Profile

Newsletter of the
Australian Society of Soil Science Inc
Issue 146 October 2006

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FROM THE EDITOR

Welcome to this information-packed edition of Profile. Thanks to everyone who responded to my request for contributions – I was certainly inundated with contributions as I had hoped. This issue features ASSSI updates, news about members, news from the branches, and a variety of articles about different aspects of soils and soil science. Don't forget that the ASSSI AGM will be held at the December conference, and we are looking for members interested in serving on the Federal Committee. Nominating details are on page 3. See you at the conference.

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

ABOUT ASSSI

ASSI 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.

Specific objectives

- To promote the field of soil science
- To further the expertise in soil science f 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 contact the ASSSI executive officer Linda Bennison at office@asssi.asn.au, phone 03 5622 0804 or fax 03 5622 0806.

Profile contributions

All contributions to Profile are welcome and can be sent to the editor at rebecca.lines-kelly@dpi.nsw.gov.au, 02 6626 1319, or PO Box 468 Mullumbimby NSW 2482. Email contributions are preferred. Please send photos as separate attachments.

Profile deadlines 2006

Please send copy for the next issue by 15 December 2006.

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. Information about ASSSI conferences, courses, scholarships etc is published free.

ASSSI FEDERAL OFFICE: PO BOX 1349 Warragul VIC 3820 ABN : 96 080 783 106 WEB: www.asssi.asn

FROM PRESIDENT NEIL MENZIES

During the last year or so, I accepted several invitations to speak to farmer groups. This is most unusual for me; I am normally content to limit my communication to that select group (and I expect that it is very small) who read my journal articles. I have even had some of my words rewritten into a form accessible by a non-technical audience – I particularly thank GRDC's Bernie Reppel for his efforts here. If you are interested you can find Bernie Reppel's article at http://www.grdc.com.au/growers/gc/gc59/reppel2.htm. I have had a remarkable amount of feedback from this; either strongly supporting my view or strongly opposing it.

For a 'lab-rat' type like me, this has all been an interesting experience, and it has prompted me to think about the role of research scientists in interacting with the wider community. Unfortunately, most soil researchers are like me; content to limit their public utterances to journal articles, and, in this way, ensuring that the public never hears them. Indeed, most soil scientists frown upon those who grab the opportunity to speak to the press; we consider them egotistical – media tarts. Yet, most of us would realise that the general public has never thought about the importance of soil, and we would freely admit that the best way of raising public awareness of soils would be for us to speak through the mass media.

In my own case, I was prompted to speak out because farmers have been receiving advice that, as a scientist, I believe to be incorrect. I have not done this in the past, and I do not expect to do it much in the future. The subjects that may interest the general public may not be our research area. In the instance of my GRDC presentations discussed above, I was asked to speak about nutrient sufficiency vs basic cation saturation ratio as a means of determining the need for potassium, magnesium and calcium fertiliser. The science was worked out in the 1950s, and I doubt that any credible journal would publish a further paper showing much the same thing as was demonstrated 50 years ago. Even though the debate continues in the farming community, there is not much incentive for a researcher to engage.

My university employer expects me to teach students, attract research funding, and publish research papers. It wants me to have a service role, but I doubt that a promotion committee would place as much weight on this role as on teaching and research. But who else is going to pay you to prepare presentations and deliver them?

Speaking out can cause you a lot of aggravation. This can range from the relatively trivial (aggressive questions at presentations, hostile email messages) through to the more serious. I know that Mark Conyers has attracted some criticism and even threats of legal action for his public presentation of his science. Indeed, his response to Bernie Reppel's article was to ask if the University had a good legal team. While Mark and I are on safe ground, scientists are not always free to present their results and viewpoints. Most Australian soil scientists would be aware of Doug Edmeades' protracted battle through the New Zealand legal system to demonstrate the veracity of his science – if you do not know this story, I recommend Doug's book "Science friction: the Maxicrop case and the aftermath" (Fertilizer Information Services Ltd, PO Box 9147, Hamilton, New Zealand: Hamilton. 2000) to you. I found it an absolutely gripping read ! Doug also reports the science in his 2002 paper, 'The effects of liquid fertilisers derived from natural products on crop, pasture, and animal production: a review', Australian Journal of Agricultural Research 53, 965-976.

Despite my own good arguments for not speaking out, I believe that we should do so. In discussing this issue with my colleagues, one of the best arguments presented for speaking out was this: "If someone with scientific knowledge does not speak out, who will?" In reading this article ahead of publication, our Profile Editor, Rebecca, offered the constructive criticism that I spend so much time on 'why not' that I overpower my argument for 'why you should speak out'. On reflection, I agree with her, but I also think that the balance in this article is a good reflection of reality. Hopefully, the single reason that I offer, that it is part of our role s scientists, is sufficiently compelling that we will continue to contribute to debate in the broader community. As governments decrease direct funding for research (eg by decreasing full-time staff numbers), there are fewer 'independent' people to keep the sharks and charlatans in check. In the end, it is the farmers who will suffer through implementing inappropriate and uneconomical practices. We move back to the Dark Ages where alchemy rules

Perhaps the most important people for us to speak to are young people. In Queensland, a change in the nature of secondary school science syllabus has brought teachers to ASSSI asking for help to design material to place biology in a real world context. This is a great opportunity for us to promote soil science. Kind regards, Neal.#

CONFERENCE UPDATE

Conference convenor Cam Grant reports on preparations for the ASSSI/ASPAC/ACMS national soils conference, Adelaide 3-7 December 2006

The conference program committee received 232 abstracts covering 12 broad themes:

- soil biology
- acid sulfate soils
- mobile soil constituents
- clay minerals
- soils and climate change
- soil formation, physical degradation and reclamation
- spatial patterns and GIS
- productivity and sustainability
- communication of soil science
- waste disposal, contaminated soils & their reclamation
- salinity and salt-affected soils
- soil organic matter

Of the 232 presentations, 45 have been slotted for oral presentation and 187 have been slotted for oral-poster presentations. A preliminary program is posted on the web at http://www.plevin.com.au/soils2006/program.htm.

The mid-conference tours and the post-conference tour are booking up quickly, so don't delay if you wish to participate. We particularly encourage you to join in the interactive soil science lab tour on the Waite Campus on Tuesday, 5 December (which also happens to be International Soils Day). It includes an NMR spectroscopy workshop with Ron Smernik, an overview of the environmental biogeochemistry analytical facility with Rai Kookana andAdrian Beech, and visits to the Australian Wine Research Institute and SARDI's plant research centre.

To register for the conference, go to http://www.plevin.com.au/soils2006/registration.htm.

I look forward to meeting you in December.

Regards, Cam

2006 ANNUAL GENERAL MEETING

ASSSI is calling for nominations for the positions of president, vice-president, secretary and treasurer. Nomination of candidates, who must be financial members of the Society, for election as office-bearers of the Society need to be made in writing, signed by two financial members of the Society and accompanied by the written consent of the candidate. Nominations need to be delivered by 24 November 2006 to
Dr Steven Raine (ASSSI Secretary)
PO Box 35
Darling Heights
Queensland 4350

The ballot for the election of office-bearers will be conducted at the Annual General Meeting at 6pm on Monday, 4 December, in the Cinema Theatre on Level 5 of the Union Building, University of Adelaide. #

ASSSI WEBSITE UPGRADE

There has been a lot of interest in our ASSSI website, and a lot of suggestions of what should be on our website - but is not there at present. Webmaster Derek Yates has been constrained by the way that the website was originally built but the website is to be rebuilt using software that will make it simpler to add new material. If you have material that you think would be of interest to other soil scientists, to other professionals dealing with soils, or to the general public, please let us know. This could include material for a "frequently asked questions" section, simple soil science experiments children could undertake, links to other useful soil sites, perhaps even some soil science humour! The Federal Council office bearers will be responsible for ensuring that the material submitted is suitable for our website. Please send a brief description of the material you have that you would like to contribute to the ASSSI Website to Linda Bennison, ASSSI executive officer, office@asssi.asn.au. #

CPSS REGISTER OF EXPERTISE

Graham Price, chairman of the CPSS Accreditation Board, reports on CPSS developments.

The CPSS register of expertise developed by ASSSI executive officer Linda Bennison is now on the ASSSI website. It would be appropriate for all accredited CPSSs to log on and inspect the site to see that they are listed in the correct expertise category or categories. If you have not submitted your areas of expertise please email the ASSSI office and request the form. The link to the CPSS Register of Expertise page is http://www.asssi.asn.au/asssi/flash/content/accreditation/accredited_scientists.asp

The CPSS Board is grateful to Linda for her enthusiasm and determination to complete this task. The exposure the register will give to the profession as a whole should encourage more soil scientists to become ASSSI members and participate in the CPSS scheme.

The register will be updated quarterly and I encourage all CPSS members to submit their areas of expertise. Plans are underway for a CPSS promotion at the national conference in Adelaide where revised CPSS application kits will be available.

Members may be interested to know that the society website is currently receiving an average of 550 hits on weekdays and 200 hits on Saturday and Sunday. The next stage will be to offer CPSS members the opportunity to link their website or contact details to the register to enable visitors to the soil website to contact a soil science expert seamlessly. #

Thank you to the ASSSI members who recently cast a vote for a logo for the society. A new logo has been selected by members and will be launched at the national soils conference in Adelaide in December. Neal Menzies, President

LETTERS

Long-bladed spade supplies

Long-bladed spades are part of the standard outfit of soil surveyors in the United States and Canada, and probably also in the UK. They used to be available in Australia, but no longer. I have approached all manufacturers of similar digging equipment, and discovered that one can only buy drainage spades, which have a curved blade and are more a shovel than a spade. On a recent trip to the UK I found that a manufacturer of spades and shovels, Faithfull, still makes the long-bladed spaces and that the retail price there is about £22 or roughly $A55. They are an all-steel construction, but yet not too heavy. So as not to miss the occasion, I brought one back, shown here. I wonder if there is enough interest among our members to justify an importer to bring in, say, 100 of these spades, at a price that is reasonable. Is this something that ASSSI might like to run with? **Robert van de Graaff**, vdg.robert@host1.com.au

ENVIRONMENT AWARD FOR GEORGE RAYMENT

Queensland soil scientist George Rayment has won an environmental award for his contribution to environmental fertiliser management. George is pictured here with his Snapper Environmental Award for 2005 from the Fertiliser Industry Federation of Australia. The award was presented in Canberra by Luc M. Maene, Director General of the International Fertiliser Industry Association (right). Ian Carruthers (left) of the Australian Greenhouse Office read the citation.

Now principal scientist with Queensland Department of Natural Resources and Water, George was a pioneer of commercial soil testing. In the late 1960s and early 1970s he developed soil sampling kits and interpretation charts for Consolidated Fertilisers Limited. He has since contributed to the development of Fertcare, the industry's national training and accreditation program; chaired the national cadmium management committee to implement the cadmium minimisation strategy; coordinated Queensland's committee into downstream effects of agricultural practice; and worked with the CRC for Sustainable Sugar Production, overseeing R&D activities aimed at protecting the environment, including a comprehensive report card on the industry's environmental footprint.#

HONORARY LIFE MEMBERSHIP FOR ROBIN BRUCE

Robin Bruce, pictured here with his wife Jeanette, was awarded honorary life membership of ASSSI at the Queensland branch's AGM in July. Robin retired from Queensland DPI as director, resource processes, in mid-1998 after 35 years with the dept. After graduating from the University of Queensland he joined DPI's agricultural chemistry section, moving to Innisfail to operate a laboratory at the South Johnstone Research Station on Queensland's wet tropical coast. There he teamed with agronomist Jim Tietzel to undertake perhaps Queensland's most systematic study of the characteristics of actual and potential pasture soils of an important geographic region. Working in NQ, Robin moved quickly to enhance knowledge of relationships between soil and plant chemical tests and the responsiveness of tropical pasture legumes to superphosphate. These findings were quickly adopted by commercial soil and plant testing services and still contribute to soil test interpretations today.

In the early 1970s Robin transferred to Brisbane to take up the position of officer in charge (plant nutrition) within what became the agricultural chemistry branch. While the role had administrative responsibilities, he retained his interest in soil and plant diagnostic criteria for crops and pastures. In a long association with George Rayment and others, he co-authored several seminal research papers that established diagnostic criteria relating soil and plant P tests to the maintenance P requirements of legume-based pastures in south-east Queensland. The associations between analytical methods and interpretations used in Queensland for soil and land use surveys were documented to help others prepare consistent land survey reports.

Robin went on to become assistant director and director, agricultural chemistry branch, in 1981-82 and in 1986 he was awarded a PhD for his thesis 'Diagnosis of aluminium toxicity and calcium deficiency in acid soils using soil and solution attributes'.

Robin is recognised for his skills in training. In 1985 he helped organised the branch's inaugural soil science refresher course and contributed to many courses in following years. In semi-retirement, he conducted many short-courses for a range of audiences through the then CRC for Sustainable Sugar Production, and produced 14 training-related publications between 1999 and 2002.

Robin has always been a committed, enthusiastic and hardworking member of Qld branch, serving as president and long time secretary. For the 2005 50th anniversary gala dinner Robin organised a tribute to honorary life members and gave an excellent insight into the branch's early day. In October 2004 Robin was presented with the inaugural Last Man Standing Award, given to the person who had attended the most branch meetings in recent times, specifically 28 of 33 meetings from March 1999 to October 2004 — the winner by far! #

VALE GEOFFREY BEDE STIRK (1925-2006)

(prepared by Jim Quirk, Roy Prebble, Cameron Grant)

Geoffrey Bede Stirk joined the soil physics section of the then CSIR Division of Soils in 1945 after completing a science degree, majoring in physics and mathematics at the University of Western Australia. Before his university studies he was educated at the Christian Brothers College, St Georges Terrace. As a research worker he was very well organised and resourceful and designed his experiments with meticulous care. These attributes are clearly evident in two of his early durable papers: 'Pressure potential of water moving downward into soil'[1] and 'Some aspects of soil shrinkage and the effect of cracking upon water entry into the soil'[2] and in his elegant contribution to Piche evaporimeter studies with JA Prescott, then Director of the Waite Institute, having a little earlier relinquished his additional role as Chief of the Division of Soils[3].

Quite early at CSIR Geoff became an authority on the field measurement of water infiltration into soils and as a result made really influential contributions to the irrigation areas along the Murray River and then to the irrigation areas destined for development in the Riverina in NSW, notably Denimean, Deniboota and Berriquin[4]. This experience was a precursor for his major, enduring and influential contributions to the development of irrigation in the Burdekin Valley in northern Queensland. Towards the end of 1950 or early in 1951 Geoff went to Brisbane as the regional soil physics officer for Queensland, the first such appointment in Australia. Geoff used the whole of his armoury as a physicist; his research on the use of Penman's evaporation equations for water balance studies in different ecological circumstances was an especially notable contribution[5].

Geoff was a very lively character with a wide range of interests in international affairs, Australian politics and various kinds of sporting activities. It is certainly true to say that all his colleagues enjoyed his company and especially his infectious sense of humour as well as his diversity of opinions expressed with an undercurrent of cynicism. He was a marvellous companion with whom it was always possible to disagree agreeably and often with laughter. Everyone who knew Geoff found him to be a great and entertaining character but this was tempered by thoughtful and perceptive insights.

On the last day of a Test match at Leeds in 1947 Australia was required to attain the virtually impossible target of 404 runs; Geoff opined that this was impossible and we wagered a small bet on the outcome; next morning Geoff happily paid but with the quip that it was immoral to bet on a certainty.

His orderly way of doing things evidently attracted the attention of the top brass in CSIRO and as a result he was appointed officer-in-charge of their Hobart laboratories for agriculture, horticulture, forestry and marine science. After about five years he was appointed officer-in-charge of the Division of Soils in Adelaide, a post he held for several years before his retirement. TJ Marshall was head of the soil physics section when Geoff joined CSIR. The Marshalls had built, quite near the Waite Institute, an impressive southern Californian house well designed for the Australian climate. When Geoff returned to Adelaide, the Stirks purchased the Marshalls' house so it could be claimed that he had closed the hysteresis loop of his career.

In his retirement Geoff, with his long-standing friend Bill Blackmore[6], became a devotee of croquet, apparently attaining a high level of proficiency. It was a great privilege to be numbered amongst Geoff Stirk's many friends who will keenly appreciate the deep sense of loss that his wife, Bina Stirk, and their two sons, John and Peter, as well as their families, must feel.

Footnotes

1. Stirk GB 1949. Pressure potential of water moving downwards into soil. Soil Science 68, 359-370.

2. Stirk GB 1954. Some aspects of soil shrinkage and the effect of cracking upon water entry into the soil. Australian J. Agricultural Research 5, 279-290.

3. When I (Jim Quirk) took up my post in CSIRO Adelaide in April 1947 as a replacement for Blake Clarke (who will be remembered for his work with TJ Marshall on the degradation of the structure of red-brown earth soils as a result of cultivation), Geoff Stirk and Blake Clarke boarded at 13 Highgate St, Fullarton (near the Waite Institute) and I replaced Blake in this arrangement until May 1950 when I got married and several months later went to England. So I got to know Geoff very well. He was a marvellous companion and there was never a dull moment.

4. Not long after I (Jim Quirk) joined the Division of Soils I accompanied Geoff to the Riverina in NSW where we carried out infiltration studies in the developing irrigation areas at Deniboota, Berriquin and elsewhere. Geoff was already a very skilled and well versed on infiltration techniques and theory, and my role was as an apprentice.

5. **Roy Prebble wrote**: Geoff arrived in Brisbane to join the Soil Division group under George Hubble. This group was involved in a study of the soils in the Burdekin district of north Queensland. Geoff measured the soil physical properties, particularly infiltration rates. I think it may have been from this work that he derived an index for rating some soil physical properties. Conditions in the Burdekin at that time were fairly rugged so his group was pleased to relocate to Brisbane in the former chemistry building of the Queensland University. In 1954 he began a study of soil physical properties and micrometeorology of several rainforest types in the Whian Whian forest of northern NSW where Dr L Webb was looking at the existence of different tree species at this site. He also started work on the effect of deep ploughing on the soil water regime of black earths on the Darling Downs west of Brisbane. Other work carried out by Geoff included the evaluation of the Penman Equation to estimate evapotranspiration from pastures at the Samford Research Station near Brisbane, and soil water studies of several soil types in the Chinchilla District. One of the soils at Chinchilla was of particular interest to the soil staff because of the existence of extensive gilgai formations, so the soil water profile was monitored in both the bank and depression sites. In 1966 Geoff moved to the US to work with Dr van Bavel at Tempe, Arizona doing research on evapotranspiration. After returning from the US he set up sites at the Narayen Research Station near Mundubbra to examine the effect of clearing trees on the hydrology of catchments.

6. **Cameron Grant wrote**: I met Geoff Stirk in 1989 in the library of the CSIRO Soils Division, Adelaide, after he retired and when I was a postdoctoral fellow (working with Bill Emerson, Brian Richards and Rob Fitzpatrick). We competed for the photocopier (he obviously still had OIC privileges!) and his attention was piqued when I told him I was studying the phenomenon of self-mulching in clay soils and he suggested I meet his friend, Bill Blackmore, who although retired from CSIRO had an interest in this sort of work (and lived in Adelaide). Geoff's introduction of Bill Blackmore provided me with a new colleague and mentor for several years. Geoff maintained a keen interest in our subsequent research and often dropped into the lab to lend a critical ear to our weekly reports given at morning tea. He had strong views on research and its 'management', and his incisive comments generated much hilarity in the CSIRO Soil Physics & Mechanics Group as we came to grips during the early 1990s with the gradual change in CSIRO's recurrent funding structure. When the SA Branch organised an event to mark ASSSI's 50th birthday in May 2005, he happily came along to celebrate his colleagues' accomplishments. This event was videoed by Cliff Hignett and a copy of this video will be posted on the ASSSI website. #

VALE GEORGE DIXON HUBBLE (1914-2006)

Although we noted George Hubble's passing in the last issue of Profile, his contribution to soil science is such that we would like to record his activities in more detail. The following obituary was published in the Queensland branch newsletter.

George Hubble, inaugural president of ASSSI Qld Branch (1956-58), and honorary life member of ASSSI, passed away on 29 March 2006. Here is a tribute prepared by Ian Fergus.

George Dixon Hubble was born in South Australia in 1914. He graduated from Roseworthy Agricultural College with a gold medal, and continued his tertiary education at the University of Adelaide. Agriculture was in his blood and soil science his greatest love. He was appointed to the youthful CSIRO Division of Soils by JA Prescott in 1936, just before Butler and Crocker, and spent his early years on soil survey and land assessment in northern Tasmania. In the early 1950s he was transferred to Queensland where his first job was to assess the characteristics of the soils that could be irrigated from a proposed dam on the Burdekin River. With his colleagues (mainly GG Beckmann, CH Thompson and GB Stirk) he introduced soil names like Baratta, Oaky and Dowie that are still in common use in the area today.

George then transferred to Brisbane as officer in charge of the Brisbane region, Division of Soils. His first major study there (again with Beckmann and Thompson) in the late 1950s was in the Darling Downs west of Toowoomba. Excellent crops were produced there, but little was known of the soil distribution. Again soil names like Mywybilla and Waco were introduced, which are still in common use among agriculturists of the district. Hubble carried out pedological studies in many other areas of southern Queensland, for example the large properties in the western parts held by Australian Estates. As an indication of his stature, he was introduced by Frank Skinner, senior soil conservationist in the Queensland Department of Agriculture and Stock at a meeting as 'Mr Queensland Soils'.

As officer in charge of the Brisbane region, George had much desk and paper work to attend to; so he was ever anxious to drop his pen and drive out to look at soils. He wrote of the folly of developing houses on the prolific vegetable growing krasnozems near Brisbane. He coined the phrase 'giant podzols' for certain soils of the coastal sand-masses of eastern Australia. He supervised studies of the trench that was dug from Roma to Brisbane to lay a gas pipeline. His meticulous training of young officers was outstanding - we recall Graham Murtha, Keith Smith, and Graham Roberts as typical examples.

No doubt his greatest contribution to pedology was his overwhelming contribution to the 'Handbook of Australian Soils' (ie Stace et al) produced by the Division of Soils for the 1968 International Congress of Soils in Adelaide. It was a real 'handbook', well thumbed by pedologists for many years.

George was an outstanding soil scientist, a keen researcher, but he was also a true gentleman, who set standards of behaviour that caught the respect of all his colleagues and inspired them to emulate him. He died peacefully on 29 March 2006, at the age of 92, and although, at his request, his funeral was attended only by his family and close friends, he will not quickly be forgotten by the many others who knew and respected him. #

THESES

Phosphorus bioavailability from land-applied biosolids in south-western Australia

Deborah Pritchard, Curtin University of Technology WA 2005,
http://adt.curtin.edu.au/theses/available/adt-WCU20060811.140234/

Profile is happy to publish details of student theses. Please email your thesis details and website where applicable to rebecca.lines-kelly@dpi.nsw.gov.au. #

NEW MEMBERS

Welcome to the following new members.

Qld: Simon Buchanan, Tony Crowley, Brigid McKenna, Geoffrey Smith, Bernhard Wehr, Grant Witheridge
NSW: Luke Atkinson, Richard Bush, Richard Collins, Christina Low, James Walker
Vic: Toby Prosser, Rebecca Rose
WA: Margaret Roper #

NEW MEMBER INTRODUCTIONS

David Allen

David trained in geophysics and has just submitted a PhD Thesis at the University of Technology, Sydney on imaging of aquifers beneath rivers. He is planning on adapting the technology developed to the purpose of high-resolution, multi-depth, high-productivity imaging of soils and aquifers. He is interested in working with anyone who wants to help achieve this goal and, for the same purpose, has commenced business in Dubbo NSW.as www.GroundwaterImaging.com.

Matthew Todd

Matthew is an honours graduate from Agricultural Science (UWA) where he majored in plant and soil sciences. He completed a PhD in conjunction with Alcoa World Alumina and Worsley Alumina, investigating nutrient cycling and the long-term sustainability of rehabilitated bauxite mines. From 1999 he surveyed farmland in WA, Vic and SA for potential blue gum plantations, and currently works with Strategen advising the environmental, mining, viticulture and forestry sectors. He now has experience in land capability surveys, soil mapping, environmental impact and due diligence assessments, and designing and implementing fertiliser/nutrition programs, irrigation management plans and environmental management systems. Matthew is fascinated with all aspects of soils, particularly in Australia, and looks forward to interacting with ASSSI members.

Margaret Roper

Margaret's main interests are in soil and plant associated microbiology. After completing her PHD at UNSW she was appointed to CSIRO Plant Industry, Canberra in 1979 to work on non-symbiotic nitrogen fixation associated with crop residues, and the impact of tillage practices on microbial processes. In 1992 she moved to CSIRO Plant Industry Perth to work on a microbial solution to water repellence in sandy soils, and found that manipulating populations of wax-degrading bacteria improved water infiltration significantly.

Margaret recently completed a long term study on tillage practices and their effects on microbial function in soils and crop yields under WA conditions. She is currently working with endophytic actinomycetes to increase grain yields in cereals by plant growth promotion and disease suppression, and with Chris Franco from Flinders University SA won the Australian Museum Eureka prize in 2004 for this work. #

AUSTRALIAN JOURNAL OF SOIL RESEARCH 44/6 2006

Minimising off-site movement of contaminants in furrow irrigation using polyacrylamide (PAM). I. Pesticides. Danielle Oliver, Rai Kookana.

Field and laboratory study of pesticide leaching in a Motupiko silt loam (Nelson) and in a Waikiwi silt loam (Southland). ME Close, AK Sarmah, MJ Flintoft, J Thomas, B Hughes.

Parameter estimation through inverse modelling and comparison of four leaching models using experimental data from two contrasting pesticide field trials in New Zealand. AK Sarmah, ME Close, R Dann, L Pang, SR Green.

The sorption and degradation of the rice pesticides fipronil and thiobencarb on two Australian rice soils. G Doran, P Eberbach, S Helliwell.

Long-term effects of crop rotation, stubble management and tillage on soil phosphorus dynamics. EK Bünemann, DP Heenan, P Marschner, AM McNeill.

Changes on chemical fractions of heavy metals in Chilean soils amended with sewage sludge affected by a thermal impact. M Antilén, N Araya, M Briceno, M Escudey.

Soil organic matter fractions and microaggregation in a Ultisol under cultivation and secondary forest in south-eastern Nigeria. CA Igwe and D Nwokocha.

Rainfall salt accessions in the Queensland Murray–Darling Basin. AJW Biggs

QUEENSLAND BRANCH NEWS

ASSSI and Landcare host 1956 soil conservation film

In 1956 Queensland's Department of Agriculture and Stock made a film in conjunction with Toowoomba Rotary Club to promote soil conservation. The film has rarely been shown over the past 40 years and was unearthed by branch secretary Bruce Carey who had it converted to DVD, While obviously a 1950s production, the film is still very relevant and covers topics like land capability, catchment planning, management of runoff and surface cover and agroforestry. It places much emphasis on the importance of communities working together. To recognise the film's 50th anniversary, ASSSI and local Landcare groups will show the film in late October-early November at Milmerran, Pittsworth, Jandowae, Toowoomba, Jondaryan, and Freestone. For more information contact Kristie Watling, 07 4688 1092; Kristie.Watling@nrm.qld.gov.au, or Bruce Carey, 07 3896 9390, Bruce.Carey@nrm.qld.gov.au

Meeting the climate change challenge

Queensland Department of Natural Resources and Water will host a climate change seminar at Indooroopilly on Tuesday 24 October. The lecture will cover climate change policy, greenhouse emissions and carbon sequestration, with presentations by Bill Slattery, Australian Greenhouse Office, and Weijin Wang and Ram Dalal of DNRW. The one hour lecture will begin at 11.15 in Block B large conference room, Natural Resource Sciences, Indooroopilly. No RSVP is needed. #

VICTORIA BRANCH NEWS

2006 Leeper lecture: Soils and greenhouse

Soils and greenhouse is the topic of the 15th Professor G.W. Leeper Memorial Lecture to be delivered by Tom Denmead at the University of Melbourne on 24 November. Dr Denmead is research fellow at CSIRO Land & Water.

Agriculture is the second biggest contributor of greenhouse gases in Australia. The National Greenhouse Gas Inventory estimates that emissions from agriculture constitute 16.5% of all the country's emissions compared with 50% from stationary energy (powerhouse) sources, and only 13% from the next highest sector, transport.

The main emission from the energy and transport sectors is carbon dioxide. Agriculture is generally considered to be carbon dioxide neutral although strenuous efforts are being made now to demonstrate that new tillage practices can lead to significant carbon sequestration by soils. The main greenhouse emissions from agriculture in Australia are methane from ruminants at 64% and nitrous oxide from soils at 19%. The Australian Greenhouse Office (AGO) has inaugurated a four-year strategic R&D investment plan of targeted research on managing greenhouse gas emissions and responding to climate change in agriculture and natural resource management. Three AGO funded projects the speaker is involved in are:

1. Greenhouse gas fluxes from sugarcane soils;
2. New open- and closed-path systems for measuring greenhouse gas emissions from land-managed systems (particularly from intensive animal production systems such as dairying, feedlots and piggeries); and
3. Quantifying emissions of indirect greenhouse gases from agriculture (such as ammonia and the odd oxides of nitrogen). The evening will also feature the presentation of the Frank Gibbons Award, and dinner. For more information contact Victorian branch secretary Gemma Nichol 03 5430 4335 or Gemma.Nichol@dpi.vic.gov.au. #

NSW/ACT BRANCH NEWS

National challenges for Australian soil science

Deputy Chief of CSIRO Land and Water, Neil McKenzie, spoke on challenges facing Australian soils when he delivered the second Harald Jensen Lecture to 50 members and associates of the NSW Branch at the University of Sydney on 8 September.

Factors that have lead to the decline of support for soil science around the world include the perception of soil science as a mature science, uncertainty about career prospects for new graduates, a retreat by governments from strategic investment in gathering information on natural resources and the difficulties associated with translating understanding of soil processes to the landscape scale where decisions are made.

'The consequences of declining capability are: an inability to develop strategies for restoring the production capacity of soils; an inability to solve soil related environmental problems; a costly trial and error approach to land use change, and a failure to address pressing natural resource management problems in Australia,' Neil said.

He presented six key challenges for soil science:

- build spatial data infrastructure
- monitor and forecast soil acidification
- monitor and forecast soil organic carbon
- monitor and forecast soil erosion by wind
- monitor and forecast soil erosion by water
- co-operate to ensure a clear path to impact.

Neil McKenzie (right) and Federal Council vice president Stephen

Neil concluded that 'a minimum recurrent expenditure by the Commonwealth, states and territories and research and development corporations of $25-50, 25-50 and 5-10 M/yr respectively, would be sufficient to address these challenges and avoid boom and bust cycles. To put this in perspective, $1billion has been invested in water resources and salinity, while $60 billion has been invested in infrastructure in south-east Queensland.'

Afterwards, guests inspected the NSW historic soils display prepared by Roy Lawrie and Nawash Haddad, and enjoyed discussion over tapas, paella, red wine and spectacular Spanish dancing at a Glebe restaurant. Thanks to Neil McKenzie and the organising committee for making the 2006 Harald Jensen Lecture such a success.

2007 branch trip: Soil secrets of north-west NSW

The branch's 2007 field trip will visit the state's north-west, beginning and ending at Dubbo with an overnight stay at Barradine or Coonamble. Tentative dates are 23-24 March, and possible topics include salinity, organic carbon, hydrological modelling, soil mapping, subsoil constraints, precision farming, forestry soils issues, Jurassic geology, Pilliga archaeology, and CMA soils strategies. If you would like to be involved, either in presenting or attending, please contact excursion coordinator Greg Chapman at greg.chapman@dnr.nsw.gov.au.

Digital soil mapping workshops

The branch will hold a digital soil mapping workshop in mid 2007 at the University of Sydney with the support of the soil science department there. In the meantime, Brian Murphy is organising a smaller version of the workshop with Central West and Lachlan catchment management authorities at Cowra on 7 November 2006. Contact Brian for more information at brian.murphy@dnr.nsw.gov.au.

Soil carbon stocks and fluxes in saline and sodic landscapes

Vanessa Wong, recipient of an ASSSI student travel scholarship to attend the WCSS in Philadelphia gave a seminar on soil carbon stocks and fluxes in saline and sodic landscapes at the branch's ACT extra general meeting in September.

The soil organic carbon (SOC) pool is the world's largest terrestrial carbon sink, and there is increasing interest in mitigating carbon dioxide emissions through land use practices. The distribution of SOC largely follows gradients similar to biomass accumulation, increasing with increasing temperature and decreasing precipitation. As a result, SOC levels are a function of inputs, dominated by plant litter contributions and rhizodeposition, and losses, such as leaching, erosion and heterotrophic respiration.

In 2000, Australian saline soils were estimated to cover over 5.5 million ha, and sodic soils 74 million ha, and both are predicted to increase in area. Increases in both salinity and sodicity can lead to a decline in vegetation health and plant biomass production, and in extreme cases, result in the complete loss of vegetation and the development of salt scalds, which become increasingly susceptible to soil erosion.

Because the amount of carbon in the soil depends on inputs and losses, increasing salinity and sodicity levels have the potential to decrease carbon inputs due to declining vegetation health, increasing erosion, and altered physical and chemical properties that affect nutrient cycling and biotic activity. However, few studies are available that unambiguously demonstrate the effect of increasing salinity and sodicity on carbon dynamics. This project aims to determine how increasing salinity and sodicity affects soil carbon stocks and fluxes.

Results have shown increased losses of native soil organic matter when salinity and sodicity levels increase, due to increased rates of decomposition. Where high levels of salinity and/or sodicity caused scalding, soil carbon stocks were up to five times less those in a non-degraded soil. However, the addition of organic material and gypsum into these degraded soils not only improved soil chemical and physical properties, but also re-established decomposition processes. Similarly, SOC stocks have been shown to increase to levels approaching that of a soil under native pasture following revegetation. The results of this project will provide a broader understanding of issues and processes associated with salinity, sodicity and carbon. #

VICTORIAN SOIL KNOWLEDGE BROKER SERVICE

The Victorian Catchment Management Council has established a 12 month trial website broker service to encourage exchange of soil knowledge. The trial is funded by the National Action Plan for Salinity and Water Quality. The website is designed to augment existing resources rather than replace them. A significant feature is the discussion board for interactive conversations. Users can share questions, experiences, tools, information and knowledge in a constructive and supportive environment. Topics include information on technical issues, specific soils-related queries, feature forums, and knowledge exchange tools and processes. ASSSI members are encouraged to have a look at the website in particular and contribute as they think appropriate. There are two ways to access the service: via the internet at www.catchmentknowledgeexchange.net.au or by ringing 0437 988 137. #

NEED FOR MORE STRINGENT SOIL ASSESSMENT

Robert Van de Graaff argues the need for more stringent guidelines for soil assessment and management

There is a need to ensure that all government agencies that use soil science criteria in their policies and guidelines have nationwide agreed exact definitions of the terms they used. This also means that if certain laboratory tests are used to quantify soil properties, the test method must be stated as well.

Watertable depth

For instance, the current Victorian EPA guideline 'Land capability assessment for on-site domestic wastewater management'[1] contains an 'Example: LCA assessment table'. In this table there is a land feature called 'Seasonal watertable depth (m) (incl. perched water tables)'. These are two very different things, as soil scientists know that a perched water table has unsaturated soil below and continues to drain downwards and therefore does not have the same negative implications for land capability as a permanent shallow watertable. The table claims that if these watertables occur within 1.5m from the surface the soil is unusable for on-site disposal of effluent.

There is another aspect to this rating: no time limits are placed on the position of 'seasonal' water tables. Nor is there any documented or observed factual data provided as references to support the assessment table. Taken literally, no part of the state will be able to be used for effluent disposal, as, surely, after a real downpour there will be a saturated surface layer of soil over an unsaturated soil below. In fact, Brouwer's doctoral research[2] on 13 operating septic tank effluent disposal fields in a wide area around Melbourne showed that temporary waterlogging in what constituted approximately the 90 percentile wet winter did not cause the effluent fields to fail, except where there was a permanent water table at shallow depth.

The guideline contains a clause saying this table is only an 'example' of what local government may assemble to develop their own policy on septics. However, in reality this table is used literally by the responsible authorities and by many consultants. The current version of Publication 746.1 has left out all definitions and all lab methods. For example, soil salinity criteria for capability classes are expressed only in dS/m, but without stating the soil-water ratio during the measurement.

Percolation test

In Victoria we also still have a so-called 'percolation test' on the books. This is a test in an unlined auger hole, in which water is put and then the rate of fall of the water table in the hole is measured. The only way in which (to my knowledge) the hydraulic conductivity can be calculated from this test is by means of an equation that is based on assuming the hydraulic gradient in all directions is unity [3,4], which is strictly not the case. The test was developed by a sanitation engineer, Henry Ryon, in New York State in around 1928, and he never used it to calculate Ksat, but broadly correlated it with the performance of effluent disposal fields: they either failed or they worked[5]. It has survived in Victoria to this day without critical analysis and, particularly, without correlation to field behaviour of disposal fields. The test procedure is described in an earlier EPA publication[6] but without cautioning the tester that the test is designed for unsaturated soil conditions (it is an 'above the watertable test'). Hence I have several times come across reports where people had saturated soils, augered a hole, added water to 250 mm above the base of the hole, only to see the water table in the hole rise or stay put.

This procedure is currently registered with NATA as the Victorian EPA percolation test. In the years between 1998-2000 I corresponded with NATA and made a submission arguing the percolation test ought to be scrapped as it has no proper mathematical and physical basis, nor does it say anything about effluent disposal. Also in that time I corresponded with Freeman Cook and got the CRC videos for the techniques for measuring soil permeability, and noted that the falling head percolation test in an unlined hole is not dealt with. I persuaded Standards Australia and New Zealand to accept the method by Talsma and Hallam[7] with the more recent equation by Reynolds, Elrick and Topp (1983)[8] for AS/NZS 1547:2000. It is a method that has a respectable pedigree.

Need for streamlining

I wonder if there is sufficient concern amongst ASSSI members to start some national action to streamline such guidelines and make approaches at a national level to government agencies that need to use soil properties and soil concepts in their policy making? Do we feel ASSSI and its members should more strongly push the use of properly defined soil terminology, such as in McDonald et al[9], and of established reliable measurement methods, such as

Rayment and Higginson[10], Mckenzie et al[11] amongst government bodies that deal with soil and the environment? Is there a way in which ASSSI can be seen to be a fount of soil science knowledge generously available to all? Is there a place for more short courses and lectures presented by the branches and advertised widely among soil information users who are not members of ASSSI? I would love to hear the reaction of my fellow soil scientists.

Robert van de Graaff, 03 9872 4677, vdg.robert@host1.com.au

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8. Reynolds WD, Elrick DE and Topp GC 1983. A re-examination of the constant head well permeameter method for measuring saturated hydraulic conductivity above the water table. Soil Sci., 136, p.250-268.
9. McDonald RC, Isbell RF, Speight JG, Walker J and Hopkins MS Australian Soil and Land Survey Field Handbook, Inkata Press.
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11. McKenzie N, Coughlan K and Cresswell H 2002. Soil physical measurement and interpretation for land evaluation. CSIRO Publishing. #

HISTORICAL SOILS OF NEW SOUTH WALES

The NSW branch and NSW DPI have produced nine soil monoliths from across the state to demonstrate how soils have influenced the development of New South Wales. The historic soils concept was originally proposed by Cedric Hawkins and prepared by Nawash Haddad of NSW DPI. Cedric (right) and Nawash (centre) are pictured here with Simon Eldridge, NSW DPI, and the red chromosol monolith at the display's launch in September.

Two of the profiles are calcarols from areas where Aboriginal tribes camped and used fire to enhance their food supply. Two are Sydney soils. The kandosol recalls the difficulties early settlers experienced in growing food, and the tenosol represents the Hawkesbury River alluvials that enabled the colony to feed itself. These soils are still being farmed 200 years later.

Three monoliths illustrate the expansion of agriculture across the state in the 19th century. The heavy black dermosols were grazed extensively, cropping was concentrated on the lighter red chromosols, and the red volcanic ferrosols supported dairy farming. These three soils are still some of our most versatile agricultural soils.

Two monoliths show how modern agricultural management has overcome many of the limitations of soils that were once considered too difficult to farm. The heavy brown clay vertosol is now used for rice growing, and the kurosol, a loamy topsoil over a dense acidic clay subsoil once used only for grazing, is now able to support vegetable growing and vines.

The profiles all highlight the importance of the subsoil to plant growth. Given the current dry conditions, it is sometimes surprising to see how much moisture the subsoil can hold, but roots must be able to gain access. A large root volume improves access to moisture. In many of the profiles roots can be seen penetrating deeply into the profile. Our native vegetation has evolved ways of penetrating many of our dense clay subsoils so is usually more drought-tolerant. Introduced plant species on which our agriculture is based often have less vigorous root systems and are more prone to failure in drought. Plants growing on deep, well-structured soils will survive droughts much better than where the subsoil is strongly acidic, full of rocks or contains very dense poorly-structured clay.

The monoliths are housed at NSW DPI's Camden office and available for use at field days and meetings to promote sustainable soil management, and introduce people to the wide range of soil types present across the state. For further information please contact Roy Lawrie, 4633 8327, roy.lawrie@dpi.nsw.gov.au.#

QUEENSLAND BRANCH RESPONDS TO SOIL CLAIMS

In January, columnist Ruth Ostrow wrote of her concern that food nutrients are diminishing due to poor soil management. Here is an edited version of Queensland branch's response.

On behalf of Queensland soil scientists, I wish to comment on an article in the January 28-29, 2006 edition of the Weekend Australian Magazine. The article contains the following quotes: '….many of the nutrients we need to survive are now missing from agricultural soils due to various long-term abuses and that the food we eat is often deficient in magnesium, zinc, selenium, iodine and many important enzymes and amino acids, needed to prevent illness' and 'Due to poor soil quality and over processing of food, we are receiving less nutrition than people did in our grandmother's day.'

We believe it is incorrect to suggest that the majority of Australian soils used for cropping are so deficient in nutrients that they are producing food with inadequate nutrients. If our soils were so impoverished, they would produce low yields and the food would have an unattractive appearance. The farming of such soils would not be economical and such foods would never make it to our markets. Crops need to extract nutrients from the soil in order to grow. If these nutrients are not replenished then soil fertility will decline and productivity will be low. Fertility decline is a serious problem that has faced farmers ever since they began to cultivate the soil. In fact it has been responsible for the destruction of many ancient civilisations. Impoverished soils have led to famines.

Australian farmers are addressing fertility decline through the use of fertilisers (both inorganic and organic) and appropriate crop and pasture rotations. Management strategies that reduce soil erosion and maintain good soil structure such as reduced tillage, controlled traffic farming and cover crops ensure that fertility and land quality is maintained. The nutritional value of our food varies with the soil type, management practices, variety, climate and post harvest handling. Generally speaking you can be confident that if our fruit and vegetables have a healthy looking appearance, they will contain the nutrients that nature intended. An exception to this rule is iodine which is not required for plant growth but is an important nutrient for humans. Some soils are naturally deficient in iodine even in their virgin state. To overcome iodine deficiency in humans, products such as iodised salt are recommended. #

NEW SOIL MAPS FROM OLD

Robert van de Graaff describes how his team developed a soil health action plan and maps using a range of existing non-digital soil maps.

A team consisting of Ian Allan (Geocode Mapping & Analysis P/L), Andrew Patterson (Patterson Rural Business Management) and I have recently completed a soil health action plan for the Glenelg-Hopkins Catchment Management Authority. The catchment covers almost 12% of Victoria and extends from the western edge of Ballarat to the border of South Australia, and as far north as the Grampians.

We had to rely on existing information about geology, land forms, soils, and land use because the project scope did not allow for new mapping to be undertaken. We knew that the area had been the subject of separate studies, all incompatible in terms of spatial scale, coverage, nomenclature and purpose. About half of the area had been covered by rather detailed land system mapping in the mid sixties by Frank Gibbons, Geoff Downes and Graham Sibley of the Victorian Soil Conservation Authority. John Martin and John Maher of the Victorian Department of Agriculture mapped the soils of the basaltic and adjacent areas of the south western plains in 1987, using the geological map for the boundaries of their mapping units. Bernie Joyce, Melbourne University, mapped the basaltic regolith in more recent times, between 1999 and 2003, and this correlated well with soil types, as the age differences and weathering differences are quite significant. Finally, Nathalie Baxter and Nathan Robinson of PIRVic, Department of Primary Industry, mapped all the soil terrains in the catchment as land units in 2001. They also described soils from soil pits in a number of locations.

We found that the Gibbons & Downes and the Sibley land system mapping contained detailed useful information on the land, its soils, land degradation, and other themes, but the terminology and procedure used for soil classification were well out of date and in some cases information on land use was also out of date. However, it proved to be possible to re-draw land system boundaries using the most recent 1:250,000 scale digital geological mapping. Likewise, the texts were also digitised and then edited and combined using terminology that was consistent and up-to-date. For example, terms such as leptopodsol and wiesenboden were translated into the new Isbell categories.

We also combined the detailed soil profile descriptions in the original work with the laboratory data for the same profiles. In the original text they were all in separate appendices.

The mapping by Maher and Martin and by Baxter and Robinson provided soils information in all the areas not covered by Gibbons & Downes and by Sibley. The regolith mapping by Joyce determined the manner in which the basaltic terrains were delineated as five different land systems.

The publications by Gibbons & Downes and by Sibley are out of print and hardly available anymore. There is plenty of anecdotal evidence that many spare copies and maps were discarded during the various governmental restructurings in Victoria when offices were cleaned out. Yet, local soil conservation field officers have found the original work extremely useful.

We managed all the spatial data in GIS and produced thematic maps, based on the new land systems, showing the linkage with soil health issues and desirable soil management. The computer age has given the old work a new lease on life and it is now very accessible to all users with a computer. It is also the intent of our work that it be accessible to landholders, not just officials, so the text refers to appendices for explanations of soil science theory, where theoretical concepts are mentioned. We also discussed the soils in the context of the region's geology and geomorphology so as to allow the reader to understand the region as a whole. First indications from farmers on the technical steering committee indicate they find the writing easy to follow.

The reason for reporting this activity is that it is still common for excellent old soils information to be forgotten because neither its mapping nor text are digital. This, and other projects undertaken by our group, have convinced us that the extra effort is worth it. The CMA now has a single study that represents all its soils in a format that is compatible in terms of scale and the way the soils are described. The mapping can now be used throughout the CMA via its corporate computer network, and can be inexpensively distributed to others in the catchment on CD. We'd like to give credit for the generous help we received from John Martin, Nathan Robinson, Keith Reynard, David Rees, Laurie Norman, Bill Sharp, Peter Dixon and many others on the steering committee, several of whom are ex-SCA friends and colleagues, and also from the landholders whose properties we visited. #

TIBET SOIL NOTE from ROY LAWRIE

I recently returned from a trip to western China and Tibet, where I spent 3 weeks travelling by 4WD between Kashgar and Lhasa. The range of soils I saw across this part of the Tibetan plateau, a region seldom visited by soil scientists, is remarkably limited. In Australian terms, the distance is about the same as from Sydney to Cape York, yet I scarcely saw a B horizon!! Despite looking at hundreds of kilometres of road cuttings, often at walking pace, the degree of profile development I could see was minimal. Rudosols dominate the landscape. Dark A horizons are present, particularly in moister sites, with peaty topsoils [organosols?] apparent in some high alpine areas. On the plateau there is a pronounced rain shadow north of the Himalayan peaks, and rainfall also decreases from east to west. In the drier west, vegetation is scarce and white saline crusts appear in patches, sometimes around the shore of salt lakes. This trip certainly made it easier for me to appreciate the 19th century Russian concept of zonal soils. Conditions for plant growth are harsh, especially in the west. There are no trees, and away from drainage lines, hardly any A horizon. Nomadic grazing is the major land use, and fenced paddocks are rare, except in the cropping areas of the eastern valley floors. Erosion is massive, favoured by the threadbare cover of vegetation. The effect of this erosion on the huge rivers flowing out of Tibet {eg the Indus, Brahmaputra, Ganges, Mekong and Yangtze} must be of concern in countries downstream, especially where large dams have been built. Since the Tibetan plateau is still being uplifted at up to 10 cm/yr (as India collides with Asia) this should be almost counterbalanced by the erosion rate, otherwise the region would be many thousands of metres higher. Roy Lawrie, roy.lawrie@dpi.nsw.gov.au.#

IUSS NOTES

New IUSS report: International mechanisms for sustainable land management

The IUSS working group IASUS (International actions for the sustainable use of soil) has produced an overview of international actions concerned with sustainable land management, based on contributions from members of the IASUS network. The report *Developing international mechanisms for sustainable land management* has three parts: Putting soils higher on the international agenda; Developing international mechanisms for sustainable land management; Priority setting for further action. Download the report at www.cde.unibe.ch or the IUSS Website (publications).

Pedometron newsletter

The latest issue of Pedometron, the newsletter of the Pedometrics Commission of the IUSS, is now published. It is a Bumper Issue with reports on the 18th World Congress of Soil Science, the second Global Workshop on Digital soil mapping, the Richard Webster Medal, the Working Group on Digital Soil Mapping, Research Notes: Trends in pedotransfer function research, a book review and an article on Sudoku, soils and sampling: compulsory reading! http://www.pedometrics.org/pedometron/pedometron20.pdf

Critical zone booklet

IUSS has published a 30 page booklet on the Earth's outermost surface defined from the vegetation canopy to the zone of groundwater. This 'critical zone' modulates the transfer of nutrients into terrestrial life. To understand processes in such settings, scientists from multiple disciplines must unravel complex inter-relationships within the hydro-, litho-, and biosphere. Read the report at http://www.iuss.org/Critical%20zone%20booklet.pdf. #

WORLD CONGRESS UPDATE

IUSS president Roger Swift, reports on planning for the 19th World Congress of Soil Science to be held in Brisbane in 2010.

The next World Congress of Soil Science (19WCSS) will be held on 1-6 August 2010 at the Brisbane Convention and Exhibition Centre. The Congress is traditionally held in July or August to accommodate the schedules of the northern hemisphere scientists who tend to make up the bulk of the attendees.

The committee structure that we have adopted will be similar to that used for the 18th Congress in Philadelphia and comprises several committees.

Executive committee

This is a small group with oversight of all aspects of the Congress, chaired by the president with vice-president, other committee chairs and the secretariat as members.

Scientific committee

This committee is chaired by IUSS vice-president Neal Menzies, and is comprises Australian chairs and vice-chairs of IUSS Divisions and Commissions, plus other positions responsible for organising tours, editing publications etc.

Organising committee

This committee, responsible for the organisation and running of the Congress, will be co-chaired by Mike Grundy and Stephen Raine. Philippa Tolmie will be responsible for the secretariat. This group has considerable experience in organising scientific meetings and was largely responsible for the organisation of the International Soil Conservation Organisation Conference held in Brisbane in 2004. **A meeting is being held for those keen to be involved with organisation of the Congress at UQ Gatton College on October 27, 10 am to 12 noon. Contact Philippa Tolmie on Philippa.Tolmie@nrm.qld.gov.au.**

International committee

This group provides advice on scientific and organisational matters, and is chaired by the president with a number of current IUSS officers and other leading international scientists as members.

Much of the organisational burden of the Congress will fall on the local members of the Queensland Branch of ASSSI. However, there will be many other tasks which will need to be undertaken by our colleagues around the country. Principally, these will relate to the organisation of field tours and organising and convening the many symposia that will make up the scientific program. In order to facilitate interaction across the country, I have asked each Branch to nominate a contact person to work with us throughout the period to the Congress. These nominees will form part of the organising committee.

A number of field tours will cover a range of biogeographical regions in Australia and New Zealand. As many of you will know, there has been a growing tendency for field tours to be cancelled in the run up to the Congress due to insufficient numbers of attendees registering for the tours at an early stage. We believe that the tours are a key part of the program and are essential if our international colleagues are to gain an appreciation of Australian soils and environments. Therefore, every effort will be made to organise these tours in a flexible way with respect to transport and accommodation. In this way, we hope to avoid disappointing those who are keen to participate in the tours as well as those who will have taken the trouble to organise them.

A URL (www.19wcss.org.au) has been secured for the website and this will be started up in the next few weeks with an initial posting of basic information. Further information about all aspects of the Congress will be posted on the website as it comes to hand. This information will also be disseminated to international colleagues through the IUSS Bulletin and brought to their attention through IUSS Alerts and we will maintain a regular flow of information through Profile.

We are very grateful to our colleagues in the USA who have kindly made available a large amount of information arising from the organisation and running of the 18th WCSS. This will help us greatly in the preparation and organisation of the 19th Congress. I hope that many of you will be able to join us in helping to organise a first-class Congress and provide a memorable experience for our international visitors. #

NEW BOOKS

Trace elements in the environment
M Prasad, K Sajwan & R Naidu
CRC Press
Covers advances in state-of-the-art analytical techniques, molecular biotechology, and contemporary biotechnology that enhances knowledge of the behaviour of trace elements.
http://www.crcpress.com/shopping_cart/products/product_detail.asp?sku=L1685&parent_id=&pc=

Managing arsenic in the environment
R Naidu, E Smith, G Owens, P Bhattacharya, P Nadebaum
CSIRO Publishing
Brings together the current knowledge on arsenic contamination worldwide, reviewing the field, highlighting common themes and pointing to key areas needing future research.
http://www.publish.csiro.au/pid/3478.htm

Biological diversity and function in soils
R Bardgett, M Usher, D Hopkins
Cambridge University Press
Reveals the dynamic roles of soils in ecosystems now that techniques are available to identify and characterise soil organisms and measure major ecosystem processes.
http://www.cambridge.org/aus/catalogue/catalogue.asp?isbn=0521609879 #

SOILNOTES

International Year of Planet Earth

2008 is the International Year of Planet Earth. The aim of the Year is to demonstrate new and exciting ways in which earth sciences can help future generations meet the challenges involved in ensuring a safer and more prosperous world. The ten themes of the year are groundwater: hazards, health, climate change, resources, megacities, deep earth, ocean, soil, and diversity. Organisers have produced informative 16 page brochures for each of these themes and these can be downloaded at http://www.yearofplanetearth.org/downloads.htm. The soils brochure: 'Soil - earth's living skin' is at http://www.iuss.org/SoilbrochureYPE.pdf.

Workshop on root/soil/soil biology in agriculture

CSIRO Plant Industry will hold this workshop in Canberra, 31 January -3 February 2007. It comprises two days of talks and discussions, followed by two days of practical sessions on collection and characterising of root exudates, and microscopy techniques for studies of roots, rhizospheres and soil microbes. All are welcome to attend the first two days of the workshop. Spaces for the practical sessions are limited and allotted on a first come basis. Enquiries to M.E. McCully, CSIRO Plant Industry 6246 5343.

Carbon: should we hoard it or use it?

Rapidly rising concentrations of atmospheric carbon dioxide have prompted a flurry of studies on soils as potential carbon (C) 'sinks'. This paper looks at the trade off between carbon accrual and decay, and the need to understand the flow of carbon rather than only the stocks. Read the paper by Jantzen in Soil Biology and Biochemistry, (1 March 2006). It is No 22 in the journal's top 25 articles at http://top25.sciencedirect.com/?journal_id=00380717.

Terra preta soils

Scientists at the recent World Congress of Soil Science agreed that terra preta, a man-made soil made by charring organic matter, is an effective way to sequester carbon. In South America these soils are up to 7000 years old, contain up to 9% carbon and three times the phosphorus and nitrogen of surrounding soils. Productivity of crops in terra preta is twice that of crops grown in nearby soils. Research interest in these biochar soils is blossoming. Read more in Nature (10 August 2006) at http://www.nature.com/nature/journal/v442/n7103/full/442624a.html. #

CONFERENCES & WORKSHOPS

Contaminated site remediation, Adelaide.
24-28 June 2007
http://www.crccare.com/clean_up07.htm

Forest soils and ecosystem health, Sunshine Coast
19 August 2007
http://www.griffith.edu.au/conference/isfs2007/content01.html

Organic matter stabilisation and destabilisation in soils and sediments, Adelaide
23-26 September 2007
www.clw.csiro.au/conferences/organic/

Salinity forum, Adelaide
31 March-3 April 2008
http://www.internationalsalinityforum.org

High resolution digital soil sensing & mapping, Sydney
5-8 February 2008
http://www.iuss.org/HRDSM_Flyer3.pdf

19th World Congress of Soil Science, Brisbane
1-6 August 2010
http://www.19wcss.org.au

ASSSI FEDERAL COUNCIL MINUTES

Australian Society of Soil Science Inc.
Minutes for Federal Council Meeting 231 (Teleconference)
Friday 15 September 2006

1. Opening

N Menzies opened the meeting at 3.05 pm.

Attendance: Neal Menzies (President), Stephen Cattle (Vice President), Steven Raine (Secretary), Linda Bennison (Executive Officer), Damien Adcock (SA President), Robert White (VIC President), Brian Murphy (NSW President), Graham Price (CPSS Board Chair), Kristie Watling (QLD President), Geoff Beecher (Riverina Vice-President)

2. Apologies

Cameron Gourley (Treasurer), Dan Carter (WA President), Cameron Grant (Chair, Organising Committee, 2006 Conference), Alice Melland (Finance Review Committee Rep), Rebecca Lines-Kelly (Profile Editor), Jason Condon (Riverina President), Derek Yates (Webmaster)

3. Minutes of meeting 230

S Raine moved that the minutes of the 230th Federal Council meeting be accepted as a true and correct record, seconded by S Cattle, accepted unanimously.

4. Business arising from meeting 230

4.1 Re: 4.1 Article on website content issues will be in next issue of Profile.

4.2 Re: 4.2 NM has had a meeting with Mike Grundy who has agreed to co-chair the 2010 World Congress organising committee with Steven Raine. Philippa Tolmie has agreed to manage the secretariat for the committee.

NM is currently working with the co-chairs in finalising the organising committee and scientific committee. They are also working towards engaging a professional conference organiser to support the conference preparations.

R Swift to write to Branch presidents and the NZ Society of Soil Science in the near future seeking assistance in organising field trips and suggestions for members of the scientific committee. Organising committee and PCO when appointed will initiate work towards the development of a business plan.

Action: NM to clarify the financial support from the IUSS and the obligations arising from these contributions.
Action: NM to write to members who attended the 2006 IUSS Congress to provide their comments and observations on the congress operation with a view to ensuring a success of the 2010 Congress. NM also indicated that there will be several sessions at the 2006 National Conference to enable members to provide suggestions on improving the 2010 Congress.

4.3 Re: 4.3 Done

4.4 Re: 4.5 Carried over. LB has put the production of all certificates on hold until logo has been resolved. LB to arrange certificate production for HLM in October.

4.5 Re: 4.6 Done. Voting is currently open and will close on the 30th September 2006.

4.6 Re: 4.7 Process started.

Action: Branch presidents to review list of unfinancial members with a view to follow up individuals.

4.7 Re: 5 SC still to follow up with the webmaster on website development

4.8 Re: 11.1 Publication review committee. Still seeking members. R White indicated that they have discussed but yet to identify a nominee.

Action: Branch presidents to finalise nominations to the publications review committee.

4.9 Re: 11.2 Started sorting these committees out, but more action required. NM has contacted chairs of the various committees to ascertain progress.

Action: SR to circulate the list of committee members to branch presidents.

CG Stephens Award Committee for 2004 and for 2005 was S Cattle (NSW Branch), Bob Gilkes (WA Branch) and R Fitzpatrick (SA Branch). Also nominations for S Black (Riverina) and R van der Graff (Victoria) to sit on the CG Stephens Award Committee for 2006.

Action: NM to seek for nominations for publications medal award.

4.10 Re: 11.4 Done

5. President's report

NM indicated that he has been active with the 2006 IUSS World Congress and initial planning for the 2010 IUSS World Congress. He also indicated that he currently looking to re-invigorate the discussions with NZSSS regarding options to improve linkages between the societies.

6. Treasurer's report

LB provided the treasurer's report. The finance review committee has met. The key points from the FRC meeting were:

The profit and loss statement and balance sheet were analysed and the society remains in a strong financial position with assets of $160,564.61 in the bank.

Initiatives undertaken since the last finance review committee have streamlined the accounts held by the society resulting in several gains: reduced administration time in relation to bank accounts and BAS, lower bank fees, and an additional $360 per month interest income.

Members discussed the change in the society's financial performance over the past five years from a loss making association to a profitable one. The FRC considered it is important to understand the key factors driving this change (electronic deliver of Profile, CPSS accreditation run by the society) and the EO will prepare a special report to Federal Council for delivery at the Adelaide conference Federal Council meeting. This report should assist the Federal Council with future strategic planning.

C Gourley indicated that he is re-locating to the USA for twelve months. Hence, CG will be an apology for the Adelaide conference and 2006 AGM and will not be seeking re-election to the treasurer's position. FRC agreed that the financial aspects of the society could function normally until December as AM is a co-signatory for the society cheque accounts.

Future actions:

Transfer the funds from the St George account to the National to consolidate accounts when the term deposit matures.

Graph assets over time and indicate key events influencing the Society's finances.

Tidy up the historical payments in QuickBooks from the previous EO (undeposited funds and accounts receivable).

Contact the 2005 Auditor and action the query regarding incorrect classification of NSW Branch field trip payments, processed by the Federal Office, as bank charges.

There was some discussion regarding the unavailability of the treasurer. R White moved that A Melland be asked to assume the position of acting treasurer for the remainder of the current term, seconded G Price, accepted unanimously.

R White moved that the funds for the St George term deposit account be rolled over into the NAB Maximiser account in February, seconded N Menzies, accepted unanimously.

7. EO's Report

7.1 LB provided an update on membership applications and administrative activities currently being undertaken. S Cattle moved that L Atkinson, S Buchanan, R Bush, R Collins, T Crowley, C Low, B McKenna, T Prosser, M Roper, R Rose, G Smith, J. Walker, G Witheridge and B Wehr be admitted as members, seconded K Watling, accepted unanimously.

8. Secretary's Report

Correspondence In

IUSS Secretariat – re: Minutes of the IUSS Council World Congress Meeting 9th July 2006

9. Profile editor's report

No report provided. NM reflected the appreciation of Federal Council for R Lines-Kelly taking on the Profile editor's position and getting the latest issues of Profile out.

Action: NM to write to J White to formally express appreciation for her contribution to the Society as Profile Editor over the last two years.

10. CPSS Board Report

G Price had circulated a report on the CPSS Board meeting (teleconference) held on 31 August. The main points were:

More OPD diaries were assessed and hours approved.

One new application was considered and one stage upgrade still required to provide more information.

Register of expertise has been finalised with some further refinements. Registers will be populated shortly.

Electronic seals have been developed for accredited members for use on reports and stationery to promote CPSS status.

Audit process has been defined and will be more searching, with feedback to each person.

Posters for conference in process of development.

CPSS Board is looking for a new member next year, so this needs to be announced in Profile.

CPSS Board proposes a change to the charges for CPSS membership and accreditation.

Executive Officer (LB) to contact AIAST (Acting EO) re CPSS logo, as the executive officer has resigned and issue of ownership needs to be clarified.

Progress with accommodating ACSS members is progressing and has assisted in the proposal of a pyramid structure of ASSSI and CPSS membership (see attached document).

Feedback from the EO is that 4 of the membership applications received recently expressed an interest in CPSS.

LB tabled a document discussing the relationships between the ASSSI and CPSS membership categories.

Action: LB to further develop the membership relationships proposal in consultation with CPSS Board and provide further details for consideration at next FC meeting.

11. National conference report

C Grant had provided a written report which was tabled. Key points were:

Plans for the conference are progressing well. The organising committee continues to meet bi-weekly and several subcommittees meet more regularly.

The technical program committee (Jock Churchman, Ron Smernik, me) extended the deadline to the end of August to accommodate people from ASSSI, ASPAC and ACMS – we couldn't assume everybody was aware of the deadlines. We have now read all the abstracts and accepted/rejected them and allocated all papers to either oral or oral-poster sessions. Submissions received after Aug 31st were automatically assigned to oral-poster sessions unless the committee considered them to be absolutely fantastic.

In attempting to keep the number of concurrent sessions in the program to a minimum (a common complaint from previous conferences – too many concurrent sessions) we have allocated oral talks across only three concurrent sessions. This means not everybody who wanted to give an oral presentation will be able to do so, but very few have complained. Authors have now been notified of the status of their papers and have been encouraged to register early.

Tours: There are limited places in some of the mid-conference field and lab visits, and there is also a limited number of seats on the post-conference field trip to the southeast of South Australia. Richard Merry will lead the post-conference bus and anybody who has heard him speak about soils will know that the trip will be packed full of interesting information. I hope Federal Council will encourage the ASSSI membership to register early (October 1st) to take advantage of the lower prices.

Sponsorship and Promotion: Mike McLaughlin (with some help from Jim Kelly) has secured $10k sponsorship from LWA and we have approached GRDC for $5k. Other proposals are being drawn up and while we have reduced our sites from the original $100k sponsorship goal (for various reasons – mainly conflicting conferences) we are confident we can raise $30k. In any case, with 230 papers we will undoubtedly have more than 250 registrants, which is the break even point for our budget. We should be able to return FC's $10k loan and contribute something to the conference account for next time.

AGMs and Board meetings:
ASSSI AGM: Mon 4 Dec at 6 pm (we need to keep this AGM on time because the CPSS Board meets immediately afterward).
CPSS Board Mtg: Mon 4 Dec at 7 pm (it would be good to keep this Board meeting short so we can participate in Pub Crawl, which starts 8pm).
ASPAC AGM: Wed 6 Dec at 6 pm.
ACMS AGM: Thur 7 Dec at 4 pm.

There was some discussion regarding the meeting times. LB suggested that there should be a FC meeting at 12pm on 3 December.

Action: LB to work with G Price to identify an appropriate time for the CPSS Board meeting.

R White moved acceptance of the reports in Sections 6-11 above, seconded D Adcock, accepted unanimously.

12. General business

12.1 Student sponsorship to attend National Conference. – FC noted that this issue had been resolved via email correspondence between meetings. S Cattle moved "that FC provide up to $1500 to each Branch to support student sponsorship to attend the 2006 National Conference on the understanding that (a) this money is matched by the relevant Branch (b) that support is only provided to existing ASSSI student members, (c) preference be given to supporting postgraduate students that are presenting a paper at the conference, and (d) the Branches are responsible for deciding who/how this money is allocated to support their students", seconded S Raine, accepted unanimously.

Action: Branch presidents to confirm their own arrangements and to undertake appropriate advertising.

12.2 Special Stamp for IUSS 2010 World Congress – This issue was spoken to by B Murphy who indicated that there was a stamp produced for the 1968 Congress. NM indicated that he has already held preliminary discussions with Australia Post regarding this issue and will follow up early in 2007. There could be a series of stamps. LB suggested that if it is a series then perhaps it could reflect the State soils. R White indicated that Australia Post would most likely commission a professional stamp designer and suggested that the Society should emphasise the soil educational perspective of the stamp(s).

13. Close

The meeting was closed at 4.25 pm Queensland time. The next meeting of Federal Council will be a face-to-face meeting on 3 December 2006. #

CONTACTS

FEDERAL COMMITTEE

President
Assoc. Prof. Neal Menzies
School of Land and Food Sciences
University of Queensland
ST LUCIA QLD 4072
Telephone 07 3365 2059
n.menzies@uq.edu.au

Secretary
Assoc. Prof. Steven Raine
Faculty of Engineering & Surveying
University of Southern Queensland
TOOWOOMBA QLD 4350
Telephone 07 4631 1691
raine@usq.edu.au

Treasurer
Dr Cameron Gourley
Dairy Research Institute
RMB 2460 Hazeldean Road
ELLINBANK VIC 3820
Telephone 03 5624 2226
cameron.gourley@dpi.vic.gov.au

Vice President
Dr Stephen Cattle
Faculty of Agriculture, Food & Natural Resources
UNIVERSITY OF SYDNEY 2006
Telephone 02 9351 2944
s.cattle@acss.usyd.edu.au

ASSSI Webmaster
Mr. Derek Yates
Nat. Cr Groundwater Technology
UTS Room 1715
PO Box 123
BROADWAY NSW 2007
Telephone 02 9514 2702
derek.yates@uts.edu.au

Executive Officer
Mrs Linda Bennison
ASSSI Executive Officer
PO Box 1349
WARRAGUL VIC 3820
Telephone 03 5622 0804
office@asssi.asn.au

Newsletter Editor
Ms Rebecca Lines-Kelly
Wollongbar Agricultural Institute
1243 Bruxner Hwy
WOLLONGBAR NSW 2477
Telephone 02 6626 1319
rebecca.lines-kelly@dpi.nsw.gov.au

NEW SOUTH WALES

President
Dr Brian Murphy
DNR Cowra Research Centre
PO Box 445
COWRA NSW 2794
Telephone 02 6349 8851
Brian.W.Murphy@dipnr.nsw.gov.au

Secretary
Dr Christopher Dorahy
CROA, NSW DPI
Private Mail Bag 8
CAMDEN NSW 2570
Telephone 02 4640 6443
chris.dorahy@dpi.nsw.gov.au

Treasurer
Mr. Budiman Minasny
Agriculture, Food & Nat. Resources
UNIVERSITY OF SYDNEY 2006
Telephone 02 9036 9043
budiman@acss.usyd.edu.au

NSW Editor
Dr James Taylor
Agriculture, Food & Nat. Resources
UNIVERSITY OF SYDNEY 2006
Telephone 02 9351 3706
j.taylor@agec.usyd.edu.au

QUEENSLAND

President
Ms Kristie Watling
Natural Resources, Mines & Water
PO Box 318
203 Tor Street
TOOWOOMBA QLD 4350
Telephone 07 4688 1092
kristie.watling@nrm.qld.gov.au

Secretary
Mr. Bruce Carey
Natural Resources,Mines & Water
Block C, 80 Meiers Road
INDOOROOPILLY QLD 4068
Telephone 07 3896 9390
bruce.carey@nrm.qld.gov.au

Vice President
Ms Philippa Tolmie
Natural Resources, Mines & Water
PO Box 318
TOOWOOMBA QLD 4350
Telephone 07 4688 1429
philippa.tolmie@nrm.qld.gov.au

Treasurer
Dr Stephen Catchpoole
Max Winders & Associates P/L
GPO Box 3137
BRISBANE QLD 4001
Telephone 07 3002 5500
stephenc@maxwinders.com.au

QLD Newsletter Editor
Mr. Ben Harms
Natural Resources, Mines & Water
Block C, 80 Meiers Road
INDOOROOPILLY QLD 4068
Telephone 07 3896 9609

ben.harms@nrm.qld.gov.au

RIVERINA

President
Dr Jason Condon
Agricultural and Veterinary Sciences
Charles Sturt University
Locked Bag 588
WAGGA WAGGA NSW 2678
Telephone 02 6933 2278
jcondon@csu.edu.au

Secretary
Mr. Geoffrey Beecher
NSW DPI
PO Box 104
LEETON NSW 2705
Telephone 02 6951 2 725
geoff.beecher@dpi.nsw.gov.au

Treasurer
Mr. Richard Early
Charles Sturt University
3 Baree Place
WAGGA WAGGA NSW 2650
Telephone 0427 007 759
rearly@csu.edu.au

SOUTH AUSTRALIA

President
Mr Damien Adcock
University of Adelaide
Soil & Land Systems
PMB 1 GLEN OSMOND SA 5064
Telephone 08 8303 6578
damien.adcock@adelaide.edu.au

Secretary
Mr Clayton Butterly
University of Adelaide
Soil and Land Systems
PMB 1 GLEN OSMOND SA 5064
Telephone 08 8303 6578
clayton.butterly@adelaide.edu.au

Treasurer
Mr. Bernard Zarcinas
CSIRO Land and Water
PMB 2 GLEN OSMOND SA 5064
Telephone 08 8303 8429
bernie.zarcinas@csiro.au

Vice President
Mr. Dougal Currie
University of Adelaide
Soil and Land Systems
PMB 1GLEN OSMOND SA 5064
Telephone 08 8303 7284
dougal.currie@adelaide.edu.au

VICTORIA

President
Emeritus Prof. Robert White
Land and Food Resources
The University of Melbourne
PARKVILLE VIC 3010
Telephone 03 8344 5886
robertew@unimelb.edu.au

Vice President
Dr Louise Clark
Environmental & Earth Sciences P/L
PO Box 2253
FOOTSCRAY VIC 3011
Telephone 03 9687 1666
lclark@eesi.biz

Secretary
Ms Gemma Nichol
PIRVic, DPI Bendigo Centre
PO Box 3100
BENDIGO DELIVERY CR VIC 3554
Telephone 03 5430 4335
gemma.nichol@dpi.vic.gov.au

Treasurer
Mr Gary Clark
Department of Agricultural Sciences
La Trobe University
BUNDOORA VIC 3086
Telephone 03 9479 5673
gjclark@students.latrobe.edu.au

VIC TAS rep
Ms Lucy Burkitt
Institute of Agricultural Research
PO Box 3523
BURNIE TAS 7320
Telephone 03 6430 4972
Lucy.Burkitt@utas.edu.au

WESTERN AUSTRALIA

President
Dr Daniel Carter
Natural Resource Sciences
WA Department of Agriculture
Private Locked Bag 4
BENTLEY DC WA 6982
Telephone 08 9368 3408
dcarter@agric.wa.gov.au

Vice President
Mr. Keith Lindbeck
Keith Lindbeck and Associates
PO Box 144
BULLCREEK WA 6149
Telephone 08 9332 0671
keith@keithlindbeck.com.au

Secretary
Dr Christoph Hinz
University of Western Australia
Soil Science and Plant Nutrition
35 Stirling Highway
CRAWLEY WA 6009
Telephone 08 6488 3466
chinz@segs.uwa.edu.au

Editor
Dr David Allen
Chemistry Centre WA
125 Hay Street
EAST PERTH WA 6004
Telephone 08 9222 3031
dallen@ccwa.wa.gov.au