DESCRIPTION

*Applied Soil Ecology* addresses the role of **soil organisms** and their interactions in relation to: **sustainability and productivity**, nutrient cycling and other **soil processes**, the maintenance of soil functions, the impact of human activities on **soil ecosystems** and bio(techno)logical control of soil-inhabiting pests, diseases and weeds.

**Benefits to authors**
We also provide many author benefits, such as free PDFs, a liberal copyright policy, special discounts on Elsevier publications and much more. Please click here for more information on our author services.

Please see our [Guide for Authors](#) for information on article submission. If you require any further information or help, please visit our [Support Center](#).

AUDIENCE


IMPACT FACTOR

2018: 3.445 © Clarivate Analytics Journal Citation Reports 2019

ABSTRACTING AND INDEXING

- CAB International
- Biological Abstracts
- Soils and Fertilizers
- EMBiology
- Current Contents - Life Sciences
- Current Contents - Agriculture, Biology & Environmental Sciences
- Web of Science
- Science Citation Index
- Ecological Abstracts
- Engineering Village - GEOBASE
- Scopus
EDITORIAL BOARD

Editors-in-Chief

Judith Ascher-Jenull, University of Innsbruck, Innsbruck, Austria
Shiping Deng, Oklahoma State University Stillwater, Stillwater, Oklahoma, United States
Richard Dick, OHIO STATE UNIVERSITY, Columbus, Ohio, United States
Heribert Insam, University of Innsbruck, Innsbruck, Austria
Andrey S. Zaytsev, University of Giessen, Giessen, Germany A.N. Severtsov Institute of Ecology and Evolution, RAS, Moscow, Russia

Editorial Advisory Board

V. Acosta-Martinez, USDA-ARS Cropping Systems Research Laboratory, Lubbock, Texas, United States
M. Aira, University of Vigo Department of Ecology and Animal Biology, Ourense, Spain
F. Bastida, Center for Edaphology and Applied Biology of the Segura River, Murcia, Spain
B.P. Bougnom, University of Yaounde I, Yaounde, Cameroon
M.G. Brandon, University of Innsbruck, Innsbruck, Austria
G. Brown, Brazilian Agricultural Research Corporation Forests, COLOMBO, Brazil
M. Busse, USDA Forest Service Pacific Southwest Research Station, Albany, California, United States
M.A. Callaham, Jr., US Forest Service Center For Forest Disturbance Science, Athens, Georgia, United States
M. Cardinali, University of Giessen, Gießen, Germany
M.T. Ceccherini, University of Florence, Firenze, Italy
M. Chodak, AGH University of Science and Technology, Krakow, Poland
S. Christensen, University of Copenhagen, København, Denmark
D.C. Coleman, The University of Georgia, Athens, Georgia, United States
M. Contin, University of Udine, Udine, Italy
M. Coyne, University of Kentucky, Lexington, Kentucky, United States
M. Cycoń, Medical University of Silesia Department of Microbiology and Virology, Sosnowiec, Poland
L. Egerton-Warburton, Chicago Botanic Garden, Glencoe, Illinois, United States
B. Eichler-Löbermann, University of Rostock, Rostock, Germany
J. Frouz, Charles University, Prague, Czech Republic
M. Goberna Estelles, University of Innsbruck, Innsbruck, Austria
K.B. Gongalsky, Russian Academy of Sciences, Moskva, Russian Federation
B. Griffiths, Scotland’s Rural College, Edinburgh, United Kingdom
Q. Huang, Huazhong Agriculture University, Wuhan, China
J. Johnson-Maynard, University of Idaho, Moscow, Idaho, United States
M. Jones, The University of British Columbia, Vancouver, British Columbia, Canada
R.G. Jörgensen, University of Kassel Department of Soil Biology and Plant Nutrition, Witzenhausen, Germany
M. Koutny, Tomas Bata University in Zlín, Zlín, Czech Republic
J. Kozdrój, University of Agriculture in Krakow, Krakow, Poland
R.J. Kremer, University of Missouri, Columbia, Missouri, United States
R. Laskowski, Jagiellonian University in Krakow, Krakow, Poland
M. Liu, Nanjing Agricultural University, Nanjing, China
L. Manici, Research Center for Industrial Crops, Bologna, Italy
F. Montemurro, The Research Unit for the Study of the Cropping Systems, Metaponto MT, Italy
S. Morris, Bradley University, Peoria, Illinois, United States
J. Paz-Ferreiro, RMIT University, Melbourne, Victoria, Australia
M. Pulleman, Wageningen University, Wageningen, Netherlands
A.J. Reinecke, Stellenbosch University, Stellenbosch, South Africa
L. Rues, Humboldt University of Berlin, Berlin, Germany
A. Schmalenberger, University of Limerick, Limerick, Ireland
M.E. Stromberger, Colorado State University, Fort Collins, Colorado, United States
M. Sun, Nanjing Agricultural University, Nanjing, China
M. Tejada, University of Seville, Seville, Spain
T. Wu, Georgia Southern University, Statesboro, Georgia, United States
M.C. Zabaloy, National Scientific and Technical Research Council, Buenos Aires, Argentina
C. Zachow, Graz University of Technology, Graz, Austria
GUIDE FOR AUTHORS

INTRODUCTION

*Applied Soil Ecology* addresses the role of soil organisms and their interactions in relation to: agricultural productivity, nutrient cycling and other soil processes, the maintenance of soil structure and fertility, the impact of human activities and xenobiotics on soil ecosystems and bio(techno)logical control of soil-inhabiting pests, diseases and weeds. Such issues are the basis of sustainable agricultural and forestry systems and the long-term conservation of soils in both the temperate and tropical regions.

The disciplines covered include the following, and preference will be given to articles which are interdisciplinary and integrate two or more of these disciplines:

- soil microbiology and microbial ecology
- soil invertebrate zoology and ecology
- root and rhizosphere ecology
- soil science
- soil biotechnology
- ecotoxicology
- nematology
- entomology
- plant pathology
- agronomy and sustainable agriculture • nutrient cycling • ecosystem modelling and food webs

**Types of paper**

1. Original research papers (Regular Papers)
2. Review articles
3. Short Communications
4. Applied Field Research Article
5. Viewpoints
6. Letters to the Editor
7. Editorials
8. Book Reviews
9. Announcements

*Original research papers* should report the results of original research. The material should not have been previously published elsewhere, except in a preliminary form.

*Review articles* should cover a subject of active current interest. They may be submitted or invited. A *Short Communication* is a concise, but complete, description of a limited investigation, which will not be included in a later paper. Short Communications should be as completely documented, both by reference to the literature and description of the experimental procedures employed, as a regular paper. They should not occupy more than 6 printed pages (about 12 manuscript pages, including figures, etc.).

An *Applied Field Research* article is a paper presenting field work. Soil research needs to begin with an important phase of field work, meaning opening a soil profile and collecting information directly in the field. It is generally given as well-established and known. However, this is frequently not the case. In addition, this particular and often mandatory phase of soil research knows a recent technical development. The large use of photographs and new field tools (chemical, physical, biological field analyses) allow a better description of soil profiles and biogenic structures. Applied Field Research articles allow sharing classical and new field techniques of investigation, necessary for the standardization of collected data at planetary level. Applied Field Research articles clearly illustrate old and new field processes of data record, or data collection in particular unusual but interesting circumstances. The aim of the articles is to help people in soil data collection and classification. Applied Field Research articles accompany the development of the field investigation phases of soil applied research. A series of Applied Field Research articles can be diffused in a Special Applied Field Research issue dealing with a given aspect of field work.

*The Viewpoint* is an opportunity to publish a short opinion piece in the journal. Contributions to this section should not be more 2500 words, 10 references and may include one figure or table. A Viewpoint can be a commentary or critique on new or emerging topics, controversies, research methods, or other issues related to soil microbial and faunal ecology.
Letters to the Editor commenting on published articles in the journal are welcomed by the Editors and are published at an Editor's discretion. Contributions to this section should not exceed 1,500 words and 5 references with one figure or table allowed. The "letter" offers comment or useful critique on material previously published in Applied Soil Ecology. Comments/responses may be solicited from authors if the letter refers to a particular article in the journal. Both the "letter" and the author rebuttal will be evaluated by the Editors and may go out for peer review. Authors wishing to submit a Letter to the Editor or an Editorial should contact one of the Editors-in-Chief to discuss this.

BEFORE YOU BEGIN

**Ethics in publishing**
Please see our information pages on Ethics in publishing and Ethical guidelines for journal publication.

**Declaration of interest**
All authors must disclose any financial and personal relationships with other people or organizations that could inappropriately influence (bias) their work. Examples of potential conflicts of interest include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding. Authors should complete the declaration of interest statement using this template and upload to the submission system at the Attach/Upload Files step. If there are no interests to declare, please choose: 'Declarations of interest: none' in the template. This statement will be published within the article if accepted. More information.

**Submission declaration and verification**
Submission of an article implies that the work described has not been published previously (except in the form of an abstract, a published lecture or academic thesis, see 'Multiple, redundant or concurrent publication' for more information), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. To verify originality, your article may be checked by the originality detection service Crossref Similarity Check.

**Preprints**
Please note that preprints can be shared anywhere at any time, in line with Elsevier's sharing policy. Sharing your preprints e.g. on a preprint server will not count as prior publication (see 'Multiple, redundant or concurrent publication' for more information).

**Use of inclusive language**
Inclusive language acknowledges diversity, conveys respect to all people, is sensitive to differences, and promotes equal opportunities. Articles should make no assumptions about the beliefs or commitments of any reader, should contain nothing which might imply that one individual is superior to another on the grounds of race, sex, culture or any other characteristic, and should use inclusive language throughout. Authors should ensure that writing is free from bias, for instance by using 'he or she', 'his/her' instead of 'he' or 'his', and by making use of job titles that are free of stereotyping (e.g. 'chairperson' instead of 'chairman' and 'flight attendant' instead of 'stewardess').

**Changes to authorship**
Authors are expected to consider carefully the list and order of authors before submitting their manuscript and provide the definitive list of authors at the time of the original submission. Any addition, deletion or rearrangement of author names in the authorship list should be made only before the manuscript has been accepted and only if approved by the journal Editor. To request such a change, the Editor must receive the following from the corresponding author: (a) the reason for the change in author list and (b) written confirmation (e-mail, letter) from all authors that they agree with the addition, removal or rearrangement. In the case of addition or removal of authors, this includes confirmation from the author being added or removed. Only in exceptional circumstances will the Editor consider the addition, deletion or rearrangement of authors after the manuscript has been accepted. While the Editor considers the request, publication of the manuscript will be suspended. If the manuscript has already been published in an online issue, any requests approved by the Editor will result in a corrigendum.
**Article Transfer Service**
This journal is part of our Article Transfer Service. This means that if the Editor feels your article is more suitable for another journal, you may be asked to consider transferring your article to the alternative journal of your choice. If you agree, your article will be transferred automatically on your behalf with no need to reformat. More information about this can be found here: https://www.elsevier.com/authors/article-transfer-service.

**Copyright**
Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (see more information on this). An e-mail will be sent to the corresponding author confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement.

Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the Publisher is required for resale or distribution outside the institution and for all other derivative works, including compilations and translations. If excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases.

For gold open access articles: Upon acceptance of an article, authors will be asked to complete an 'Exclusive License Agreement' (more information). Permitted third party reuse of gold open access articles is determined by the author's choice of user license.

**Author rights**
As an author you (or your employer or institution) have certain rights to reuse your work. More information.

*Elsevier supports responsible sharing*
Find out how you can share your research published in Elsevier journals.

**Role of the funding source**
You are requested to identify who provided financial support for the conduct of the research and/or preparation of the article and to briefly describe the role of the sponsor(s), if any, in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. If the funding source(s) had no such involvement then this should be stated.

**Funding body agreements and policies**
Elsevier has established a number of agreements with funding bodies which allow authors to comply with their funder’s open access policies. Some funding bodies will reimburse the author for the gold open access publication fee. Details of existing agreements are available online.

**Open access**
This journal offers authors a choice in publishing their research:

**Subscription**
- Articles are made available to subscribers as well as developing countries and patient groups through our universal access programs.
- No open access publication fee payable by authors.
- The Author is entitled to post the accepted manuscript in their institution’s repository and make this public after an embargo period (known as green Open Access). The published journal article cannot be shared publicly, for example on ResearchGate or Academia.edu, to ensure the sustainability of peer-reviewed research in journal publications. The embargo period for this journal can be found below.

**Gold open access**
- Articles are freely available to both subscribers and the wider public with permitted reuse.
- A gold open access publication fee is payable by authors or on their behalf, e.g. by their research funder or institution.

Regardless of how you choose to publish your article, the journal will apply the same peer review criteria and acceptance standards.
For gold open access articles, permitted third party (re)use is defined by the following Creative Commons user licenses:

**Creative Commons Attribution (CC BY)**
Lets others distribute and copy the article, create extracts, abstracts, and other revised versions, adaptations or derivative works of or from an article (such as a translation), include in a collective work (such as an anthology), text or data mine the article, even for commercial purposes, as long as they credit the author(s), do not represent the author as endorsing their adaptation of the article, and do not modify the article in such a way as to damage the author's honor or reputation.

**Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND)**
For non-commercial purposes, lets others distribute and copy the article, and to include in a collective work (such as an anthology), as long as they credit the author(s) and provided they do not alter or modify the article.

The gold open access publication fee for this journal is **USD 2600**, excluding taxes. Learn more about Elsevier's pricing policy: https://www.elsevier.com/openaccesspricing.

**Green open access**
Authors can share their research in a variety of different ways and Elsevier has a number of green open access options available. We recommend authors see our open access page for further information. Authors can also self-archive their manuscripts immediately and enable public access from their institution's repository after an embargo period. This is the version that has been accepted for publication and which typically includes author-incorporated changes suggested during submission, peer review and in editor-author communications. Embargo period: For subscription articles, an appropriate amount of time is needed for journals to deliver value to subscribing customers before an article becomes freely available to the public. This is the embargo period and it begins from the date the article is formally published online in its final and fully citable form. Find out more.

This journal has an embargo period of 24 months.

Elsevier Researcher Academy
Researcher Academy is a free e-learning platform designed to support early and mid-career researchers throughout their research journey. The "Learn" environment at Researcher Academy offers several interactive modules, webinars, downloadable guides and resources to guide you through the process of writing for research and going through peer review. Feel free to use these free resources to improve your submission and navigate the publication process with ease.

**Language (usage and editing services)**
Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the English Language Editing service available from Elsevier's Author Services.

**Submission**
Our online submission system guides you stepwise through the process of entering your article details and uploading your files. The system converts your article files to a single PDF file used in the peer-review process. Editable files (e.g., Word, LaTeX) are required to typeset your article for final publication. All correspondence, including notification of the Editor's decision and requests for revision, is sent by e-mail.

Submit your article
Please submit your article via [http://ees.elsevier.com/apsoil/](http://ees.elsevier.com/apsoil/)

Referees
Please submit, with the manuscript, the names, addresses and e-mail addresses of three potential referees. The referees must not have a conflict of interest with any of the authors or the content of the manuscript. For this reason, do not submit referees who are part of your or your co-authors' institutions, or referees you or your co-authors have collaborated with in the past three years. Ideally referees from several different countries are invited. Potential referees should be experts in the field of your research, having published peer-reviewed papers on the subject. Note that the editor retains the sole right to decide whether or not the suggested reviewers are used.

**PREPARATION**
Peer review
This journal operates a single blind review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor’s decision is final. More information on types of peer review.

English and presentation standards
It is essential that your manuscript be written clearly, succinctly, and be grammatically perfect. If the manuscript is written poorly it will be sent back without a scientific review. Beyond this, one does not want to have marginally acceptable English and/or delivery of the information. Poorly written manuscripts gets you off on a bad start with the reviewer. If the English or lack of clarity gets in the way of the science, it will be very difficult for the reviewer to have a favorable evaluation of the manuscript, no matter how good the data is. Organize each section in a logical progression or order and it is a good idea to use subheadings judiciously to enable the reader to easily navigate the paper. However, a subheading should have at least two paragraphs. Avoid run on sentences - if a sentence is more than 3 lines long, please re-evaluate the sentence to either shorten or break into separate sentences. Carefully review each paragraph that it contains only one theme or topic and that it has transition sentences to start and end the paragraph. These are important to carry the reader from one paragraph or idea to the next. Normal paragraphs should not be longer than a third of a page - if you find longer paragraphs in your manuscript, carefully edit them to see if they can be shortened and that they follow the criteria outlined above. It is always a good practice to have a colleague not involved as a co-author to edit your paper. Ideally this be should somebody who knows the discipline, has published extensively and has a thorough knowledge of English. Additionally you can have an agency edit the manuscript. Upon request, Elsevier will direct authors to an agent who can check and improve the English of their paper (before submission). Please visit our customer support site at http://service.elsevier.com for more information.

Manuscripts should be prepared with numbered lines, with wide margins and double line spacing throughout, i.e. also for abstracts, footnotes and references. Every page of the manuscript, including the title page, references, tables, etc. should be numbered. However, in the text no reference should be made to page numbers; if necessary, one may refer to sections.

Article structure
Subdivision - numbered sections
Divide your article into clearly defined and numbered sections. Subsections should be numbered 1.1 (then 1.1.1, 1.1.2, ...), 1.2, etc. (the abstract is not included in section numbering). Use this numbering also for internal cross-referencing: do not just refer to 'the text'. Any subsection may be given a brief heading. Each heading should appear on its own separate line.

Introduction
The Introduction should start broadly followed by an abbreviated review of the key literature related to your research. This is followed by a short presentation of the rationale and the information gaps that the research is filling. Additional justification can be that the research further develops or challenges the findings of others. This leads to clearly stated objective(s) for doing the research. Summaries of experiments, methods or results should not be included in the Introduction and please avoid a detailed literature survey.

Material and methods
This section should give enough detail to allow a competent scientist to repeat the experiments. This should be presented in a paragraph and full sentence format - typically not in an outline or numbered format. The arrangement of Materials and Methods section can proceed chronologically, but normally starts with site description, followed by statistical experimental design (including number of replications) and layout, treatments, analytical methods and statistical/data analysis. For the experimental design statement please make a clear statement on the design and the number of replications which for example could start this way - "The experiment had a completely randomized block design with four replications that had the following treatments....." Then go on and describe the treatments in detail.

Sometimes it may be appropriate to include tables, flow diagrams, or figures to assist with the description of the research procedures, but this should be done only when absolutely necessary. Maps should NOT be used to show research locations (rather describe nearest city, the state/
province, country, and longitudinal and latitudinal coordinates in the text). Maps could be used when needed to describe something in the experimental design (e.g. sampling schemes on the landscape) that can not be easily described in the text. The site description should generally include the climate, soil(s), vegetation, and any other pertinent information about the research site condition/situation. Identify soils by Great Group name at least, and preferably by soil series name and. This should either be the FAO World Reference Base (WRB) for Soil Resources or the USDA soil classification systems. Information for the WRB system can be found at: http://www.fao.org/docrep/003/y1899e/y1899e02.htm#TopOfPage

For the USDA system, as an example in the text of the Materials and Methods, the text can read as follows - "The soil was a Malabon silty clay loam (Pachic Ultic Argixerolls) (Soil Survey Staff, 2010). Then cited in the Reference Section as follows:

For the description of the analytical methods - If the techniques are widely familiar, use only their names and give the citation that describes the method. However, any significant modification to a method should be described. For a completely new method it is important that all the details are provided. Not all materials need to be identified by brand name and manufacturer. The criteria for inclusion of a particular product by brand name are based on whether it is essential to the outcome of the research, and the availability (e.g. common to several vendors). When a product must be identified by trade name, add the name of the manufacturer or a major distributor and the city of their sales headquarters, parenthetically after the first mention of the product. For specially procured or proprietary materials, give the relevant chemical and physical properties (e.g., purity, pH, concentration) (see Nomenclature and Units section below for more details). Plants and other organisms, including viruses, insects, bacteria, and pathogens should be identified accurately at first mention by scientific name (with authority for plants) and cultivar name if applicable. All units must be in be formatted according the SI system (see Nomenclature and Units section below for more details).

Results
The Results section explains the data and major outcomes using tables, graphs, and other illustrations as appropriate. This section to provides a clear understanding of representative data from the experiments. Highlight major findings and special features (e.g., one quantity is greater than another, one result is linear across a range, or a particular value is optimum). Avoid the repeating the details that are already clear from an examination of the graphics or tables.

Discussion
It is possible to have a single Results and Discussion Section. If you do this, it is generally best to present one set of data (which could be delineated by a short descriptive subheading) that is followed by discussion as outlined below. Whether there should be two separate sections or not is driven by the data. Sometimes there are very distinct subset of data that can be presented and then discussed independent of the other sub data sets or topics. If this is the case then a single Results and Discussion section might be most appropriate. On the other hand if the data is interrelated and can be synthesized in to single progression discussion then it is likely best to have a separate Discussion section. The discussion component's primary role is to interpret the results by exploring the significance and novel aspects of the work but should not repeat results. The discussion should be driven by the rationale, objectives or hypothesis presented in the Introduction. Explain the principles, relationships, and generalizations that can be supported by the results or outcomes. It is important that your interpretation and explanations be based on your experiments and not go beyond what can be concluded from the data. It is important to acknowledge exceptions, anomalies, or findings that run counter to the literature - sometimes these can be the most significant outcome and result in a paradigm shift. Explain how the results relate to previous findings, whether in support, contradiction, or simply provide new data. On the other hand, avoid extensive citations and discussion of published literature. Scientific speculation is encouraged but must be acknowledged and should be reasonable and based on the extension of your observations. Often the discussion can include suggestions for further investigation. Present conclusions, supported by a summary of the evidence.

Conclusions
The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.
Appendices
If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information
• Title. Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible. Limit the title to those words that give significant information about the article’s content and avoid words such as 'Effect of' or 'Influence of.' Keep titles free of nonstandard abbreviations, chemical formulas, outdated terminology or proprietary names. Use common names of crops and chemicals. If no common name is available for a plant or microorganism has no common name then the scientific name (with authority) may be used in the title.

Highlights
Highlights are mandatory for this journal as they help increase the discoverability of your article via search engines. They consist of a short collection of bullet points that capture the novel results of your research as well as new methods that were used during the study (if any). Please have a look at the examples here: example Highlights.

Highlights should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point).

Abstract
A journal abstract has two typical uses. One is to help readers decide whether they should delve into the whole paper and the second is for key words for indexing services and literature search engines. A concise and factual abstract that can stand alone is required. An informative abstract must be a paper in miniature that must include: introductory statement of the rationale and objectives or hypotheses, brief description of materials and methods, results and conclusions. The abstract should call attention to new techniques, observations, or data. References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

Graphical abstract
Although a graphical abstract is optional, its use is encouraged as it draws more attention to the online article. The graphical abstract should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership. Graphical abstracts should be submitted as a separate file in the online submission system. Image size: Please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more. The image should be readable at a size of 5 × 13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files. You can view Example Graphical Abstracts on our information site. Authors can make use of Elsevier’s Illustration Services to ensure the best presentation of their images and in accordance with all technical requirements.

Keywords
Immediately after the abstract, please provide 4-6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

Abbreviations
Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

Acknowledgements
Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

Formatting of funding sources
List funding sources in this standard way to facilitate compliance to funder’s requirements:
Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa].

It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.

If no funding has been provided for the research, please include the following sentence:

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Nomenclature and Units
Follow internationally accepted rules and conventions: use the international system of units (SI). The online resources for SI can be found at National Institute of Standards and Technology (http://physics.nist.gov/cuu/). It is OK to use other units if it promotes clarification and interpretation of the data but should be done parenthetically. If other units are used, please give their equivalent in SI.

Authors and Editor(s) are, by general agreement, obliged to accept the rules governing biological nomenclature, as laid down in the International Code of Botanical Nomenclature, the International Code of Nomenclature of Bacteria, and the International Code of Zoological Nomenclature.

All biota (crops, plants, insects, birds, mammals, microorganisms, etc.) should be identified by their scientific names (the Latin binomial or trinomial and authority) when first mentioned. Binary names, consisting of a generic name and a specific epithet (e.g., Escherichia coli) must be used for microorganisms.

The spelling of bacterial names should follow Bacterial Nomenclature Up-to-Date (http://www.dsmz.de/bacterial-diversity/bacterial-nomenclature-up-to-date.html) and List of Prokaryotic Names with Standing in Nomenclature (http://www.bacterio.cict.fr/). If there is reason to use a name that does not have standing in nomenclature, the name should be enclosed in quotation marks in the title and at its first use in the abstract and the text and an appropriate statement concerning the nomenclatural status of the name should be made in the text.

All biocides and other organic compounds must be identified by their Geneva names when first used in the text. Active ingredients of all formulations should be likewise identified. If a commercially available product is mentioned, the first time the name and location of the manufacturer should be included in parentheses.

Chemicals when first presented with both the accepted common name and the chemical name (including pesticides). For chemical nomenclature, the conventions of the International Union of Pure and Applied Chemistry (IUPAC) should be followed. For enzymes, use the recommended (trivial) name assigned by the Nomenclature Committee of the International Union of Biochemistry (IUB) as described in Enzyme Nomenclature and (http://www.chem.qmul.ac.uk/iubmb/enzyme/) the official recommendations of the IUPAC-IUB Combined Commission on Biochemical Nomenclature should be followed.

If a nonrecommended name is used, place the proper (trivial) name in parentheses at first use in the abstract and text. Use the EC number when one has been assigned. Authors of papers describing enzymological studies should review the standards of the STRENDA Commission for information required for adequate description of experimental conditions and for reporting enzyme activity data.

Soils used in the manuscript should be identified according to the U.S. or FAO (World Soil Resources) soil taxonomic system at first mention. See resources for more details.

Math formulae
Present simple formulae in the line of normal text where possible. In principle, variables are to be presented in italics.
Number consecutively any equations that have to be displayed separate from the text (if referred to explicitly in the text). Subscripts and superscripts should be clear. Greek letters and other non-Roman or handwritten symbols should be explained in the margin where they are first used. Take special care to show clearly the difference between zero (0) and the letter O, and between one (1) and the letter l. Give the meaning of all symbols immediately after the equation in which they are first used. For simple fractions use the solidus (/) instead of a horizontal line. Equations should be numbered serially at the right-hand side in parentheses. In general only equations explicitly referred to in the text need be numbered. The use of fractional powers instead of root signs is recommended. Also powers of e are often more conveniently denoted by exp.

Levels of statistical significance which can be mentioned without further explanation are: * $P < 0.05$, ** $P < 0.01$ and *** $P < 0.001$.

In chemical formulae, valence of ions should be given as, e.g., Ca$^{2+}$, not as Ca$^{++}$. Isotope numbers should precede the symbols, e.g., $^{18}$O.

**Footnotes**

Footnotes should be used sparingly and generally only in tables and figures. If footnotes are needed in the body of the text number them consecutively throughout the article, using superscript Arabic numbers. Many wordprocessors build footnotes into the text, and this feature may be used. Should this not be the case, indicate the position of footnotes in the text and present the footnotes themselves separately at the end of the article. Do not include footnotes in the Reference list. However, if footnotes are used in figures or tables DO NOT use numbers or letters, but rather use symbols as described below.

**Table and figure footnotes**

Indicate each footnote in a table or figure with a superscript. Place footnotes in tables below the table body and indicate them with superscripted symbols. Use the following symbols for footnotes in the order shown: †, ‡, §, #, ††, ‡‡, etc. The symbols *, **, and *** are always used to show statistical significance at the 0.05, 0.01, and 0.001 level, respectively, and are not used for other footnotes. Do not use letters as these are reserved for showing the statistical results for multiple means separation analyses.

**Electronic artwork**

**General points**

- Make sure you use uniform lettering and sizing of your original artwork.
- Embed the used fonts if the application provides that option.
- Aim to use the following fonts in your illustrations: Arial, Courier, Times New Roman, Symbol, or use fonts that look similar.
- Number the illustrations according to their sequence in the text.
- Use a logical naming convention for your artwork files.
- Provide captions to illustrations separately.
- Size the illustrations close to the desired dimensions of the published version.
- Submit each illustration as a separate file.
- Ensure that color images are accessible to all, including those with impaired color vision.

A detailed guide on electronic artwork is available.

**You are urged to visit this site; some excerpts from the detailed information are given here.**

**Formats**

If your electronic artwork is created in a Microsoft Office application (Word, PowerPoint, Excel) then please supply ‘as is’ in the native document format. Regardless of the application used other than Microsoft Office, when your electronic artwork is finalized, please ‘Save as’ or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):

- EPS (or PDF): Vector drawings, embed all used fonts.
- TIFF (or JPEG): Color or grayscale photographs (halftones), keep to a minimum of 300 dpi.
- TIFF (or JPEG): Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi.
- TIFF (or JPEG): Combinations bitmapped line/halftone (color or grayscale), keep to a minimum of 500 dpi.

**Please do not:**
• Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); these typically have a low number of pixels and limited set of colors;
• Supply files that are too low in resolution;
• Submit graphics that are disproportionately large for the content.

Color artwork
Please make sure that artwork files are in an acceptable format (TIFF (or JPEG), EPS (or PDF), or MS Office files) and with the correct resolution. If, together with your accepted article, you submit usable color figures then Elsevier will ensure, at no additional charge, that these figures will appear in color online (e.g., ScienceDirect and other sites) regardless of whether or not these illustrations are reproduced in color in the printed version. For color reproduction in print, you will receive information regarding the costs from Elsevier after receipt of your accepted article. Please indicate your preference for color: in print or online only. Further information on the preparation of electronic artwork.

Figures
Each figure must be submitted on a separate page. Supply captions separately, not attached to the figure at the end of the file on a separate page. A caption should comprise a brief title (not on the figure itself) and a description of the illustration. Captions should explain the data rather than discuss the results of the data. The illustration should be self-explained and be able to stand alone. Therefore, the description should be clear and as complete as possible (i.e. use full species names). Where needed, you may refer to other relevant tables or figures, and consider referring to the text only when the description is too long. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used. Do not use figures that duplicate information in tables. Use font sizes and line weights that will reproduce clearly and accurately. Keep in mind that published figures will be much smaller than your manuscript form. Avoid screening and/or shaded patterns often do not reproduce well; whenever possible, use black lines on a white background in place of shaded patterns. Color figures are acceptable and are the default of the electronic version but this could result in additional surcharges. Use distinct symbol shape for each treatment, not just the differing a change in line thickness or type to differentiate between data.

Figure captions
Ensure that each illustration has a caption. Supply captions separately, not attached to the figure. A caption should comprise a brief title (not on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

Tables
Each table must be submitted on a separate page. Number tables consecutively in accordance with their first appearance in the text. The titles of tables should be clear and as complete as possible to enable proper understanding of what the table is presenting. Similar to figures, the tables must be self-explanatory and be able to stand alone, including the use of full species names. Always use your word processor’s (MS Word is preferred) table feature so that you have defined cells for most if not all entries. DO NOT create tables by using the space bar and/or tab keys. Separate data horizontally with a new row in the body of the table, not with the enter key. Where needed, you may refer to other tables or figures that contain relevant information relevant, and consider referring to the text only in the event that the title becomes too long. Do not duplicate information that is presented in charts or graphs.

Place footnotes to tables and figures below the table body or the figure, and indicate them with superscript symbols. Use the following symbols for footnotes in the order shown: †, ‡, §, ††, ‡‡, etc. The symbols *, **, and *** are always used to show statistical significance at the 0.05, 0.01, and 0.001 level, respectively, and are not used for other footnotes. Do not use letters as these are reserved for showing the statistical results for multiple means separation analyses.

Vertical lines should never be used in a table. There generally should only be 3 horizontal lines in a table, one at the bottom just below the last row of data and 2 at the top that separates the headers from the body. When a header covers 2 or more subheadings (or columns of data) there should be spanner (line) beneath the heading that spans the subheadings it represents. Units belong in a row of their own, just beneath the column headings, or in row headings. See below a template for how tables should be constructed. Be sparing in the use of tables and ensure that the data presented in tables do not duplicate results described elsewhere in the article. Here is a template for the layout of tables:
Table X. Table titles should be written in words and sentences that are understandable to someone who has not read the text. The table below shows the main components of a typical table.

*Significant at the 0.05 probability level.
**Significant at the 0.01 probability level.
***Significant at the 0.001 probability level.
† Footnote description of column heading 1
‡ Footnote description of column heading 2
§ Values with the same lower case letters in a row within the Subspanner heading are not significantly different at P < 0.05.

Suggested symbols for footnotes in this order - †, ‡, §, ††, ‡‡, §§)

References

Citation in text
Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

Web references
As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

Data references
This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

References in a special issue
Please ensure that the words 'this issue' are added to any references in the list (and any citations in the text) to other articles in the same Special Issue.

Reference management software
Most Elsevier journals have their reference template available in many of the most popular reference management software products. These include all products that support Citation Style Language styles, such as Mendeley. Using citation plug-ins from these products, authors only need to select the appropriate journal template when preparing their article, after which citations and bibliographies will be automatically formatted in the journal's style. If no template is yet available for this journal, please follow the format of the sample references and citations as shown in this Guide. If you use reference management software, please ensure that you remove all field codes before submitting the electronic manuscript. More information on how to remove field codes from different reference management software.

Users of Mendeley Desktop can easily install the reference style for this journal by clicking the following link:
http://open.mendeley.com/use-citation-style/applied-soil-ecology

When preparing your manuscript, you will then be able to select this style using the Mendeley plug-ins for Microsoft Word or LibreOffice.

Reference style
Text: All citations in the text should refer to:
1. Single author: the author's name (without initials, unless there is ambiguity) and the year of publication;
2. Two authors: both authors' names and the year of publication;
3. Three or more authors: first author's name followed by 'et al.' and the year of publication.
Citations may be made directly (or parenthetically). Groups of references can be listed either first alphabetically, then chronologically, or vice versa.

Examples: 'as demonstrated (Allan, 2000a, 2000b, 1999; Allan and Jones, 1999).... Or, as demonstrated (Jones, 1999; Allan, 2000).... Kramer et al. (2010) have recently shown ...'

List: References should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.

Examples:
Reference to a journal publication:

Reference to a journal publication with an article number:

Reference to a book:

Reference to a chapter in an edited book:

Reference to a website:

Reference to a dataset:

*Journal abbreviations source*

Journal names should be abbreviated according to the List of Title Word Abbreviations.

*Video*

Elsevier accepts video material and animation sequences to support and enhance your scientific research. Authors who have video or animation files that they wish to submit with their article are strongly encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed. All submitted files should be properly labeled so that they directly relate to the video file's content. In order to ensure that your video or animation material is directly usable, please provide the file in one of our recommended file formats with a preferred maximum size of 150 MB per file, 1 GB in total. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect. Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please visit our video instruction pages. Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content.

*Data visualization*

Include interactive data visualizations in your publication and let your readers interact and engage more closely with your research. Follow the instructions here to find out about available data visualization options and how to include them with your article.

*Supplementary material*

Supplementary material such as applications, images and sound clips, can be published with your article to enhance it. Submitted supplementary items are published exactly as they are received (Excel or PowerPoint files will appear as such online). Please submit your material together with the article and supply a concise, descriptive caption for each supplementary file. If you wish to make changes to supplementary material during any stage of the process, please make sure to provide an updated file. Do not annotate any corrections on a previous version. Please switch off the 'Track Changes' option in Microsoft Office files as these will appear in the published version.
Research data
This journal encourages and enables you to share data that supports your research publication where appropriate, and enables you to interlink the data with your published articles. Research data refers to the results of observations or experimentation that validate research findings. To facilitate reproducibility and data reuse, this journal also encourages you to share your software, code, models, algorithms, protocols, methods and other useful materials related to the project.

Below are a number of ways in which you can associate data with your article or make a statement about the availability of your data when submitting your manuscript. If you are sharing data in one of these ways, you are encouraged to cite the data in your manuscript and reference list. Please refer to the "References" section for more information about data citation. For more information on depositing, sharing and using research data and other relevant research materials, visit the research data page.

Data linking
If you have made your research data available in a data repository, you can link your article directly to the dataset. Elsevier collaborates with a number of repositories to link articles on ScienceDirect with relevant repositories, giving readers access to underlying data that gives them a better understanding of the research described.

There are different ways to link your datasets to your article. When available, you can directly link your dataset to your article by providing the relevant information in the submission system. For more information, visit the database linking page.

For supported data repositories a repository banner will automatically appear next to your published article on ScienceDirect.

In addition, you can link to relevant data or entities through identifiers within the text of your manuscript, using the following format: Database: xxxx (e.g., TAIR: AT1G01020; CCDC: 734053; PDB: 1XFN).

Mendeley Data
This journal supports Mendeley Data, enabling you to deposit any research data (including raw and processed data, video, code, software, algorithms, protocols, and methods) associated with your manuscript in a free-to-use, open access repository. During the submission process, after uploading your manuscript, you will have the opportunity to upload your relevant datasets directly to Mendeley Data. The datasets will be listed and directly accessible to readers next to your published article online.

For more information, visit the Mendeley Data for journals page.

Data in Brief
You have the option of converting any or all parts of your supplementary or additional raw data into one or multiple data articles, a new kind of article that houses and describes your data. Data articles ensure that your data is actively reviewed, curated, formatted, indexed, given a DOI and publicly available to all upon publication. You are encouraged to submit your article for Data in Brief as an additional item directly alongside the revised version of your manuscript. If your research article is accepted, your data article will automatically be transferred over to Data in Brief where it will be editorially reviewed and published in the open access data journal, Data in Brief. Please note an open access fee of 600 USD is payable for publication in Data in Brief. Full details can be found on the Data in Brief website. Please use this template to write your Data in Brief.

MethodsX
You have the option of converting relevant protocols and methods into one or multiple MethodsX articles, a new kind of article that describes the details of customized research methods. Many researchers spend a significant amount of time on developing methods to fit their specific needs or setting, but often without getting credit for this part of their work. MethodsX, an open access journal, now publishes this information in order to make it searchable, peer reviewed, citable and reproducible. Authors are encouraged to submit their MethodsX article as an additional item directly alongside the revised version of their manuscript. If your research article is accepted, your methods article will automatically be transferred over to MethodsX where it will be editorially reviewed. Please note an open access fee is payable for publication in MethodsX. Full details can be found on the MethodsX website. Please use this template to prepare your MethodsX article.
Data statement
To foster transparency, we encourage you to state the availability of your data in your submission. This may be a requirement of your funding body or institution. If your data is unavailable to access or unsuitable to post, you will have the opportunity to indicate why during the submission process, for example by stating that the research data is confidential. The statement will appear with your published article on ScienceDirect. For more information, visit the Data Statement page.

Submission checklist
The following list will be useful during the final checking of an article prior to sending it to the journal for review. Please consult this Guide for Authors for further details of any item.

Ensure that the following items are present:
One author has been designated as the corresponding author with contact details:
- E-mail address
- Full postal address
- Telephone and fax numbers
All necessary files have been uploaded, and contain:
- Keywords
- All figure captions
- All tables (including title, description, footnotes)
Further considerations
- Manuscript has been 'spell-checked' and 'grammar-checked'
- References are in the correct format for this journal
- All references mentioned in the Reference list are cited in the text, and vice versa
- Permission has been obtained for use of copyrighted material from other sources (including the Web)
- Color figures are clearly marked as being intended for color reproduction on the Web (free of charge) and in print, or to be reproduced in color on the Web (free of charge) and in black-and-white in print
- If only color on the Web is required, black-and-white versions of the figures are also supplied for printing purposes
For any further information please visit our customer support site at https://service.elsevier.com.

Style Resources
1. Spelling: Webster's New Collegiate Dictionary
2. Chemical names of pesticides: Farm Chemicals Handbook (Meister Publishing, revised yearly)
6. Journal abbreviations: Chemical Abstracts Service Source Index (American Chemical Society, revised yearly)
7. The Glossary of Soil Science Terms is available both in hard copy (SSSA, 2008) and on the SSSA Web page https://www.soils.org/sssgloss/.

AFTER ACCEPTANCE

Online proof correction
Corresponding authors will receive an e-mail with a link to our online proofing system, allowing annotation and correction of proofs online. The environment is similar to MS Word: in addition to editing text, you can also comment on figures/tables and answer questions from the Copy Editor. Web-based proofing provides a faster and less error-prone process by allowing you to directly type your corrections, eliminating the potential introduction of errors.
If preferred, you can still choose to annotate and upload your edits on the PDF version. All instructions for proofing will be given in the e-mail we send to authors, including alternative methods to the online version and PDF.
We will do everything possible to get your article published quickly and accurately. Please use this proof only for checking the typesetting, editing, completeness and correctness of the text, tables and figures. Significant changes to the article as accepted for publication will only be considered at this
stage with permission from the Editor. It is important to ensure that all corrections are sent back to us in one communication. Please check carefully before replying, as inclusion of any subsequent corrections cannot be guaranteed. Proofreading is solely your responsibility.

**Offprints**
The corresponding author will, at no cost, receive a customized Share Link providing 50 days free access to the final published version of the article on ScienceDirect. The Share Link can be used for sharing the article via any communication channel, including email and social media. For an extra charge, paper offprints can be ordered via the offprint order form which is sent once the article is accepted for publication. Both corresponding and co-authors may order offprints at any time via Elsevier's Author Services. Corresponding authors who have published their article gold open access do not receive a Share Link as their final published version of the article is available open access on ScienceDirect and can be shared through the article DOI link.

**AUTHOR INQUIRIES**
Visit the Elsevier Support Center to find the answers you need. Here you will find everything from Frequently Asked Questions to ways to get in touch. You can also check the status of your submitted article or find out when your accepted article will be published.

© Copyright 2018 Elsevier | https://www.elsevier.com