

JOURNAL OF Food, Agriculture & Environment

www.world-food.net

Science and Technology

Special Journal

WFL Publisher



Helsinki, Finland

JOURNAL OF FOOD, AGRICULTURE & ENVIRONMENT



WFL Publisher
Science and Technology

www.world-food.net

ISSN: 1459-0255

General Information

Aims and Scope: The Journal of Food, Agriculture & Environment publishes peer-reviewed original research, critical reviews and short communications on food science and technology, agriculture, animal science, human nutrition or human health, with particular emphasis on interdisciplinary studies that explore the intersection of food, agricultural, and the environmental. The journal also considers a limited number of relevant scholarly manuscripts addressing ethical or socioeconomic issues related to modern agricultural and environmental sciences. The Journal offers advertisement space for special announcements.

Editorial office

Director	: Ramdane Dris PhD.
Editor-in-Chief	: Shri Mohan Jain PhD.
Associate Editor	: T. N. Shivananda PhD. Raina Niskanen PhD. Alisdair Mclean PhD.
Assistant Editor	: Russell Miller Piritta Halttu
Technical Assistant	: Antti Pohjoisaho, Timo Helminen Päivi Kesti and Leena Ietakangas
Address	: JFAE-Editorial Office, Meri-Rastilantie 3 C, FIN-00980 Helsinki, Finland
E-mail	: Editorial@world-food.net
Tel/Fax	: 00 358 9 759 2775
Website	: www.world-food.net

Editorial Board

L. Daley (USA)	M. Pessarakli (USA)
K. Brandt (Denmark)	Eva Thörn (Sweden)
A. Andrén (Sweden)	C. Tsadilas (Greece)
A. Nes (Norway)	I. Mueller-Harvey (UK)
C. M.J. Pieterse (The Netherlands)	H. Krug (Germany)
G.N. Magesan (New Zealand)	C. Watkins (USA)
J. Rechcigl (USA)	S. C. Minocha (USA)
S. Baima (Italy)	P. Wójcik (Poland)
M. Gutierrez-Correa (Peru)	G. McIsaac (USA)
Y. B. Che Man (Malaysia)	H.K.Pant (USA)
S. Twomlow (Zimbabwe)	S.Huyskens-Keil (Germany)
H-W. Dehne (Germany)	F. Salamini (Germany)
A. Komamine (Japan)	P. Clayton (UK)
G. Noga (Germany)	P. Galeffi (Italy)
G. Fuleky (Hungary)	J. F. Durigan (Brazil)
Z. Singh (Australia)	A. Hashimoto (Japan)
S. D. Murphy (Canada)	Y. Liu (Singapore)
B. M. Chassy (USA)	R. Sangakkara (Sri Lanka)
S. K. Sopory (India)	M. Dorais (Canada)
G. S. Mittal (Canada)	A. Pandey (India)
G. Spangenberg (Australia)	D. S. Brar (Philippines)
J. P. Gustafson (USA)	L. A. Lacey (USA)
R.T. V. Fox (UK)	G. Stoewsand (USA)
Joachim Raupp (Germany)	S. Saheed Baba (Nigeria)
C.J. Graham (USA)	Kevin Kerr (UK)
Olusola Lamikanra (USA)	R. M. Welch (USA)
David W. Stanley (USA)	Q. M. Ketterings (USA)
A. Pellegrineschi (Mexico)	M.S. Thakur (India)

Helvecio De-Polli (USA)	J. Shi (Canada)
Jerzy Nowak (USA)	Annie Hubert (France)
Francisco Artes Calero (Spain)	Catherine Barry-Ryan (Ireland)
Andreas Klieber (Australia)	Masayuki Hojito (Japan)
Gary J. Pickering (Canada)	Kong-Hwan Kim (Korea)
Pervin Basaran (Turkey)	Linus U. Opara (Oman)
Christian Larroche (France)	J. Buyse (Belgium)
Constantinos Kittas (Greece)	Frank Devlieghere (Belgium)
K. Ravindrantham Thampi (Switzerland)	Seiichi Oshita (Japan)
Clément Vigneault (Canada)	M. Ashraf (Pakistan)
Gamal Abdel-Nasser Khalil (Egypt)	Hiroshi Gemma (Japan)
Jong-Bang Eun (Korea)	Sabah Bidawid (Canada)
Virginie Amillien (Norway)	Tom J Sauer (USA)
Badal . C. Saha (USA)	C. P .F. De Lima (Australia)
Quirien Van Oirschot (Norway)	W. Pfannhauser (Austria)
David Tay (USA)	Dr. E. Fallou Guèye (Senegal)
E. M. Abou-Fakhr Hammad (Lebanon)	Rong Cao (Canada)

Subscription: Orders are accepted on a prepaid and calendar-year basis. Issues are sent by standard mail (surface within Europe, air delivery outside Europe). Priority rates are available upon request. Please find subscription rates and ordering details in detachable form included in every issue of the Journal, or request from the editorial office: (email:Editorial@world-food.net).

Important Note: If you are not a member of ISFAE yet, please visit our homepage: <http://www.isfae.org> and register to benefit from special rates when purchasing scientific journal, plus online ISFAE magazine or taking part in ISFAE meetings. Kindly contact ISFAE Secretariat at: isfae@isfae.org

Abstracting: JFAE is abstracted in Chemical Abstracts - CAS, Apic abstract, IFIS, FSTA, CABI and under process with ISI etc.

Advertising: Inquiries and correspondence regarding advertisements or announcements should be sent to World Food Rd Ltd. Meri-Rastilantie 3 C, FIN-00980, Helsinki, Finland. Tel: +358 9 75 92 775 or +358 50 505 11 35, e-mail: info@world-food.net

Book Proposal: WFL Publisher invites scientists and experts to submit book proposal. We suggest that books are focused and of high-level (research and/or development level). For more details, contact WFL Publisher. (email: publisher@world-food.net).

Copyright: The articles published in this journal are protected by Copyright of World Food RD, WFL Publisher and the following terms and conditions apply to their use (<http://www.world-food.net/copyright.php>). All rights are reserved. **No part of this journal may be reproduced in any form without the written permission of the publisher.**

Online Information: Table of contents, Abstracts, Advisory or Editorial Board listings, and Instructions to Authors regarding manuscript preparation or submission for publication can be accessed free of charge at www.world-food.net/scientjourn.php.

Authorization: To photocopy items for subscribers grant personal use of a specific client. This consent does not extend the copying for general distribution, for advertising or promotional purposes, for creating new.

Subscription Rate

The Print and/or Online journal of Food, Agriculture & Environment (JFAE)

Print ISSN 1459-0255 / Online ISSN 1459-0263 .

One-year subscription rate includes print, and/or online journal. The subscription cost is low compared to many other International Journals. One-year membership of the scientific Journal of Food, Agriculture & Environment (JFAE) will give you access to the print and/or online version of the Journal. For one-year subscription, subscribers will get 4 issues of the Print journal and/or access to the Online journal services (subscriber can read and download full articles).

Subscribers should send us by **fax or by email or by air mail** the order. Payment should be made either by foreign payment (all charge should be paid by customers) or by Credit Cards such as visa or master cards. (for cheques or bank drafts, 20 euro must be added as bank charges). Only If you face problems in sending the payment, kindly contact us at: Publisher@world-food.net

	Developed countries	Developing countries
Institutional Rates		
Print Journal	€400	€250
Online Journal	€380	€200
Print Journal + Online Journal	€500	€350
Individual Rates		
Print and/or Online Journal	€195 / 120	€120/80

WFL Publisher is willing to assist some libraries or departments especially those from some developing countries.

WFL Publisher is willing to make few exceptions to waive the subscription fees. Kindly contact us at:
Publisher@world-food.net

WFL Publisher offers 10% reduction (to each subscriber) if you invite 5 or more libraries or departments or individuals to subscribe the journal (JFAE).

This scientific journal is published by WFL Publisher in Helsinki, Finland.

Meri-Rastilantie 3 C,
FIN-00980 Helsinki, Finland
Tel: 00 358 50 505 11 35
00 358 50 469 7088
Tel/Fax: + 358 9 75 92 775
E-mail: Info@world-food.net
Website: <http://www.world-food.net>



Publish Your Work

Journal of Food, Agriculture & Environment (JFAE)

You are cordially invited to contribute to the journal "Food, Agriculture & Environment -JFAE" manuscripts on original research work or critical reviews in food science, human nutrition or human health, agriculture or/and environment . The journal also considers manuscripts on biotechnology, ethical and socioeconomic issues related to modern agricultural and environmental sciences. The Journal offers advertisement space for special announcements from, and employment opportunities within, food, agricultural and environmental organizations in the public and private sectors. For more details, please take contact with the editorial office, Meri-Rastilantie 3 C, FIN-00980 Helsinki, Finland (Info@world-food.net) or visit our web site: www.world-food.net

Recommend us to.....

International Society Of Food, Agriculture and Environment (ISFAE)

Note to Head of Department

The International Society of Food Agriculture and Environment invites head of institution, head of department, companies or decision makers to organize local, regional or international self funded meeting and/or exhibition under the auspice of ISFAE. The ISFAE takes charge of resulting publication and distribution of the proceeding or book . A special JFAE Issue might be considered. For more details contact us at: ISFAE-Executive Secretariat, Meri-Rastilantie 3C, FIN-00980 Helsinki.Finland (email: isfae@isfae.org).

In addition to, the online journal of the Scientific Society of Food Agriculture and Environment (ISFAE)

Agri-Food "Research & News" ISSN: 1459-2029, accepts:

- Popular Articles
 - Opinions and Views
 - Ongoing R&D Projects
 - Instructions / Recommendations
 - Specific Courses or Education, workshop, symposium,
 - Summary of reports or thesis (*full material can be published only if it is well written*)
 - Announcements or Nominations: (*meetings, courses/lectures, projects/proposals, training or exchange programs, exchange visits, excursions, exhibitions, trips*)
 - Job announcements and Employment Opportunities (*seeking jobs, offering or informing of jobs*)
 - Advertisements (*Conferences, meetings, products, materials, instruments, machines, equipments, etc..*)
- News and Information
 - Newsletters
 - Achievements
 - Methodology / Technology
 - Event or exhibition

Help Libraries in the Developing Countries

We appreciate if you , your colleagues or your institution can help and pay for a year subscription to a developing country's library (ies). We can recommend a library (ies), if needed. However, you may choose any library from the developing country and fill the application form you may download from www.isfae.org (JFAE Subscriber Application Form), please mention the correct mailing address of the library, contact person, etc.) and send one copy of the form by email, fax or by air mail to the WFL Publisher / JFAE-Editorial Office.

WFL Publisher publishes books dealing with food science and technology, human health and nutrition, veterinary, agriculture and environmental sciences. WFL Publisher would like to make a special contract with libraries, agencies, booksellers or bookstores in order to provide you with new books at low prices. All our books are strictly reviewed by a panel of well known scientists as well as international experts. You'r welcome to make the new contract with WFL Publisher and order some books.

Contact us at:

Meri-Rastilantie 3 C, FIN-00980 Helsinki. Finland

Tel/Fax: 00 358 9 759 2775 / Tel: 00 358 50 505 11 35 / 00 358 50 469 7088 / 00 358 50 469 70 88

Email: isfae@isfae.org ; Web site: www.isfae.org

WFL Publisher Offers 10% Reduction to Subscribers!