DESCRIPTION

*Information Processing in Agriculture* (IPA) was established in 2013 and it encourages the development towards a science and technology of information processing in agriculture, through the following aims:

- Promote the use of knowledge and methods from the information processing technologies in the agriculture;
- Illustrate the experiences and publications of the institutes, universities and government, and also the profitable technologies on agriculture;
- Provide opportunities and platform for exchanging knowledge, strategies and experiences among the researchers in information processing worldwide;
- Promote and encourage interactions among agriculture Scientists, Meteorologists, Biologists (Pathologists/Entomologists) with IT Professionals and other stakeholders to develop and implement methods, techniques, tools, and issues related to information processing technology in agriculture;
- Create and promote expert groups for development of agro-meteorological databases, crop and livestock modelling and applications for development of crop performance based decision support system.

Topics of interest include, but are not limited to:

- Smart Sensor and Wireless Sensor Network
- Remote Sensing
- Simulation, Optimization, Modeling and Automatic Control
- Decision Support Systems, Intelligent Systems and Artificial Intelligence
- Computer Vision and Image Processing
- Inspection and Traceability for Food Quality
- Precision Agriculture and Intelligent Instrument
- The Internet of Things and Cloud Computing
- Big Data and Data Mining

ABSTRACTING AND INDEXING

Scopus
Directory of Open Access Journals (DOAJ)
Ei Compendex
EDITORIAL BOARD

Editor in Chief
Daoliang Li, College of Information and Electrical Engineering, China Agricultural University, Beijing, China

Associate Editors
K.C Ting, Dept. of Agricultural and Biological Engineering, University of Illinois at Chicago, Urbana, Pennsylvania, USA
Wenzhu Yang, Department of Computer Science, Hebei University, Baoding, China
Chinsu Lin, Department of Forestry and Natural Resources, National Chiayi University, Chiayi, Taiwan
João Manuel R.S. Tavares, Department of Mechanical Engineering of the Faculty of Engineering, Universidade do Porto, Porto, Portugal
Dionysis Bochtis, Department of Engineering, Aarhus University, Aarhus, Denmark
Ya Guo, College of Internet of Things Engineering, Jiangnan University, Wuxi, China
Hua Liu, Department of Political Science and Geography, Old Dominion University, Norfolk, USA
Haiyan Cen, College of Biosystems Engineering and Food Science, Zhejiang University, Hangzhou, China
Ashfaqur Rahman, Intelligent Sensing and Systems Lab (ISSL), Commonwealth Scientific and Industrial Research Organisation (CSIRO), Hobart, Tasmania, Australia

Members of Editorial Board
Chunjiang Zhao, Department of Agricultural Information Technology, National Engineering Research Center, Beijing, China
Da-Wen Sun, Food Refrigeration & Computerised Food Technology, National University of Ireland, Dublin, Ireland
Wei Gao, Dept. of Chemical and Materials Engineering, University of Auckland, Auckland, New Zealand
Qin Zhang, Center for Precision & Automated Agricultural Systems, Washington State University, Prosser, Washington, USA
Yong He, College of Biosystems Engineering and Food Science, Zhejiang University, Hangzhou, China
Thomas Rauschenbach, Fraunhofer Institute, Ilmenau, Germany
Béla Csukás, Dept. of bio, environmental and chemical engineering, University of Kaposvár, Kaposvár, Hungary
Yanqing Duan, The Business School, University of Bedfordshire, Luton, UK
Professor Konstantinos Konmitsas, Technical university Crete, Chania, Greece
María Doula, Dept. of Soil Science Institute of Athens, Hellenic Agricultural Organization Demeter, Lycoovrisi, Greece
Ning Wang, Dept. of Biosystems and Agricultural Engineering, Oklahoma State University, Stillwater, Oklahoma, USA
Qin He, School of Strategy and Leadership, Coventry University, Coventry, UK
Changxing Li, Coll. of Engineering, University of Georgia Athens, Athens, Georgia, USA
Claus Aage Grøn Sørensen, Department of Engineering, Aarhus University, Aarhus, Denmark
Daniel Cozzolino, School of Agriculture, Food & Wine, University of Adelaide, Adelaide, South Australia, Australia
Kaloxyls Alexandros, Department of Informatics and Telecommunications, University of Peloponnesse, Peloponnese, Greece
Yubin Lan, Areawide Pest Management Research Unit (APMRU), ARS USDA, College Station, Texas, USA
Thomas Banhazi, Fac. of Engineering and Surveying, University of Southern Queensland, Toowoomba, Queensland, Australia
Won Suk Lee, Department of Agricultural and Biological Engineering, University of Florida, Gainesville, Florida, USA
Dehne Heinz-Wilhelm, Department of Phytomedicine, University of Bonn, Bonn, Germany
Professor José Fernán Martinez Ortega, Dept. of Engineering and Telematic Architectures, Technical University of Madrid, Spain
Iqbal Gondal, School of Engineering and Information Technology, Federation University Australia, Ballarat, Victoria, Australia
N.K. Sreelaja, Dept. of Master of Computer Applications, Sri Krishna College of Engineering & Technology, Coimbatore, India
Weifa Liang, Research School of Computer Science, Australian National University, Canberra, Australian Capital Territory, Australia
Kim-Kwang Raymond Choo, Information Security Institute, University of South Australia, Adelaide, Australia
Dr. Theodore Zahariadis, Electrical Engineering Dept., TEISTE, Athens, Greece
Gregory O'Hare, School of Computer Science and Informatics, University College Dublin, Dublin, Ireland
Raja Jurda, Autonomous Systems Laboratory, Commonwealth Scientific and Industrial Research Organisation, Brisbane, Queensland, Australia
Samsuzana Abd Aziz, Department Of Biological and Agricultural Engineering, University Putra Malaysia, Selangor, Malaysia
Zhulu Lin, Department of Agricultural and Biosystems Engineering, North Dakota State University, Fargo, North Dakota, USA
Lawal Biilla, School of Geography, The University of Nottingham Malaysia Campus, Greater Kuala Lumpur, Malaysia
Manoj Karkee, Dept. of Biological Systems Engineering, Washington State University, Prosser, Washington, USA
Klein Ileleji, Department of Agricultural and Biological Engineering, Purdue University, West Lafayette, Indiana, USA
Jonathan Li, Department of Geography & Environmental Management, University of Waterloo, Waterloo, Ontario, Canada
Prem Parajuli, Agricultural and Biological Engineering Department, Mississippi State University, Starkville, Mississippi, USA
Qihao Weng, Dept. of Earth & Environmental Systems, Indiana State University, Terre Haute, Indiana, USA
Sultan Aksakal, Institute of Geodesy and Photogrammetry, Swiss Federal Institute of Technology, Zurich, Switzerland
Professor Yongliang Liu, US Department of Agriculture, New Orleans, Mississippi, USA
Paul Reese Weckler, Biosystems and Agricultural Engineering, Oklahoma State University, Stillwater, Oklahoma, USA
Steven James Hoff, Agricultural & Biosystems Engineering, Iowa State University, Ames, Iowa, USA
Victor Ella, College of Engineering and Agro-industrial Technology, University of the Philippines, Los Baños, Philippines
Fatih Kalkan, Department of Biosystem Engineering, Faculty of Agriculture, Yüzüncü Yıl Üniversitesi, Van, Turkey
Snehasish Dutta Gupta, Dept. of Agriculture and Food Engineering, Indian Institute of Technology (IIT) Kharagpur, Kharagpur, India
Jens Léon, Faculty of Agriculture, University of Bonn, Bonn, Germany
Professor Francisco Rodriguez Diaz, Systems Engineering and Automatic Control Area, Informatics Department, University of Almeria, Spain
Bruno Bernardi, Dipartimento di Agraria, Università Mediterranea di Reggio Calabria, Reggio Calabria, Italy
Minzan Li, College of Information and Electrical Engineering, China Agricultural University, Beijing, China
Camilo Franco, Department of Food and Resource Economics, University of Copenhagen, Copenhagen, Denmark
Odemir Bruno, São Carlos Institute of Physics, University of São Paulo, São Carlos, Brazil
Asa Gholizadeh, Department of Soil Science and Soil Protection, Czech University of Life Sciences, Prague, Czech Republic
Honwei Xiao, College of Engineering, China Agricultural University
Zhenbo Li, College of Information and Electrical Engineering, China Agricultural University, Beijing, China

Editorial Assistant
Zhengbin Liu, Topp Lab, Donald Danforth Plant Science Center
GUIDE FOR AUTHORS

Introduction
Information Processing in Agriculture is an international open access journal for the publication of advanced information technology for solving problems in agriculture and related industries, which include agronomy, forestry, aquaculture, animal/livestock science, plant science, environment and food processing, food safety and quality tracking, and so on. The information technologies, used in the aforementioned fields, are as following but not limited to: Smart Sensor and Wireless Sensor Network, Remote Sensing, Simulation, Optimization, Modeling and Automatic Control, Decision Support Systems, Intelligent Systems and Artificial Intelligence, Computer Vision and Image Processing, Inspection and Traceability for Food Quality, Precision Agriculture, The Internet of Things in Agriculture, Cloud Computing and Agricultural Applications.

Types of article
1. Original research papers
2. Review articles
3. Application notes
4. Book reviews

No page charges
Information Processing in Agriculture follows an author-pays open access model and your article will be freely available to all via the ScienceDirect platform. This charge is necessary to offset publishing costs - from managing article submission to typesetting, tagging and indexing of articles, hosting articles on dedicated servers, supporting sales and marketing costs to ensure global dissemination via ScienceDirect, and permanently preserving the journal article. The fee excludes taxes.

Authors will not be charged any publication fee now.

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.

Studies in humans and animals
If the work involves the use of human subjects, the author should ensure that the work described has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans. The manuscript should be in line with the Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals and aim for the inclusion of representative human populations (sex, age and ethnicity) as per those recommendations. The terms sex and gender should be used correctly.

Authors should include a statement in the manuscript that informed consent was obtained for experimentation with human subjects. The privacy rights of human subjects must always be observed.

All animal experiments should comply with the ARRIVE guidelines and should be carried out in accordance with the U.K. Animals (Scientific Procedures) Act, 1986 and associated guidelines, EU Directive 2010/63/EU for animal experiments, or the National Institutes of Health guide for the care and use of Laboratory animals (NIH Publications No. 8023, revised 1978) and the authors should clearly indicate in the manuscript that such guidelines have been followed. The sex of animals must be indicated, and where appropriate, the influence (or association) of sex on the results of the study.

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 must disclose any interests in two places: 1. A summary declaration of interest statement in the title page file (if double-blind) or the manuscript file (if single-blind). If there are no interests to declare then please state this: ‘Declarations of interest: none’. This summary statement will be ultimately published if the article is accepted. 2. Detailed disclosures as part of a separate Declaration of Interest form, which forms part of the journal’s official records. It is important for potential interests to be declared in both places and that the information matches. More information.

Please complete and upload the Conflict of Interest and Author Declaration form with your manuscript. Inclusion of this form is mandatory.

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.

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.

Copyright
Upon acceptance of an article, authors will be asked to complete an 'Exclusive License Agreement' (see more information on this). Permitted third party reuse of 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
Every peer-reviewed research article appearing in this journal will be published open access. This means that the article is universally and freely accessible via the internet in perpetuity, in an easily readable format immediately after publication. The author does not have any publication charges for open access. The China Agricultural University will pay to make the article open access.

A CC user license manages the reuse of the article (see http://www.elsevier.com/openaccesslicenses). All articles will be published under the following license:

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.

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 WebShop.

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
Please submit the names and institutional e-mail addresses of several potential referees. For more details, visit our Support site. Note that the editor retains the sole right to decide whether or not the suggested reviewers are used.

Additional information
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. Avoid excessive use of italics to emphasize part of the text.

PREPARATION

Peer review
This journal operates a single blind review process. All contributions are 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
It is important that the file be saved in the native format of the word processor 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 word processor's options to justify text or to hyphenate words. However, do use bold face, italics, subscripts, superscripts etc. 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). Note that source files of figures, tables and text graphics will be required whether or not you embed your figures in the text. See also the section on Electronic artwork.
To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your word processor.

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.

Theory/calculation
A Theory section should extend, not repeat, the background to the article already dealt with in the Introduction and lay the foundation for further work. In contrast, a Calculation section represents a practical development from a theoretical basis.

Results
Results should be clear and concise.

Discussion
This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.
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.
• **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 lowercase 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.

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.

Highlights
Highlights are a short collection of bullet points that convey the core findings of the article. Highlights are optional and 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). You can view example Highlights on our information site.

Keywords
Immediately after the abstract, provide a maximum of 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, yyyyy]; 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). If other quantities are mentioned, give their equivalent in SI. You are urged to consult IUPAC: Nomenclature of Organic Chemistry for further information.

Math formulae
Please submit math equations as editable text and not as images. Present simple formulae in line with normal text where possible and use the solidus (/) instead of a horizontal line for small fractional terms, e.g., \( \frac{X}{Y} \). In principle, variables are to be presented in italics. Powers of e are often more conveniently denoted by exp. Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text).

Footnotes
Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors 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.

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.

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**
1. All publications cited in the text should be presented in a list of references following the text of the manuscript (and vice versa). The manuscript should be carefully checked to ensure that the spelling of author's names and dates are exactly the same in the text as in the reference list.

2. If reference is made in the text to a publication written by more than two authors the name of the first author should be used followed by "et al." This indication, however, should never be used in the list of references. In this list names of first author and co-authors should be mentioned.

3. Use the following system for arranging your references:

   Indicate references by number(s) in square brackets in line with the text. The actual authors can be referred to, but the reference number(s) must always be given. List: Number the references (numbers in square brackets) in the list in the order in which they appear in the text.

**Examples:**

Reference to a journal publication:


Reference to a book:


Reference to a chapter in an edited book:

Note shortened form for last page number. e.g., 519, and that for more than 6 authors, the first 6 should be listed followed by et al.

6. Do not abbreviate the titles of periodicals mentioned in the list of references; alternatively use the International List of Periodical Title Word Abbreviations.

7. In the case of publications in any language other than English, the original title is to be retained. However, the titles of publications in non-Latin alphabets should be transliterated, and a notation such as "(in Russian)" or "(in Greek with English abstract)" should be added.

8. Work accepted for publication but not yet published should be referred to as "in press".

9. References concerning unpublished data and "personal communications" should not be cited in the reference list but may be mentioned in the text.

10. 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.

11. 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 and Zotero, as well as EndNote. Using the word processor 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.

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

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.

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.

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).

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 be notified and receive a link to the published version of the open access article on ScienceDirect. This link is in the form of an article DOI link which can be shared via email and social networks. 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 Webshop. Authors requiring printed copies of multiple articles may use Elsevier Webshop’s ‘Create Your Own Book’ service to collate multiple articles within a single cover.

AUTHOR INQUIRIES
You can track your submitted article at http://www.elsevier.com/track-submission. You can track your accepted article at http://www.elsevier.com(trackarticle). You are also welcome to contact Customer Support via http://support.elsevier.com. For journal related information, please contact Sharon at ipa_cau@163.com.

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