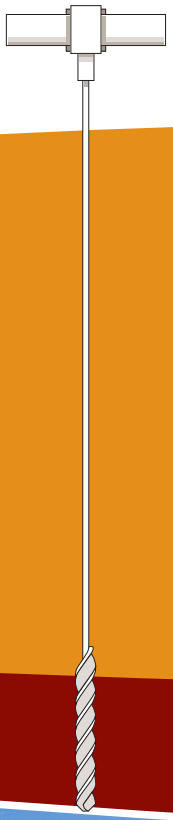
BRITISH SOCIETY OF SOIL SCIENCE

THE Auger

JUNE 2018



SUSTAINABLE DEVELOPMENT GOALS

SOILS & SUSTAINABLE DEVLOPMENT GOALS 2018 SOCIETY CONFERENCE – 4TH & 5TH SEPTEMBER AT LANCASTER UNIVERSITY

www.soils.org.uk

In this issue...

Cover image: Lancaster University as seen from the sky.
Taken using a drone

Editorial

It has been a busy few months of membership renewals, CPD collection and supporting Society events.

Preparations are now underway for the forthcoming 21st World Congress of Soil Science which takes place between 12th and 17th August in Rio de Janeiro, Brazil. If you are attending the Congress then do please come and say hi to us on the Society exhibition stand. And, if you are able to spare an hour helping out on it then even better. Drop Lynne Boshier an email if you are able to volunteer to help us out on the stand. Lynne can be contacted at **events@soils.org.uk**

The team is also working on the Annual Conference at Lancaster University on 4th and 5th September 2018. The programme is being compiled at the moment from the abstracts received. We also have an impressive line-up of invited speakers who will be addressing some of the issues surrounding "Soils and Sustainable Development Goals". Full details of the Conference are available on the website. To support the movement to a paperless Society we will be using a Conference App for first time at the 2018 Annual Conference. This will be available next month so look out for details in an email from the Society.

Whilst we are on the subject of communication — with the new Data Protection laws now in place it is important that we have gained your consent for ongoing contact so you continue to receive the Journals, Auger, members' emails and other Society announcements. If you have not already responded to the emails confirming your permission for the Society to stay in touch, please log into your website account and update your preferences. Alternatively please contact the office and we can make the changes on your behalf.

Ian Brown, *Executive Officer* exec@soils.org.uk

Our mission is to promote the study and profession of Soil Science

British Society of Soil Science

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President's Welcome

Prof. Wilfred Otten President

I hope that you all are feeling the wind in your sails with the increasing interest for soils and soil science. It, of course, does mean that many of us are extremely busy. It is nevertheless important that as a Society we make sure our views are heard and soils are represented by experts in the field.

Thank you to those of you who have attended various meetings and working groups on behalf of the Society over the last months and thank you to those who have written about this in this Auger. We will debate going forward how we can formalise our views to ensure we communicate a consistent message.

I will use this welcome word to highlight some of the exciting events that are coming up shortly. We know that many of you will be attending the World Congress in Brazil. We recognise that this is an expensive conference and we are pleased as a Society that we have been able to assist many of you with a grant to financially contribute to your attendance. The Society will be there with a stand, so please do come and visit the stand and help to promote the Society and our Journals. Much exciting science will be presented at the meeting and we hope you will publish the best papers in our Journals EJSS and SUM.

BSSS Annual Conference. We have our annual conference coming up on 4th and 5th September at Lancaster University. The meeting is an excellent opportunity to demonstrate how our research and soils are at the heart of the 'United Nations Sustainable Development Goals'. There will be keynotes on Food Security, Climate Change, Health and Water Quality. Our meetings have been well attended over the past years so make sure you sign up quickly. Note that the deadline for submission of abstracts is June 10th and this will be strictly adhered to as it is a busy time in the office given the World Congress in Brazil in August. You can find details on registration and abstract submission on our web-page.

WCSS 2022 in Glasgow. The preparations for WCSS 2022 in Glasgow are well underway. To date the main focus has been on appointing a professional conference organiser as well as considering governance and contractual related issues that will ensure that the financial risk to the Society is minimised. We fully expect this to be a very successful and profitable meeting, but want to make sure the Society is covered in case of unexpected events. These are important and essential first steps in the preparation for such an event, but thanks to great efforts led by Bruce Lascelles this stage is coming to a close soon. Emphasis will now rapidly switch to the more exciting organisation of the event itself. To kick-start the process a working group has been put in place and thank you to all who have put themselves forward to make contributions.

BSSS members and IUSS. I expect the route to Glasgow to gather pace quickly, starting with the official hand-over and start of the campaign during the World Congress in Brazil. This will include the election of Vice President Congress for IUSS, a role for which we have proposed Bruce Lascelles. We are also very pleased with those of you who put themselves forward for the post of Vice-Chair of one of the four divisions of IUSS. These posts have now been elected and the following members will act as Vice Chairs: Matt Aitkenhead and Jack Hannam (Division 1); Leo Condron and Paul Hallett (Division 2); Bob Rees and Tom Aspray (Division 3); and Chris Evans and Christine Watson (Division 4). Congratulations to all and we look forward to work with you in shaping the program of WCSS 2022.

Get involved with BSSS. It is a good time to be involved with the Society and we are very pleased with the response received lately when we reach out to our membership for assistance. Clearly many of you are willing to contribute to a lively soil science community and a growing list of activities. In case we haven't been able to take advantage of your offer yet, or in case you are still looking to engage with Society activities, please keep an eye out for our calls or get in touch directly. Various functions within the Society are up for renewal and with the preparations for WCSS picking up pace rapidly we welcome your continued support with the Society. Remember that the Society may also be able to assist you as our member weather it is in organising an event or offering financial support to attend meetings through one of our many grants. Please check out our web-page for ongoing opportunities.

Professor Wilfred Otten, *President,*
June 2018 president@soils.org.uk

Notes from the PPC Chair

Anna Becvar PPC Chair

The Professional Practice Committee (PPC) are pleased to see a steady stream of new members joining BSSS with numbers reaching 772 in January with 192 members now within the new Early Careers membership category.

We hope that the shift in membership boundaries will allow students to retain their membership as they progress in their career, with a continued interest in soils.

We have just faced a review of our licenses with the Science Council which we 'passed'. And although you may feel as if we are chasing for CPD a little more, ***"The review panel praised BSS for their improvements in their CPD processes".***

If you would like to learn more about becoming a Chartered Scientist, the professional benefits and requirements please contact the BSSS office or the PPC Committee, who can assist you through the process. To apply to be a Chartered Scientist visit http://www.soils.org.uk/science-council-registration

To further enhance individual professional practise BSSS is proud to be running more Working with Soils courses in 2018:

Course 1
Exposing and Describing a soil profile:
19th September 2018, *Dundee*

Course 3
Introduction to Soil Classification:
3rd–4th October 2018, *Shuttleworth College*

Course 4
ALC:
21st & 22nd November 2018, *Solihull*

> *We are very keen to hear and help with more events, both regionally and nationally to promote the great work of all our members in soil science, so please get in touch.*

In its 25-year Environment Plan Defra's Secretary of State Michael Gove has committed to protect soil health and make it as a central pillar of farming policy and the system of farm support that will replace the Common Agricultural Policy. Improved soil health is a key environmental public good that will underpin the new agricultural policy the Government consulted on in February 2018. Recent press reports claim that UK soils have reached an emergency, and that soil erosion and compaction have been worsened by poor land management practices.

BSSS members have helped to organise and will deliver key note talks at the **'Saving our Soils: Understanding and improving soil health'** event held in conjunction with the Renewable Energy Association and AD Network. We will examine these claims more closely, with a view to understanding the current situation and exploring how soil health can be improved through best-practice and the use of existing biomass resources such as digestate, compost and bio-char.

We are very keen to hear and help with more events, both regionally and nationally to promote the great work of all our members in soil science, so please get in touch.

And finally, if you would like to join the PPC team to help maintain the framework of our membership and professional standards as well as implement new ways for promoting our profession, we would welcome your input, just volunteer to the BSSS office

Anna Becvar, *PPC Chair* ppc@soils.org.uk

Regional Group Update

NORTHERN SOILS NETWORK (NSN) SCOTTISH SOILS DISCUSSION GROUP (SSDG)

The Northern Soils Network and the Scottish Soils Discussion Group teamed up for a one day meeting on *Spatial Datasets for Soils in the UK* held at the Centre for Life, Newcastle-upon-Tyne on 22nd February. The meeting aimed to bring together people who create, work with or rely upon soil spatial datasets. Thirty one people attended across a range of organisations.

Key themes addressed at the event included Open science and open data (Matt Aitkenhead, James Hutton Institute), Where's all the soils data? (Rick Stuart, NERC Environmental Information Data Centre), National soil data in Scotland — is it really free? (Allan Lilly, James Hutton Institute), LandIS — The Land Information System for England and Wales (Nikki Baggaley, James Hutton Institute, on behalf of Cranfield University) and The issues of licensing (Russell Lawley, British Geological Survey).

The talks were followed by a wide-ranging debate on issues raised in the presentations. There was concern for the lack of scientists from soils and related environmental areas who are skilled in GIS. It was agreed that there was a need for training and funding to achieve a stronger body of skilled researchers. Feedback from the event was highly positive.

The Chair and Deputy Chair are working closely with the team preparing for the BSSS Annual meeting on *Soils and Sustainable Development* to be held at Lancaster University, 4th–5th September.

The NSN is encouraging members to participate in Open Farm Sunday on 10th June 2018. These events provide an excellent opportunity to liaise with the public and the farming community. The Chair will be posting information about this. A field-based event for the group is also planned for later in the year.

The NSN still needs a Student Representative. Responses to a request for volunteers from the student community has been disappointing.

Welcome to the following new Members:

Student Members

Layla Al-Mousili
Sebastian Blunk
Roseanne Broyd
Mihai Cimpoiasu
Jana Darmovzalova
Stuart Dick
Kirsty Elliott
Rachel Efrat
Caroline Freeman
Izzah Binti Abd Hamid Ghazali
Jamal Hallam
Charlotte Hawkins
Juliane Hirte
Mohammad Firdaus Abdul Karim
Tamsyn Kiss
Tinashe Mawodza
Maria McMahon
Jean-Pascal Miranda
Alex Newnes
Ewan Ebenezer Oleghe
Francis Parry Roberts
Sam Reynolds
Sam Robinson
Victoria Struthers
Bruce Taylor
Victoria White
Martin Worsley
Ibrahim Rashid Ali
Philip Brailey
Lee Carlesso
Samantha Coyle
Vinicius De Oliveira
Emily Dowdeswell
Osim Enya
Daniel Evans
Richard Gantlett
Lucy Greenfield
Anne Hand
Elliot Hill
Gruffydd Jones
Nim Kibbler
Angeliki Kourmouli
Chris McCloskey
Melika Mezali
Sebastian Murray
Ezekiel Okonkwo
Elle Marie Pace
Rita Razauskaite
Jake Richards
Lewis Rose
Christopher Sweeney
George Themistocleous
Alexander Williams
Ting Yang

Associate Members

Iain Brown
Georgina Éclair-Heath
Alex Hazelhurst
Alix Vidal
Benjamin Butler
Ruth Flower
Stephen Ramsay

Technical Members

James Cooke
Christopher Graveson
Zac Goodhall
Hannah Robertson
Arit Efretuei
Sarah Gilliland
Caitlin Hedinburgh-Bailey
Robin Truslove

Full Members

Taiwo Michael Agbede
An Tongxin
Sarah De Baets
Myroslava Khomik
Laura Martinez-Garcia
Carla Richmond
Diogenes Antille
Tegan Darch
Marta Dondini
Kate Le Cocq
Dusty Rhodes
Nicholle Taylor

Meet the Early Career Representative (ECR): **Dan Evans**

Sometimes, amidst the many unanswered questions that accompany postgraduate research, the world of Soil Science can feel quite literally as clear as mud. At these moments, I like to close my eyes and retrace my steps, back to where it all began: Norfolk, or as I spell it, home…

On the most easterly entrance into the United Kingdom is a rug of boundless beauty. The graceful dance of the corn in the tender breeze, the labyrinth of bygone country lanes, a row of weather-pummelled cottages that gaze out to sea and, of course, those endless Sunday afternoons when thoughts are taken for a stroll down the hushed tracks and byways. And there, just around the corner, a young boy and his father are sauntering over the fields. The young boy doesn't realize that, in another twenty years, he shall be studying this brown earthy material for a PhD.

Twenty years on, I still have this impassioned connection with the countryside and I still find myself developing a desire to defend it. I figured a while back that if I wanted to protect the soil, I must learn more about them. As John Quincy Adams once elegantly asserted, *"to furnish the means of acquiring knowledge… prolongs life itself"*. When I return to Norfolk these days and gaze out over the fields that cloak the steps to the sea, I spend a few minutes thinking about how fast the soil is forming (the essence of my PhD) before the mind is drawn once again, not to the science, but to the beauty. For me, my love of Soil Science will always be one closely entwined with my passion for the landscape.

Growing up, I spent much of my time ambling the fields in solitary bliss. But to be in deep meditation with the landscape, is quite different to being alone in research. In fact, during the course of my PhD, I have become more invested in the idea of society. And so perhaps that is where I should more formally introduce myself, not as a Norfolk boy in his wellies, or as a PhD student at Lancaster University, but as your Early Career Representative for BSSS. I am truly honoured to be in this position, especially given the amazing job that Ashley Gorman did before me.

> *"For me, my love of Soil Science will always be one closely entwined with my passion for the landscape."*

> *We are already hard at work, both regionally and nationally, to make your experience as a member of the society the very best it can possibly be."*

Dan Evans, *ECR Rep*

You can also follow me on Twitter
@DanEvansol
and email me with your comments and questions:
student@soils.org.uk

Back at the start of the year, I sat down one evening and considered what I wanted to achieve in my two year tenure. I settled on four objectives: to bring our members together more, to support them as they inspire the next generation of soil scientists , to formulate innovative communication strategies and finally, to always listen and learn along the way. I have these pinned up above my desk and I often reflect on our progress on each one in my monthly website platform posts. If you have not already seen these, do visit the ECR page on the BSSS website.

I would like to take this opportunity to introduce the wonderful team of regional ECR representatives:

ECR Rep for South East England
Emily Dowdeswell
e.dowdeswell@cranfield.ac.uk

ECR Rep for Wales
Paul George **afp67e@bangor.ac.uk**

ECR Rep for Midlands
Ernesto Saiz **e.saiz.val@keele.ac.uk**

ECR Rep for Scotland
Tom Inglis **tom.inglis@hutton.ac.uk**

We are already hard at work, both regionally and nationally, to make your experience as a member of the society the very best it can possibly be. I have had the great fortune to attend a number of regional events around the country and meet many of you. Moreover, I am delighted to announce that we will be holding a special ECR Social Event at the Annual Meeting in September this year. More details will be unveiled shortly on this.

Until the next time, may I wish you all a wonderful summer and I look forward to seeing you all at the Annual Meeting!

Grants

The Society is delighted to award financial support to 17 members to attend the forthcoming World Congress of Soil Science in Rio de Janiero, Brazil in August 2018.

Oral Presentations

Sunday Aboh
Dr Benjamin Butler
Hannah Cooper
Olivia Cousins
Vinicius De Oliveira
Dr Jacqueline Hannam
Dr Ishaq Mian
Georges Nzdana
Tom Storr

Poster Presentations

Sebastian Blunk
Jasmine Burr-Hersey
Professor Victor Chude
Lloyd Cockram
Tinashe Mawodza
Caleb Melenya
Carmen Sanchez-Garcia
Gilka Silva

All of the members will be helping on the Society Exhibition stand during the World Congress and am sure would be delighted to meet up with any other members attending.

Each year the Society allocates £20,000 for grant funding applications covering Student travel grants, field equipment grants, Innovation grants and the David S Jenkinson Fellowship. The Society also manages the Brian Chambers Soils Fund which was set up in 2015 to fund the learning and development costs of students and early career scientists.

All funding applications are reviewed by the Grants and Awards Committee; Professor Liz Baggs (Chair), Paul Newell Price, Dr Matt Aitkenhead and Dr Sami Ullah.

In 2017 the committee awarded 21 grants totalling £13,095. Part of the conditions of being awarded a grant is to compile a short report to illustrate how the funding has helped with your research. These reports are reviewed by the Committee and published on the Society website. Some recent reports received included the following comments;

Joyce Franklin Academy was awarded £178 for the purchase of equipment for geography and soil science. *"On behalf of the school and the students that have directly benefited from the new equipment I would like to say a massive thank you for your support and for providing this equipment. The equipment has been utilised by the upper and lower sixth. They used it to analyse soil for their applied science coursework. Secondly, Years 7/8 have been using the soil sampling kit to compare soil from around the school site".*

Early Career Member Sebastian Blunk received a Student Travel Grant to attend the 12th Triennial Conference of the International Society for Seed Science in California, USA. *"I was invited for an oral presentation at the ISSS conference and additionally asked to present a poster in one of the afternoon sessions. In my talk, I presented the Hounsfield Facility at the University of Nottingham where I am conducting X-ray CT quantifications of enhanced seed growth behaviours in situ. Throughout my presentation, I highlighted the main results of my PhD including the latest results of my publications. The evaluation of seed-soil contact as an important factor for germination was well appreciated from researchers and company representatives attending the session. I received a lot of positive feedback during the corresponding poster session later the same afternoon".*

For further details on the grants offered by the Society please check the website www.soils.org.uk

RIO18

21st World Congress of Soil Science

Soil science:
beyond food and fuel

AUGUST 12-17-2018 **BRAZIL**

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Brazilian Soil Science Society

SLCS

International Union of Soil Sciences

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Westminster Energy, Environment and Transport Forum Keynote Seminar:

The 25-year Environmental Plan (25-YEP) was announced on the 11th January 2018 by the Prime Minister, Theresa May. An ambitious plan which considers a wide range of environmental topics, including amongst others; biodiversity, land-use, plastics, well-being and climate change.

Jonathan Mullard (Head of Public Sector Energy) introduced the 25-YEP Seminar to *"…perhaps the biggest ever audience for a Westminster Energy, Environment and Transport Forum event…"*, immediately demonstrating the wide-reaching interest and appetite for this ambitious document across a range of public and private sectors. It was with great pleasure that I was given the opportunity to attend this event, representing the British Society of Soil Science.

The seminar comprised keynote speakers and panel discussions from a range of experts across the environmental, economic and political sectors. The common opinion arising from the session was an optimistic energy that this 25-YEP had been created and that it goes towards not only protecting the natural environment in England but also taking strides to help our natural environment recover.

The first speaker of the morning was Nick Barter, the Deputy Director of the Natural Environment Strategy in Defra and the man responsible for developing the Government's 25-YEP. Commenting on the importance of this long-term document, Barter enthused that this document extends much further into the future than a term of office. This crucially allows for a strategic, whole-system approach, setting the direction for the reshaping of essential environmental policies and legislation during and following the exit of the UK from the European Union, increasing the likelihood of the successful implementation of this environmental plan.

A panel discussion whistled through a number of the environmental aspects which need to be considered, possibly raising more questions than were answered, including; Is there enough money (and support) to put in place and successfully manage the 25-YEP? The UK is currently the 2nd largest importer of forest products and the 4th largest importer of food products; do we focus on England, the UK, or do we need to consider our 'exported' global environmental impact? How do we put a value on ecosystems?

Miranda Winram (Forest Enterprise) enthusiastically presented the results from the natural capital accounting carried out on 252,000 ha of Forest Enterprise forest and woodland. She highlighted that the natural capital value is only an indication, as a value cannot be assigned to everything. However, the importance was that the scale of difference between the financial balance of Forest Enterprise (primarily from the sale of timber) and the natural capital balance, which was twenty times the financial balance value, indicating the value placed on the landscape and the services it provides beyond the financial gains in the timber products. Looking ahead, Winram suggested this approach could be used to drive land management decisions in an options appraisal type process.

Leonie Cooper AM (Chair of the Environment Committee; London Assembly) highlighted the necessary move towards evidence-based policy which can be practically implemented, which is reflected in the requirement of environmental metrics to measure the success of the 25-YEP. These metrics are yet to be determined, however are critical for the successful implementation of the plan. Whilst Jeremy Owen (LUC Town Planner), discussed the 25-YEP in terms of the NPPF and the need to ensure there is not an increased burden set on developers, however suggested that the 'Net Environmental Gains' discussed in the 25-YEP should be a mandatory clause in the National Planning Policy.

Throughout the talks, it was great to see national soil metrics already available and utilised in existing ecosystem services tools, including soil texture, soil moisture and soil organic matter content. These metrics were part derived from survey data and part from modelling. As such, it was recognised that additional site data is essential to improve our baseline data to continue to improve the output of these tools.

Nick Barter, Deputy Director of the Natural Environment Strategy in Defra

To close the session, Emma Boyd (EA) discussed the impact of climate change and England's resilience to flooding, discussing the recent 6-year flood programmes enabling longer-term plans to be implemented. Boyd stated that the individual objectives of the 25-YEP join together, and whilst '*the 25YEP sets out the ambition, Climate change sets out the urgency*', highlighting that this report comes at a critical time, not only with respect to Brexit, but also at a time when the environment is at tipping point.

It can be said that every person in attendance at the seminar agreed that the 25-YEP is a huge step forward with the potential to raise environmental standards for the future, however the concerns over funding and implementation was evident.

Moving this Environmental Plan forward, a new independent body will be created to help assure this plan is put into practice. Consultation to establish the environmental principals to underpin policy making and to set up an independent, 'world-leading environmental' watchdog will open in Spring 2018. This will ensure the Government is held to account for upholding these environmental standards, with Nick Barter welcoming everyone to contribute to this consultation period.

To continue this momentum of positive attitude towards our environment, the Government has announced that 2019 is going to be the Year of Green Action, a year-long youth-focused promotional campaign to engage people with environmental issues. Using #iwill hashtag the campaign will aim to increase action and engagement on the environment among 10 to 20-year olds.

The full plan can be found here: https://www.gov.uk/government/publications/25-year-environment-plan

Dr Eleanor Reed

Cranfield University wins fifth Queen's Anniversary Prize for its Soils work

In February 2018, Cranfield University was delighted to receive, for the fifth time in its history, a prestigious Queen's Anniversary Prize.

Cranfield is one of only eight institutions to have won the award on five or more separate occasions. Cranfield received the award for its research and education in soil science and for the large-scale soil and environmental data, supporting the sustainable use of natural resources in the UK and worldwide. This is the first time in the Prize's history that an award has been given for soil science.

THE QUEEN'S ANNIVERSARY PRIZES
FOR HIGHER AND FURTHER EDUCATION
2015 & 2017

Cranfield has a long history of soil science research and education. In England and Wales alone, the equivalent of over 200 years of fieldwork has identified over 750 different types of soil. Together with a unique, parallel international soils archive, the University has created the largest collection of soil information in Europe. Cranfield University has been designated by the Department for Environment and Rural Affairs as the national reference centre for soils.

Cranfield University award winners outside Buckingham Palace
From left to right: Professor Sir Peter Gregson, Vice Chancellor of Cranfield University; Professor Leon Terry, Director of Environment and Agrifood; PhD student Alexandra Ansell; Professor Jane Rickson, Professor of Soil Erosion and Conservation; Dr Alexandra Cooke; PhD student Kelechi Anyaoha; PhD student Matthew North; PhD student Tom Storr; Professor Simon Pollard, Pro Vice-Chancellor (School of Water, Eneregy and Environment)

The Queen's Anniversary Prizes are awarded to universities and colleges who submit work judged to show excellence, innovation, impact and benefit for the institution itself and for people and society generally in the wider world. Part of the State Honours System, they are the UK's most prestigious form of national recognition open to a UK academic or vocational institution.

Receiving the Queen's Anniversary Prize represented the formal recognition of the soils work of the university, and the curation undertaken of the national soil resource datasets, stretching back to when the Soil Survey of England and Wales joined Cranfield back in 1987, forming the Soil Survey and Land Research Centre, through to the current day. These datasets are held in Cranfield's Land Information System, LandIS, (www.landis.org.uk), plus the parallel World Soil Survey Archive and Catalogue (WOSSAC), (www.wossac.com).
The Prize is a great testament to all the many survey staff who were responsible for gathering this unique body of data about our soil resources, recognising the many ways in which this data has been put to use by a broad spectrum of users, with many soil resource applications ranging from food security to environmental impact assessment, ecosystem services and natural capital to geotechnical interpretations.

Stephen Hallett, *Cranfield University*

General news

Rothamsted at 175

We look forward to Rothamsted's 175th birthday celebrations this year. The main events are 'The Future of Long-Term Experiments in Agricultural Science' conference on 21–23 May, and the 'Rothamsted Festival of Ideas' public event on 23–24 June, preceded by an event for schools and stakeholders on 22 June. For more information, please visit: **https://www.rothamsted.ac.uk/175**

Achieving the '4-per-1000' soil carbon target

A group of Rothamsted scientists recently examined the rates of change of soil organic carbon (SOC) in 16 of its long-term experiments as part of the current debate on C sequestration. Whilst in some cases an SOC increase of '4 per 1000' was possible, severe constraints to long-term sustainability were identified including: (a) farmers not having the necessary resources (e.g. insufficient manure); (b) some, though not all, practices favouring SOC are already widely adopted; (c) some practices are uneconomic for farmers; and, (d) some practices are undesirable for global food security. Nevertheless, they concluded that practices which result in small increases in SOC may well enhance soil quality and function, resulting in disproportionately large beneficial impacts, though not necessarily increasing crop yield.

—

Poulton, P.R., Johnston, A.E., Macdonald, A.J., White, R.P. and Powlson, D.S. 2018. Major limitations to achieving "4 per 1000" increases in soil organic carbon stock in temperate regions: evidence from long-term experiments at Rothamsted Research, United Kingdom. *Global Change Biology,* **http://doi.org/10.1111/gcb.14066**

Journal editorial board appointments

Recent editorial board appointments from Rothamsted include Kevin Coleman at *Global Change Biology Bioenergy,* Laura Cardenas at *Soil Biology and Biochemistry,* and Andy Gregory at *European Journal of Soil Science,* the latter following the stepping-down of David Powlson in that role.

New projects

A new project entitled GeoNutrition was funded by Bill & Melinda Gates Foundation. The project, US$ 5.78M over 43 months, involves scientists from Rothamsted (Steve McGrath, Alice Milne, Jackie Stroud & Stephan Haefele), Nottingham University (Lead PI: Martin Broadley), The London School of Hygiene & Tropical Medicine, 8 partner organisations in Ethiopia and Malawi, CIMMYT and ICRAF. It is part of our strategic cooperation with Nottingham, builds on two GCRF Foundation awards, and utilises methodologies and expertise from the AfSIS project.

A new BBSRC/Newton Fund, The Alliance for Sustainable Agriculture - Rothamsted Research & Embrapa Research Award will examine spectral analysis tools to characterize Brazilian soils and analyse nutrient cycling in integrated crop-livestock-forest systems.

Andy Neal leads a new iGCRF2 Open soils database grant with CABI and CEH.

Delegates at the UK-China Virtual Joint Centres meeting at Rothamsted (September 2017).

Conferences and scientific meetings

Meeting of UK-China projects

Last year (September), Rothamsted hosted a joint meeting of two Newton Fund/BBSRC/NERC-funded China Virtual Joint Centres, CINAg and N-Circle, to discuss findings and explore opportunities for future collaborations. The event included over 80 delegates from the two projects and guests representing other VJCs and the wider scientific community. The VJCs are led by Liu Xuejun, Ju Xiaotang, Liu Hongbin (China), Tom Misselbrook (Rothamsted) and Pete Smith (Aberdeen).

The key aim of the CINAg project is to develop novel indicators of nitrogen use efficiency (NUE), to use these and other emerging knowledge to help farming systems achieve sustainable intensification. To this end, field experiments have been ongoing in the UK and China assessing potential solutions to improving NUE and reducing environmental impacts, with a focus on the development of new soil health metrics. Alongside this, computer modelling has been used to assess the possible impacts of suggested improved practices in agriculture. N-Circle adopts an integrated approach to tightening the agricultural N cycle by targeting each stage of potential N addition or loss. There are several areas in which experiments are ongoing, with field trials, laboratory work and computer modelling covering areas including fertilisers, crop genomics and livestock breeding ongoing in both China and the UK.

Both projects have published papers in academic journals, and have also been featured in the press in publications such as Fertilizer Focus magazine and China Daily USA. In addition, CINAg has been implementing its outreach strategy through the Chinese "Science and Technology Backyard" programme.

Other meetings

Meanwhile, Rothamsted staff have been busy at a variety of conferences, meetings and workshops:

- Andy Neal, Xiaoxian Zhang, Stephan Haefele and Martin Blackwell visited EMBRAPA Instrumentation, Sao Jose, Brazil to attend Rothamsted Embrapa Joint Initiative - Alliance for Sustainable Agriculture sandpit, (December).
- Adrian Collins, Andy Neal, Andy Whitmore, John Crawford, Laura Cardenas, Michael Lee, Stephan Haefele, Steve McGrath, Tim Mauchline and Xiaoxian Zhang took part in the Rothamsted-Bristol Farming Futures Strategic Workshop in Harpenden (January).
- Keith Goulding chaired the first day of a two-day meeting on soil and water management, held by the Game and Wildlife Conservation Trust at the Allerton Project in Loddington, Leicestershire (February).
- Tim Mauchline co-organised the 2nd Plant Microbiome Symposium in Amsterdam. Also attending were Penny Hirsch and Ian Clark (February).
- Rothamsted hosted a workshop to construct a Soil Quality and Health Bayesian Belief Network for a NERC-funded project in the Soil Security Programme. This involved several stakeholders and scientists (e.g. GWCT, ADAS, AHDB, Elm Farm). It is hoped that the output will be published as a multi-author paper (February).
- Jordana Rivero and colleagues from North Wyke presented their research on selecting cattle for sustainability traits on pasture based systems at the 11th World Congress on Genetics Applied to Livestock Production in Auckland, New Zealand (February).
- Adrian Collins, Michael Lee, Andy Whitmore, Jon Storkey and Adelia de Paula attended the joint BBSRC/NERC/Defra workshop on Sustainable Intensification in Leamington Spa (February/March).
- Steve McGrath attended a stakeholders meeting of the AHDB project Opti-S (sulphur supply from manures to arable crops) at Gleadthorpe with stakeholders ADAS, AHDB, United Utilities, Yorkshire Water, Severn Trent Water and CF Fertilisers (March).
- Andy Neal was an invited speaker at the Systems Biology for Plant and Human Nutrition workshop, hosted by ICRISAT's Center of Excellence in Genomics and Systems Biology, Patancheru, India (March).
- Stephan Haefele was an invited speaker at the Phosphates 2018 conference in Marrakech, Morocco (March).
- Adrian Collins was an invited speaker at a UK-wide policy conference on re-designing riparian buffers for new post-Brexit agri-environment schemes, and has been invited to join the expert working group.
- Andy Neal, John Crawford, Andy Whitmore, Steve McGrath and Jackie Stroud met with Defra representatives to discuss soil health (December).
- Stephan Haefele, Steve McGrath and Achim Dobermann visited ISRIC in Wageningen University, The Netherlands, to discuss potential collaboration (January).
- Andy Gregory, Stephan Haefele, Richard Whalley, Xiaoxian Zhang, and others visited the International Centre for Integrated Mountain Development (ICIMOD) in Kathmandu, Nepal, to explore collaborations, particularly in soil and plant science (February).
- Richard Whalley and Andy Gregory visited University of Zimbabwe to discuss application of soil physics and equipment needs as part of their work on the Nottingham-led (PI: Murray Lark) GCRF Growing Research Capacity project. On the same trip, they visited University of Zambia to install instrumentation in a conservation agriculture field experiment and to provide training (February).
- Steve McGrath was an invited speaker at the All-Party Parliamentary Group on Science & Technology in Agriculture meeting on international development opportunities for UK agri-science (March).

Andy Gregory *(2nd from left)* **and Richard Whalley** *(5th from left)* **with colleagues from Zambia, Zimbabwe and Malawi at a conservation agriculture field experiment at University of Zambia (February 2018).**

Visitors

- Sir Paul Nurse, Chief Executive of the Francis Crick Institute, Nobel Laureate and former President of the Royal Society, gave a seminar entitled 'Science as Revolution' at Rothamsted (December).
- Fusuo Zhang and Xue-Jun Liu (China Agricultural University) visited Rothamsted and spoke to a number of research groups to discuss the on-going collaborations between the two institutions (December). A workshop on 'Green Development of Agriculture' will be held in Beijing in April.
- Andy Neal and Steve McGrath hosted a collaborative visit of Matt Poulter, Michell Mao and Kaiyu Lei of BGI Genomics to talk about soil metagenomics sequencing projects.

Sir Paul Nurse delivering his seminar at Rothamsted (December 2017).

Moving in

Michael Mielewczik (January): to work with Andy Whitmore.

Claire Meade (January): to work with Jackie Stroud.

Marcos Paradelo-Perez (February): to work with Tim Mauchline on soil microbiology and soil structure.

Moving out

Chris Watts retired in November after 39 years of sterling research in agricultural engineering and soil physics at Rothamsted (2004–2017) and Silsoe Research Institute (1978–2004).

Colin Webster retired in December after an incredible 45-year career working on nitrogen and, latterly, soil physics at Rothamsted (1985–2017) and Letcombe Laboratory (1972–1985).

Not a final departure, but December marked the retirement of **Penny Hirsch** after 34 years at Rothamsted (1982–2017). Penny is now an Emeritus Scientist, continuing her soil microbiology research.

Andy Gregory

BBSRC bioscience for the future

STARS

The European Geosciences Union, is Europe's premier geosciences union, dedicated to the pursuit of excellence in the Earth, planetary, and space sciences for the benefit of humanity, worldwide. It was established in September 2002 as a merger of the European Geophysical Society (EGS) and the European Union of Geosciences (EUG), and has headquarters in Munich, Germany.

STARS in Vienna *From left to right:* Professor Phil Haygarth, Paul Bryn Llewellyn George, Jasmine Burr-Hersey, Hannah Scott, Dan Evans, Fiona Seaton.

STARS CDT cohort 1 ventured to Vienna this April to participate in the annual European Geoscience Union (EGU) assembly.

The assembly was made up of 4,776 oral, 11,128 poster, and 1,419 PICO presentations. 666 unique scientific sessions together with 68 short courses and 294 side events attended by 15,075 scientists from 106 countries. As the name suggests this multidisciplinary conference attacks a wide range of disciplines from, but not limited to, planetary and solar system science, seismology, cryospheric science and palaeontology. So there is not a member of the global soil science community that could not feel fully catered for with such a diverse plate to feast upon. With the full machinery of earth science represented, discussed, teased apart, pondered, wondered, the soil scientist was given a great opportunity to sit back and see how all these disciplinary cogs connected; providing an insight one rarely gets to experience. However, it was not just all about big picture reflections. For example, BSSS's own Wilfred Otten kicked off the session on The rhizosphere: plant-soil-microbial interactions and soil life visualization with a fantastic talk '*Visualising habitats in soil: moving beyond the techniques*'. Such a talk not only provided the soil scientist with practical prescriptions for employment but demonstrated the importance of considered practice, experience and intellectual reflection demanded by any successful careerist in the discipline. If the assembly made up the sweeping strings of the symphonic orchestra, Wilfred's talk and others like it added the technical solos of the virtuoso.

And on the 7th day (well technically the 6th) Members of STARS CDT cohort 1 Jasmine Burr-Hersey, Hannah Cooper, and Fiona Seaton co-convened a session within the Soil Systems Science (SSS) division of the conference: Impact of agriculture on soil functions – processes and indicators. Several STARS students also contributed to the session with oral and poster presentations, a culmination and display of 3 years of PhD research and STARS training. The full day session was centred around some key themes including; soil structure and compaction, tillage systems, microbiology and soil quality and cropping systems and nutrient dynamics. This proved to be a highlight of the conference for the STARS students in attendance, not just for those that presented but also for those that got the opportunity to see their cohort members thrive at such a prestigious international event. A certain type of aggregate bound by the exudates of 3 years of STARS training, netted by the mycelium of unwavering enthusiasm and commitment by its director Prof Phil Haygarth and never short of a soluble nutrient supply provided by its board members and supervisors from Bangor University, Cranfield University, Nottingham University, University of Lancaster, The James Hutton Institute, The British Geological Society and Rothamsted Research.

Malika Mezeli and Jasmine Burr-Hersey

BRITISH SOCIETY OF SOIL SCIENCE

SUSTAINABLE DEVELOPMENT GOALS

SOILS & SUSTAINABLE DEVELOPMENT

4–5 September 2018 • Lancaster University

Soils are crucial for sustainable development and healthy soils are central to achieving many of the *United Nations Sustainable Development Goals.*

Keynote speakers, including Dr Cheryl Palm from the University of Florida, will address issues such as *Soils and Food Security, Climate Change* and *Health and Water Quality* and the 2018 Annual Conference of the British Society of Soil Science will provide an opportunity to deliberate and discuss these critical topics.

Throughout the two days there will be opportunities to network with practitioners from diverse organisations, discuss how your research aligns to current SDGs, benefit from hearing differing views and opinions, learn how your research can contribute to the UK Soil SDG aims, and catch up with peers and colleagues.

Join us for a stimulating conference and debate!

71st Annual General Meeting — *minutes*

Minutes of the 71st Annual General Meeting of the Society, he Royal College of Physicians at 4.15pm on 5th December 2017.

Society President, Professor Wilfred Otten chaired the meeting. 70 members present.

1 Welcome

Professor Wilfred Otten welcomed the members present to the 71st Annual General Meeting of the British Society of Soil Science. He thanked the Organising Team of the debate that had preceded the AGM and also for all the members who had participated.

2 Apologies

Apologies received from Dr Tom Batey, Dr Patricia Bruneau, Professor Mark Hodson, Dr Bob Evans, Willie Towers, Sunday Aboh, Angus Leigh, Anna Louise Batchelor, David Eldridge, Caleb Melenya, Dr Peter Smart, David Dent, Nigel Titchen.

3 Minutes of the previous (70th AGM) Meeting

Published in The Auger, June 2017 Edition pages 16–20.

4 Matters Arising from the Minutes

There were no matters arising from the previous minutes.

5 Acceptance of the minutes by Members present

The minutes were accepted by the meeting. Proposer, Professor David Hopkins and seconded by Dr Sami Ullah.

6 President's Report

Wilfred Otten began his address by thanking Professor Liz Baggs for her time as President for the previous two years and welcoming new incoming President Professor Sacha Mooney to the Board of Trustees. He also welcomed new Council Members Leila Froud and Eleanor Reed. He also acknowledged Anna Louise Batchelor who had resigned from Council in March 2017 due to personal reasons.

Wilfred also wanted to record his thanks to the members of the Society who had shown their support when called upon to attend meetings on behalf of the Society, answer calls for help from the media or members of the public, promote events and provide information when requested.

This year the Society has been reaching out to other Leaned Societies and organisations to increase its reach, learn from them and look at potential collaboration if appropriate. The President has established a close working relationship with the Royal Society of Biology (RSB) and Members are reminded that they are entitled to a discount on attending RSB events and courses.

Soil is enjoying a prominent position in the media and with government focus. This is obviously a good thing and it is important that we all embrace this renewed focus. Many members will no doubt be involved in the various initiatives through their employment and the Society is also ensuring that it is represented at some of the meetings when invited to do so.

2017 has seen some memorable achievements by some of our members;

Professor Lorna Dawson received a special recognition Pride of Britain award for her pioneering work in forensic techniques.

Professor Pete Smith was made a Fellow of the Royal Society and awarded a medal at the European Geosciences Union (EGU) for his contributions to science.

Harper Adams University was awarded the Queens Anniversary Prize for its work in developing agricultural techniques.

Cranfield University also received a Queens Anniversary Prize, for the fifth time, for its research and education in large-scale soil and environmental data for the sustainable use of natural resources in the UK and worldwide.

2017 has been a special year for the Society as we celebrated our 70th anniversary. Today's meeting is the final event to mark the anniversary.

Our year of celebrations actually began exactly one year ago on World Soil Day 2016 when the Society announced the new Patron HRH The Duke of Gloucester KG GCVO. Thanks must be given to Lord de Ramsey our previous Patron for his services and support of the Society and we organised a special training event for his estate staff as an official thank you from BSSS.

Our first interaction with the new Patron was a reception (21st March 2017) attended by many invited guests and the production of a commemorative book demonstrating the diversity of aspects of Soil Science. This book is available from the BSSS website.

The Society was a partner organiser for the SOM2017 conference hosted at Rothamsted Research. BSSS Members were eligible for a significant discount to attend the conference which received good feedback. The Society also benefited from attracting 59 new members as a result of the discount offered.

2017 Membership numbers have increased by over 100 compared to last year and now stand at 772. You can see a breakdown of the 2016 membership numbers in the Trustee Report. We have also looked at a breakdown of our membership and can confirm that we have members in 40 countries (79% of members are UK based), 30% of our membership is aged 30 and under, 25% is over 60 and the male/female split is 70%/30%.

This increase is truly encouraging and we strive to ensure that we continue to grow our numbers.

Our Journal remain at the heart of the Society; they are our main outlet and you will hear more about these from our editors later today. We invited a series of papers to celebrate our 70th Anniversary and I look forward to seeing them in print soon.

We also ran our Early Career Researcher Conference at Lancaster University with over 60 Student Members attending. Thanks to Ashley Gorman who together with Lynne in the office organised the two day event which was very well received by those attending.

Many event happen out of sight; we do however offer support to many events and members to advance the discipline of Soil Science. Here are a few examples of these:

Support to SSP and reading for their display at the Royal Berkshire show; a well attended event bringing the importance of soil science to a wide audience.

We have supported individual members to attend events and we will continue to do so; this is an important aspect of the Society and gives individuals that little bit of support that will enable them to attend meetings or organise events.

One member received some paid work through an enquiry raised to the Society and where appropriate and possible we pass on invitations that the Society receives to attend events. These are small things in the larger scheme of things, but make a difference to those supported.

We love to hear feedback from our members of meetings they attend, either drop a short note to the office or write a larger piece for our Auger, whatever you feel is appropriate. Many events have sequels and it will help our members to choose where to go, and us as a Society to identify who to support.

Some less interesting events include council and Board meetings; Wiley meetings, etc, but these are critical for the stability of the Society.

Thanks to the office team for all the work they do to support the Society. They have been involved with organising and running a large number of events this year and this is set to continue. Look out for a taste of the events we have planned for 2018 when you receive your December Auger before Christmas.

7 Professional Practice Committee Report

Anna Becvar talked about the forthcoming proposal to extend the "Student" membership to "Early Career" as a means of retaining members after graduation as the current structure does not allow them to retain many benefits. Also by widening the category to Graduates from a wider selection of environmental subjects this will give the Society a chance to recruit members at the early stages of a person's career.

Anna also gave an update on the Society's Professional Registration Licences. The Science Council has awarded the Society the opportunity to offer Registered Scientist Technician (RSciTech), Registered Scientist (RSci) and Chartered Scientist (CSci). The Professional Practice Committee are focusing on promoting RSciTech and RSci currently as no members have applied for this type of registration. There will be a review of the licences held by the Society during 2018.

The Working with Soil Programme will continue in 2018. Training courses are already planned to cover;

- Introduction to Soil Classification
- Exposing and Describing a Soil Profile
- Agricultural; Land Classification

A new course has been proposed on Assessment Techniques for Soil Structure and work will begin on compiling it.

Also the Working with Soil Competency documents are being reviewed and updated to ensure they are up to date and fit for purpose.

8 Editor in Chief EJSS Report

Margaret Oliver gave an update to the attendees – "One of the important items to report is that our two-year impact factor increased again this year, albeit to a smaller degree than last year. It is 3.475 (2016) compared with 3.425 (2015) and 2.649 (2014). Our ranking in soil science journals is 5 of 34 compared with 3 of 34 (2015) and 7 of 34 (2014). Our five-year impact factor also increased by a small amount – this is fairly stable.

After discussion with the deputy editors and Wiley, I have introduced Short Communications. We have not received any as yet.

We have had 10 open access papers this year – this is the largest number so far. This is encouraging because OA papers potentially have a wider circulation. Open access papers are now flagged in the list of contents.

I acknowledge the support of the entire editorial team of Deputy Editors, Statistics Adviser to the Editor, Associate Editors, the Statistics Panel members, Production Editor, and the Wiley and Prepress teams. It is a huge undertaking to get an issue into print and this would not happen without such excellent support.

Submissions. In 2017 to date we have received 367 new papers (November 13), this compares with about 295 for the equivalent time last year.

The source of papers remains similar to last year with China still dominates at 44% of the submissions so far this year (Table 3), Germany is second with 5.7% and the UK third with 5.4% (Table 4). The overall acceptance rate so far for 2 017 is 32.7% and the rejection rate is 67.3% (includes immediate reject, reject and reject and resubmit).

The average turnaround times for papers is considered reasonably good by Wiley and they intend to use this as one of the reasons to publish in EJSS. Unfortunately the figures are distorted by a few Associate Editors and reviewers who overrun their time considerably in spite of frequent prompts for them to make progress with papers.

Average number of days from submission to first decision	37.3
Average turnaround time (days) by reviewers – **Original**	29
Average turnaround time (days) by reviewers – **Revision**	28
Average time (days) to assign reviewers – **Original**	15.1
Average time (days) to assign reviewers – **Revision**	13.3
Average number of days from submission to final decision	45.2

Landmark papers. The sixth landmark paper was published in January 2017 (P. Nannipieri *et al.* 2003, 'Microbial diversity and soil functions', *European Journal of Soil Science,* **54,** 655–670). The original paper was reproduced, the author provided reflections on it and a group of Associate Editors provided a commentary. It was also accompanied by a virtual, online edition of associated papers published in the journal and its predecessor.

Special issues. This year we have published one special section comprising papers from the second SOMpatic workshop on soil organic matter balance methods organized in Rauischholzhausen in 2015. There are five papers from this workshop in Issue 6 of the journal. The guest editors were Christoper Brock, H.-R Oberholzer and U. Franko. There will be two special sections in Issue 1 of 2018: the larger one comprises papers invited to celebrate the 70th Anniversary of BSSS and the other papers on Soil and Human Health.

There are three new special issues in the pipeline—one from this year's soil and human health section of the EGU meeting (Vienna), one from the Pedometrics meeting (Wageningen) and one from the SOM meeting at Rothamsted.

Reviews. We have published one invited review this year by Keith Smith in Issue 2, 'Changing views of nitrous oxide emissions from agricultural soil: key controlling processes and assessment at different spatial scales'. *European Journal of Soil Science,* **68,** 137–155. We have published several review papers this year, which is encouraging because they generally have a good citation record. At the moment Wiley publish invited reviews as 'free to view' papers for one year.

Royal College of Physicians 5th December 2017

Changes. There have been no major structural changes in the journal format over last year. However, there have been several changes in personnel. Roel Merckx (University of Leuven, Belgium) resigned at the beginning of the year because of taking on a new senior role at his University. We were very fortunate to recruit Siobhan Staunton (INRA, Montpellier) who has been a very good and loyal Associate Editor for many years. Disappointingly, Ed Tipping left at the end of July and again we were very fortunate to recruit another deputy editor to take his place, Rob Bryant (University of Swansea). Rob has also been a long-standing and very good AE.

Richard Webster stood down at the end of 2016 as statistics advisor to the Editor. We were very fortunate to appoint Pat Bellamy who had been a member of the statistics panel since its inception. Pat deals with a great many papers each month and takes a great interest in getting the authors to do their analyses correctly. She works with them directly when this is necessary.

We had been looking to appoint a review papers editor for both journals for some time. The position was advertised and we were very fortunate that Professor Leo Condron (University of Lincoln, New Zealand) applied for his and was appointed.

The support team. In addition to the senior editorial team we have many Associate Editors (AEs) and reviewers. We have had some changes in AEs this year. Ian Baillie, John Butnor, Siobhan Staunton, Juan Cornejo, Rob Bryant and David Powlson have retired as AEs. The new AEs are Rupert Bäumler, Erlangen, Germany, Andrés Calderín García, Rio de Janeiro, Brazil, Li Guo, University Park, PA, USA, Maria Rao, Naples, Italy, Rafael Celis, Sevilla, Spain, Ingrid Hallin, Edmonton, Canada and Andy Gregory, Harpenden, UK.

Our AEs and reviewers put tremendous effort and expertise into the decision-making process and to making a success of the journal; I acknowledge their large contribution to the success of EJSS. It is becoming increasingly difficult to find willing reviewers but those that do take on the task spend much time in providing advice and guidance to the editorial team and to authors. We acknowledge them by printing a list of reviewers in the Journal each June.

Book Reviews Editor. Donald Davidson retired as book reviews editor for EJSS and SUM and we have been fortunate that Keith Smith has stepped into this role. We receive a healthy flow of books for review.

Statistical advisory panel. This panel provides an invaluable service; the editorial team is calling on its services increasingly to deal with ever present problems with the statistics applied in papers, in particular the analysis of variance. Murray Lark wishes to recruit two new members for the panel, one to replace Pat Bellamy.

Wiley–Blackwell. These are our publishers and they continue to promote and publicize our outputs and activities widely and effectively. Our direct point of contact is Justinia Wood, the journal's manager who has provided excellent support throughout the year. In addition, Shannen Bennett and Lorna Mein have provided invaluable guidance over the past year. Lorna has put in place our first public promotion of a paper – this is a paper on antibiotic resistance genes in soil that will be published in Issue 1 2018.

PrePress. Provides very effective input to the day-to-day management of the Journal with particularly helpful assistance and suggestions from our current contact.

71st Annual General Meeting — *minutes*

9 Editor in Chief SUM Report

Mike Goss gave a brief update on the achievements for the Soil Use and Management Journal.

The 5 year Impact Factor is 2.542 compared with 2.352 (2015). Our ranking in soil science journals is 14 of 34 compared with 12 of 34 (2015).

The 2 year Impact Factor is 2.117 compared with 1.823 (2015).

There was an increase in citable articles in 2016, 85 compared to 58 (2015).

The Editorial team for the Journal changed in 2017 with Amarilis de Varennes retiring as Deputy Editor in June and Matt Aitkenhead replacing her from July. Fiona Nicholson is the other Deputy Editor working on the Journal. The team have held team meetings via SKYPE in 2016 and then more recently face to face at both Rothamsted Research (SOM2017) and Perth with Pre Press Projects Ltd.

Journal promotion had been somewhat curtailed in 2016 with the Eurosoil Conference being postponed at the last minute due to an attempted coup in Turkey. The revised date was announced but the Society decided that the risk of travelling was too great and subsequently the Journals were not represented at the Eurosoil conference.

The Journal was represented at EGU (Vienna) in 2017, SOM2017 (Rothamsted Research, Harpenden UK), Tri Society Meeting (Tampa, USA) and the Nitrogen Workshop (Wexford, Ireland).

The team are developing a 4 year strategy to achieve a major increase in the number of papers to be published in association with the World Congress of Soil Science in Glasgow in 2022.

Mike thanked the Deputy Editors, Associate Editors, Wiley and Pre Press for their support in producing the Journal.

10 Finance Update

In the absence of the acting Treasure Trustee (Nigel Titchen) the Society accounts for 2016 were presented by Ian Brown (Executive Officer).

The account information was included in the 2016 Trustee Report which was distributed at the meeting plus had been made available to members on the Society website in July 2017.

The 2016 accounts had been independently verified by the Society's Accountants (HSA & Co), reviewed by the Board of Trustees at their meeting on 8th June 2016 and signed off by Professor Liz Baggs (2016 President).

A surplus of £60.9k was recorded for 2016, this excludes the Brian Chambers Soils Fund which is managed by the Society as part of its Grant Funding programme. Increase in income was due in the main to the number of training courses run under the Working with Soil programme. The Society ran 6 courses and delivered training to 90 delegates which delivered an income of £33k (compared to £7k in 2015).

The 2017 budget for the Society had been agreed by Council and Board in September and October 2016. Expenditure is expected to be around £50k over income during 2017. This is due to the Society looking to release funds to mark the 70th anniversary of formation and the funding for Soil Organic Matter (SOM2017) Conference at Rothamsted Research in September 2017. Funding has been set aside to offer BSSS members a substantial discount to attend the 4 day International Symposium. The Society will also be sponsoring a workshop during the event.

11 AGM 2017 Member Resolutions

There were 2 resolutions submitted for voting by Members at the 2017 AGM.

Members not able to attend the meeting were also given the option to vote either by email/post or proxy. 7 members supplied responded by email and these were also recorded as part of the overall voting.

a) While it is the responsibility of members to decide the benefits associated with each BSSS membership category, it is proposed that Student members should maintain the stated benefits of their membership for five years following graduation to ensure that at such time they have suitable experience to qualify to apply for Full Membership, with no loss of membership benefits within this time period. 'Early Career' members would pay the same annual fee as students for a maximum of five years post-graduation (i.e. until they qualify as a Full member or apply for an alternative membership category).

Early Career. Student Membership is open to all registered students of soil science and its allied disciplines* plus graduates with a recognised honours degree in soil science or related scientific subjects* but with less than 5 years professional experience. Early career members will be working towards Full membership by gaining knowledge and experience in relevant disciplines through on-going professional training and development or studying for a Post Graduate degree. You will need to supply BSSS with your first qualification graduation date to enter this category for the maximum five year period.

*e.g. environmental science, pedology, pedometrics, microbiology, physics, chemistry, biology etc.

Resolution: To extend the stated benefits of BSSS Student Membership to a five year period following Graduation

Voting result –
71 Votes in favour of the resolution –
Resolution Passed

b) Members will be aware that BSSS subscriptions have not increased since 2015, due to the Society's overall healthy financial situation and a desire by Council/Board to limit the cost to members already facing the economic pressures of austerity.

However, members will also be aware that inflation has been steadily rising over the past year. This has an impact on all BSSS activities and therefore Council/Board have jointly agreed that as part of an ongoing financial sustainability review of income and expenditure, subscriptions should be raised in line with inflation.

To achieve this members are invited to endorse the following motion to the 2017 BSSS AGM:-

"All individual subscriptions shall be automatically increased on an annual basis by the rate of inflation as measured by the Consumer Prices Index (CPI) for July of each year unless Council/Board deems it unnecessary for financial or other reasons, to implement the full increase, it shall have the delegated authority to implement a lower figure for that particular year and will inform the members as to the reason."

Voting result –
6 Votes in favour of the resolution –
Resolution Failed

Professor Stephen Nortcliff receiving his BSSS Honorary Member Award from Professor Liz Baggs

12 Council/Board of Trustee Vacancies

Wilfred advised members that there was currently a vacancy for a Treasurer Trustee on Board. This role was currently being performed by Nigel Titchen, in addition to his role as HR Trustee. The Society will also be seeking a new Incoming President to join the Board of Trustees from January 2019. Nominations can be made in confidence by email to President@soils.org.uk

13 Any other business

No other business was raised by the attending members or had been submitted in advance.

The meeting was formally closed at 5.30pm

Meet a Soil Scientist

Sheila Royle

Soil consultant with ADAS (retired but still do occasional ad hoc work)

Introduction

I grew up in south Lancashire at a time when coal was still king and winter smogs were common. Perhaps it was this that sparked my later interests in land restoration and pollution.

I have always enjoyed being outside in the countryside and after leaving school, I worked on a farm for 6 months, before going to university. I remember that one of my first jobs on the farm was being sent to search for cattle that had gone missing on a colliery spoil mound!

At Nottingham University, I studied agricultural science and specialised in the final year in soil science and agronomy. I then spent 4 memorable years at the Scottish Crop Research Institute near Dundee, a location which gave me the opportunity to enjoy weekends of hill walking and skiing (not very well) and probably contributed to knee problems in later life!

Can you describe your work in general? And what are you currently working on?

I joined ADAS as a soil scientist in 1977 at a time when women were rare in this role and considered an oddity by some, but numbers soon increased! I was privileged to be given experience in a wide range of advisory, research & development work covering everything from the nutrition of glasshouse tomatoes to the reclamation of heather moorland.

Later my specialisms included land restoration and the recycling, to land, of waste materials such as canal dredgings and water treatment wastes. I carried out numerous pre-working soil surveys on opencast coal sites, quarries, pipeline and road routes and advised on their restoration. Initially most restorations were to agricultural land but later ones gave the opportunity to be more creative. For example, I had to look for suitable soils and soil making materials for restoring different areas for amenity use, woodland or wildflower meadows.

I still enjoy being out with a soil auger and have recently helped out with some agricultural land classification in North Wales.

List 5 things that make your job interesting...

1. **Variety – no two days are the same**
2. **Opportunities for travel throughout the country and beyond**
3. **Seeing science put into practice and making a difference**
4. **Meeting a wide range of people**
5. **Benefiting from the breadth of experience within ADAS**

Can you recommend any information resources that have been useful for you in your work?

- The Soil Survey of England & Wales 1:250,000 maps and accompanying memoires are invaluable background information when visiting a new site.
- Also the website www.magic.gov.uk
- For fertilisers and organic manures the bible is the *'Nutrient Management Guide (RB209)'*
- A good practical guide to soils is *'Soil Management'* by Davies, Eagle & Finney. A little dated now but covers the principles very well.

Could you tell us an interesting fact?

I once unwittingly had breakfast with the Archbishop of Uganda. Whilst visiting a friend in Uganda I stayed at a missionary guest house. The person sat opposite me at breakfast introduced himself saying 'Hello I'm Henry'. I replied similarly with 'Hello, I'm Sheila'. It was some time later before I discovered that he was Henry Oronbi the then Archbishop of Uganda.

What is the most exciting or interesting thing you have ever done?

I joined a canoeing and wild camping holiday to a remote part of Canada in the early 1990s. We canoed about 70miles along interconnecting lakes and rivers, with stunning scenery and wonderful night-time displays of the aurora borealis. This was a time before mobile phones, so there was no contact with the outside world, and the use of safety helmets wasn't even considered. Periodically the rivers had rapids and one of these was beyond our capability. We should have portaged the canoes around it. However the land route was badly blocked by fallen trees, following a storm, so we had no option but to attempt the rapid. Fortunately we all survived relatively unscathed despite losing control and shooting part of the rapid without the canoe!

Who would you most like to have dinner with, and why?

Having just finished reading *'The Voyage of the Beagle'*, I'd like to meet Charles Darwin who grew up in Shropshire where I now live. I'd like to ask him about things that weren't covered in the book and see how much his attitudes might have changed eg. to aboriginal peoples, in the light of modern evidence.

What advice would you have for anyone looking at a career in soil science?

Get experience in a broad range of soil related areas and always aim to maintain a good balance between the science and the practical.

OBITUARY

Barry Rawlins (1970 – 2017)

Barry Rawlins died in September 2017 after a two-year fight with cancer. His courage and resilience in the face of his illness, continuing his research, writing and supervision nearly to the end, was an inspiration to his colleagues at the British Geological Survey and in the wider world of soil science.

Barry Rawlins

> *"Barry was committed to the sustainable management of soil resources, and the wider environment, and to the role of the scientist in providing a robust evidence base for this."*

Barry studied Earth Sciences at Sheffield University, graduating in 1992. He remained at the University for his doctoral studies, although these also marked the start of his affiliation with the Natural Environment Research Council (NERC). His research, on the chemistry of acidifying soils under coniferous vegetation, was conducted partly under the auspices of the Institute of Terrestrial Ecology (now Centre for Ecology and Hydrology). He joined the British Geological Survey in 1996 and, apart from a secondment to the Royal Commission on Environmental Pollution, was to spend his career at the BGS headquarters near Nottingham.

Barry's research at BGS was wide-ranging. He examined the forensic value of earth sciences data, he studied the geochemistry of stream waters, including an assessment of their role in the carbon cycle, he did research on pollution associated with mining activities and the distribution of air-borne metal particulates in urban environments. However, his research on the soil was his dominant interest, leading to his appointment as leader of BGS's Sustainable Soils team.

Barry's research on the soil covered a diverse range of topics. A key contribution of his was to showcase the potential of BGS's Geochemical Baseline of the Environment (GBASE) data. He sought out collaborators both within and outwith the survey to tackle a range of problems. Together they showed how GBASE data reflected the underlying distribution of parent materials for the soils of eastern England, they showed how remote sensor measurements and topographic information could elucidate the distribution of soil carbon in a range of environments, and they demonstrated the value of urban soil data for understanding the distribution and impact of pollution processes. Barry was committed to the sustainable management of soil resources, and the wider environment, and to the role of the scientist in providing a robust evidence base for this. One of his last papers, based on a NERC-funded research internship with Defra which he completed after his diagnosis, gave a critical account of the potential of soil data originally collected for farmers and their advisors as a source of information for soil monitoring at national scale.

One of Barry's characteristic achievements was the publication of *The advanced soil geochemical atlas of England and Wales* (Rawlins *et al.*, 2012; http://www.bgs.ac.uk/gbase/advSoilAtlasEW.html) which presents maps of 53 elements in the topsoil, based on the 5-km grid of the National Soil Inventory of England and Wales. This was based on data from the reanalysis of archived soil on BGS's x-ray fluorescence spectrometer. This project reflected Barry's ability to build collaborations which transcended the (all-too-often paralysing) barriers of institutional jealousies and shortsightedness. He saw the potential value of such a resource for the management of the soils of England and Wales and deployed all his political skills, tact and force of character to achieve it.

> *"... This project reflected Barry's ability to build collaborations which transcended the (all-too-often paralysing) barriers of institutional jealousies and shortsightedness."*

Barry's research in soil science included a series of collaborative papers on phosphorous in the agricultural environment, examining both soil and water. His interest in soil carbon, organic and inorganic, included collaborations in Europe, and he was always interested in the potential of new remote or proximal sensing technology to provide soil information. In pursuit of this latter interest he worked with colleagues from around the world to develop a global library of visible–near infrared spectra of soils.

Over time Barry's interest in the soil shifted scale from the landscape or region to the basic units of organization of soil material in aggregates. He was interested in aggregate stability and made an original contribution to the measurement of this property by the combination of laser granulometry and ultrasonication. He secured funding for beam time the DIAMOND synchrotron facilities at Harwell, which he used to make 3D images of the distribution of organic matter in the architecture of a set of aggregates from soil under pasture. Initial results showed that variations in the respiration rate of each aggregate were related to variations in the spatial distribution of the organic matter.

Barry was a natural scientific collaborator. He contributed to the life of BSSS as a leading figure in the establishment of the Midlands Soil Discussion Group, and a member of council during his time as MSDG chair. He also served as a topic editor for the EGU's journal *Soil*.

Barry's energy and enthusiasm were infectious, and, with his warmth and concern for others, made him a valued friend to many of his scientific colleagues. I have many happy memories of time spent in his company, discussing data in the BGS canteen, setting out sampling schemes in the field, or engaging in vigorous discussions in the pub. I know that many will concur when I say that it is hard to believe that he is not still with us, pushing us to tackle new problems, exploit new sources of data and try out new ideas. His wife, Ruth Parry, and their sons Josh and Daniel, who will miss him the most, remain in our thoughts.

> *"He contributed to the life of BSSS as a leading figure in the establishment of the Midlands Soil Discussion Group, and a member of council during his time as MSDG chair."*

OBITUARY

Ewart Adzil FitzPatrick (1926 – 2018)

Ewart Adzil FitzPatrick, known affectionately to his many friends, colleagues and students alike, as FITZ, was born in October, 1926, in the West Indies.

Early interests focussed on boat building, sailing in the seas around Barbados and, like, many West Indians, making the game of cricket look easy! Formal education was at Harrison College, where he was "Dux" in his final year. There followed enrolment at the Imperial College of Tropical Agriculture (DICTA) in Trinidad, where, as a student of Professor Frederick Hardy, he graduated in 1948. His interest in Soil Science, besides field sports, was stimulated at DICTA where his final year project focussed on Soil Classification and characterisation of the institute farm. He then left the West Indies to enrol as the first PhD student within the recently formed Department of Soil Science at the University of Aberdeen. Under the supervision of Dr Williamson, the then Head of Department, his thesis focussed on the formation of soils around a defined area in upper Deeside. He graduated with his doctorate in 1951, and immediately took up a position as a member of staff.

> *"Early interests focussed on boat building, sailing in the seas around Barbados and, like, many West Indians, making the game of cricket look easy!..."*

In 1954, Fitz led the very successful Aberdeen-Spitsbergen expedition to investigate whether the study of local conditions would explain the origin of the indurated sub-soils found extensively in many parts of North East Scotland. These features are common elsewhere in Scotland. Subsequently, he concluded and published in the Journal of Soil Science (1956), the correlation between the indurated horizon and fossil permafrost, a property with significant scientific and economic implications. Further studies around that time concentrated on periglacial features in North East Scotland and a raft of pioneering publications on deeply weathered Tertiary sites, solifluction deposits and an interglacial Soil at Teindland followed. Teindland remains one of the UK's most significant Quaternary field sites and has been the focus of many terrestrial scientists. His single author Nature paper trail-blazed some changes in fundamental thinking of the last Ice Age in the UK.

In the 1950's, Fitz joined the British Society of Soil Science. His athletic prowess in field sports at DICTA and rugby skills demonstrated as a wing three-quarter with Aberdeen Wanderers Rugby Club, stood him in good stead when attending field meetings. At that time, and into the 1960's and 70's, annual BSSS meetings always included a field visit to study representative soil profiles from the meeting area. Throughout this period, he held the pedologist sprint record from bus to soil profile, generally beating the late JCC Charlie Romans (Soil Survey of Scotland) and the late Brian Avery (Soil Survey of England and Wales) in the process! The soil profile may have been developed over 10,000 years, but, to Fitz, first examination, with ample elbow room, followed by his (elaborate) personal profile characterisation and subsequent classification, with inevitable disagreement with the resident area surveyor and national classification, was a ritual to be upheld. To witness his judgement was like waiting for the announcement of the Oscars and his delivery surpassed any post acceptance speech!

> *"...To witness his judgement was like waiting for the announcement of the Oscars and his delivery surpassed any post acceptance speech!"*

Although he never resisted, even in retirement, the opportunity to evaluate a potentially new periglacial site in the field, Fitz's main academic contribution since the 1960's focussed on teaching aids for Soil Science, Soil Micromorphology and Soil Classification.

His departmental lectures were inspirational to many undergraduates from different disciplines and greatly enhanced the widely acclaimed degree course in Soil Science at Aberdeen. The same dedication and attention to detail was also applied to his many postgraduates, who valued his supervision, both from a scientific and paternal viewpoint. Beyond the University, he created excellent tutorial CD Roms, including *"Introduction to Soils" (1999), "Horizon Identification" (2003)* and *"Soil Microscopy and Micromorphology" (2005),* also publishing the well illustrated and comprehensive books *"Soils – their Formation, Classification and Distribution" (1981)* and *"Pedology – a Systematic Approach to Soil Science at Aberdeen" (1971).* Such contributions to Soil Science were recognised in 2006 through the award of the Philippe Duchaufour medal from the European Geosciences Union, Europe's premier, Geoscientific Academy.

"His departmental lectures were inspirational to many undergraduates from different disciplines and greatly enhanced the widely acclaimed degree course in Soil Science at Aberdeen."

Fitz was a pioneer in Soil Micromorphological studies, using his expertise to produce large thin sections, features from which he photographed brilliantly to enhance his books. *"Micromorphology of Soils"* was published in 1984 and in 1993 a landmark book *"Soil Microscopy and Soil Micromorphology"* became a standard textbook for students in this field. Throughout his extensive travels, during which he often held seminars and workshops, and through his supervision of postgraduate students from 19 countries, he built up a comprehensive collection of soil thin sections, now held by CREST. He was awarded the prestigious Kubiëna medal by the International Union of Soil Science in 1996, in recognition of his work in this field.

No pedologist with an international reputation will refrain from a discussion on soil classification. Fitz was certainly no exception. He read widely in the area before devising the underpinning issues that would be a foundation for an ideal system. He published his own international system based on the naming of diagnostic soil horizons and their possible groupings. Soil classification systems were often based on national interests or the adoption of existing international schemes, which meant that Fitz encountered insurmountable problems in obtaining universal acceptance. However, as it had achieved throughout his distinguished career, the fundamental thinking of this great man of Soil Science stimulated the kind of lively debate that he enjoyed more than anyone!

Fitz will be sadly missed by his family: his wife, Morag, children, Claire and Brian, and his four Grandchildren.

Tom Batey, Jim Gauld, Ken Killham and Graeme Paton. *Aberdeen. March, 2018.*

OBITUARY

John Alfred Catt (1939–2017)

John Catt, who died in December of last year, made outstanding and wide-ranging contributions to Quaternary science at a time when the subject was developing rapidly.

John Catt in his prime after a day in the field

John was born on 10 April 1939 in Kent, the son of a gardener who worked at the vicarage of the local parish church. From an early age he took an interest in his father's profession and in the soil in particular. He attended Ashford Grammar School, and then in 1956 he headed for the University of Hull to study geology and chemistry, perhaps the nearest to soil science that Hull could offer. After graduating with honours he won a scholarship to study the Pleistocene deposits of Holderness in East Yorkshire, for which he was awarded his PhD. John joined Rothamsted Experimental Station, as it then was, in 1963 as Scientific Officer in the Pedology Department where he expanded his doctoral research on the development of soil in Quaternary sediments. Hull University awarded him his DSc for that work in 1981. At the time Rothamsted's scientists were among world leaders in research on the mineralogy of soil and its constituent clays; John contributed significantly to that research and to the work of the Soil Survey of England and Wales then with its headquarters at Rothamsted and with an expanding budget.

> *"From an early age he took an interest in his father's profession and in the soil in particular."*

The customer–contractor principle enunciated in 1971 by Lord Rothschild foreshadowed an end to studies on the origins and fundamental mineralogy of soil, at least in government-funded institutes. In the 1980s the government of the day did cut its funding for such research, and John had to divert his attention to more practical aspects of agriculture and its consequences for the environment. This he did with grace, enthusiasm and success. He took charge of the Brimstone experiment in Oxfordshire to investigate the transport of agricultural chemicals and pollutants through the soil into water courses and of the erosion experiment on Rothamsted's farm at Woburn to investigate the effects of weather and management on soil erosion. His broadened research included remote sensing and the effect of short-range variation on crop performance and the role of available water in soil. In 1988 John was appointed Deputy Head of Rothamsted and Acting Head of the Soils and Agronomy Department. He retired from Rothamsted two years later to become Honorary Fellow and then Professor at University College London.

John's experience and interests were widely appreciated by soil scientists and geologists in both Britain and abroad. He served on numerous committees. He was a Fellow of the Geological Society and Institute of Geology, and in addition Visiting Professor at Birkbeck College, London, Honorary Professor in the Agricultural University of Prague, Secretary of the Institution of Geologists and, from 1990 to 1994, Editor of *Soil Use and Management*. He was author of almost 200 peer-reviewed papers and several scientific reports. His books include *'Soils and Quaternary Geology'* and *'Soil Management: Problems and Solutions'* (with M.A. Fullen). He was awarded the prestigious John Phillips Medal by the Yorkshire Geological Society for his research on the Quaternary geology of the region, and in 2015 his contribution to geoscience more generally was recognized in the Distinguished Service Award he received from the Geological Society. Closer to home he was for long dedicated to the geology of his adopted county, Hertfordshire, being at times chairman and president of the Hertfordshire Geological Society and, in 2017, the Society's first honorary member. His book *'Hertfordshire Geology and Landscape'* stands as testimony to that.

People often remark that John was the perfect gentleman. He was indeed. We miss him and remember him as a kind, wise and supportive colleague and friend.

R. Webster

Health and safety gone mad —
challenges for the consulting soil scientist

Rare are the days when a soil scientist undertaking a survey could zig zag across the countryside with a spade and auger over the shoulder, refreshments for the day in a backpack and solely nature to commune with. Nowadays, if working as a consultant on a survey or sampling exercise for a civil engineering project.

Land Research Associates has always had a sensible approach to health and safety (H&S), for example putting check-in processes in place when staff are lone-working in remote areas. We have long had to succumb to quarry H&S regulations and safety inductions when undertaking soil resource surveys for quarry extensions or assessing the content of soil stockpiles around existing workings – all situations where one might feasibly be in proximity to heavy machinery. But over the last 2–3 years H&S regulations have blossomed to idiotic levels.

Gloves to texture soil?

Take the example of an agricultural land quality and soil survey needed across a large tract of coastal arable land where the Environment Agency was investigating the potential for reverting the area back to marshland by moving flood protection back to landward. A straightforward task you might think? No! Geotechnical investigations for some new floodbanks were starting which meant the whole area was now under a Construction Management Plan that was being implemented by a site manager.

Consequently, our surveyor was asked to wear full high viz clothing, a hard hat, safety glasses, safety boots and gloves to walk across agricultural land where the only machinery operating might be a lone farm tractor. We asked if the farm workers were required to obey the same rules. No, of course not! We said we could not texture soil wearing gloves. *Why do you need to handle soil without gloves?* we were asked! We were told to CAT-scan every sampling location to ensure that our auger didn't encounter buried services, despite none being shown on utility plans. This resulted in our surveyor being followed round by a bored CAT-scan operator for several days. Of course, his equipment detected no hazards.

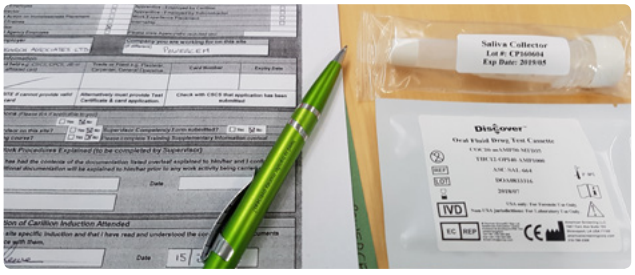
Welfare vans

For another survey across agricultural land in Cumbria we were told we would need to hire a welfare van. '*What's one of those?*' we asked. A Google search educated us that it was a van-based mini bus with seats, table and brew up facilities behind the driving position, with a chemical toilet and wash facilities accessed through the rear doors. We pointed out that the type of survey we were undertaking would take us a long way from any roads where a welfare van could be parked and accessed.

Result: we had to hire a welfare van, which sat unused in a car park most of the week until it was returned to the rental company!

What were you up to last night sir?

The highlight of our H&S tribulations in 2017, however, was provided by the now defunct company Carillion. I was to attend the demonstration of a machine for creating temporary roadways across agricultural land using a modified lime stabilisation technique. My task was to inspect and sample the soil afterwards to establish how easily the treated strip of soil could be returned to arable use once the roadway was no longer needed.



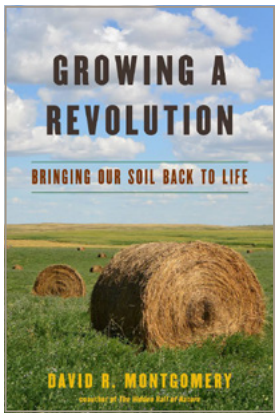
Myself and a couple of other specialists were asked to attend an H&S briefing by Carillion at 8 am in the local National Grid offices. What followed was a predicable presentation, most of it irrelevant to the day (e.g. driving Carillion vehicles, which none of us would be doing). Then we were drug- and alcohol-tested before we were allowed to proceed to site.

Welcome to the new world of the consulting soil scientist!

Malcolm Reeve, *Land Research Associates*

Book Review

Growing a Revolution: Bringing our Soil back to Life



David A Montgomery
Growing a Revolution: Bringing our Soil back to Life.
WW Norton & Co/Wiley,
New York and London

316 pp • $26,95
ISBN 978-0-393-60832-8

The author basically proposes that a large-scale swing from industrial agriculture to conservation agriculture would help to improve soil health and, as a consequence, crop productivity. This would be sufficient to reduce fertiliser, pesticide and moisture use for crops such that it would help cope with upcoming problems of restricted supplies of oil and fertiliser, population growth and changing climate. The conservation agriculture that he proposes involves the combination of three principles: no-tillage, residue retention via cover cropping and crop rotations, with short duration, high-intensity grazing of stock where appropriate. He mainly relies on examples of systems in the US and Africa developed by innovative farmers to build their soil, often from a low- fertility base. He considers that the necessity to use intensive agrochemicals to feed the world of tomorrow is a myth. This might be true if many people chose to eat less meat and reduce food waste – but is that likely in the near future? He also states that 'adding fertilisers to already fertile soils does not boost yields'. This might be true for fairly low-yielding rainfed soils in dry regions but is not true in high-yielding, moist areas in North-West Europe. A greater awareness of the importance of nutrient balances is thus required. He considers that university researchers are too slow to study areas of farmer success in improving soil health to sustain productivity, due mainly to funding constraints. This is perhaps true where soil scientists are less focused on agronomy than in former times. He makes much of the need to use no-till. However it is clear that no-till is not widely practised in much of Europe and Asia, due principally to constraints of weed control, compaction and straw residues. Perhaps new research using all three aspects of conservation agriculture may allow no-till to flourish but we would need a change in market conditions, policy support and greater recognition of the environmental benefits – that might occur after Brexit.

I agree with much of the book in that we need to develop 'soil-focused farming' to sustain productivity and retain carbon and that 'the most promising way forward lies in the marriage of agrotechnology and agroecology to rebuild soil fertility'. I like his thoughts on combining some of the ideas of organic farming and conservation agriculture to give 'organic-ish farming', though other agroecological approaches could have been mentioned such as permaculture. This book is similar to a recent one by Kirstin Ohlson. Both are very welcome reading for soil lovers and both were written by non-soil scientists. David Montgomery is a professor of geomorphology yet one of his reviewers describes him as 'soil's greatest living advocate'. Surely this accolade should be reserved for a soil scientist?

His book seems good to me because it focuses heavily on the importance of soil and raises awareness of the centrality of soil management for future sustainability. It is also well written and widely accessible, introducing many interesting characters. I think that it also poses a challenge to us soil scientists to build on this book by promoting farming practices in our research and knowledge transfer that put the soil first in order to sustain productivity and soil functions. Some minor niggles were the lack of any figures or tables and the omission of descriptions of reduced tillage techniques such as strip till, ridge till or strategic tillage. There was also no mention of the good work of the International Soil Tillage Research Organisation.

Bruce Ball

Reference

Ohlson, K. 2014. *The soil will save us.* Rodale, New York.

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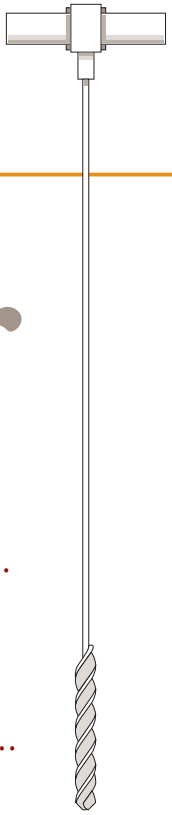

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19th September 2018
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Cranfield University

19th September 2018
"Exposing and Describing a Soil Profile" Course
Dundee

3rd and 4th October 2018
"Introduction to Soil Classification" Course
Shuttleworth College

21st and 22nd November 2018
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