

COPYING

No contents may be reproduced by any means without the permission of Cambridge University Press. This journal is registered with the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, USA (www.copyright.com). Organizations in the USA who are also registered with the CCC may therefore copy material (beyond the limits permitted by sections 107 and 108 of US copyright law) subject to payment to CCC. This consent does not extend to multiple copying for promotional or commercial purposes. *ISI Tear Sheet Service*, 3501 Market Street, Philadelphia, PA 19106, USA, is authorized to supply single copies of separate articles for private use only. Organizations authorized by the Copyright Licensing Agency may also copy material subject to the usual conditions. *For all other use*, permission should be sought from Cambridge or the American Branch of Cambridge University Press.

INTERNET ACCESS

This journal is included in the Cambridge Journals Online service which can be found at <http://www.journals.cambridge.org> For further information on other Press titles access <http://www.cambridge.org>

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 for information.

CAMBRIDGE UNIVERSITY PRESS

The Edinburgh Building, Shaftesbury Road, 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

THE JOURNAL OF AGRICULTURAL SCIENCE

CONTENTS

MODELLING ANIMAL SYSTEMS PAPERS

- A. A. STEWART, S. M. LITTLE, K. H. OMINSKI, K. M. WITTENBERG and H. H. JANZEN Evaluating greenhouse gas mitigation practices in livestock systems: an illustration of a whole-farm approach 367
- H. DARMANI KUHL, E. KEBREAB, S. LOPEZ and J. FRANCE Application of the law of diminishing returns to estimate maintenance requirement for amino acids and their efficiency of utilization for accretion in young chicks 383
- R. S. DIAS, S. LOPEZ, T. SILVA, R. M. P. PARDO, J. C. SILVA FILHO, D. M. S. S. VITTI, E. KEBREAB and J. FRANCE Rumen phosphorus metabolism in sheep 391

CROPS AND SOILS PAPERS

- A. OSWALD, S. DE HAAN, J. SANCHEZ and R. CCANTO The complexity of simple tillage systems 399
- G. DI GIORGIO, D. GRAZIANO, P. RUISI, G. AMATO and D. GIAMBALVO Pheno-morphological and agronomic diversity among *Scorpiurus muricatus* (Fabaceae) natural populations collected in Sicily 411
- Z. C. ZHANG, Y. G. XUE, Z. Q. WANG, J. C. YANG and J. H. ZHANG The relationship of grain filling with abscisic acid and ethylene under non-flooded mulching cultivation 423
- Z. DAL, Y. YIN and Z. WANG Activities of key enzymes involved in starch synthesis in grains of wheat under different irrigation patterns 437
- S. D. KOUTROUBAS, M. PAPAGEORGIOU and S. FOTIADIS Growth and nitrogen dynamics of spring chickpea genotypes in a Mediterranean-type climate 445
- H. GULEN, A. CANSEV and A. ERIS Cold hardiness of olive (*Olea europaea* L.) cultivars in cold-acclimated and non-acclimated stages: seasonal alteration of soluble sugars and phospholipids 459
- E. I. HAMADINA, P. Q. CRAUFURD and R. ASIYEDU Flowering intensity in white yam (*Dioscorea rotundata*) 469
- K. SAARIJÄRVI and P. VIRKAJÄRVI Nitrogen dynamics of cattle dung and urine patches on intensively managed boreal pasture 479

ANIMAL PAPER

- B. A. MCGREGOR and K. L. BUTLER Variation of mohair staple length across Angora goat fleeces: implications for animal selection and fleece evaluation 493

BOOK REVIEWS 503

VIEWPOINT 505

CORRIGENDUM 507

FORTHCOMING EVENTS 509

Journal of Agricultural Science now accepts submissions via Manuscript Central.
Go to <http://mc.manuscriptcentral.com/jagricsci>

Cambridge Journals Online

For further information about this journal
please go to the journal website at:
journals.cambridge.org/ags



Mixed Sources

Product group from well-managed
forests and other controlled sources
www.fsc.org Cert no. SA-COC-1527
© 1996 Forest Stewardship Council

CAMBRIDGE
UNIVERSITY PRESS