



*In memory of His Highness*

*Bhumibol Adulyadej*

*5<sup>th</sup> Dec 1927 to 13<sup>th</sup> Oct 2016*

*A true advocate for  
soil and who sanctioned  
World Soil Day*



SOIL CONNECTS is the biannual newsletter of Division 4 in the International Union of Soil Sciences

Issue 5 - December 2016



# this edition

Welcome to SOIL CONNECTS - 4

It is a pleasure to release the fourth edition of the newsletter covering the stories, issues, events from the members of Division 4. This newsletter will contribute to a suite of newsletters already produced within the IUSS and will give its members the opportunity to share their knowledge of soil with other members and the broader community.

The mid-conference meeting of the IUSS will have just been completed with the release of this newsletter so in addition to the articles here we look forward to the reports to be included in the next edition.

It continues to be my pleasure to edit this newsletter and I call on all of you who are reading it to make a contribution to future issues.

Damien Field  
*Editor, Soil Connects*

Cover Photo - His Majesty King of Thailand, Bhumibol Adulyadej.

Photo sourced

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David van der Linden



Newsletter design inspired by Profile, a newsletter produced for Soil Science Australia

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## IUSS Division 4 & Newsletter Information

### DIVISION 4

#### The Role of Soils in Sustaining Society and the Environment

This Division focuses on transfer and outreach of good soil knowledge to society, as well as, taking responsibility for lifting the profile of soil among the general community. It takes the scientific knowledge and information developed in the other three divisions of the IUSS and shares this through education, international conventions and informing public policy and debate. Sharing of this knowledge between scientists, economists, policy makers and the broader community means this division interacts well beyond the traditional bounds of the soil science disciplines.

#### Commission 4.1 - Soils and the Environment

This Commission looks at soil as part of the ecosystem and how human activities impact on the soil and environmental interactions.

#### Commission 4.2 - Soils, Food Security and Human Security

This Commission looks at the challenge of maintaining agricultural lands, providing enough safe and nutritious food, and the role of soils in a changing world affecting human health.

#### Commission 4.3 - Soils and Land Use Change

In the context of global sustainability, this Commission investigates how soil functions can be managed and controlled to mitigate the impact of climate change. It also considers the impact of land use change with increased urbanisation, and loss of productive and forested lands.

#### Commission 4.4 - Soil Education & Public Awareness

A well informed public is needed so that the importance of soil is understood. This Commission shares the developments in learning and teaching of soil science that support this aspiration, as well as, developing strategies that increase the connectedness of the public with soil.

#### Commission 4.5 - History, Philosophy, and Sociology of Soil Science

This Commission deals with the past; it links the study of what has happened in history and how soil can be used to help explain the past changes. This Commission investigates the relationship between human development and soil.

### Newsletter Contributions

Soil Connects is published in December and July each year. Contributions are to be received the first day of the month preceding the publication and can be emailed to the current editor Damien Field - email: [damien.field@sydney.edu.au](mailto:damien.field@sydney.edu.au)



## Division Chair's Report

**Christian Feller** (Chair Division 4)

*Division 4 is concerned with 'The role of soils in sustaining society and the environment'. This requires a wide ranging expertise in various domains from soil science and the other biophysical sciences, and to also include the human and socioeconomic sciences. Actually the main competences missing are housed within the sociocultural, economy and legal domains. It is this gap that provides the rationale for a proposal to the IUSS a working group, linked to Division 4, focusing on the sociocultural aspects related to soil.*

*This proposition is provided below and is signed by Nikola Patzel and Christian Feller. This text is submitted to the IUSS Executive Committee and the IUSS Council to be discussed at the Inter-Congress Meeting (20-26 Nov. 2016).*

### Cultural Patterns of Soil Understanding

#### ***Rationale and objective***

Living soil supports all terrestrial ecosystems. The only global threat to earth's soils comes from land use of human societies and resource consuming activities. Soil perception and understanding by soil scientists are mainly drawn from biophysical parameters and found within Cartesian rationality (focus on the 'outer' soil), and not, or much less consciously from its rather intangible cultural dimension (the 'inner' soil). But nevertheless, human soil perception, soil awareness, and soil relation are cultural phenomena, too.

Aiming at soil awareness and education, it is of first order importance for the soil science community and the IUSS to study, discuss and communicate also about the cultural perceptions and representations of soil. That needs an interdisciplinary as well as a trans-disciplinary approach. In this perspective we could also speak of intangible roots of soil perception and representation, which need to be acknowledged and carefully addressed.

For any society, cultural patterns in their relation to soil encompass: (i) General culturally underlying structures like (religious or 'secular') myths and belief systems, framing society's effective "value landscape" and the central values therein. (ii) The personal, individual relation to/with and behaviour towards soil. This includes implicit concepts of soil being part of integral concepts of landscape, as well as of primary economy. The large majority of humans does not consider soil as a distinct object.

This working group should also provide a forum to specific cultural expressions with regard to soil: as soil representation includes also all kinds of creative work as visual art, land art and performances, movies, literature and poetry etc. Many artists are mediators of soil awareness and different soil values to general public.



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The objective of this working group would be to make evident the importance of cultural patterns and psychic/psychological background concerning soil, by case studies and overviews on different cultural areas.

### *Outcomes and targets*

As soil, its preservation and its sustainable and meaningful cultivation are of existential relevance for human societies, this WG aims not only at studying our field of interest, but also to address and to touch hearts and minds of people by appropriate means.

Outcomes we would like to see:

- Stimulating/ Motivating our soil scientist colleagues to ask new questions and to seriously integrate the cultural dimension into their research and project designs;
- for general public, to engage into processes towards enhanced valuing of soil within their cultural framing, or towards developing their cultural framework to achieve a more respectful nature (and soil) relation.

Specific target groups for dialogue are:

- Our own soil science community (research and teaching),
- the educational domain (soil awareness raising for teachers, primary and secondary schools etc.),
- development project advisers and managers in the agricultural sector which are looking for cultural skills,
- farmers and farmer's associations which are in search for new alliances with societal actors for achieving a multidimensional sustainable.

### *Linkage with IUSS and Div4 activities*

This new working group (WG) is proposed to be linked to Div4 to complement the activities of the commissions 4 “Soil Education and Public Awareness”, and 5 “History, Philosophy, and Sociology of Soil Science”. This WG may foster the role of societies in sustaining soils, as well as the other way round.

The proposal to establish such a WG will be discussed at the IUSS Inter-Congress meeting in RIO in November 2018 during the Division day meeting. The WG may participate to IUSS in organizing sessions for 2018 World Congress of Soil Science (as already submitted), as well as other seminars, workshops etc., which may contribute to preparing an IUSS booklet on its topic later on.

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**2<sup>nd</sup> draft, 6<sup>th</sup> of November, 2016**

Preparing **division 4 meeting** (The Role of Soils in Sustaining Society and the Environment) at InterCongress Meeting in Nov. 2016, Rio d. J.



## PART II. What to do about this,

by John Norman  
Emeritus Professor  
University of Wisconsin-Madison

In Issue 4 of *Soil Connects* John Norman presented Part I. of his opinion piece focusing on ‘*the visibility of soil science*’. In this part II. he muses on what can be done.

In my study since retiring, I have learned something that I paid lip service to as an active research scientist. No measurement can be interpreted without a model, and all models are based on myriad assumptions and definitions (standards or references). Furthermore, narrative, which is derived from subjective synthesis of the author, is critical to thinking and interpretation. We as scientific researchers do not have any special pipeline to absolute truth, and as much as the community we serve wants to believe that such access is possible through reason, we should not feed their illusions because of some perceived short-term benefit to us. Experts make mistakes too, we just present the best we have, honestly.

Anything based on “unprovable statements” is going to be relative at best. Predicting the future from the past with relative tools is precarious, as evidenced by the history of science many times over.

The first perspective that would serve us well is to adopt attitudes of humility, respect and openness to all possibilities. One thing that I am still struggling with internally is the following: Based on my understanding of “reason”, what is the difference between a “premise” and a “revelation”? As a scientist I call an unprovable statement, but as an inspired human being I may refer to a revelation as an unprovable statement, even though both may have some evidence supporting them that is subjectively acceptable to some and unacceptable to others. The value of both is in their workability so I see science and mysticism standing on similar foundations—both producing workable results in different ways and both deserving of respect. This seems at odds with the perspective of many of my colleagues, who see society as failing us rather than vice versa. I can be open to mysticism without compromising my integrity as a scientist. I can even use my science to explore the implications of mysticism where the two endeavors overlap, as William A. Tiller and others have done (see *Conscious Acts of Creation*, 2001). I see no need for antagonism between science and mysticism—in fact, such antagonism is bigotry if they both are considered to be based on unprovable statements.

The second perspective is to stay in close touch with the community we serve and involve them in the process as much as we reasonable can. The constraint of usability on reason-based pursuits can keep us from wandering down rabbit holes. The



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perspectives of the practitioners we serve are an absolutely critical part of the observation process for us. At least we should make more than superficial efforts to include them a priori; after all, if this should tend to orient us more toward what is useful to the community we serve, it may be worth slowing down our priority-setting process. We currently have largely cut that client community off from our work and said to them “trust me”. Eventually that community is so cutoff that they no longer see the benefit to continuing to support it with their resources. In the U.S. this has been happening for at least a generation if not more.

The last 10 years of my career I did my field work on farms and worked closely with farmers. That was when I really began to realize that most of what I was doing that was interesting to me was not particularly useful to them, and it did not address the root issues underlying the production/pollution problems I was trying to address. As I shifted my priorities to seeking workable solutions to serious societal issues, funding for such activities was seriously wanting. This led to a personal sense of failure while I was being handsomely rewarded within the academic system. Retirement looked good to me at that point. The past seven years in “retirement” I have been addressing this discrepancy between my personal feelings and the rewards I received in my job. I have made progress on the personal front, but my advice to the academic community is largely speculative, as may be apparent from the above discussion.

I do suspect that the most valuable efforts we can make to understanding our diminishing societal role involves looking deep into ourselves and genuinely reflecting on how well we are aligned with our ideals of science, and how well we are serving the community we want to serve.



Rio de Janeiro August | 12 - 17

## 2016 IUSS Inter-Congress Meeting

The theme for the World Congress of Soil Science in 2018, “Soil Science: Beyond Food and Fuel”, will be the basis to start discussions and prepare the program for 2018.

A day of symposia focusing on a range of topics from Beyond food and fuel; nexus to soil in space and time, to a nexus to soil properties and processes, nexus to soil use and management, and through to nexus to Soil’s role in sustaining society and the environment.

The next edition of Soil Connects will include articles reporting on Soil’s role in sustaining society and the environment which was being led by the Division 4 Chair Christian Feller.



## Connectivity: The What, So What and Now What.

by Damien Field  
University of Sydney

One of the priorities of soil security is to reconnect the broader community with soil and this intention is described the dimension, connectivity. Of the five dimensions that frame soil security the connectivity dimension is probably the least developed dimension. This dimension compliments the need to place a value on the soil, i.e. its capital, and is concerned with understanding how society as a whole is connected to soil.

A link has been made between soil security and the seven functions that soil provide. It is through these functions that the connection of society as a whole can be mapped to determine 'what' the people's relationships with soil are. For example farmers and graziers have the strongest connection to soil and are concerned with biomass production, soil function 1, but they may also adopt various management strategies to conserve the natural resource on farm contributing to soil functions number 3, biodiversity and 6, soil carbon. This well-established connection is maintained by those who work with soil and know of its capabilities and are concerned with maintaining its condition and value.

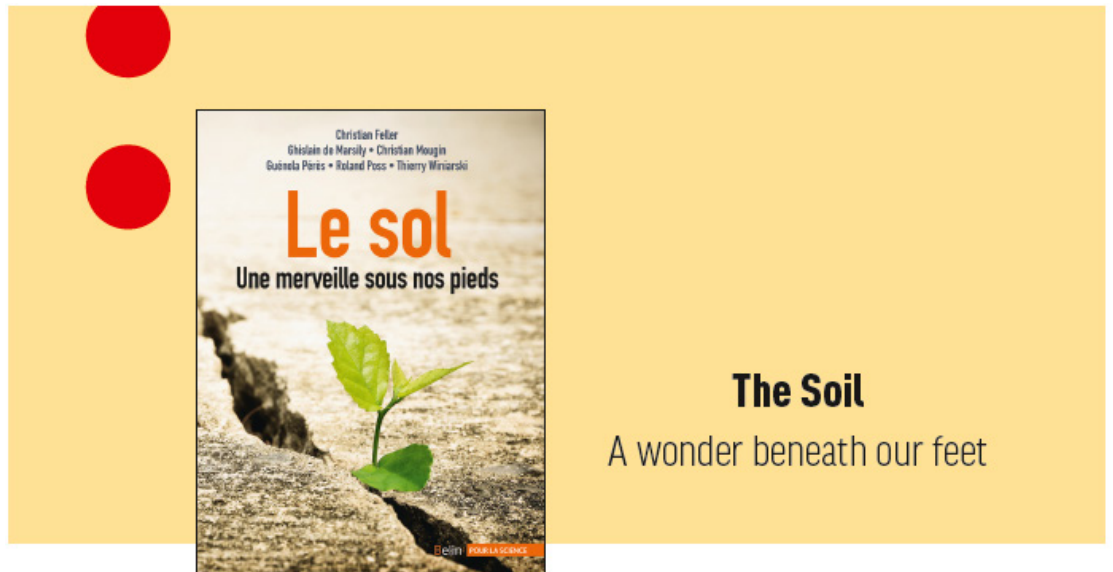
Farmers and land managers are supported by knowledge brokers who provide advice on soil issues and ensure the extension of the latest soil knowledge. What is crucial is these brokers of soil knowledge have the social intelligence to know why soil is relevant to those who are connected, i.e. the 'so what'. It is crucial that the development of future soil science curriculums incorporate 'real-world problems' so that graduates have had the opportunity apply soil knowledge and skills and be able to integrate this knowledge with other considerations, such as; the economic feasibility, availability of resources, and abilities and needs of the end-user.

Reconnecting society as a whole to soil is an immediate challenge and is predicated on those who 'care' about soil. This concept of caring for soil may be founded on the notions of beauty and utility. As a utility, society will increasingly appreciate and want to know the soil that provides good quality clean food, and into the future, a source of their pharmaceuticals. Soil also provides spaces for people to recreate and the value here can be described as a contributor to human health and aesthetics.

The 'now what' is concerned with the future and the actions that need to be taken now to facilitate this. There is always the continued need for improved soil data acquisition and its integration with other data sources to secure soil as a producer of food and water, and maintain biodiversity. This data needs to be relevant for policy development and enable a value to be placed on soil, as those using soil are concerned with earning and compliance. Other institutions are also considering the value of soil, e.g. the banking sector through natural capital, as well as contributing to their social licence. To do this they also need good quality and relevant soil data.

*continued page page 20*





## The Soil

A wonder beneath our feet

What do Roquefort cheese and tuberculosis have in common: the soil! The very specific taste of Roquefort cheese is due to *Penicillium roqueforti*, a fungus found in the soil and streptomycin, the drug used very efficient against tuberculosis, was extracted in 1943 from *Streptomyces griseus*, another soil fungus.

The soil is crucial for our everyday life. We use the soil, walk, drive and build on it. In a word, we live from the soil. The soil not only enables us to grow our orchards and vegetables, it is also provides us with an incredible variety of goods and services. It helps to prevent flooding, offers up building materials, keeps us in good health as well as inspiring legends and works of art...

In the present book, the authors describe this often poorly known wonder. What in essence is the soil and how is it generated? Which organisms inhabit it? How does water circulate within it? How can the soil help reduce the impact of climate change? All these aspects and many more are clearly dealt with in this remarkably illustrated volume.

### The Authors

**Christian Feller, Ghislain de Marsily,  
Christian Mougín, Guénola Pérès,  
Roland Poss et Thierry Winiarski**

*"The most competent experts have got together to help us discover the soil, our vital partner in life itself. And understanding how ignorant we are, they have greatly simplified their explanations. The proof of their success? I understood everything and enjoyed it immensely!"*

**Érik Orsenna,**  
member of the French Academy

## Book Review

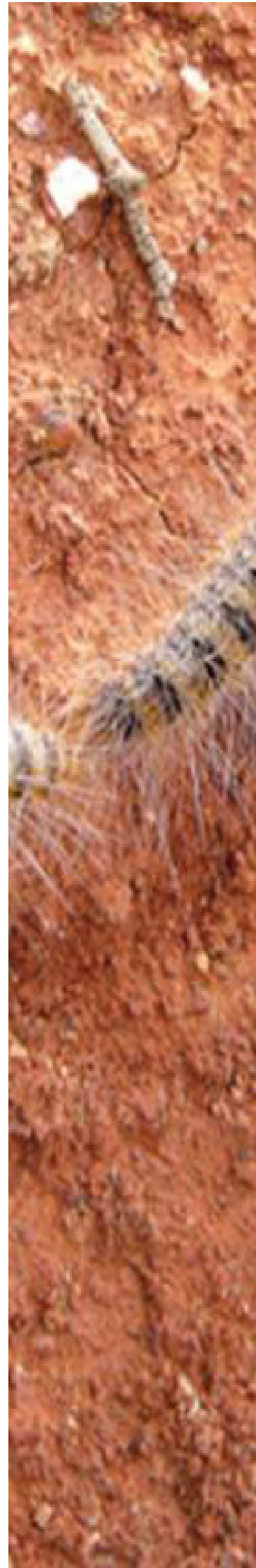
**FELLER, C., DE MARSILY, G., MOUGIN, C., PERES, G., POSS, R., WINIARSKI, T. *Le sol. Une merveille sous nos pieds. (The Soil. This Wonder Beneath Our Feet)*. 2016. Belin, Pour la science, Paris, 256 pp. ISBN 978-2-7011-8349-7, € 24.90.**

This book is a particularly welcome attempt at presenting the soil in its for human being most relevant facets avoiding any scientific jargon and using a wording that every francophone reader is likely to understand. Such an initiative is very much of a risk, first because it is a real challenge to try for all the complex characteristics and potential uses of the topic to be adequately covered in nine chapters each of a few pages only, and second because the earth is generally looked at by most people as being just “dirt”.

The authors have devoted the first chapter to a short, yet comprehensive description of the object soil, its various origins, compositions, aspects, properties, as well as the farmers’ perceptions of this poorly known but fundamental basis of all the ecosystems of the world. In the following three parts of the book, they deal successively with widely different functions of the soil in terms of resource for mankind starting with its key role as the substrate on which all plants are growing. A clear comparison of the benefits from, and a discussion of the problems posed by different cropping strategies of current practice (conventional vs. organic, biodynamic and/or agroecological approach) are also proposed. A separate section considers specifically the circulation of water and its relevance at both the microsite and the landscape scales, while another one concentrates on all the organisms living in and from the earth. A substantial portion of the latter is rightly dedicated to the extraordinary and usually neglected role played by the many earthworms that ingest huge fractions of soil and thereby contribute to its fertility. It is a bit unfortunate, however, and difficult to justify why leaf aphids and ladybirds are being evoked here and not the devastating phylloxera of grapevine roots for instance, whereas the *Bacillus thuringiensis* preparations also extracted from the soil, mass-produced and nowadays commercialized worldwide as biological control agents of a number of pest insects are not even mentioned.

Some even more unexpected side aspects of the soil are being dealt with in a second part of the book, starting with the alarming threat posed to the environment by the accumulation of all sorts of possibly quite polluting mineral and chemical residues disposed of on, or in a whole range of soils. The readers are made aware of the fact that the capacity of the ground to stock or degrade contaminants of that kind has narrow limits. Next we discover that on top of determining the quality of our nutrition and water to a large extent, the earth may have a number of human applications as medicament e.g. for fango, etc., or may be directly consumed by several domesticated and wild animal species!

A further chapter examines how diverse soils have been incorporated in the construction of human shelters including roads and dams as well as the problems the weight of these buildings may create on the soil structure. Over many centuries finally, the soil has been a source of inspiration for many visual artists, or else has been extensively used as material for their sculptures and paintings.





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It ought to be emphasized that the authors did not elude a discussion of the recently introduced scientific concepts of ecosystem services (the terminology of which is, admittedly, sometimes a bit confusing for non-specialists) - by providing simple explanations of the way they operate and several clear examples. As a consequence, the whole book always remains very pleasant reading. In addition, a serious effort has been made at gathering first class, large-sized colour pictures, drawing easily apprehended diagrams, and retaining convincing, straightforward information only for the tables to illustrate the major developments. In summary the team of French research workers led by FELLER offers herewith a beautiful opus that can only be recommended to anyone interested in environmental sciences.

Jean-Paul AESCHLIMANN  
Specialist in integrated control of pest organisms  
AGROPOLIS, Montpellier (FRANCE)

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## Engendering Connectivity to Soil through Aesthetics

Richard McEwan, Ayesha MacEwan and Alexandra Toland have reflected on the isolation of most of the population from the natural environment in a chapter, Engendering Connectivity to Soil through Aesthetics, published in the newly released Global Soil Security (Springer, 2016). They describe a society with a predominant view of soil as 'dirt', and conclude that 'it is clear that this disconnect between many individuals and the soil is great'.

This disconnect is attributed to the concentration of populations in urban habitats, the use of language reflecting cultural attitudes, and education and socio-economic forces reinforcing a disconnection between individuals and nature. They believe that 'Something extraordinary is needed to re-create connection, and consider the nature and role of 'care', the relationship between care and knowledge, the role of art in promoting care, the aesthetics of soil, and the role of early childhood education in forming positive attitudes towards nature'.

This work described in detail the need for Soil art to instil an aesthetic appreciation of soil and in some cases impact individual behavioural changes to support the lobby for soil security. Equally, early childhood and school years' experiences are shown to affect attitudes to nature, which may persist into adult life. It is in these years that environments and activities are needed that will enhance 'biophilia'.

This is illustrated with examples are given of early childhood and broader education programs that could assist in engendering a lasting appreciation of nature and soil. This chapter is worth the read by those interested in soil connects.





World soil day activities in Melbourne, Australia engaged all ages in the discovery activities with soil through art and science.

Photographer: Richard MacEwan



Mawala Soil

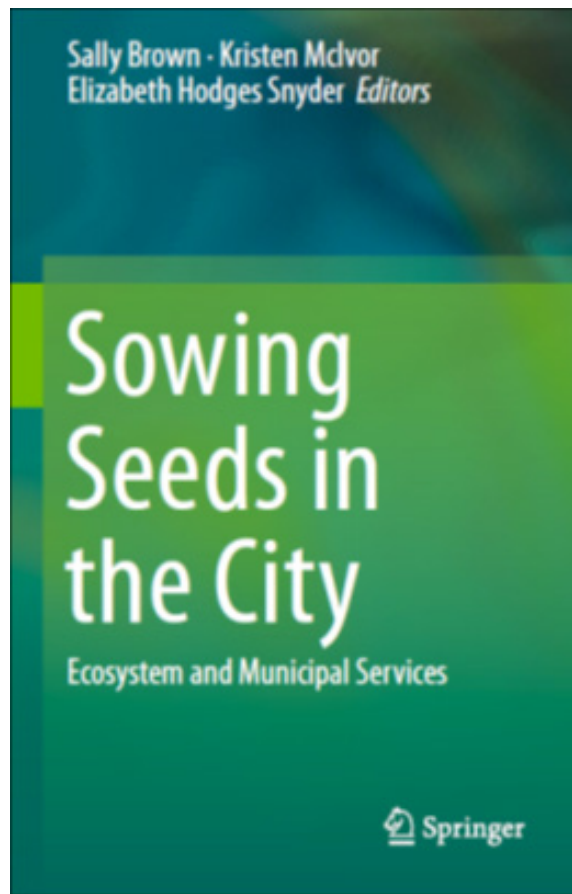
Photo by Daisy Ouya/ICRAF. August 2015, <http://blog.worldagroforestry.org/wp-content/uploads/2015/10/Mwala-soil.jpg>



## Sowing seeds in the city - 2 Volumes

*Ecosystem and Municipal Services  
Human Dimensions*

**Ganga Hettiarachchi**  
**Chair - Commission 4.2**



The two volumes of Sowing Seeds in the City were motivated and driven by a National Academy of Science Keck Foundation (NAKFI) conference on ecosystem services

([http://www.keckfutures.org/conferences/ecosystem-services\\_podcast\\_home.html](http://www.keckfutures.org/conferences/ecosystem-services_podcast_home.html)).

At this conference each attendee was asked to select an area of inquiry from a potential list of nine topics. They worked in groups to come up with innovative solutions to each question. One of the editors of Sowing Seeds in the City, Dr. Sally Brown, who was at the NAKFI conference said “I was struck by how urban agriculture has the potential to address so many of the questions on that list. When the conference was held, urban agriculture was not on the radar. Six of those nine areas of inquiry from the NAKFI

are shown below, along with the related sections in Sowing Seeds in the City and it is a good introduction to the two volumes of Sowing Seeds in the City:

- *How ecosystem services affect infectious and chronic disease: Volume 2, Section 1*
- *Identify what resources can be produced renewably or recovered by developing intense technologies that can be applied on a massive scale: Volume 1, sections on water and waste*
- *Design agricultural and aquacultural systems that provide food security while maintaining the full set of ecosystem services needed from landscapes and seascapes: Volume 1, all sections, and Volume 2, sections on food security*
- *Design production systems for ecosystem services that improve human outcomes related to food and nutrition: Volume 1, sections on ecosystems services and food production, and Volume 2, sections on health and food security*
- *Design a federal policy to maintain or improve natural capital and ecosystem services within the United States including measuring and documenting the effectiveness of the policy: Volume 1, sections on municipal infrastructure,*

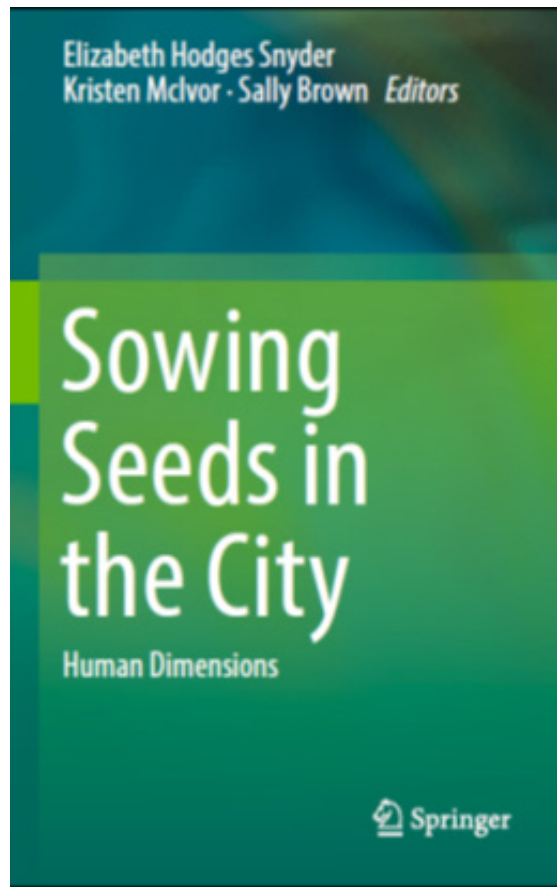


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and Volume 2, case studies and the sections on research, education, and programming

• *Develop a program that increases the American public's appreciation of the basic principles of ecosystem services: Volume 2, case studies and the sections on research, education, and programming.”*

The first volume focuses on urban agriculture and ecosystem services and how growing food can be integrated into the physical and legal framework of cities in the United States. As there is an incredible diversity of people and creativity involved in urban agricultural projects the second volume is designed to connect these diverse groups of people to each other and to what is happening on the ground. Additionally this volume attempts to clarify what is known and not known



and in the process assist in building a stronger urban agriculture movement to support greater health for ourselves and our environment through a different type of food system.

I hope that these two volumes of books would encourage and inspire the broad range of individuals who stand to benefit from urban agriculture, not only in the U.S.A. but all over the world. The urban population in 2014 accounted for 54% of the total global population according to the United Nation's 2014 Economic and Social Affairs report titled "World Urbanization Prospects." So this is timely as well as we now have, for the first time in history, the majority of the world's population is living in cities.



## Ecosystem Service Podcast Tutorials

[http://www.keckfutures.org/conferences/ecosystem-services\\_podcast\\_home.html](http://www.keckfutures.org/conferences/ecosystem-services_podcast_home.html)

At this site you will find 8 podcasts that have been developed by leaders in their field to help overcome the differences in terminology used by researchers in various fields. These podcasts will act as "tutorials" focusing on various aspects of ecosystem services.



## Books

## Publications



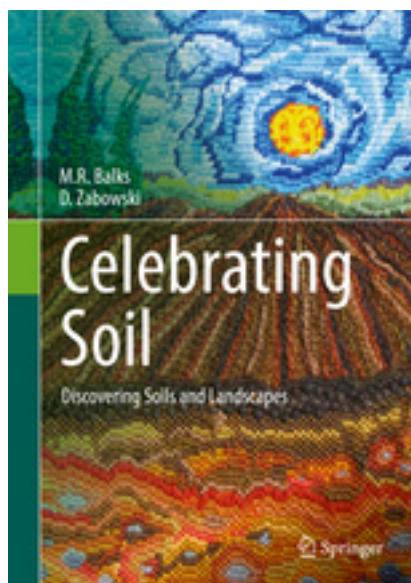
Publ. 2016 Springer  
Damien Field  
Cristine Morgan  
Alex McBratney

### Summary

This book introduces the concept of soil security and its five dimensions: Capability, Capital, Condition, Connectivity and Codification. These five dimensions make it possible to understand soil's role in delivering ecosystem services and to quantify soil resource by measuring, mapping, modeling and managing it. Each dimension refers to a specific aspect: contribution to global challenges (Capability), value of the soil (Capital), current state of the soil (Condition), how people are connected to the soil (Connectivity) and development of good policy (Codification). This book considers soil security as an integral part of meeting the ongoing challenge to maintain human health and secure our planet's sustainability. The concept of soil security helps to achieve the need to maintain and improve the world's soil for the purpose of producing food, fiber and freshwater, and contributing to energy and climate sustainability. At the same time it helps to maintain biodiversity and protects ecosystem goods and services.-

Details found at:

<http://link.springer.com/book/10.1007/978-3-319->



Publ. 2016 Springer  
Balks, M.R., Zabowski, D

### Summary

This richly illustrated book celebrates the diversity, importance, and intrinsic beauty of soils around the world and helps the reader to understand the ways that soils are related to the landscapes in which they form. The book unravels the complex bond between humans and soils and the importance of soils in our cultures and everyday lives.

Soil is critical to terrestrial life on earth. It underpins human food supply and provides materials on which we build our lives. Soil is out of sight and often out of mind, thus easy to overlook. Yet soil has tremendous variety and intrinsic beauty for those who care to look. Soil contains a memory of the events that have shaped the landscape and the environment. With help you can look at a soil and understand the stories that it has to tell.

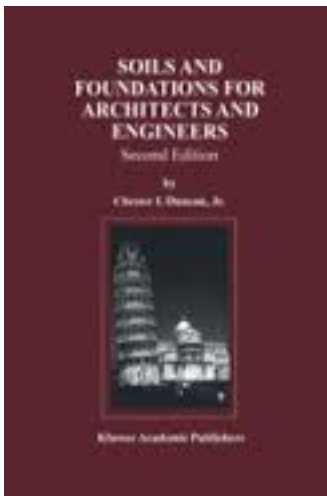
Written in a reader-friendly way, Celebrating Soil is a wonderful resource for farmers, horticulturalists, naturalists, students and others who are concerned about how soils are formed, work and are used.

Details found at:

<http://www.springer.com/us/book/9789400767591>



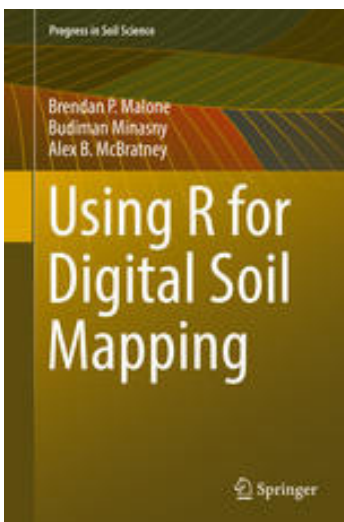
### Summary



Publ. 2012 Springer  
Chester I Duncan

Soils and Foundations for Architects and Engineers, Second Edition is a practical guide to the technology of soil mechanics and foundations, and the application of that technology to the design and construction process. This text provides an up-to-date overview of the classification of soils, the design of foundations, and the behavior of soils under load. Particular emphasis has been given to the subject of piles, piers, and caissons, and to the design and details of construction of basement and retaining walls. In addition to the numerous new improvements, the author also includes: effects of high water tables on architectural and engineering considerations, design of shear keys used in the transfer of lateral earth pressure from a wall to the supporting element, various drainage alternatives to the structural treatment of adjacent footings, and much more.

Details found at:  
<http://www.springer.com/us/book/9780412145216>



Publ: 2016, Springer  
Malone B., Minasny B.,  
McBratney A.

This book describes and provides many detailed examples of implementing Digital Soil Mapping (DSM) using R. The work adheres to Digital Soil Mapping theory, and presents a strong focus on how to apply it. DSM exercises are also included and cover procedures for handling and manipulating soil and spatial data in R. The book also introduces the basic concepts and practices for building spatial soil prediction functions, and then ultimately producing digital soil maps

Details found at:  
<http://www.springer.com/gp/book/9783319443256>



## Journal - Feature Article

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### *The elusive role of soil quality in nutrient cycling: a review*

*This paper reviews nutrient cycling and reports that its management and assessment is site specific*

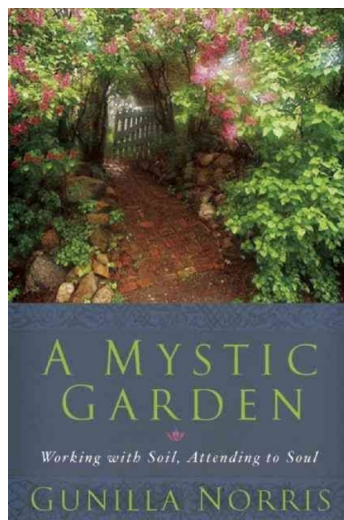
Schröder, J. J., Schulte, R. P. O., Creamer, R. E., Delgado, A., van Leeuwen, J., Lehtinen, T., Rutgers, M., Spiegel, H., Staes, J., Tóth, G. and Wall, D. P. (2016), The elusive role of soil quality in nutrient cycling: a review. *Soil Use and Management*. doi:10.1111/sum.12288

This current review focuses on agricultural nutrient cycling that includes the reuse of agricultural, industrial and municipal organic residues. The processes underlying the cycling of nutrients lies in the center of the paper, in order to better understand which soil properties determine the performance of this vital soil function. Four processes are identified (i) the capacity to receive nutrients, (ii) the capacity to make and keep nutrients available to crops, (iii) the capacity to support the uptake of nutrients by crops and (iv) the capacity to support their successful removal in harvested crop. It is shown that soil properties matter but, as constituents of 'soil quality', they should be evaluated in the context of management options and climate and not as ends in their own right, without forgetting the trade-offs. In summary, evaluations of soil properties and management actions need to be site-specific, taking account of local aspects of their suitability and potential challenges.

(Taru Sandén, Heide Spiegel)

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## Books (Popular)



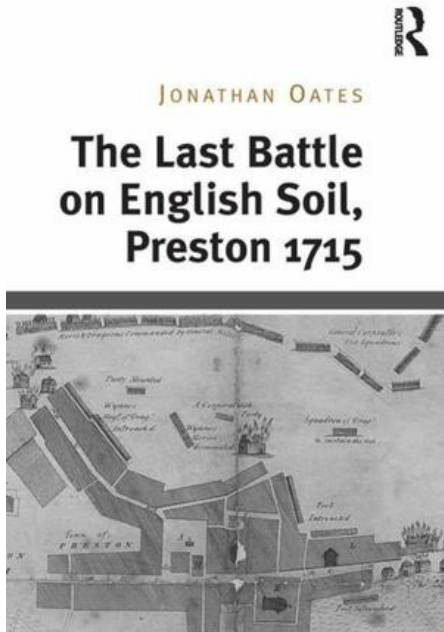
Publ: 2006, The Nile  
Gunilla Norris

### Summary

This lyrical primer on the spirituality of gardening reflects on the relationship between a gardener and his or her garden. Meditating upon how interaction with the earth opens the heart, schools the mind, engages the body, and embraces the soul in a world of increasing detachment from the natural realm, this book affirms a garden as a soulful space where people can take root and experience the changing seasons and the enduring cycle of renewal. Filled with the joy of living, this enchanting spiritual guide will speak to those who yearn to find the holy in the place they call home.

Details found at:  
[TheNile.com.au](http://TheNile.com.au)

## Books (Popular)



Publ: 2016, eBook  
Jonathon Oates

### Summary

Whilst much has been written about the Jacobites, most works have tended to look at the Rebellion of 1745, rather than the earlier attempt to reinstate the Stuart dynasty. As such this book provides a welcome focus on events in 1715, when Jacobites in both England and Scotland tried to oust George I and to replace him with James Stuart. In particular it provides a detailed narrative and analysis of the campaign in the Lowlands of Scotland and in the north of England that led to the decisive battle at Preston and ended the immediate prospects of the Jacobite cause. Drawing upon a wealth of under-utilised sources, the work builds on existing research into the period to give weight to the community and individual dimensions of the crisis as well as to the military ones. Contrary to popular myth, the Jacobite army contained both English and Scots, and because it surrendered almost intact, an analysis of the surviving list of Jacobite prisoners captured in the North West England reveals much information about their origins, occupations, unit structure and, sometimes, religion, as well as the quality of the soldiers' arms and equipment, their experience and that of their leaders. Through this study of the last major battle to be fought on English soil, a clearer picture emerges of the individuals and groups who sought to mould the direction of the freshly created British state and the dynasty that should rule it.

Details found at:  
[OnlineBookPlace.com](http://www.onlinebookplace.com)



Image: Battle of Culloden, 1746,  
David Morier - [http://www.britishmuseum.org/research/collection\\_online/collection\\_object\\_details.aspx?objectId=1522238&partId=1](http://www.britishmuseum.org/research/collection_online/collection_object_details.aspx?objectId=1522238&partId=1),







## PUBLICATIONS

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*continued from page 9*

Changes to the soil education have been flagged but with the future development of soil specific policy and regulation there may be the need to further develop accreditation for soil knowledge brokers that is not only recognised nationally but internationally facilitating transfer of soil experts globally. The acceptance of the amateur, i.e. the love of, needs to be considered and embraced as has been done by other formal society's (e.g. geological societies). Care is their connection to soil and this may be experienced through community gardens, making and admiring of soil art forms, keepers of the history and philosophy of soil, or contributing to crowd sourced data. Collectively this will help to develop the dimension of connectivity and ensure these pursuits are relevant.

**SEE THIS BLANK SPACE**

**Don't forget to send in your news, stories,  
pictures to be included in the next issue of  
Soil Connects**

**There is a spot waiting here**





## Soil Science: beyond food and fuel

The Brazilian Soil Science Society and the Latin American Soil Science Society are pleased to welcome the international soil science community to Rio de Janeiro for the 21st World Congress of soil science . The Congress theme “Soils to feed and fuel the planet” is an invitation to answer the following questions:

- How to feed a hungry planet?
- How to fuel an energy-hungry planet?
- How to drink a thirsty planet?
- How to clean up our polluted planet?

The Congress will be held in RioCentro Exhibition & Convention Center, in August, 12 to 18, 2018. The city of Rio de Janeiro is a cosmopolitan metropolis, known worldwide for its scenic beauty and its natural resources, the city provides a harmonic and agreeable environment for its inhabitants and visitors, for both leisure and work, which combined with its infrastructure, makes Rio an important center for commerce and services with the advantage of modern and diversified industrial sector.

Visit: <http://www.21wcsc.org/>





## 2nd International Teabag Index workshop 01/03/2017

The purpose of the 2nd International Tea Bag Index workshop is to improve the understanding and application of the Tea Bag Index (TBI) in ecological studies and to build a TBI community for advanced data generation, method development and knowledge exchange.

The Tea Bag Index (TBI) is a standardized method to measure organic matter decomposition rates in soil. It is a simple and cheap method to measure decay rate of plant material by using tea, as a standardized material. The method consists of burying tea bags with Green tea and Rooibos and digging them up ca. three months later. In this period, the tea will decay, and will therefore show what will happen with normal plant material in the soil. It has even been used in many ecosystems ranging from forests to lakes. The scientific value of this new method has already been acknowledged and experiments are currently running in countries all over the world. Many school children and other citizen scientists joined. As TBI team, consisting of researchers from the University of Utrecht, Umeå University, The Netherlands Institute of Ecology and the Austrian Agency for Health and Food Safety, we envision that TBI can be used as reference material in scientific decomposition experiments which will result in a global soil map of decomposition. Such map can improve global climate models that use these maps.

The call for abstracts is open 15.9-30.11.2016  
Registration is open 15.12.2016 - 15.2.2017  
Contact: [taru.sanden@ages.at](mailto:taru.sanden@ages.at)





## Paris, France, 5-6 December 2016

The 2nd Global Soil Security Conference aims to demonstrate that soil, this highly pressurized and crucial resource, is indispensable partner to meet sustainable development goals. The demonstration will be done by linking businesses, practitioners, policymakers and researchers on soil security dimensions through good working practices, business solutions, scientific outcomes and international initiatives that enhance protection and sustainable management of soils

From details visit: <https://gssparisen.wordpress.com/>

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## Austrian Soil Film Day

For the second time, the Vienna soil film day will take place on the 1st of December 2016, organized by the Austrian Soil Science Society (ASSS) in cooperation with several institutions interested in the topic. This year a series of short films will be presented, focusing on the role of soil in the Alps, the nutrient cycling function as well as soil consumption. While in the morning and afternoon screening mainly pupils and young students will be addressed, the evening screening is oriented at interested citizens. For the school screening, experts of the ASSS will be available for discussions, in the evening a panel of external experts as well as politicians will join the discussion. In 2015, about 800 people could be addressed.

Contact: [andreas.baumgarten@ages.at](mailto:andreas.baumgarten@ages.at)







International Union of Soil Sciences



# The contribution of the Soil Science Societies to scientific knowledge, education and sustainability



SESSION during the EGU 2017 General Assembly, April 23-28 2017, Vienna, Austria

SSS1 – History, Education and Society of Soil Science, Taxonomy

Division SSS – Soil System Sciences.

Contributions that show new educational approaches, cooperation with other disciplines and efforts to improve sustainability are of interest.

For more details on the session: <http://meetingorganizer.copernicus.org/EGU2017/session/23790>



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