

### TABLE OF CONTENTS

•	<b>Description</b>	<b>p.1</b>
•	<b>Audience</b>	<b>p.2</b>
•	<b>Impact Factor</b>	<b>p.2</b>
•	<b>Abstracting and Indexing</b>	<b>p.2</b>
•	<b>Editorial Board</b>	<b>p.2</b>
•	<b>Guide for Authors</b>	<b>p.5</b>



ISSN: 0038-0717

### DESCRIPTION

#### AIMS

*Soil Biology & Biochemistry* publishes original, scientifically challenging research articles of international significance that describe and explain **biological processes** occurring in **soil**. These include the possible applications of such knowledge to issues of soil and environmental quality - insofar as such studies inform our understanding of the role of **soil biology** and **biochemistry** in mediating soil functions, agricultural sustainability and ecosystem services. The ecology and biochemical processes of soil organisms, their effects on the environment and their interactions with plants are major topics. The applications of new molecular, microscopic and analytical techniques to understanding and explaining population and community dynamics is of great interest. The journal also publishes state-of-the-art reviews of contemporary research that present significant and novel hypotheses, as well as comments and arguments about specific and often controversial aspects of life in the soil.

#### SCOPE

The scope of *Soil Biology & Biochemistry* publishes scientific research articles of international significance which describe and explain fundamental biological and biochemical features and processes occurring in soil systems.

The emphasis is on original research which substantively advances or directs our understanding of the mechanistic basis of how soils function. Articles may involve applications of basic knowledge to applied issues if they provide distinct insight into the role of soil biology and biochemistry in regulating soil functions. Some examples of major topics include: The ecology of all soil organisms (including viruses) How soil biology interacts with soil physical and chemical properties and processes to regulate belowground functions Relationships and functional interactions between soil biota and plants The effects of soil organisms on ecosystem dynamics across spatial and temporal scales

SBB also emphasizes the application of molecular, microscopic, and analytical techniques and modelling approaches to understand, explain and visualise soil functioning. Technique-focused papers must involve a particularly high degree of novelty or significance.

In addition, the journal publishes state-of-the-art reviews that consider contemporary research and synthesise knowledge to provide enhanced understanding of biotic roles in soil system functioning.

#### 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

---

Soil biologists, biochemists, plant scientists, agricultural scientists, environmental scientists, earth scientists, botanists, ecologists and entomologists.

## IMPACT FACTOR

---

2019: 5.795 © Clarivate Analytics Journal Citation Reports 2020

## ABSTRACTING AND INDEXING

---

Current Contents - Agriculture, Biology & Environmental Sciences  
Biological & Agricultural Index  
EMBIology  
Aqualine Abstracts  
BIOSIS Citation Index  
Elsevier BIOBASE  
Cambridge Scientific Abstracts  
Current Contents  
Current Contents  
Environmental Periodicals Bibliography  
Engineering Village - GEOBASE  
Pascal Francis  
Research Alert  
Scopus  
AGRICOLA

## EDITORIAL BOARD

---

### *Editors-in-Chief*

**Karl Ritz**, University of Nottingham, Nottingham, United Kingdom

**Josh Schimel**, University of California Santa Barbara, Santa Barbara, California, United States

### *Chief Editors*

**Evgenia Bladogatskaya**, Institute of Physicochemical and Biological Problems of Soil Science RAS, Pusino, Russian Federation

**Claire Chenu**, Institute of Life and Environmental Sciences and Industries, Grignon, France

**Tim Clough**, Lincoln University, Lincoln, New Zealand

**Rainer Jorgensen**, University of Kassel Department of Soil Biology and Plant Nutrition, Witzenhausen, Germany

**Petra Marschner**, The University of Adelaide, Adelaide, South Australia, Australia

**Carmen Trasar-Cepeda**, Institute of Agrobiological Research of Galicia, Santiago de Compostela, Spain

**Joann Whalen**, McGill University Department of Natural Resource Sciences, Quebec, Canada

### *Associate Chief Editors*

**Feike Dijkstra**, The University of Sydney Centre for Carbon Water and Food, Camden, New South Wales, Australia

**Kamlesh Jangid**, National Centre For Cell Science, Pune, India

**Christina Kaiser**, University of Vienna, Wien, Austria

**Kate Orwin**, Landcare Research New Zealand, Lincoln, New Zealand

**Søren O. Petersen**, Aarhus University Department of Agroecology, Tjele, Denmark

**Liz Shaw**, University of Reading, Reading, United Kingdom

**Biao Zhu**, Peking University, Beijing, China

### **Founding Editor**

**John S. Waid†**

### **Former Chief Editors**

**R.G. Burns**, University of the Sunshine Coast, Maroochydore DC, Australia  
**Retired 2018**

**D.C. Coleman**, The University of Georgia, Athens, Georgia, United States  
**Retired 2017**

**K.M. Scow**, University of California Davis, Davis, California, United States  
**Retired 2016**

### **Board of Subject Editors**

**V. Acosta-Martinez**, USDA-ARS Cropping Systems Research Laboratory, Lubbock, Texas, United States

**S.M. Adl**, University of Saskatchewan, Saskatoon, Saskatchewan, Canada

**G.I. Agren**, Swedish University of Agricultural Sciences, Uppsala, Sweden

**G. Almendros Martin**, Spanish Scientific Research Council, Madrid, Spain

**E. Bååth**, Lund University, Lund, Sweden

**E. Baggs**, University of Aberdeen, Aberdeen, United Kingdom

**I. Bertrand**, French National Institute for Agricultural Research INRAE, Paris, France

**J. Blankinship**, University of Arizona, Tucson, Arizona, United States

**T. Bolger**, University College Dublin, Dublin, Ireland

**M.J.I. Briones**, University of Vigo, Vigo, Spain

**L. Cardenas**, Rothamsted at North Wyke, Okehampton, United Kingdom

**T. Caruso**, Queen's University Belfast, Belfast, United Kingdom

**W. Cheng**, University of California Santa Cruz, Santa Cruz, California, United States

**P.-E. Courty**, National Research Institute for Agriculture Food and Environment Bourgogne-Franche-Comté Center, Dijon, France

**C. Crecchio**, University of Bari Department of Biology, Bari, Italy

**K. DeAngelis**, University of Massachusetts Amherst, Amherst, Massachusetts, United States

**J.L. DeForest**, Ohio University, Athens, Ohio, United States

**P. Dörsch**, Norwegian University of Life Sciences, Ås, Norway

**M. Fisk**, Miami University, Oxford, Ohio, United States

**R. Franklin**, Virginia Commonwealth University, Richmond, Virginia, United States

**A. Gange**, Royal Holloway University of London School of Biological Sciences, Egham, United Kingdom

**J. Germida**, University of Saskatchewan, Saskatoon, Saskatchewan, Canada

**M. Goberna**, National Institute for Agricultural and Food Research and Technology, Madrid, Spain

**S. Grandy**, University of New Hampshire, Durham, New Hampshire, United States

**S. Hallin**, Swedish University of Agricultural Sciences, Uppsala, Sweden

**H. Henry**, Western University, London, Ontario, Canada

**M. Höggberg**, Swedish University of Agricultural Sciences Department of Forest Ecology and Management, Umeå, Sweden

**M. Hungria**, Brazilian Agricultural Research Corporation, Brasilia, Brazil

**J.D. Jastrow**, Argonne National Laboratory, Lemont, Illinois, United States

**Z. Jia**, Institute of Soil Science Chinese Academy of Sciences, Nanjing, China

**I. Kögel-Knabner**, Technical University of Munich Research Department Ecology and Eco-System Management, Germany

**Y. Kuzyakov**, University of Göttingen Department of Soil Science of Temperate Ecosystems, Göttingen, Germany

**C. Liang**, Institute of Applied Ecology Chinese Academy of Sciences, Shenyang, China

**X. J. A. Liu**, Northern Arizona University, Flagstaff, Arizona, United States

**T. Liu**, Nanjing Agricultural University College of Resources and Environmental Sciences, Nanjing, China

**S. Manzoni**, Duke University, Durham, North Carolina, United States

**M. Maraun**, University of Göttingen, Göttingen, Germany

**S. Marhan**, University of Hohenheim, Stuttgart, Germany

**P.J. Martikainen**, University of Eastern Finland - Kuopio Campus, KUOPIO, Finland

**D.D. Myrold**, Oregon State University, Corvallis, Oregon, United States

**A. Neal**, Rothamsted Research, Harpenden, United Kingdom

**R. Neilson**, The James Hutton Institute, Dundee, United Kingdom

**G. Nicol**, Central College Lyon, Ecully, France

**N. Nunan**, Environments Transfers and Interactions in Hydrosystems and Soils, Paris, France

**E. Paterson**, The James Hutton Institute Aberdeen, Aberdeen, United Kingdom

**G. Paton**, University of Aberdeen, Aberdeen, United Kingdom

**J. Pett-Ridge**, Lawrence Livermore National Laboratory, Livermore, California, United States

**A. Plante**, University of Pennsylvania Hillel, Philadelphia, Pennsylvania, United States

**M. Rivas-Casado**, Cranfield University, Cranfield, Bedford, United Kingdom

**J. Rousk**, Lund University, Lund, Sweden

**L. Ruess**, Humboldt University of Berlin, Berlin, Germany

**C. Rumpel**, Centre AgroParisTech, iEES Paris - Bât. EGER, Thiverval-Grignon, France

**M. Sauvadet**, Department of Physical and Environmental Sciences University of Toronto Scarborough, Scarborough, Ontario, Canada  
**T.R. Seastedt**, University of Colorado Boulder Institute of Arctic and Alpine Research, Boulder, Colorado, United States  
**M. Spohn**, University of Bayreuth, Bayreuth, Germany  
**J.E. Thies**, Cornell University Section of Soil and Crop Sciences, New York, New York, United States  
**E.L. Tilston**, East Malling Research, West Malling, United Kingdom  
**G. Vadakattu**, CSIRO Waite Campus, Urrbrae, Australia  
**R.T. Venterea**, USDA, Baxter, Minnesota, United States  
**M. Wallenstein**, Colorado State University, Fort Collins, Colorado, United States  
**W. Wanek**, University of Vienna, Wien, Austria  
**T. Whitman**, University of Wisconsin Madison, Madison, Wisconsin, United States  
**M. Williams**, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, United States  
**N. Wrage-Mönnig**, University of Rostock, Rostock, Germany  
**J. Yavitt**, Cornell University, Ithaca, New York, United States  
**M. Zimmer**, University of Salzburg, Salzburg, Austria

## GUIDE FOR AUTHORS

---

### INTRODUCTION

This journal is a forum for research on soil organisms, their biochemical activities and their influence on the soil environment and plant growth. It publishes original work on quantitative, analytical and experimental aspects of such research. Soil biology and soil biochemistry cover many scientific disciplines but a single journal brings together the results and views of research workers working in a wide variety of research areas. The scope of this journal is wide and embraces accounts of original research on the biology, ecology and biochemical activities of all forms of life that exist in the soil environment. Some of the subjects which have proved to be prominent are the biological transformations of plant nutrients in soil, nitrogen fixation and denitrification, soil-borne phases of plant parasites, the ecological control of soil-borne pathogens, the influence of pesticides on soil organisms, the biochemistry of pesticide and pollution decomposition in soil, microbial aspects of soil pollution, the composition of soil populations, modelling of biological processes in soil systems, the biochemical activities of soil organisms, soil enzymes and the interactions of soil organisms with plants and the effects of tillage on soil organisms and soil biochemistry. **Sequence data** Papers dealing with amino acid sequences of proteins or with nucleotide sequences must carry a statement that the data have been deposited with an appropriate data bank, e.g., the European Molecular Biology Laboratory (EMBL) or GenBank Data Libraries. The data base accession number must be given at the end of the Materials and Methods section of the manuscript under the separate heading 'Accession numbers'. For example: Coordinates and structure factors have been deposited in the Protein Data Bank with accession number 2XYZ. Lengthy nucleotide sequences will be published only if, in the judgement of the Editorial Board, these results are of general interest and importance.

### *Types of paper*

1. Regular papers. Original full-length research papers which have not been published previously, except in a preliminary form, may be submitted as regular papers.
2. Short communications. These should not exceed 1200 words (three printed pages) or their equivalent, excluding references and legends. Submissions should include a short abstract not exceeding 10% of the length of the communication and which summarizes briefly the main findings of the work to be reported. The bulk of the text should be in a continuous form that does not require numbered sections such as Introduction, Materials and methods, Results and Discussion. However, a Cover page, Abstract and a list of Keywords are required at the beginning of the communication and Acknowledgements and References at the end. These components are to be prepared in the same format as used for full-length research papers. Occasionally authors may use sub-titles of their own choice to highlight sections of the text.
3. Review articles\*. Review articles are welcome but should be topical and not just an overview of the literature. Before submission please contact the Editor in Chief : Prof.Karl Ritz. The University of Nottingham, Leicestershire, UK, Karl.Ritz@nottingham.ac.uk
4. Perspectives: These are articles that provide an insightful perspective on any subject covered by the aims and scope of SBB. They can take the form of comments, views or opinions on topics, discussions on material published previously in SBB, or summaries of the state-of-the-art in an allied area. They are intended to provide a bridge between letters to the editor, research papers and full scientific reviews. The format can be any form that best suits the topic, conveys the key points effectively and encourages insightful and creative thinking. They can be any length but should be content-rich and concise. They must include an abstract and highlights. Such submissions will be subject to editorial and peer-review.

### *\*Review Articles For Soil Biology And Biochemistry*

Readers of Soil Biology and Biochemistry may submit reviews on any topic that falls within the scope of this journal. Authors of Review Articles should aim to provide facts as well as qualified ideas and opinions derived from reliable and relevant publications. Then, from such material develop reasoned arguments and questions for future evaluation and research. Reviewers should provide a list of relevant and appropriate references. They should avoid introducing new facts in the form

of unpublished data or personal communications. Thus, the reader will be able to assess the interpretations and evaluate the methodology employed in the publications that are cited in the review.

The Introduction should outline the scope of the review and set the limits to the field it covers. The overall objective of the review may be posed as a question or a series of questions.

The bulk of the review should aim to present or introduce new ideas to the reader, review the literature relevant to these ideas and be specific. The authors of a Review Article might be able to provide alternative and reasoned interpretations or opinions to those advanced in the articles cited in the review.

The review might conclude with a set of hypotheses for future work that could be tested either using available technology or for which current technology could be improved.

### **Submission checklist**

You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details.

#### **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

All necessary files have been uploaded:

*Manuscript:*

- Include keywords
- All figures (include relevant captions)
- All tables (including titles, description, footnotes)
- Ensure all figure and table citations in the text match the files provided
- Indicate clearly if color should be used for any figures in print

*Graphical Abstracts / Highlights files* (where applicable)

*Supplemental files* (where applicable)

Further considerations

- Manuscript has been 'spell checked' and 'grammar checked'
- 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 Internet)
- A competing interests statement is provided, even if the authors have no competing interests to declare
- Journal policies detailed in this guide have been reviewed
- Referee suggestions and contact details provided, based on journal requirements

For further information, visit our [Support Center](#).

## **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. Content should make no assumptions about the beliefs or commitments of any reader; contain nothing which might imply that one individual is superior to another on the grounds of age, gender, race, ethnicity, culture, sexual orientation, disability or health condition; and use inclusive language throughout. Authors should ensure that writing is free from bias, stereotypes, slang, reference to dominant culture and/or cultural assumptions. We advise to seek gender neutrality by using plural nouns ("clinicians, patients/clients") as default/wherever possible to avoid using "he, she," or "he/she." We recommend avoiding the use of descriptors that refer to personal attributes such as age, gender, race, ethnicity, culture, sexual orientation, disability or health condition unless they are relevant and valid. These guidelines are meant as a point of reference to help identify appropriate language but are by no means exhaustive or definitive.

### 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 in one of our other participating journals, then you may be asked to consider transferring the article to one of those. If you agree, your article will be transferred automatically on your behalf with no need to reformat. Please note that your article will be reviewed again by the new journal. [More information](#).

### 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.

### **Open access**

Please visit our [Open Access page](#) for more information.

*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.

*Referees*

Authors are required to identify four persons who are qualified to serve as reviewers. Authors are requested not to suggest reviewers with whom they have a personal or professional relationship, especially if that relationship would prevent the reviewer from having an unbiased opinion of the work of the authors. A working e-mail address for each reviewer is essential for rapid review in the event that reviewer is selected from those that are identified by the authors. You may also select reviewers you do not want to review your manuscript, but please state your reason for doing so.

## **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](#).

### **Use of word processing software**

Manuscripts should be prepared with numbered lines, with wide margins and double 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.



It is important that the file be saved in the native format of the wordprocessor used. The text should be in single-column format. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. In particular, do not use the wordprocessor's options to justify text or to hyphenate words. However, do use bold face, italics, subscripts, superscripts etc. Do not embed "graphically designed" equations or tables, but prepare these using the wordprocessor's facility. When preparing tables, if you are using a table grid, use only one grid for each individual table and not a grid for each row. If no grid is used, use tabs, not spaces, to align columns. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier: <https://www.elsevier.com/guidepublication>). Do not import the figures into the text file but, instead, indicate their approximate locations directly in the electronic text and on the manuscript. See also the section on Electronic illustrations.

To avoid unnecessary errors you are strongly advised to use the "spell-check" and "grammar-check" functions of your wordprocessor.

Manuscripts should be prepared with numbered lines, with wide margins and double 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.

#### *LaTeX*

You are recommended to use the [latest Elsevier article class](#) to prepare your manuscript and [BibTeX](#) to generate your bibliography.

Our [Guidelines](#) has full details.

### **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*

State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

#### *Material and methods*

Provide sufficient details to allow the work to be reproduced by an independent researcher. Methods that are already published should be summarized, and indicated by a reference. If quoting directly from a previously published method, use quotation marks and also cite the source. Any modifications to existing methods should also be described.

### **Results**

This need only report results of representative experiments illustrated by Tables and Figures. Use well-known statistical tests in preference to obscure ones. Consult a statistician or a statistics text for detailed advice.

### **Discussion**

This section must not recapitulate results but should relate the authors' experiments to other work and give their conclusions, which may be given in a subsection headed **Conclusions**.

We discourage this. It is important that readers be able to clearly distinguish actual results from an authors interpretations of them. Separate Results and Discussion sections is the easiest way to ensure this. However, we recognize that there are some few papers where the structure of the experiments makes an integrated Results and Discussion section may be the most effective way to present and explain the science. In those few cases, we will consider allowing this. Should you chose to write a combined Results and Discussion, please explain why in the cover letterexplain why separate sections would undermine the overall presentation of the science.

### **Essential title page information**

- **Title.** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
- **Author names and affiliations.** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-

case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.

- **Corresponding author.** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. This responsibility includes answering any future queries about Methodology and Materials. **Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.**

- **Present/permanent address.** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

### 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 concise and factual abstract is required. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, 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

Keywords are index terms or descriptions for information retrieval systems, normally 4-6 items. Words selected should reflect the essential topics of the article and may be taken from both the title and the text. Do not select "soil".

### Abbreviations

Abbreviations may be used for unwieldy names which occur frequently and such abbreviations must be defined the first time they occur in the text. Conventional abbreviations, e.g. EDTA, ATP, 2,4-D should be used in preference to freshly coined ones.

### 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.). **Sponsors can be acknowledged and grant numbers included in the section**

#### 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.

### **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 I.

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<sup>2+</sup>, not as Ca<sup>++</sup>.

Isotope numbers should precede the symbols, e.g., <sup>18</sup>O.

### **Footnotes**

Footnotes should only be used to provide addresses of authors or to provide explanations essential to the understanding of Tables.

### **Artwork**

#### *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/half-tone (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.](#)

*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**

Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

**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.

[dataset] Oguro, M., Imahiro, S., Saito, S., Nakashizuka, T., 2015. Mortality data for Japanese oak wilt disease and surrounding forest compositions. Mendeley Data, v1. <http://dx.doi.org/10.17632/xwj98nb39r.1>

*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/soil-biology-and-biochemistry>

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

#### *Year and name system*

*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 should be listed first chronologically, then alphabetically.

Examples: as demonstrated (Allan, 1999, Allan and Jones, 1999, Allan 2000a, Allan 2000b). 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:

Van der Geer, J., Hanraads, J.A.J., Lupton, R.A., 2010. The art of writing a scientific article. *Journal of Scientific Communication* 163, 51–59.

Reference to a book:

Strunk Jr., W., White, E.B., 2000. *The Elements of Style*, fourth ed. Longman, New York.

Reference to a chapter in an edited book:

Mettam, G.R., Adams, L.B., 2009. How to prepare an electronic version of your article. In: Jones, B.S., Smith, R.Z. (Eds.), *Introduction to the Electronic Age*. E-Publishing Inc., New York, pp. 281–304.

#### *Journal abbreviations source*

Journal titles must be written in full.

### **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](#).

## **AFTER ACCEPTANCE**

### **Online proof correction**

To ensure a fast publication process of the article, we kindly ask authors to provide us with their proof corrections within two days. 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>