Australasian Soil and Plant ANALYSIS Council Inc.

ASPAC Digest – September 2018

12th Edition, September 2018

Contents

Australasian Soil and Plant Analysis Council Inc.
ABN 82 792 475 282 Reg. #: A0024099D ISSN: 1445-524 www.aspac-australasia.com

National Soils Conference and ASPAC workshop Update

SOIL SCIENCE AUSTRALIA

NATIONAL SOILS CONFERENCE
Canberra 18-23 November 2018

SOIL: The key to the Past, the Present and the Future

KEY DATES
Registration
12 November 2018 *- Online registrations close*
http://soilscienceconference.org.au/

Note: *ASPAC members should select the member options when registering as they are to pay the same as Soil Science Australia members, and as such a significant discount will apply*

Soil and Plant Analysis Workshop – new thinking, extra value

Convened by members of the Australasian Soil and Plant Analysis Council (ASPAC).

Date: Wednesday 21 November 2018

Time: 13:30-15:30

Venue: Hyatt Hotel Canberra

Cost: Complimentary

Please note*:* This workshop is complimentary to delegates attending all or part of the rest of the conference. Please indicate your interest in attending during the registration process. Single or two day delegates do not need to select Wednesday as an attending day as the ASPAC sponsored workshop is only for 2 hrs.

This general interest workshop will be conducted by ASPAC. It is free for ASPAC members to attend and members are encouraged to attend their AGM commencing a 4 pm.

The workshop structure will include both presentations and group interaction. There will be three Managers from major soil and plant testing facilities that cover commercial, government and university sectors. Each will give their perspective of existing and emerging techniques and tests, future challenges and the value their laboratory offers to the soil and plant testing Industry. An experienced Agronomist will discuss sampling and interpretation of results for soil fertility purposes. The final presenter will give an overview of ASPAC's objectives and achievements including demonstrated improvement in the quality of both soil and plant testing due to the proficiency testing programs and training workshops that ASPAC run.

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Program

13:30-13:35	Welcome and Introduction – Dave Lyons, Chair of ASPAC.
13:35-13:50	Chris Gendle, CSBP Laboratory, Perth, Western Australia.
13:50-14:00	Questions and Group Interaction.
14:00-14:15	Rob De Hayr, Department of Environment and Science, Queensland.
14:15-14:25	Questions and Group Interaction.
14:25-14:40	Graham Lancaster, Southern Cross University, New South Wales.
14:40-14:50	Questions and Group Interaction.
14:50-15:05	Jim Laycock, Incitec Pivot, Cowra, New South Wales.
15:05-15:15	Questions and Group Interaction.
15:15-15:20	Dave Lyons, Chair of ASPAC.
15:20-15:30	General Discussion/Close.
16:00-17:00	ASPAC AGM.

Meet the Workshop Presenters

Dave Lyons, Chair of ASPAC, Sunshine Coast, Queensland.

Dave is the current Chair of ASPAC (Queensland representative) and has been a member of ASPAC's Laboratory Proficiency Committee for over 10 years. He is 6 years into "retirement", after 44 years of work in all aspects of soil, plant and water laboratory testing operations, as well as running research trials covering a range of crops and agronomic approaches. He does voluntary work as a technical assessor for NATA when required, and has done voluntary stints in East Timor setting up a soil testing facility there.

Chris Gendle, Operations Manager, CSBP Soil and Plant Laboratory, Perth, Western Australia

Chris is the Operations Manager at the CSBP Soil and Plant Laboratory which is a major commercial testing facility in Australia. Prior to his current role, Chris had roles as a Laboratory Technician and Chemist at the same Lab. He has been a member of the ASPAC

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Executive Committee for six years and is a current member of the ASPAC methods committee, which provides technical assistance for the soil and plant testing industry.

Rob De Hayr, Department of Environment and Science, Brisbane, Queensland.

Rob manages the DES Chemistry Centre laboratories at the EcoSciences Precinct in Brisbane. His laboratory experience ranges over the past 40 years. Rob has also spent time as a research scientist studying biogeochemical processes in groundwater-surface water interactions and the fate of particulate nutrients emanating from erosion processes.

The Chemistry Centre laboratories support Government and collaborative research, survey, extension and monitoring programs aimed at environmental protection particularly in the Great Barrier Reef and sustainable agricultural production with an emphasis on soil security.

Graham Lancaster, Southern Cross University, Lismore, New South Wales.

Graham has been manager of the Environmental Analysis Laboratory within the Southern Cross University at Lismore for more than 25 years. His primary interests are in biological and organic farming, along with sustainable agricultural practices. Graham is also involved in extensive research into environmental contamination and remediation options.

Jim Laycock, Incitec Pivot Temperate Farming Systems Agronomist Cowra, New South Wales.

Jim has been involved in Australian agriculture since 1975. For the past 23 years he has been employed by Incitec Pivot focusing on understanding plant nutrition, soil fertility and nutrient management and identifying soil and nutrient management practices that maximize productivity and profitability while maintaining or enhancing the productive capacity of the soil and quality of the environment.

ASPAC Laboratory Proficiency Committee (LPC)

Roger Hill, David Lyons, Leigh Sparrow and Paul Kennelly

Some upcoming changes.

The inter-laboratory proficiency programs (ILPP's) and Certification process are important services that ASPAC provides to its members. These were initially run from State Chemistry Laboratories in Werribee, Victoria, but as demand grew for more frequent rounds and faster feedback of results, the service was contracted out in 2004 to Proficiency Services Limited (now Global Proficiency Limited) in Hamilton, NZ. Changes included an increase from 6 to 12 "test" samples per annum, with a frequency upgrade from one to three rounds per program year. Moreover, participating laboratories now receive round-by-round feedback within two weeks following the due-date for result submissions. This allows laboratories to utilise the ILPPs more effectively to identify and address any measurement-performance issues they may have.

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ASPAC has enjoyed an excellent relationship with Global Proficiency and its predecessor over the last fourteen years. Initially, the Laboratory Proficiency Committee (LPC) visited their premises each year to audit their facilities and provide direction and feedback for the programs. However, since they have achieved ISO accreditation, the auditing function has ceased, but we still meet annually to discuss any issues, and potential enhancements to the service. The inclusion of soil Mehlich-3 analytes, soil acid-digestible metals and plant ultra-trace metals are good examples.

Global were able to hold their fees for the programs constant for many years, despite additional services being added and inflationary pressures. Some years ago, a small increase was negotiated, and there have been one or two further adjustments. Over the fourteen years, the price increases have been well below the rate of inflation. Recently, they have reviewed all of their proficiency programs, and found that the ASPAC programs were the poorest performing, in terms of commercial viability. As would any commercial business, they are looking to address the situation and have advised the ASPAC Executive, through the LPC, they need to significantly increase the fees to participants, in the order of 30%. While this was disappointing to hear, the LPC recognise the quality of the service being provided, and the willingness of Global to accommodate our many requests over the years at no additional cost.

The option to go out to open tender was considered, as happened fourteen years ago, but given the comprehensive services Global provide, we are confident we would not find an alternative provider that could offer an equivalent service at a similar price. All of the data assessment for certification, preparation of the certificates and summary data for the preparation of our annual reports are performed by Global at no additional charge to ASPAC, and overall, the service is running very smoothly

Global are also planning to charge immediately prior to dispatching each round of samples, which will spread the cost over the year and provide greater flexibility to the participants. The LPC and Exec are disappointed that the members will incur greater costs, but believe that the programs will continue to be value for money and hope that this matter will not cause any reduction in the amount of proficiency laboratories undertake. Global will also be advising the participants directly of these new developments.

Certification Rules can be Over-ruled

ASPAC Certification for Soil and Plant Tissue testing is based on a set of Rules established many years ago by the Laboratory Proficiency Committee (LPC) and endorsed by the ASPAC Executive. It involves a statistical analysis of the dataset for each analyte, where the mean and standard deviation (SD) are calculated. Results that lie outside two SD's are deemed to be outliers. These are removed from the dataset and the mean and the SD recalculated, and those again outside two SD's on the second iteration are deemed to be stragglers.

ASPAC certification is achieved by demonstrating (over 3 proficiency rounds) the ability to consistently produce results within an accepted range from the assigned value (usually the median of participants' results, after removal of stragglers and outliers).

Specifically, an outlier result incurs two demerit points and a straggler result incurs one demerit point for that test. Also, an unreported result or the submission of a non-numeric result incurs 2 demerit points on each occasion.

To be eligible for certification in any test method, a participating laboratory must have no more than 4 demerit points incurred across the three proficiency rounds (totalling 12 samples) in the annual program.

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The maximum number of demerit points a laboratory can accrue from the 4 samples in any single round is 3, so if a round is missed or a systematic error results in more than 3 demerit points for any round, the laboratory will still have an opportunity to achieve certification if they perform well in the other two rounds.

If a "round" is missed, the maximum number of 3 demerit points for every test in that "round" is allocated. Under very special circumstances an explanation can be submitted to the ASPAC LPC and if accepted, performance from the three most recently completed "rounds" may be used to assess eligibility for certification.

When less than (7) laboratories submit results for a particular test, proficiency assessments cannot be made statistically with an acceptable level of confidence and hence certification for the specific tests cannot be granted.

When manual intervention is necessary

On rare occasions, the dataset may have a group of results that are in exceptionally good agreement, resulting in a very small SD value, which means that other results reasonably good agreement are deemed to be outliers. The LPC has seen this occur on at least two occasions in the last decade. This arose in the last plant proficiency round for molybdenum, where the co-efficient of variation (COV) for one sample was an order of magnitude lower than usual. One laboratory questioned why their result of 1623 ug/kg, when compared to the assigned value of 1645 ug/kg, was deemed to be an outlier. This was obviously an unreasonable assignment, and was found to be a consequence of the excellent agreement of seven results dominating the statistical assessment. Common-sense prevails in such situations, and the LPC will step in and assign a typical or 'fit for purpose' SD for the purpose of assigning demerit points. The median and SD as found will still be reported by Global Proficiency as found in the round, but this modification can be made for the purposes of certification.

Future Labs 2018 Conference Report

A special report by William Bodeker, ARL, New Zealand

The 2018 Future Labs conference was held between the 13th-15th June at the Melbourne Convention and Exhibition Centre. The main themes for the conference were efficiency, automation and quality. The conference was attended by approximately 40 delegates, the vast majority being from Australasia.

The conference was aimed at a general audience. This resulted in a large number of case studies and general talks ranging from steel testing labs, to pathology labs to ammunition labs. Any technical talks were largely left off the agenda, as the applicability of these talks would have been low. The value of ASPAC, and the soil and plant specific technical workshops became more and more apparent to me as the conference proceeded.

The agenda for the conference looked very interesting and covered a range of issues that are pertinent to laboratory operations today. Unfortunately on a number of occasions there was a significant discrepancy between the agenda summary of the talk and the presentation. This was disappointing, given that my decision to attend was largely based on what I was expecting to hear. The length given to each speaking slot, 40 minutes in most cases, was too long. Rather than concise on point presentations, the more than ample time given resulted in expanded presentations that tended to deviate from the presentation theme.

Nonetheless there were some excellent talks. The workshop given on ISO 17025 migration is a good example. The content applied to everyone in the room, was presented in an engaging and interactive way, and came with a useful amount of take home documentation. There were some useful presentations on lab culture and continuous improvement which ended with practical applications.

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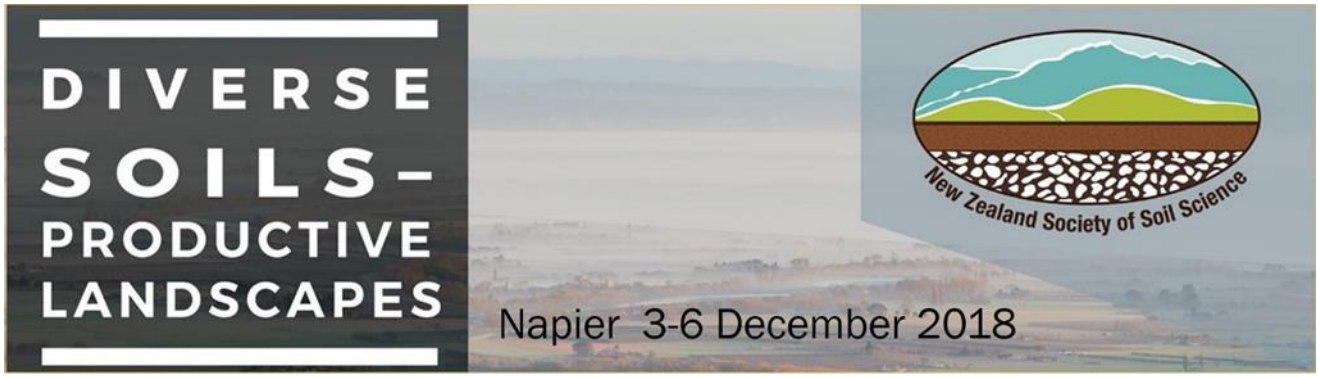
The conference also included a tour of the Melbourne Pathology Lab. It was very interesting to see the scale of the operation, and the level of automation that had been put in place to deal with that scale. The automation not only covered the instrumentation, but a tracked network to move samples between instrumentation and into storage. Despite the lab being unrelated to our type of testing, there were a number of take homes for me with respect to sample login and the approach to quality.

Finally the networking aspect was a strong point of the conference. There was plenty of opportunity between talks to touch base with other delegates and this was encouraged throughout our time in Melbourne. Despite the wide range of laboratory contexts the topics of quality, financing and the rapid evolution of instrumentation seemed to be common to us all.

Before signing up to next year's conference I would recommend checking the length of the presentations and the applicability of the conference content to the soil and plant laboratory context.

Conferences



KEY DATES
Registration online
20 October 2018 - Early bird registrations close
http://nzssconference.co.nz/

This conference will be held from 3rd to 6th of December. Rebecca Withnall our current New Zealand representative on the ASPAC Executive, is on the organising committee and can take any enquiries from members intending to go to this conference (becswithnall@gmail.com) ASPAC is sponsoring an activity at the conference.

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