



# Fundamental for Life:

Crop, Soil, & Environmental Sciences

## 2011 International Annual Meetings

American Society of Agronomy

Crop Science Society of America

Soil Science Society of America

*in conjunction with the Canadian Society of Soil Science*

October 16–19 • San Antonio, Texas

Join colleagues from around the world for 2,500+ oral and poster presentations on the latest agronomy, crops, soils, and environmental topics.

***Online Registration  
Opens June 14***

**[www.acsmeetings.org/register](http://www.acsmeetings.org/register)**

CAMBRIDGE

JOURNALS

# Journal of Dairy Research

Published for the Institute of Food Research and the Hannah Research Institute

## Executive Editors

D. G. Chamberlain, *Hannah Research Institute, UK*

E. C. Needs, *Hannah Research Institute, UK*

*Journal of Dairy Research* publishes original scientific research on all aspects of mammary biology and dairy science including: the physiology, biochemistry, cell biology and endocrinology of lactation; animal husbandry, milk production, composition, preservation, processing and separation; biotechnology and food science; properties of milk proteins and other components; dairy products such as cheese, fermented milks and spreads; relevant studies in bacteriology, enzymology and immunology, the use of milk products in other foods; and the development of methods relevant to these subjects.

---

## Price information

is available at: <http://journals.cambridge.org/dar>

## Free email alerts

Keep up-to-date with new material – sign up at <http://journals.cambridge.org/dar-alerts>



## *Journal of Dairy Research*

is available online at:  
<http://journals.cambridge.org/dar>

## To subscribe contact Customer Services

### in Cambridge:

Phone +44 (0)1223 326070

Fax +44 (0)1223 325150

Email [journals@cambridge.org](mailto:journals@cambridge.org)

### in New York:

Phone +1 (845) 353 7500

Fax +1 (845) 353 4141

Email

[subscriptions\\_newyork@cambridge.org](mailto:subscriptions_newyork@cambridge.org)

For free online content visit:  
<http://journals.cambridge.org/dar>



CAMBRIDGE  
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

# Renewable Agriculture and Food Systems

## Editor-in-Chief

J.W. Doran, University of Nebraska, USA

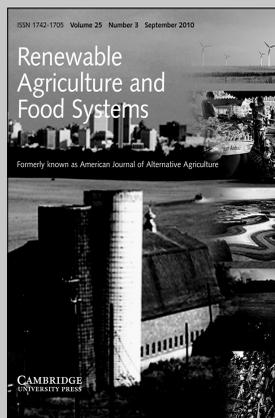
*Renewable Agriculture and Food Systems* (formerly *American Journal of Alternative Agriculture*) is a multi-disciplinary journal which focuses on the science that underpins economically, environmentally, and socially sustainable approaches to agriculture and food production. The journal publishes original research and review articles on the economic, ecological, and environmental impacts of agriculture; the effective use of renewable resources and biodiversity in agro-ecosystems; and the technological and sociological implications of sustainable food systems.

**For free online content visit:**  
<http://journals.cambridge.org/rafsample>

## Free email alerts

Keep up-to-date with new content

<http://journals.cambridge.org/raf-alerts>



## **Renewable Agriculture and Food Systems**

is available online at:  
<http://journals.cambridge.org/raf>

## **To subscribe contact Customer Services**

### **Americas:**

Phone +1 (845) 353 7500  
Fax +1 (845) 353 4141  
Email  
[subscriptions\\_newyork@cambridge.org](mailto:subscriptions_newyork@cambridge.org)

### **Rest of world:**

Phone +44 (0)1223 326070  
Fax +44 (0)1223 325150  
Email [journals@cambridge.org](mailto:journals@cambridge.org)

## **Price Information**

is available at:  
<http://journals.cambridge.org/raf>



**CAMBRIDGE**  
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

# Journal of Tropical Ecology

## Editor

Ian Turner, Winchelsea, UK

*Journal of Tropical Ecology* publishes papers in the important and now established field of the ecology of tropical regions, either arising from original research (experimental or descriptive) or forming significant reviews. First published in 1985, *Journal of Tropical Ecology* has become a major international ecological journal. With clear, stimulating and readable reports of recent research findings, the journal provides a platform for the dissemination of information on all aspects of tropical communities and ecosystems

---

## Price information

is available at: <http://journals.cambridge.org/tro>

## Free email alerts

Keep up-to-date with new material – sign up at  
<http://journals.cambridge.org/tro-alerts>



## *Journal of Tropical Ecology*

is available online at:

<http://journals.cambridge.org/tro>

## To subscribe contact Customer Services

### in Cambridge:

Phone +44 (0)1223 326070

Fax +44 (0)1223 325150

Email [journals@cambridge.org](mailto:journals@cambridge.org)

### in New York:

Phone +1 (845) 353 7500

Fax +1 (845) 353 4141

Email

[subscriptions\\_newyork@cambridge.org](mailto:subscriptions_newyork@cambridge.org)

For free online content visit:  
<http://journals.cambridge.org/tro>



CAMBRIDGE  
UNIVERSITY PRESS

# Seed Science Research

The official journal of the International Society for Seed Science (ISSS)

**Editor-in-Chief**

H.W.M. Hilhorst, Wageningen University, The Netherlands

*Seed Science Research* is an international journal publishing original and opinion papers, as well as reviews. The Journal deals primarily with the fundamentals of seed research with emphasis on the physiology, biochemistry, molecular biology and ecology of seed development, dormancy and germination.

The importance of seeds to propagation, food, biofuel and biodiversity is of increasing interest and therefore submissions on seed genetics, seed biotechnology, seed treatment and seedling establishment are especially encouraged if they are novel and 'seed driven'.

**For free online content visit:**

[http://journals.cambridge.org/ssr\\_sample](http://journals.cambridge.org/ssr_sample)

**Free email alerts**

Keep up-to-date with new content

<http://journals.cambridge.org/ssr-alerts>

**Seed Science Research**

is available online at:

<http://journals.cambridge.org/ssr>

**To subscribe contact  
Customer Services****Americas:**

Phone +1 (845) 353 7500

Fax +1 (845) 353 4141

Email

[subscriptions\\_newyork@cambridge.org](mailto:subscriptions_newyork@cambridge.org)

**Rest of world:**

Phone +44 (0)1223 326070

Fax +44 (0)1223 325150

Email [journals@cambridge.org](mailto:journals@cambridge.org)

**Price Information**

is available at:

<http://journals.cambridge.org/ssr>



**CAMBRIDGE**  
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

# The Journal of Agricultural Science

## Senior Editor (Animal papers)

Julian Wiseman, *University of Nottingham, UK*

## Senior Editor (Crops & Soils papers)

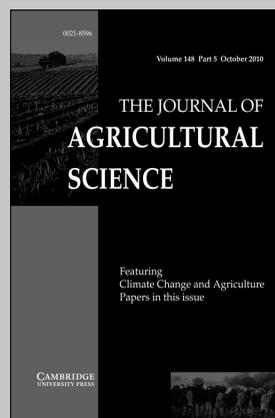
Robert E. L. Naylor, *University of Aberdeen, UK*

*The Journal of Agricultural Science* publishes papers concerned with the advance of agriculture and the use of land resources throughout the world. It publishes original scientific work related to strategic and applied studies in all aspects of agricultural science, including: crop and animal physiology, modelling of crop and animal systems, the scientific underpinning of agronomy and husbandry, engineering solutions, decision support systems, land use, environmental impacts of agriculture and forestry, impacts of climate change, rural biodiversity, experimental design and statistical analysis, the application of new analytical and study methods (including molecular studies). The journal also publishes book reviews and letters.

## Submit your research online

<http://mc.manuscriptcentral.com/jagrisci>

For free online content visit:  
<http://journals.cambridge.org/ags>



*The Journal of Agricultural Science* is available online at:  
<http://journals.cambridge.org/ags>

## To subscribe contact Customer Services

### Americas:

Phone +1 (845) 353 7500

Fax +1 (845) 353 4141

Email

[subscriptions\\_newyork@cambridge.org](mailto:subscriptions_newyork@cambridge.org)

### Rest of world:

Phone +44 (0)1223 326070

Fax +44 (0)1223 325150

Email [journals@cambridge.org](mailto:journals@cambridge.org)

## Free email alerts

Keep up-to-date with new material – sign up at

[journals.cambridge.org/ags-alerts](http://journals.cambridge.org/ags-alerts)



CAMBRIDGE  
UNIVERSITY PRESS

CAMBRIDGE

JOURNALS

## animal

Published for The Animal Consortium  
[www.animal-journal.eu](http://www.animal-journal.eu)

### Editor-in-Chief

Michel Doreau, *INRA, Clermont-Theix, France*

*animal* publishes original cutting-edge research, 'hot' topics and horizon-scanning reviews on animal-related aspects of the life sciences at the molecular, cellular, organ, whole animal and production system levels.

The main subject areas include: breeding and genetics; nutrition; physiology and functional biology of systems; behaviour, health and welfare; farming systems, environmental impact and climate change; product quality, human health and well-being.

---

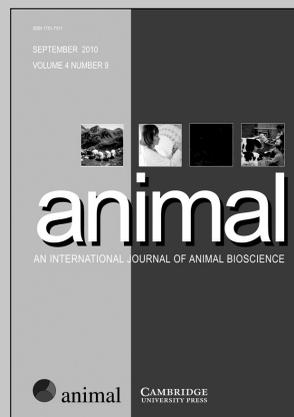
### For free online content visit:

<http://journals.cambridge.org/anmsample>

### Free email alerts

Keep up-to-date with new content

<http://journals.cambridge.org/anm-alerts>



### *animal*

is available online at:

<http://journals.cambridge.org/anm>

### To subscribe contact Customer Services

#### Americas:

Phone +1 (845) 353 7500

Fax +1 (845) 353 4141

Email

[subscriptions\\_newyork@cambridge.org](mailto:subscriptions_newyork@cambridge.org)

#### Rest of world:

Phone +44 (0)1223 326070

Fax +44 (0)1223 325150

Email [journals@cambridge.org](mailto:journals@cambridge.org)

### Price Information

is available at:

<http://journals.cambridge.org/anm>



CAMBRIDGE  
UNIVERSITY PRESS

# Bulk Article Reprints

Reprints of articles published in this journal can be purchased for use by your company or organisation. These reprints can be produced as straight article reprints or with custom designed covers and, if required, the sponsor's name printed on or inside the cover. Reprints represent a versatile sales tool for the distribution of up-to-date information on your particular areas – via your sales force, direct mail campaigns and as handouts at major conferences and commercial exhibitions. Reprints can usually be delivered to clients 2-4 weeks after the receipt of the order.

## Reprint sales in the UK, Europe and Rest of World

The Advertising Sales Team  
Cambridge University Press  
The Edinburgh Building,  
Shaftesbury Road,  
Cambridge, UK, CB2 8RU  
Tel: +44 (0) 1223 325083  
Email: [ad\\_sales@cambridge.org](mailto:ad_sales@cambridge.org)

## Reprint sales in the Americas

Journals Advertising Coordinator  
32 Avenue of the Americas,  
New York,  
NY 10013-2473, USA  
Tel: +1 (212) 337 5053 Fax: +1 (212) 337  
5959  
Email: [journals\\_advertising@cambridge.org](mailto:journals_advertising@cambridge.org)



**CAMBRIDGE**  
UNIVERSITY PRESS

# Experimental Agriculture

---

## INSTRUCTIONS TO CONTRIBUTORS

### Electronic Submission of Manuscripts

Contributions for consideration for publication should be submitted online at

<http://www.editorialmanager.com/eag>

### Editorial Policy

With a focus on the tropical and sub-tropical regions of the world, *Experimental Agriculture* publishes the results of original research on field, plantation and herbage crops grown for food or feed, or for industrial purposes, and on farming systems, including livestock and people. It reports experimental work designed to explain how crops respond to the environment in biological and physical terms, and on the social and economic issues that may influence the uptake of the results of research by policy makers and farmers, including the role of institutions and partnerships in delivering impact. The journal also publishes accounts and critical discussions of new quantitative and qualitative methods in agricultural research, and of contemporary issues arising in countries where agricultural production needs to develop rapidly. There is a regular book review section and occasional, often invited, reviews of research. Most papers are published within six months from acceptance.

The minimum standards for a paper to be considered by the Editor and the referees are set out below:

- The title page, all headings and the references must conform to the style of *Experimental Agriculture*.
- Each table and figure must be cited in the text of the typescript.
- All figures to be supplied as separate TIFF or EPS files wherever possible.
- The statistical treatment of experimental data must conform to the instructions given in Riley, J. (2001). Presentation of statistical analyses. *Experimental Agriculture* 37: 115–123.

This journal issue has been printed on FSC-certified paper and cover board. FSC is an independent, non-governmental, not-for-profit organization established to promote the responsible management of the world's forests. Please see [www.fsc.org](http://www.fsc.org) for information.

© Cambridge University Press 2011

CAMBRIDGE UNIVERSITY PRESS  
The Edinburgh Building, Cambridge CB2 8RU,  
United Kingdom  
32 Avenue of the Americas, New York, NY  
10013-2473, USA  
477 Williamstown Road, Port Melbourne, VIC  
3207, Australia  
Ruiz de Alarcón 13, 28014 Madrid, Spain  
Dock House, The Waterfront, Cape Town 8001,  
South Africa

*Printed in the United Kingdom by the  
University Press, Cambridge*

# Experimental Agriculture

## CONTENTS

- Aune, J. B. and Ousman, A.** Effect of seed priming and micro-dosing of fertilizer on sorghum and pearl millet in Western Sudan 419
- Ousman, A. and Aune, J. B.** Effect of seed priming and micro-dosing of fertilizer on groundnut, sesame and cowpea in Western Sudan 431
- Ball, B., Meharry, D., Botwright Acuña, T. L., Sharma, D. L., Hamza, M. and Wade, L. J.** Increases in seed density can improve plant stand and increase seedling vigour from small seeds of wheat (*Triticum aestivum*) 445
- Cossani, C. M., Thabet, C., Mellouli, H. J. and Slafer, G. A.** Improving wheat yields through N fertilization in Mediterranean Tunisia 459
- Adekiya, A. O., Ojeniyi, S. O. and Agbede, T. M.** Soil physical and chemical properties and cocoyam yield under different tillage systems in a tropical Alfisol 477
- Karunaratne, A. S., Azam-Ali, S. N. and Crout, N. M. J.** BAMGRO: a simple model to simulate the response of bambara groundnut to abiotic stress 489
- Karunaratne, A. S., Azam-Ali, S. N., Izzì, G. and Steduto, P.** Calibration and validation of FAO-AquaCrop model for irrigated and water deficient bambara groundnut 509
- Sharma, M. P. and Adholeya, A.** Developing prediction equations and optimizing production of three AM fungal inocula under on-farm conditions 529
- Gonzalez, C., Perez, S., Cardoso, C. E., Andrade, R. and Johnson, N.** Analysis of diffusion strategies in northeast Brazil for new cassava varieties with improved nutritional quality 539
- De Souza, P. J. De O. P., Ribeiro, A., Da Rocha, E. J. P., Botelho, M. D. N., De Sousa, A. M. L., De Souza, E. B. and Farias, J. R. B.** Impacts of soyabean expansion on the Amazon energy balance: a case study 553
- Book reviews** 569

Cambridge Journals Online

For further information about this journal  
please go to the journal website at:  
[journals.cambridge.org/eag](http://journals.cambridge.org/eag)



MIX  
Paper from  
responsible sources  
FSC® C018127

**CAMBRIDGE**  
UNIVERSITY PRESS