

# ASSAY

A NEWSLETTER ABOUT ACID SULFATE SOILS

No.11 October 1996

## National ASS conference

The second national conference on acid sulfate soils was a resounding success. Almost 300 delegates listened to 30 papers, inspected 40 posters and displays, discussed, debated, argued and networked solidly. The feeling after the two days was that the assessment and analysis of ASS is now well understood; that solutions can be found where there is plenty of money; but little is known about effective management techniques for broadacre agriculture.

Queensland and NSW were the states most strongly represented at the conference, with other delegates from WA, ACT and Thailand. Limited copies of the proceedings are available for \$50 (\$45 plus \$5 postage). To order a copy please fax your order to Jennifer Grant on 066 281 744 or post it to her at Wollongbar Agricultural Institute, Bruxner Highway, Wollongbar 2477. We cannot take orders over the phone.

## National ASS group

The national working party on acid sulfate soils held its second meeting at Cairns in July and its third meeting on 4 September before the ASS conference at Coffs Harbour. The group is working through a range of issues such as social and economic impacts of ASS management, the role of government and community, and research and resource requirements for effective management. Outcomes from these sessions are being used to draft a national strategy for the management of ASS. If you are interested in commenting on the draft strategy when it becomes available please fax your details to ASS national working party chairman John Williams 066 281 744.

## ASS meetings

The Acid Sulfate Soil Management Advisory Committee (ASSMAC) met in Sydney in June and August. Its next meeting is on 14 October at Berry on the south coast where members will inspect management developments and research projects and meet local landholders. ASSMAC's NSW Agriculture representative, Terry Abbott, has left the committee because he has moved to DLWC to take up a position as Program Manager, Landcare.



Landowners Russell Yerbury, Clybucca, and John Hogg, Coopernook, compare ASS management techniques at the ASS conference in September.

ASSMAC's technical committee met at Coffs Harbour on 4 September before the ASS conference. Issues discussed included the ASS methods forum, the survey of councils conducted by the Dept of Urban Affairs and Planning, and the proposed upgrading of DUAP's ASS circular. Details follow.

## ASS methods forum

ASSMAC technical committee members meet on 17-18 October in Sydney to fine-tune ASS laboratory and field analysis methods. Also attending will be a representative from ASPAC (Australian Soil and Plant Analysis Committee).

On the first day the forum will decide on a standard methodology for a restricted number of routine ASS laboratory tests for environmental samples - not research samples. After a short trial period, it is likely that Qld and NSW EPA will require soil analyses by at least one of the standardised ASS methods in environmental submissions.

It is also planned to initiate an exchange ASS standard sample program for interested laboratories. The exchange will be under the supervision of the ASSMAC technical committee and ASPAC, with results shared but individual laboratories not identified. Laboratories using the new standard methods and taking part in a quality assurance exchange sample program may finish in a preferred category for environmental samples.



Please register your interest in the exchange sample program to Col Ahern or Dennis Baker from Qld Dept of Natural Resources (DNR) by 31 October. Contact Col Ahern on 07 3896 9510, email [ahernc@dpi.qld.gov.au](mailto:ahernc@dpi.qld.gov.au) or fax 07 3896 9898. Dennis Baker 07 3896 9477, fax 07 3896 9623, email [bakerd@dpi.qld.gov.au](mailto:bakerd@dpi.qld.gov.au) will send samples on request. Conditions and a fee to cover costs will apply.

On the second day the forum will look at standardising field sampling techniques: auger selection, sampling sites, sample numbers, storage facilities, transport techniques and timing.

Once decided, the laboratory and field methods will become standard requirements for ASS assessment in environmental impact statements in Qld, NSW and probably nationally.

### **DUAP council survey**

The NSW Dept of Urban Affairs and Planning (DUAP) has surveyed the state's 58 coastal councils to assess trends in ASS management. Of the 30 country councils, 25 responded; in the metropolitan area only 11 out of 28 responded, as many do not consider ASS to be an issue. Several recommendations resulted from the survey, including the need to:

- develop ASS indicators for state of environment reporting on ASS
- develop technical and practical guidelines to assist councils in management and restoration of ASS
- train councils in assessment of development applications which affect ASS
- disseminate information on sources of funding for trials and rehabilitation projects
- remind councils, drainage unions and flood mitigation county councils of their responsibilities under current legislation concerning ASS (Part 5 EP&A Act,

Pollution Control Act, Fisheries Management Act, Rivers and Foreshore Act etc)

- contact Federal telecommunications bodies pointing out the hazards of erecting structures in ASS
- develop model Local Environment Plan and Development Control Plan provisions for ASS areas.

DUAP intends to upgrade Circular F11 on ASS management to incorporate information requested in the survey of coastal councils. It is intended that the Circular will be supported by more detailed guidelines on planning in ASS. It is also intended that workshops will be held for council staff early in 1997 to introduce the guidelines and to assist in planning and management of ASS.

A committee comprising members of ASSMAC's technical committee, council representatives and drainage specialists will meet in November to begin writing the guidelines.

### **Hastings Council draft LEP**

Hastings Council's senior strategic planner Debbie McKenzie meets with the Dept of Urban Affairs and Planning this month to discuss council's draft Local Environmental Plan (LEP) for ASS. The draft was launched for public comment on 21 August through a public workshop attended by 40 people. When submissions closed on 11 September only two had been received. If you are interested in viewing the draft, contact Debbie on 065 830 644, fax 065 843 809.

### **Richmond River LEP**

Richmond River Shire Council has resolved to prepare a draft LEP to cover agricultural drainage in ASS. The Shire council is based at Casino and takes in much of the lower Richmond where there are extensive plantations of sugar cane and tea tree. Council's manager of environmental development services, Manfred Boldy, hopes to involve ASSMAC and the sugar and tea tree industries in the drafting of the LEP. For more information ring Manfred on 066 622 066.

### **Macleay ASS committee**

Lower Macleay residents have formed a local committee to look at ASS management techniques for the catchment. The committee was formed at an ASS management meeting called by Macleay Catchment Management Committee at Gladstone Hall. The new committee is independent of TCM or any other committees in the catchment.

Committee members represent the two lower catchment Landcare groups, Belmore-Kinchela



From left, Michael Mobbs, environmental lawyer, fishermen Greg Golby (Wallis Lake) and John Gallagher (Ballina), and Phil March, Oceanwatch, at the ASS conference.



and Seven Oaks; fishing interests, environmental interests and Kempsey Shire Council. Trevor Flewin from DLWC will provide technical co-ordination.

The Macleay committee is the third local ASS committee to be formed on the NSW north coast. Manning and Richmond-Tweed catchments also have committees. For more information contact Trevor Flewin on 065 631 212.

### **Manning drains project**

Manning ASS local advisory committee has received \$52,000 from the National Landcare Program to develop a drainage management plan in the lower Manning catchment. The project, detailed in the June 1996 issue of ASSAY, will map all catchment drains and determine ASS management strategies for each drain. The position will be based at Greater Taree City Council where the catchment's ASS information is mapped on GIS. A project management committee comprising members of the local advisory committee, council and NSW Agriculture will call for applicants to do the work. For more information contact Manning Catchment Management Committee co-ordinator Carl Atchison on 065 522 788, fax 065 522 047.

### **Pitfalls of watertable management**

Andrew Porter (UNSW) has completed his honours thesis on the feasibility of managing watertables on the acidified floodplains of the Shoalhaven river. Supervised by Jes Sammut (UNSW) and Andrew Nethery (South Coast EPA), Andrew has reviewed weir designs, studies on water management in ASS-affected areas, policy and legal implications, pasture and environmental requirements, and soil research. His review and own water and soil data indicate that watertable management must be approached cautiously. For example, the general assumption that reflooding arrests pyrite oxidation and reverses acidity may be false, and raised watertables do not necessarily ameliorate soil and groundwater acidity in the short or medium term. Rather, raised watertables may, in some cases, cause increased acid export during small rainfall events. The study concluded that watertable management should be first trialled on a manageable scale and consider negative impacts as much as the perceived benefits before being used as common practice. To date, improved pasture is imprudently used as a gauge of amelioration, despite persistent soil acidity.



**Conference-goers, from left, Ian White (ANU), Bruce Blunden (EPA), John Murtagh (consultant), Glen Atkinson (DLWC), Richard Bush (Southern Cross University) and Debbie McKenzie, Hastings Council.**

### **Queensland developments**

Recently the Department of Natural Resources has been involved in assessing a significant number of development proposals. Most are located in south-east Queensland and involve canal estates, marinas, golf courses, lakes or gravel/sand extraction. Some involve investments of more than \$100 million.

DNR is pleased to report that in many cases, developers and their consultants have been prepared to discuss management solutions in a constructive way and accepted the additional costs involved in acceptable ASS management. A major reason for this co-operation has been attributed to the willingness of DNR officers to inspect development sites with the consultants and developers, listen to each other's point of view and clarify any misconceptions on site. It is a much more successful and rewarding approach than the traditional site unseen comments from behind a desk.

### **ASS management on the Gold Coast**

Gold Coast City Council has had a strong response from industry, government agencies, consultants, conservation groups and private individuals about its draft ASS management policy. 'As a result of these submissions we have rewritten sections but have not changed the major thrust of the policy,' says John Carleton. The policy is currently being reviewed for legal implications before it goes to council for consideration in October.

Council is also watching closely a development on the floodplain next to the Pacific Highway. Under the EIS approved for the project, the developer is stripping off topsoil, mixing it with lime and stockpiling it; and using a constructed lake and wetlands to take all drainage waters from the site.



The council has also formed a floodplain committee to find out what people want done on the Mudgeeraba floodplain. Issues to be considered include flooding, hydrology, tidal surges, water quality, ASS and nutrient polishing. For more details, contact John Carleton 07 5581 6140, fax 07 5581 6346.

### **ASS training for Queensland sugar**

A two day ASS training course for Bureau of Sugar Experimental Stations Officers will be held in the week 11-15 November in Mackay. Officers will be trained in methods of identification, sampling and interpretation of soil analysis. For more information ring Bernie Powell on 07 3896 9398 or Col Ahern on 07 3896 9625.

### **ASS management in NSW sugar cane**

The NSW sugar industry has developed a management plan system for all new cane lands to help improve water quality in river systems. The management plans are also suitable for growers wishing to alter drains in established cane land. The plans will be based on information gathered in a major research program co-ordinated by the Co-operative Research Centre for Sustainable Sugar Production. The program has three key ingredients: sampling farms with cane grower present to test for the presence of ASS; analysis of the soil cores using equipment jointly purchase by CRC and the NSW Sugar Milling Co-operative; return of the results to the grower and discussion about what action to take. A management plan will be prepared if any acid hazard is detected; the plan will help the grower avoid disturbing acid material and remediate affected areas through drain design and liming.

For more information, contact the co-operative's agricultural services manager Peter Nielsen 066 208 257/ fax 066 828 330.

### **Liming subsidy**

Demonstration trials to reduce the impact of acid water discharges in floodgated areas may be eligible for funding from the NSW government if they are part of strategies developed for management of the floodplain. Catchment groups or drainage unions interested in trialling lime to neutralise acid in drain banks and drain spoils may be able to obtain a one-off 2:1 subsidy to offset the cost of the lime. More details are available from your local DLWC resource improvement manager.

### **Tuckean Project**

Tuckean project officer Jane Baldwin is currently considering submissions to the draft land and water management plan for Tuckean Swamp. The draft, launched in July, contains a sizeable section on acid sulfate soils. Proposed ASS management strategies include

- lime exposed ASS
- lime paddocks
- lime acid scalds
- pond scalded areas unsuited to liming
- neutralise acid in small drains by liming and flushing
- modify small drains
- maintain existing watertable heights
- stabilise watertable fluctuations

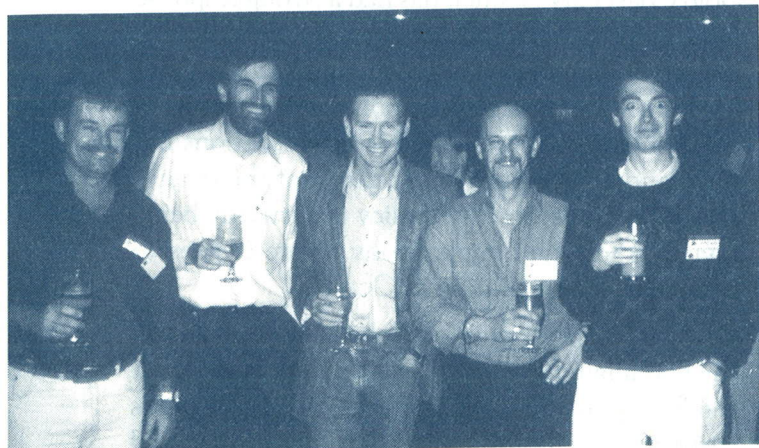
Other recommendations include improved drainage design and management to improve water quality and habitat. For more information on the Tuckean Project contact Jane Baldwin 066 286 081/ fax 066 285 680, or Craig Copeland 066 261 394/ fax 066 261 202.

### **Floodgate asset management**

DLWC's Coastal, Floodplain and Riverine Resources Directorate has endorsed the flood mitigation module of the Total Asset Management System (TAMS). Three NSW coastal councils are already using the module which helps them manage their floodgates, particularly in acid sulfate soil areas, where maintenance demands can be higher than average.

### **ASSIST database**

The first edition of an ASS public database is now available. An introductory edition was released at the ASS conference. If you would like a copy, email or paper, contact Rebecca Lines-Kelly. If you would like to be in the next edition (December 1996) send her your details: name, address, phone, fax, email, ASS classification (eg landowner, consultant), and area of ASS interest.



**DLWC staff at the ASS conference, from left, Dave Morand, Owen Graham, Casey Murphy, Stewart Murray and Humphrey Milford. All except Owen were involved in mapping ASS in NSW.**





Queenslanders at the conference, Nicole Williams (left) and Maria Neuhold of Dept of Environment, and John Beumer of DPI (Fisheries).

### Floodgates brochure

DLWC have produced a brochure on floodgate management on coastal farmland to promote discussion among landholders on coastal floodplains. The four page colour leaflet looks at the role of floodgates in protecting farmland, the impacts they may have on the environment, and the benefits of opening them during non-flood times to allow water upstream. Benefits include improved water quality, reduced exotic drain vegetation, enhanced native vegetation, increased fish passage and improved soil and pasture. Copies are available from DLWC offices at Grafton, Wollongong and East Maitland, and from Rebecca Lines-Kelly.

### Drainage leaflet

ASSMAC's technical committee has produced general drainage guidelines for landholders. The guidelines include information on planning, maintenance and drain design. The committee hopes to put out different editions of the guidelines for specific audiences such as outdoor council staff. If you would like a copy contact Rebecca Lines-Kelly.

### Groundwater leaflet

An illustrated leaflet explaining the effects on groundwater of activities in ASS is now available. The four page leaflet illustrates the effects of drainage, cropping and excavation on groundwater in ASS areas. Increasingly, an understanding of groundwater movement is necessary to manage and work in ASS. The leaflet is available from Rebecca Lines-Kelly.

### Analytical guidelines

The interim analytical guidelines produced in June have been in great demand. They will be updated later this year after the methods forum and subsequent laboratory testing.

### ASS publications

Following is a list of all ASS publications produced in the past 18 months:

- *An introduction to ASS* (24 page colour booklet)
- *How to recognise ASS* (colour brochure)
- *An illustrated guide to ASS and groundwater* (4 page leaflet)
- *Floodgates and farmlands* (4 page colour leaflet)
- *Identifying and managing ASS in tea tree plantations* (4 page leaflet)
- *Draining land in ASS areas: a guide for landholders* (4 page leaflet)
- ASSIST: ASS public database
- ASSAY newsletter
- *Interim analytical guidelines*
- *EPA guidelines* (currently out of print but the new edition be available early next year)
- *DLWC map guidelines* (provided with ASS maps on purchase)
- *1996/97 strategic plan for the management of ASS in NSW* (12 page document)
- *Guidelines for operation of local action committees for improved management of ASS* (10 page document).

If you would copies of any of these documents, contact Rebecca Lines-Kelly.

### Editor's farewell

Sad to say this is my final ASSAY. I have accepted a position at Wollongbar as environment extension co-ordinator and finish in ASS at the end of October. I leave with some regret. It is exciting and intoxicating being involved in such a new area of science, where we know little and want all the answers yesterday. Through ASSMAC and the technical committee I have learnt a lot and worked with passionate people who are committed to achieving practical and environmentally friendly outcomes. I have had inspiring phone conversations with others who take the information we produce and galvanise their communities. There is still much to be done but we have come such a long way in just two years that I am sure we can and will improve soil and water quality in ASS areas. Please continue to contact me for ASS information until we appoint my replacement.





At the ASS conference, from left, Angus McPherson (Southern Cross University), Brian Schafer (University of Queensland), Leigh Sullivan (SCU), Phil Mulvey (consultant) and Dave McConchie (SCU).

### ASS articles of interest

**Indraratna, B., Sullivan, J., Nethery, A.**

Effect of groundwater table on the formation of acid sulfate soils. In *Mine Water and the Environment*, Vol. 14, annual issue, 1995, Paper 6, pp71-84.

**Jugsujinda, A., Delaune, R.D., Lindau, C.W., Sulaeman, E., Pezeshki, S.R.**

Factors controlling carbon dioxide and methane production in acid sulfate soils. *Water Air and Soil Pollution*, February 1996, 87, 1-4, 345-355.

**Lehane, R.**

Fish with ulcers - why, and what can be done. *Partners in research for development*, No 9 1996.

**Le Quang Minh, To Phuc Tuong and Vo-Tong Xuan**

Leaching of acid sulfate soils and its environmental hazard in the Mekong River Delta. In Denning G.L. and Xuan, V-T., eds (1995) *Vietnam and IRR: A Partnership in Rice Research*. International Rice Research Institute, PO Box 933, Manila 1099, Philippines.

**Lin, C., Melville, M.D., White, I., Hsu, Y.P.**

Comparison of three methods for estimation of reduced sulfur content in estuarine sediments. *Science of the Total Environment* 1996 (in press)

**Sammut, J. And Mohan, C.V.**

Processes and impacts of estuarine acidification: Richmond River, northern NSW, and Karnataka, India. Presented at ASS symposium, Sydney University, 29 July 1996,

**Sammut, J., White, I., and Melville, M.D.**

Acidification of an estuarine tributary in eastern Australia due to drainage of acid sulfate soils. *Marine and Freshwater Research* 1996 (in press)

**Woodin S. and Skiba, U.**

Liming fails the acid test. *New Scientist* 10 March 1990

### Landcare net

There was so little ASS traffic on the Landcare net that we are no longer using it. All email ASSAY will be sent through ASSAY's email mailing list. If you would like to receive ASSAY by email send your request to [lineskr@agric.nsw.gov.au](mailto:lineskr@agric.nsw.gov.au). Please include your postal address and telephone/fax just in case the email goes astray.

### Email addresses

A gremlin in the system has lost some of the ASSAY email mailing list. If you know subscribers who usually receive ASSAY by email please ask them to contact Rebecca Lines-Kelly to check whether their addresses are still on the list.

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