tsunami soil management, Bogor, Indonesia

July 1-2 2008 http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0019/209431/International-post-tsunami-soil-management-workshop.pdf

IUSS Inter-Congress meeting symposium & field trip, Brisbane

July 1-2 2008 <http://www.ccm.com.au/soil/>

International workshop on soil-plant interactions in arid environments, China

July 11-18, 2008 <http://www.shzu.edu.cn/news/iw.pdf>

Opening of soils exhibit, Smithsonian National Museum of Natural History, USA

July 19 2008 <http://forces.si.edu/soils/>

1st international conference on hydrogeology, USA

July 28-31 2008 <http://hydrogeology.psu.edu/>

6th national controlled traffic farming conference, Dubbo

August 12-14 2008 www.actfa.net

Eurosoil Congress: Soil, society and environment, Vienna

August 25-29 2008. www.ecsss.net

3rd international biochar initiative conference, Newcastle UK

September 7-11 2008 <http://www.biochar-international.org/>

6th international acid sulfate soil conference, China

September 16-20 2008 www.6assard.org

5th international conference on land degradation, Italy

September 18-22 2008 <http://www.iamb.it/5ICLD/>

Australian Society of Agronomy biennial conference, Adelaide

September 21-25 2008 www.agronomy.org.au/events/2008

Digital soil mapping, USA

October 1-3 2008 <http://dsmusa.org>

International year of planet Earth joint meeting, USA

October 5-9 2008 <https://www.acsmeetings.org/>

Onsite and decentralised sewerage conference, Benalla

October 12-15 2008 <http://www.awa.asn.au>

Interactions of soil minerals with organic components and microorganisms, Chile

November 24-29 2008 <http://forest.akadem.ru/Konf/2008/6/Info2.pdf>

Soil—the living skin of Planet Earth, NZ

December 1-5 2008 <http://conferences.massey.ac.nz/Soils2008/index.htm>

Australian and New Zealand geomorphology group inc, Melbourne

July 7-12 2009 www.geomorphology2009.com

2nd international conference on biohydrology, Slovakia

September 21-24 2009 <http://www.ih.savba.sk/biohydrology2009/>

19th World Congress of soil science, Brisbane

August 1-6 2010 <http://www.19wcss.org.au>



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