

P r o f i l e

The official newsletter of the Australian Society of Soil Science Inc



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In this issue

Branch news

Feature: Pioneers of soil science

Feature: A healthy soil saves money

Feature: NZ SLURI

Soil poetry

In praise of soil

World Soils Day celebrations

The Victorian Branch celebrated ASSSI's half century on World Soils Day, 5 December 2005 with 50 members and friends at the Melbourne Museum. Robert (Bob) White spoke on the importance of educating the urban population about soils (read his talk in the Features section); Ron Prestidge, DPI's general manager for Environmental Resource Sciences, explained the government's role in soil science; Neil McKenzie (CSIRO) explained the services ASRIS provides; and David Rees (DPI) outlined the revision of geomorphology for Victoria and how this nested within the ASRIS framework. David acknowledged the tremendous support given by the Victorian Geomorphology Reference Group who, though retired from their professions in academic and government service, continue to make a contribution to our science. The last formal item for the event was a rundown on the 11 contenders for Victorian State Soil, the announcement of the winning soil, and the announcement of Cliff Dillon from Shepparton as the winner of the state soil prose competition with his poem praising red sodosols. Read the poem and excerpts from other entries later in this section.

Victorian state soil: mottled brown sodosol

To increase awareness and appreciation of soils in Victoria, the branch opened its selection of a state soil to popular vote after selecting 11 contenders. 'Champions' for each soil provided written descriptions, which can be found on Victorian Resources Online at http://www.dpi.vic.gov.au/dpi/vro/vrosite.nsf/pages/soil_vic.

The search inspired Weekly Times journalist Danielle LeGrand to write a two-page feature describing the 11 soils and featuring three farmers' personal stories about their farm soils. Her follow-up article announced the winning soil, and resulted in two ABC radio interviews about the soil and World Soils Day.

The search attracted 158 votes. The winning soil by popular vote and energetic 'how to vote' advice by a dedicated team led by David Rees, is the mottled brown sodosol. Red

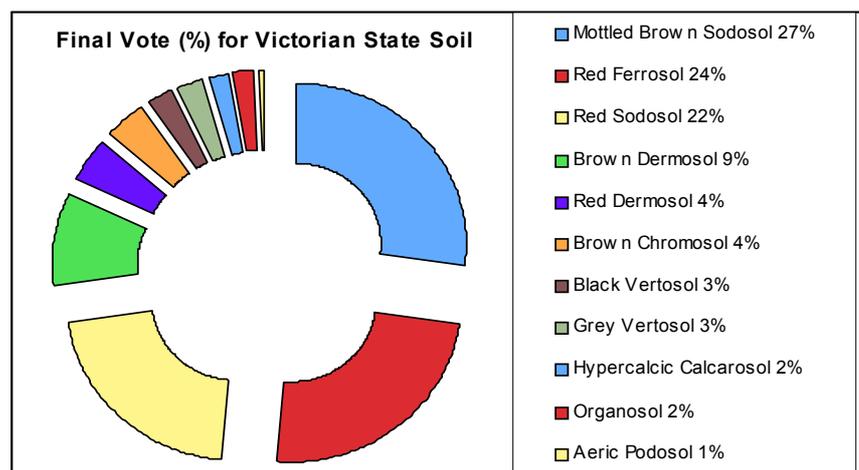
ferrosol and red sodosol, with less ambitious champions in Nick Uren and Mark Imhof, were not far behind. These three soils were clearly well ahead of the other contenders (see figure).

So the Victorian Branch must get behind the mottled brown sodosol as a symbol for all that is needed in soil science and soil management in Victoria. It's not a bad choice really as it is capable of expressing every problem encountered in other soils. Waterlogging, poor structure and erosion are very characteristic of this soil. It needs careful management, just like our state emblematic fauna and flora that are endangered and also in need of care.

Frank Gibbons essay award: call for entries

The Victorian branch is calling for entries for the 2006 Frank Gibbons essay award on the topic 'Soils and climate in Australia'. The theme is open to interpretation but may include climate change, soil atmosphere, soil formation and/or management. The award is open to current undergraduate students attending Victorian or Tasmanian tertiary institutions and is assessed on the basis of scientific merit, relevance to the topic and the overall effectiveness in communicating to a scientific audience. The award will be presented at the Leeper Memorial Lecture on 24 November 2006 at the University of Melbourne.

Award criteria



The length of the essay is between 1000-1500 words. The student should be the sole author of the essay. Essay nominations are to be made by the student's supervisor. The following declaration signed by the Chair of the Department should be attached: "I hereby state that the attached essay was written by an enrolled student and meets all of the requirements specified in the Guidelines for the Frank Gibbons Award". Submissions close on 13 October, 2006. All submissions (one hard copy and one email copy) should be forwarded to Gemma Nichol, DPI, PO Box 3100, Bendigo Delivery Centre, Victoria 3554.
Email: Gemma.Nichol@dpi.vic.gov.au

Right: Last year's essay winner, Monash student Ang Chee Heong, receiving his prize from Richard McEwan. Ang won \$250 plus two years subscription to ASSSI for his essay 'Half a century of soils research: Contribution of soil classification in Australia'.



2006 Leeper lecture

The 2006 Geoffrey Leeper Memorial Lecture will be presented by Dr OT Denmead, Research Fellow, CSIRO Land and Water on the topic 'Soils and greenhouse'. The lecture will be held at the University of Melbourne on 24 November 2006 at 5pm, followed by refreshments and dinner, and a post-lecture field trip to the Mornington Peninsula on Saturday 25 November.

2005 Leeper lecture: The world's biggest water filter

NZ's Professor Brent Clothier gave the 2005 Leeper Lecture on 'blue gold' - water - and the importance of understanding the hydrological cycle, because of the soil's ability to store, release, transport and filter water. Water and chemical fluxes through unsaturated soil in the active presence of plant roots are necessary for the healthy functioning of soil as the productive base for sustainable agriculture. As well, these fluxes are critical determinants of the quantity and quality of our underground and surface reserves of water. We need to use our scientific understanding of the functioning world's largest water filter – our soil – to protect the quantity and quality of our resources of 'blue gold'.

2005 Leeper lecture excursion

Steve Willatt report's on the excursion following Brent Clothier's Leeper lecture.

Robert van de Graaff organised a tour to illustrate the lecture theme of soil as a water filter. ASSSI members visited a housing development site at Eynesbury Pastoral Estate south of Melton. The site will contain 3000 homes and facilities in park surrounds but with an annual rainfall of 490 mm the park surrounds need recycled water. Class A treated water from a nearby sewage treatment plant will be used for watering and for toilets and grey house water. Knowledge of soils is paramount to the success of the scheme.

The estate soils are complex. The site is a basalt plain with volcano cones still evident, next to the Werribee River. The site manager outlined the attempt to retain some of the existing features such



as the grey box forest, the native grassland reserve and access to the river. Robert described the soils as 'strongly structured dark reddish brown and black heavy gradational clay soils with subsoils which include manganiferous nodules and calcium carbonate'. Two 'pits', one in an ephemeral water course, scooped out in an area being levelled for a golf course showed these features clearly. It was good to see that soil scientists still cannot resist a pit or two with great activity taking place in the pits. Topsoils were seen as non- saline but the subsoils are slightly

saline. The proposed irrigating of some areas with Class A water from a sewage treatment facility and grey water will need to be monitored to ensure long term problems of toxic chemical accumulation and increasing saline levels in the soil and ground water are dealt with.

Catchment soil health knowledge

The Victorian Catchment Management Council is coordinating catchment knowledge using soil health as a focus theme. At the Victorian branch's June meeting, the council's Shawn Butters outlined the knowledge needs of different interest groups and presented a complex web of relationships that currently exist between people who have soil science knowledge and those who need it. While the work has a Victorian focus there were significant connections in the knowledge network to national and international sources of information. Shawn went on to discuss different ways in which the knowledge of soils necessary for catchment management might be enhanced through 'knowledge brokerage'. The talk gave food for thought and was a breakaway from the more conventional society presentations on soil processes.

NSW BRANCH NEWS

Neil McKenzie to give 2006 Harald Jensen lecture

Neil McKenzie, deputy chief of CSIRO Land and Water, will give the second Harald Jensen lecture at the University of Sydney on Friday 8 September. He will speak on the directions soil science is taking in Australia, and the place of soil science in natural resource management. To book, contact Chris Dorahy, chris.dorahy@dpi.nsw.gov.au.

Harald Jensen was born in Denmark and migrated to Australia at 6. He completed a BSc degree with geology honours at the University of Sydney in 1904 and in 1908 he was awarded a DSc and the university medal. From 1908 to 1911 he worked as a soil scientist with the New South Wales Department of Agriculture. His early findings were published during 1911 as 'Soils in relation to geology and climate' in Science Bulletin No. 1 (Dept of New South Wales Agriculture), and in 1914 he published the book 'Soils of New South Wales' in 1914.

The inaugural Harald Jensen lecture was given in 2005 by ASSSI life member Pat Walker who spoke on Australia's soil pioneers (see Features).



Above: NSW DPI Soil Scientists Roy Lawrie and Nawash Haddad with Dr Pat Walker, next to monoliths of soils typically encountered by early settlers in the colony of New South Wales.

South Coast field excursion

Understanding the landscape was the theme of NSW branch's March 2006 excursion to the NSW south coast. Ann Young introduced the group to the mystery of the contour trenches at Maddens Plains on the Woronora Plateau, between the old Princes Hwy and the F6 Freeway. Waterlogged furrows and drier ridges occur along the contour at a frequency of < 1 m and the micro-topographical patterns have different micro-environments colonised by different plant and animal communities.

Morning tea at Sublime Point lookout provided an important overview of the Shoalhaven floodplain and the tour topics: acid sulfate soils, effluent reuse at Shoalhaven Starches, and monitoring to predict landslides at the base of the Illawarra escarpment.

Darryl Goldrick (DNR) explained how soil mapping was used in the final design of the Shell Cove Marina development. A combination of digital soil mapping and field profile descriptions identified areas with high actual or potential ASS and decided the final location of the marina, thereby reducing the quantity of ASS material to be

excavated, treated and disposed of. The project illustrates how soil monitoring and assessment is an essential component of any urban development project, representing a relatively small cost in relation to the entire development but yielding information that drastically reduces costs and improves environmental outcomes.



Who said soils aren't fun??!! Sue Hobley using a gouge auger to sample acid sulfate soil on the Shoalhaven River floodplain. (Photo – Ann Young).

At Manildra Starches Glenys Lugg gave an overview of effluent irrigation on the Bomaderry floodplain. Waste water from the starch factory irrigates 1000 ha of pastures using 3 centre pivots and several travelling irrigators. Soil monitoring and assessment schedules irrigations and demonstrates compliance with regulatory requirements.

Acid sulfate soils

Will Glamore (UNSW Water Research Laboratory) outlined how improved flood gate management is reducing acid discharge from acid

sulfate soils on the floodplains. The floodgates are set just below the level of low tide to enable inflow of brackish water to the drainage channels which increases solution pH, flocculates Al and Fe and reduces the occurrence and extent of acid plumes entering creeks and tributaries.

Roy Lawrie (NSW DPI) described the soil monitoring and high resolution elevation data from aerial laser scanning being used to identify areas within the high ASS risk floodplains of the Shoalhaven/ Crookhaven Rivers. Areas with higher elevations and drier soil profiles, such as the Worrigea area, have increased levels of sulfide oxidation. In contrast, areas such as the Brundee Swamp, which are below sea level and are characterised by alkaline and saline soils, have much lower levels of stored acidity, even though they may contain sulfide at depth.

Jervis Bay

Peter Fogarty described how information from his soil survey work is being used to manage Department of Defence land around Jervis Bay. One of the main issues is the high runoff from fire tracks which leads to rilling and erosion of Aeolian sand deposits. At the site, coastal heathland forms on flat and poorly drained areas, which are underlain by sandstone benches covered with Aeolian sands. Further down the toposequence, Pleistocene deposits lead to the development of Podzols, which are colonised by eucalypts and banksia..

Bob Young described landscape evolution around Jervis Bay. The 300 million year old Permian sandstone at the base of the cliffs had been sequentially overlain by deposits of mottled clayey sand, indurated clayey sand and sandy humate, approximately 100 000 – 200 000, 50 000 and 20 000 years ago, respectively. i.e. within the last interglacial period. Several areas of Jervis Bay provided clear evidence that the east coast of Australia had been hit by a tsunami within the last 250-500 years. Significant wave energy would have been required to deposit sandstone boulders on cliffs 30m above the sea.

Sand dune reclamation

At the Windang Peninsula, Dick Condon spoke about his role with the Soil Conservation Service of NSW in coordinating key sand dune reclamation projects along the NSW Coast. The first step is to re-establish the frontal dune by building a permeable fence to slow the wind and make it drop its sand on the other side to form a baby dune. A new fence is then built upon the new crest and so on, until it is possible to plant sand-loving plants in the shelter created by the frontal dune. Dick's take home message was "if you want to do a sand drift control job, always work with the wind behind you!" Thirty years on, the dune is now stable and the danger of the sea breaking into Lake Windang has been averted, which attests to the success of this approach.

Landslide warnings

At Clifton, Phil Flentje (University of Wollongong) gave a fascinating talk on Illawarra Coast landslides. The university is using instrumentation and real time monitoring to develop state of the art early warning systems to protect roads, rail lines and houses from landslides.

The group enjoyed a scenic walk along the new Sea Cliff Bridge between Clifton and Coalcliff. Apart from providing spectacular views and an opportunity to marvel at this impressive engineering feat, it also enabled us, to once again, study the geology that has influenced many of the landscapes we had seen over the past two days.

The two day excursion was a great opportunity to understand how landscapes can be used to manage soil and water resources more effectively. I would strongly encourage other ASSSI members to participate in future excursions as they are a great opportunity to gain new skills across a diverse range of topics, establish new professional relationships and have some fun as well! Thanks must go to all of the speakers on and participants in the excursion, in particular Roy Lawrie for his effort in finalising the itinerary, driving the bus and sharing his extensive knowledge of this region. Greg Chapman is also acknowledged for his effort in laying the ground work for the excursion and lining up the speakers.

SOUTH AUSTRALIA BRANCH NEWS

Turkey irrigation conference



ASSSI member Tapas Biswas from SARDI's Water Resources and Irrigation gave a keynote address at the international symposium on water and land management for sustainable irrigated agriculture held in Turkey in April. As per capita water availability decreases, irrigated agriculture will have to be more efficient in water use and environment friendly. A concept of moving from 'more crop per drop' to 'more crop less drop' was proposed to be the way forward. The symposium provided a platform for a number of contentious issues concerning

the future of irrigated agriculture under increasing competition for freshwater resources. After the symposium participants toured the Southeast Anatolia Project which has an estimated total investment of US\$ 32 billion.

Above: Tapas Biswas (front row, fifth from left) with some of the conference participants.

RIVERINA BRANCH NEWS

Who needs soil?

The December meetings of the Riverina Branch continue to attract extremes of weather. This time we were confined to a shed because of cool wet weather. In December! In the Riverina! However it had to be the most interesting shed we've ever visited. Dean Morris runs an open hydroponic system to grow citrus. All macro and trace nutrients start in a water soluble form (yes phosphoric acid for P), are mixed through a venturi, the solution is automatically pH adjusted and fertigation takes place through a computer controlled drip irrigation system on each of his 35 blocks. Who needs soil?



Above: Riverina Branch members in stunned amazement in Dean Morris' open hydroponics control centre. Dean is 3rd from right in the front row. Photo Iva Quarisa.

Undergraduate awards



Qld president Don Yule with three of the four students awarded the Qld branch's 2005 undergraduate awards for excellence in soil science, from left, Carmen Dyer (UQ St Lucia), Jessica Peters (UQ Gatton), and Lauren Johnson (JCU). The three students gave presentations on their soils work at the branch's November meeting. Carmen Dyer won an extra award for her presentation. The fourth student, Amphone Sivonggray (USQ), was unable to present because of exams.

ISCO 2006

Qld branch members Mike Grundy, Bing So and Hossein Ghadiri attended the 14th conference of the International Soil Conservation Organisation Conference in Morocco earlier this year. The theme of the conference was water management and soil conservation in semi-arid environments. Mike presented a paper 'Preventing salinity – the scientific and community dimensions of a solution' co-authored with Mark Silburn. Bing So spoke about his recent modelling successes with root zone salinity and Hossein used two papers to illustrate the capacity that Griffith University retains to study the fundamental processes behind erosion. Several issues particularly caught Mike's attention:

- Emphasis on direct connection between soil conservation and water management and quality, and the important role of participatory approaches – now a major international theme through the convention on desertification which was prominent at the conference.
- A keynote address on the development of an international legal framework for sustainable soil. This is being supported by the IUCN and will use the Convention on Biodiversity.
- A series of papers around the theme of using ecosystem function in managing for outcomes such as water quality, especially in semi-arid areas. Ideas of functional heterogeneity at different scales where high function equals highly conserving landscapes look promising and approaches were outlined. This relates to a current dilemma in Queensland where concepts of landscape management are either scientist (ecologist)-centred or farmer-centred. Can these be resolved and how do they relate to hydrological function?
- A special session on the soil, landscape and ecological effects of wildfire – including erosion and erosion prevention, soil carbon dynamics and new modelling efforts.
- Papers on measurement and modelling of gully erosion and its consequences. There was a paper on the use of ASTER modelling of direct relevance to current projects and the range of papers are relevant to the current interest in improving our understanding of gullies in water quality work.
- Number of papers around the theme of sediment delivery and movement. Directly relevant to current research and modelling in Queensland. One interesting paper addressed the uncertainty around spatial soil erosion modelling.

FEATURE: PIONEERS OF SOIL SCIENCE

NSW branch's Chris Dorahy reports on the inaugural Harald Jensen lecture given by Pat Walker.

For the inaugural Harald Jensen lecture, Pat Walker, gave a fascinating insight into Australia's soil pioneers and the key factors that influenced the development of modern soil science in Australia.

He highlighted the difficult time European settlers had in developing agriculture in the new colony because of the inhospitable climate and soils, typically based on sandstone and shale. 'The breakthrough came with the crossing of the Blue Mountains in 1813, which opened the way for the development of vast areas of land favourable to crop and pasture', he said.

Paul Strzelecki

'The first person to employ the scientific method for systematically studying and analysing soils in Australia was Paul Strzelecki (of Mt Kosciusko fame), who took many samples of rocks and soils during expeditions into southern NSW, Victoria and Tasmania. He published his field observations and laboratory data in a large text book in 1845. His work had a strong influence on the study of soils in Australia for the next seventy years.

'By the 1850's and 1860's there was widespread concern about declining soil fertility and other forms of land degradation in most parts of Australia. To address this issue, most state Departments of Agriculture developed programs to investigate "soil exhaustion", particularly in relation to cereal crops. The first big move in came in 1890, when Dr Guthrie, a chemist, was appointed by the NSW State Department of Agriculture to analyse soil and plant samples for farmers, using the same methods as Strzelecki.

'Other states followed NSW's lead in the 1890's and 1900's and generated a large amount of chemical data for soils. However, there seem to have been questions raised about the interpretation of the data and how best to use them.

Harald Jensen

'Harald Jensen, a geologist, was employed by the NSW Department of Agriculture in 1908 to investigate the soils of NSW and provide information of direct use to farmers. Jensen found such a close relationship between soils and the rocks from which they developed, that he proposed the first classification of New South Wales soils – based on rock type. He considered this local classification more useful than European classifications that were based on climatic zonal concepts. With this classification in hand, Jensen produced the first soil map of New South Wales, one based on geology – the first on such a scale in Australia.

'In 1914, Harald Jensen published a major text book, *The Soils of New South Wales*, in which he put field observations and laboratory data together with the soil classification and the soil map. It contained much information of use to farmers.

'I see Harald Jensen as a great soil pioneer of Australia and it is appropriate that he be honoured by the NSW Branch of the Australian Soil Science Society.

'Many factors contributed to the development of modern soil science in Australia, including the expansion of irrigated and dryland agriculture following World War I; recruitment and training of soil scientists to provide a scientific basis for land subdivision and soil management; the establishment by CSIR (CSIRO) in 1927 of a specialist group in Adelaide, to carry out field and laboratory studies in these newly settled areas; and modern soil survey methods, which provided details of soils at the farm scale.

Prescott, Teakle, Leeper

'There were also people in Australia at that time who provided the leadership necessary for modern soil science to develop on a sound basis. Some of the new generation of soil pioneers included John Prescott who developed the first classification of Australian soils and the first soils map of Australia; Laurence Teakle, from Western Australia, who in the 1930s, was one of the first people to tackle the problem of soil salinity; and Geoffrey Leeper, who carried out soil surveys and laboratory studies in Victoria during the 1930s and published the first Australian textbook on soil science.'

Dr Walker also highlighted how important advances in knowledge gave impetus to the beginnings of modern soil science in Australia. The first was the discovery of how exchange properties on the surface of soil particles determine soil physical stability and influence nutrient availability to plants.

Plate tectonics

Pat attributed the second advancement to the recognition of how plate tectonics over the past 50 million years led to the development of our unique Australian landmass and ecosystems. In particular, ‘much of the Australian mainland had not been glaciated during the last two million years and our landscapes are generally old compared with much of the northern hemisphere’, he said.

Dr Walker concluded by saying ‘The special mix of old and new soils and landscapes in Australia led to the development of the Australian approach to soil science, which has evolved from adapting knowledge gained from overseas or in some instances, going our own way - just like Harald Jensen.’

FEATURE: A HEALTHY SOIL SAVES MONEY

Robert White advocates a new approach to build people’s interest in soils. Below is the text of his talk he gave at the Victoria branch’s World Soils Day event at the Melbourne Museum in December 2005.

ASSSI has always been interested in education in soil science – primarily in how soil science is taught in our universities. The topic has been reviewed by committees and debated at conferences (most recently in Perth in 2002).

Today, in this 50th year of the ASSSI, I do not want to talk about soil education in a narrow sense. I intend to talk about soils and education in the broadest sense - to focus on how knowledge about soil can be communicated to a wide audience, so as to raise an awareness of the importance of soil to society, locally and globally. Scientific societies in Western countries have notably failed in the task of inserting soil and its management into the public consciousness, especially in urban communities.

As John Ralston Saul said in his 1995 Massey Lectures in Canada, we have become an ‘unconscious civilization’ – one that is oblivious to (or unconcerned about) the fact that our democratic forms of government have largely been taken over by self- and sectarian interests, as represented by pressure groups, organized labour and large corporations. Consequently, government action in ‘the public good’ has become less prominent in recent years.

Self interest

Consistent with self-interest, in Australia as elsewhere, the prime motivation for most individuals in society is to make money. Let’s call that ‘private good’. If we as soil scientists want to ‘educate’ people about soil, we have to take this prime motivation into account. In general, people will not want to learn about soil simply because we tell them we have information they ought to have too. We have to show how possession of that information will benefit them.

Benefits come in various forms. First, a person can make money out of soil by growing things in it. This is the basis of commercial agriculture, horticulture and forestry, but the number of people engaged is small and their influence on public policy has been waning for decades. However, this has been the main target audience for soil scientists for many years. No wonder that awareness of soil and the value of soil science in the general community is low.

Secondly, a person can benefit from soil by not losing money because of it. By this I mean that by maintaining a ‘healthy soil’, one avoids the risk of erosion, and damage to water quality as a result of erosion, and from the input of nitrate, phosphate and other undesirable chemicals and pollutants from agriculture and industry. To this one can add soil salinization, which directly affects water quality and infrastructure such as houses and roads. The trick is to convince the general community, especially in towns and cities, that abuse of soil is directly connected with many of these undesirable consequences that cost money to fix (generally public money raised through taxes).

Public awareness of the importance of good water management has increased considerably over the past five years or so, but soil has been left behind. Heightened awareness of water issues has occurred because (a) water now costs more (though it is still cheap), (b) there are penalties for wasting it, and (c) there is the risk of not having enough.

To me, the slogan ‘a healthy soil saves me money’ is likely to gain more traction in the public consciousness than the concept of soil as part of the ‘ecosystem services’. In the latter, the focus is on valuing the public benefits of clean air and water, and bushland for recreation and leisure, which are provided by healthy soils in biodiverse ecosystems. However, because the science is complex and there are uncertainties, the linkage between cause and effect is too tenuous to have much impact.

Communication

If we understand what motivates people to become more concerned about unhealthy soils, we must decide how to communicate our message ‘a healthy soil saves me money’. And here lies another old problem – the technical language of soil science. Even amongst ourselves, we have been equivocal over the years as to how we should name soils – but to the general public, does this academic debate matter? I think not. What matters to lay people is - how does soil abuse affect me personally, and if it is a problem, how do I fix it? As individuals become more aware of this personal impact, perceptions of the need to manage soils for the public good will grow stronger.

This brings me back to the ‘public good’. It is the responsibility of governments to urge people to save soil, in the same way they run public education campaigns about the risks of drug-taking, gambling and smoking. But the message needs to be that the abuse of soil has private costs – through the cost of remediating polluted water, the cost of devalued recreational opportunities, and the health cost of consuming food produced from contaminated soil, or food that is deficient in essential elements.

So I am advocating an education campaign about soil that is directed primarily at an urban audience – with the focus ‘a healthy soil saves me money’. ASSSI at Federal and State level could play an important role in providing governments with the ammunition to be used in such a campaign.

FEATURE: NZ SLURI

Brent Clothier outlines the background to the formation of NZ’s Sustainable Land Use Research Initiative (SLURI).

In the 1980s and 1990s New Zealand’s politicians and economic commentators predicted that agriculture was a ‘sunset industry’. But since 1985 agricultural productivity in New Zealand has increased at a rate of 4% pa, almost double the average of the rest of the New Zealand economy. Agriculture, including forestry plus downstream processing, is a higher percentage of GDP, at around 20%, than 10 years ago.

At the heart, and the start of the production chain, is the top 150 mm of our soil. This soil is New Zealand’s most valuable resource and we must ensure that it stays productive during the years to come. Much of the recent increase in production has been achieved by intensification of land use and by diversification to new crops. The quantity of nitrogen-based fertilizers has increased by over 10-fold since 1989. New and planned irrigation projects, and their associated land use changes, are set to impact on our soils and water quality.

However, soil science and land-use research has, over the last decade or so, become fragmented, so in late 2003 the four core Crown Research Institutes of AgResearch, Crop and Food Research, HortResearch and Landcare Research proposed forming an entity to coordinate soil science and land-use research – SLURI, the Sustainable Land Use Research Initiative. Discussions are continuing with Ensis, the forestry-based CRI.

SLURI will have two goals: to establish national leadership in soil science and land use research, and tackle future soil science and land use issues for New Zealand’s national benefit.

The scientists from the four CRIs have identified five priority issues, which they now seek to refine through discussion with stakeholders and end-users.

1. Soil functioning: tools to ensure maintenance of soil services in the face of pressure from increasing inputs.
2. Managing land-use: Knowledge to assess the performance of land-uses now being carried out on soils not formerly used for these purposes, and the prediction of plant performance to express certain traits or qualities.
3. Resilience under change: New system designs to sustain our existing land-uses in the face of the exigencies created by increasing climate variability and extreme weather events.
4. Valuing the natural capital of soils: Research to assign value to the natural capital of our soils and waters to underpin rational land-use decision-making and resource allocation by industry and policy makers.
5. Strategic land use management: Tools to integrate and scale-up our understanding of enterprise and sector behaviours across the mosaic of land-uses to permit equitable resource allocation and sustainable coexistence of land uses.

Find out more about SLURI at www.sluri.org.nz. You can register as a visitor.

SOIL POETRY

The power of soil moves people to poetry. Cliff Dillon won the Victorian branch's soil prose competition with his paen to red sodosols. Another entrant, Ian Thomas prefers organosols.

In praise of Red Sodosol Cliff Dillon

When I went to school,
and about soils I was taught,
The information was so boring,
that I learned naught.
The lecturer droned on,
about olivine and feldspar,
And red wasn't red,
it was 'Munsell 2.5 Y R'.
Clay was not called clay,
it was known as 'smectite',
We had to learn its chemistry,
even if it took all night.
Soil structure was described,
as 'strong' and 'prismatic',
Lots of information on soils
,but disjointed and erratic.
And even in the field,
where we spent quite a while
,Just a boring, dull coloured,
uniform, profile.
It was not until later,
when out with the soil society,
The fact that soils are important,
was impressed upon me.
I found that soils can be relevant
,and interesting too,
When through a red sodosol,
I saw just how roots grew.
And soil in obvious layers,
sand on top, clay below,
I could see where roots were,
and learnt what it could grow.
I now lecture on soils,
and with those I am teaching,
We feel soil texture,
see root growth and leaching.
Teaching the boring soils,
is just a waste of my time
,I need interesting soils,
with layers, colours and lime.
I'm careful not to bore,
or lose the interest of the class,
That's why I show a soil,
with a strong texture contrast.
I need variable colours,
and a layer that's bright red,
Your single coloured soils,
would bore the kids to bed.
A medium clay subsoil, texture
it - make a muddy mess,
And fine sandy loam texture,
simply a delight to caress.

I explain the bleached layer,
the class think I'm a whizz,
Then I wow them with acid,
mixed with lime to make fizz.
I do all this in the field,
down a pit or a hole,
And could only show all these things,
in a Red Sodosol.
And I need it near the class room,
or just out the gate
And the Red Sodosol is handy,
it covers half the state
So when choosing a soil,
pick an interesting soil type,
Forget your Dermosols and Ferrosols,
their just all hype
.Choose an exciting soil,
to inspire interest not dread,
And make sure for the state soil,
you choose the Sodosol that's red!

Organosols Ian Thomas

Organosols are sticky things
in alpine vales they reign,
tho' often scarce and always wet
they are the soil supreme.
From Howitt top to Camperdown
they seem a farmers curse;
oft-times boggy, always acid and texturally flaccid
they can tax the owners purse .
They have no value critics say,
but those who know say nay.
These peats hold water like a sponge
and start the mighty Murrays run
'till waters lost in endless sands,
make other soils seem coarse and bland.
So spare a thought for Sphagnum dells
and charming little valleys.
Whether perched on pan, trapped by dune
or fringed by alpine Sallee,
Northcote's O is king,
from Alp to far flung Mallee.
And finally, contained therein
the door to global understanding,
for in the peat lies history's key,
with pollen, in abundance.
As carbon sink, or sponge
or place of understanding,
one thing is clear, one fact so bold
(Bogged cows and cars not withstanding)
that here we have the one true soil,
the only soil of substance

IN PRAISE OF SOIL

Victoria's search for a state soil released passionate outpourings from all over the state. Space limitations (and readers' patience) precludes printing them all here, so below is a small selection. Perhaps the branch might think about having all the entries on display at the Adelaide conference. They make inspiring and entertaining reading.

The mottled brown sodosol, with its duplex nature is a good representation of Victorian society. Its many levels and sometimes unstable lower horizon depict our community, which on the surface is quite beautiful and seems full of promise but which on closer inspection has problematic undercurrents which need to be addressed. (Alan Varney)

The red ferrosol from the Strezlecki ranges around the picturesque rolling hills of the Thorpdale region just ooze health, vitality and abundance. The patchwork myriad of ploughed paddocks with that chocolate colour or rows of deep green potatoes all linked with healthy pastures feeding beef & dairy cattle. The red chocolate colour of the soil permeates everything from all the farm machinery to inside every house - even the sheep's fleece carries that distinctive color. (Garry Hammer)

Also, if Victoria names the red ferrosol as its state soil, someone will no doubt name a chestnut racehorse 'Red Ferrosol'. It will be a glossy, well structured animal, which will go well in the wet, and it will exemplify all that is glorious about these historic, productive and beautiful soils, which are surely the racehorse of the 'solum system'. (Chris Bluett)

The organosol is closely associated with the character of Victorians and the State's future. Nowhere is this seen more clearly than on the Victorian high plains with the battle between conservation and production, preservation and degradation of the organosol never far from the news. (Tony Weatherley)

The Black Vertosol melts before your spade like chocolate! A deliciously clay-rich soil, high in organic matter with decadent layers of peat... mmmm peat. (Philip Wallis)

Often intractable but potentially rewarding, the red sodosol reflects the adversities, complexities, challenges and joys of agriculture in Victoria. (Michael Schulz)

At first it is the rich earthy smell that grabs you like a rock picker working on a traditional grazing paddock on the eastern fringe of the stony rises. The depth to which this pillar sustains biological creation and infrastructure essential for translocation into exportable raw products will often exceed a mature expectation. Flecks of carbonate may confuse our more northern colleagues as maximum rooting depths, but it is the sight of vertical tap roots below 60cm that excites even the numb on a cold winter morn. The shrink and swell of seasonal conditions will forever depict our primary production, yet our wheeling control over infiltration/extraction regains our management impact. (Andrew Whitlock)

As the soil that produced untold wealth in the 19th century gold rushes, was the birth place for Eureka and democracy in Australia, fed and housed most of the early migrants to Victoria, particularly millions of rabbits, this outstanding example of soils from ancient landscapes must be the mother of all soils. (Bruce McGregor)

It looks like the stuff that always gets under my fingernails and stuck in the lines on the pads of my fingers. It is under the foundation of my house and it is the support for the fruit and vegetables that I grow at home, with my kids. (Ron Walsh)

Versatile, responsive, productive, and in our location this soil is sited on the older river terraces that are just above common flood levels -now that's handy! (Gavan Lamb)

The feel of it between my toes and the smell of it freshly turned remind me of my childhood on a Gippsland dairy farm. This soil is almost good enough to eat. (Richard Williams)

This soil evokes the most spiritual connection I have with the landscape and is a visual landmark of the area I call home. (Phil Newton)

The backbone of Victoria is made of this soil. (Eleina Tava)

ABOUT ASSSI

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.

Specific 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 & CPSS

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

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