The Journal of Agricultural Science

SENIOR EDITOR
W. J. Whittington

EDITORIAL ASSISTANT
N. M. Boston

Journal of Agricultural Science, University of Nottingham, Faculty of Agricultural and Food Sciences, Sutton Bonington Campus, Loughborough, Leicestershire LE12 5RD, UK

EDITORIAL BOARD

E. J. Allen University of Cambridge, UK

B. W. Bache

University of Cambridge, UK

J. Davis

Plant Breeding International, Cambridge, UK

W. Dav

Silsoe Research Institute, UK

R. H. Ellis

University of Reading, UK

M. F. Fuller

Rowett Research Institute, Aberdeen, UK

K. Giller

Wye College, UK

J. C. Gower

University of Leiden, The Netherlands J. R. Hillman

Scottish Crop Research Institute, Dundee, UK

A. E. Johnston

AFRC Institute of Arable Crops Research, Rothamsted, UK

R. N. B. Kay

Aberdeen, UK

C. N. Law

Cambridge Laboratory, JI Centre for Plant Science Research, Norwich, UK

R. W. Matthewman

Centre for Tropical Veterinary Medicine, University of Edinburgh, UK

T. R. Morris

University of Reading, UK

J. B. Owen

University College of North Wales, Bangor, UK C. J. Pollock

Welsh Plant Breeding Station, Aberystwyth, UK

D. A. Preece

University of Kent, Canterbury, UK

T. J. Riggs

Horticulture Research International,

Wellesbourne, UK

P. E. Russell

Chesterford Park Research Station, Saffron Walden, UK

R. K. Scott

University of Nottingham, Sutton Bonington, UK

D. E. Walters

University of Cambridge, UK

D. Wilman

University College of Wales, Aberystwyth, UK

INTERNATIONAL CONSULTANTS

P. Day Rutgers University of New Jersey, New Brunswick, USA D. B. Lindsay
Tropical Cattle Research
Centre, Rockhampton,
Australia

S. K. Sinha

Indian Agricultural Research Institute, New Delhi, India G. M. O. Maloiy University of Nairobi, Kenya

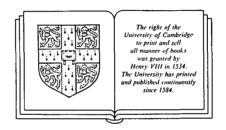
VOLUME 119

CAMBRIDGE UNIVERSITY PRESS

Cambridge

New York Port Chester Melbourne Sydney

1992



PUBLISHED BY THE PRESS SYNDICATE OF THE UNIVERSITY OF CAMBRIDGE

The Pitt Building, Trumpington Street, Cambridge CB2 1RP 40 West 20th Street, New York, NY 10011-4211, USA 10 Stamford Road, Oakleigh, Victoria 3166, Australia

© Cambridge University Press 1992

Printed in Great Britain by the University Press, Cambridge

CONTENTS

PART I (AUGUST 1992)

Instructions to Authors	PAGE
CROPS AND SOILS McMASTER, G.S., WILHELM, W.W. AND MORGAN, J.A. Simulating winter wheat shoot apex	
phenology	1
DANSO, S. K. A. AND PAPASTYLIANOU, I. Evaluation of the nitrogen contribution of legumes to subsequent cereals	13
JENKYN, J. F., GUTTERIDGE, R. J. AND TODD, A. D. Effects of sowing winter barley on different dates in autumn on the severity of take-all (Gaeumannomyces graminis var. tritici) in those and the	19
subsequent crops VADIVELOO, J. Varietal differences in the chemical composition and <i>in vitro</i> digestibility of rice straw	27
WURR, D. C. E., FELLOWS, J. R. AND ALLEN, E. J. Determination of optimum tuber planting density	
in the potato varieties Pentland Squire, Cara, Estima, Maris Piper and King Edward	35
MIDMORE, D. J. AND ROCA, J. Influence of production and storage conditions on subsequent growth and tuber yield of potato (Solanum spp.) in the hot tropics	45
BENJAMIN, L. R. AND SUTHERLAND, R. A. Control of mean root weight in carrots (<i>Daucus carota</i>)	43
by varying within- and between-row spacing	59
CLIFFORD, P. E., PENTLAND, B. S. AND BAYLIS, A.D. Effects of growth regulators on reproductive abscission in faba bean (<i>Vicia faba</i> cv. Troy)	71
PAPANICOLAOU, E. P., APOSTOLAKIS, C. G., SKARLOU, V., NOBELI, C. AND KRITIDIS, P. Ratios of plant to soil concentrations of strontium-85 and their relation to exchangeable bases for soils	70
and crops of Greece PAPANICOLAOU, E. P., APOSTOLAKIS, C. G., SKARLOU, V., NOBELI, C. AND KRITIDIS, P. Ratios	79
of strontium-85 to cations for crops and soils of Greece	83
NGUYEN, M. L. AND GOH, K. M. Nutrient cycling and losses based on a mass-balance model in grazed pastures receiving long-term superphosphate applications in New Zealand. 1. Phosphorus	89
NGUYEN, M. L. AND GOH, K. M. Nutrient cycling and losses based on a mass-balance model in grazed pastures receiving long-term superphosphate applications in New Zealand. 2. Sulphur	107
ABSTRACTS OSUAGWUH, A. I. A. Effects of strategic feed supplementation during pregnancy on birthweight and	
perinatal survival of West African Dwarf kids	123
BASSETT, J. M. Effects of additional lighting to provide a summer photoperiod for winter-housed pregnant ewes on plasma prolactin, udder development and lamb birthweight	127
ANIMALS	
Proceedings of the Twenty-Second Meeting of the AFRC Modellers' Group	137
BOOK REVIEWS	143

PART 2 (OCTOBER 1992)

Instructions to Authors	PAGE
REVIEW OWEN, J. B. Genetic aspects of appetite and feed choice in animals	151
CROPS AND SOILS	
McDOUGALL, G. J., GOODMAN, B. A. AND CHUDEK, J. A. Nuclear magnetic resonance (NMR) micro-imaging of stems of <i>Linum usitatissimum</i>	157
ESECHIE, H. A. Effect of planting density on growth and yield of irrigated maize (Zea mays) in the Batinah Coast region of Oman	165
SHARMA, A. R. Effect of varying seed rates and transplanting clonal tillers on the performance of rice under intermediate deepwater conditions (0–80 cm)	171
NEWTON, P. C. D. AND HAY, M. J. M. Technique for evaluating the potential for growth of shoot and root buds of white clover (<i>Trifolium repens</i>)	179
KALRA, A., RISHI, N., GROVER, R. K. AND PAULKHURANA, S. M. Influence of different factors on the reduced susceptibility of potato virus X infected potato leaves to <i>Alternaria solani</i>	185
WHITEHEAD, A. G. AND NICHOLS, A. J. F. Control of potato golden cyst-nematode, Globodera rostochiensis, by nematicides applied once or twice in two rotations	191
DIXON, F. L. AND LUTMAN, P. J. W. Effects of drilling date on the growth and yield of sunflower (Helianthus annuus) in the UK	197
GOMEZ-CABRERA, A., GARRIDO, A., GUERRERO, J. E. AND ORTIZ, V. Nutritive value of the olive leaf: effects of cultivar, season of harvesting and system of drying	205
SILIM, S. N., HEBBLETHWAITE, P. D. AND JONES, C. Irrigation and water use in leafless peas (<i>Pisum sativum</i>)	211
WATSON, C. J., STEVENS, R. J., LAUGHLIN, R. J. AND POLAND, P. Volatilization of ammonia from solid and liquid urea surface-applied to perennial ryegrass	223
ANIMALS	
KENNEDY, P. M., McSWEENEY, C. S., FFOULKES, D., JOHN, A., SCHLINK, A. C., LEFEUVRE, R. P. AND KERR, J. D. Intake and digestion in swamp buffaloes and cattle. 1. The digestion of rice straw (Oryza sativa)	227
KENNEDY, P. M., BONIFACE, A. N., LIANG, Z. J., MULLER, D. AND MURRAY, R. M. Intake and digestion in swamp buffaloes and cattle. 2. The comparative response to urea supplements in	221
animals fed tropical grasses	243
ABDULLAH, N., NOLAN, J. V., MAHYUDDIN, M. AND JALALUDIN, S. Digestion and nitrogen conservation in cattle and buffaloes given rice straw with or without molasses	255
TERRILL, T. H., DOUGLAS, G. B., FOOTE, A. G., PURCHAS, R. W., WILSON, G. F. AND BARRY, T. N. Effect of condensed tannins upon body growth, wool growth and rumen metabolism in sheep	
grazing sulla (<i>Hedysarum coronarium</i>) and perennial pasture NEWMAN, J. A., PARSONS, A. J. AND HARVEY, A. Not all sheep prefer clover: diet selection revisited	265 275
The matrice, v. a., 1 and one, a. J. and make 11, a. not all shoep profes diover, diet selection revisited	
BOOK REVIEWS	285

PART 3 (DECEMBER 1992)

Instructions to Authors	PAGE
REVIEW JONES, H. G. AND CORLETT, J. E. Current topics in drought physiology	291
CROPS AND SOILS ROY, S. K. AND BISWAS, P. K. Effect of plant density and detopping following silking on cob growth,	
fodder and grain yield of maize (Zea mays) JENKYN, J. F., CARTER, N., DARBY, R. J., GUTTERIDGE, R. J., MULLEN, L. A., PLUMB, R. T., ROSS, G. J. S., TODD, A. D., WIDDOWSON, F. V. AND WOOD, D. W. Effects of seven factors on the growth	297
and yield of winter barley grown as a third consecutive take-all susceptible crop and of growing the barley after oats or a fallow	303
CUTTLE, S. P., HALLARD, M., DANIEL, G. AND SCURLOCK, R. V. Nitrate leaching from sheep-grazed grass/clover and fertilized grass pastures	335
NEWTON, P. C. D., HAY, M. J. M., THOMAS, V. J. AND DICK, H. B. Viability of axillary buds of white clover (<i>Trifolium repens</i>) in grazed pasture	345
O'BRIEN, P. J. AND ALLEN, E. J. Effects of seed crop husbandry, seed source, seed tuber weight and seed rate on the growth of ware potato crops	355
DUA, R. P. Differential response of chickpea (Cicer arietinum) genotypes to salinity	367
LLOYD, A. Urea as a nitrogen fertilizer for grass cut for silage STEVENS, R. J., LAUGHLIN, R. J. AND FROST, J. P. Effects of separation, dilution, washing and	373
acidification on ammonia volatilization from surface-applied cattle slurry STEVENS, R. J., LAUGHLIN, R. J., FROST, J. P. AND ANDERSON, R. Evaluation of separation plus	383
acidification with nitric acid and separation plus dilution to make cattle slurry a balanced, efficient fertilizer for grass and silage	391
ANIMALS	
COATES, D. B. AND TERNOUTH, J. H. Phosphorus kinetics of cattle grazing tropical pastures and implications for the estimation of their phosphorus requirements	401
JAAKKOLA, S. AND HUHTANEN, P. Rumen fermentation and microbial protein synthesis in cattle given intraruminal infusions of lactic acid with a grass silage based diet	411
DEGEN, A. A. AND KAM, M. Body mass loss and body fluid shifts during dehydration in Dorper sheep NEWBOLD, C. J., FRUMHOLTZ, P. P. AND WALLACE, R. J. Influence of Aspergillus oryzae fermentation extract on rumen fermentation and blood constituents in sheep given diets of grass	419
hay and barley	423
BOOK REVIEWS	429
INDEX	435

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, 27 Congress Street, Salem, MA 01970. Organizations in the USA who are also registered with the C.C.C. may therefore copy material (beyond the limits permitted by sections 107 and 108 of US copyright law) subject to payment to C.C.C. of the per-copy fee of \$5.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 0021–8596/92 \$5.00+0.00.

ISI Tear Sheet Service. 3501 Market Street, Philadelphia, PA 19106, USA, is authorized to supply single copies of separate articles for private use only.

For all other use, permission should be sought from Cambridge or the American Branch of Cambridge University Press.

CAMBRIDGE UNIVERSITY PRESS

The Pitt Building, Trumpington Street, Cambridge CB2 1RP 40 West 20th Street, New York, NY 10011-4211, USA 10 Stamford Road, Oakleigh, Victoria 3166, Australia

Printed in Great Britain by the University Press, Cambridge

ISSN: 0021-8596

The Journal of Agricultural Science

VOLUME 119 PART 3 DECEMBER 1992

CONTENTS	
Instructions to Authors	PAGE
REVIEW JONES, H. G. and CORLETT, J. E. Current topics in drought physiology	291
CROPS AND SOILS ROY, S. K. and BISWAS, P. K. Effect of plant density and detopping following silking on cob growth, fodder and grain yield of maize (Zea mays) JENKYN, J. F., CARTER, N., DARBY, R. J., GUTTERIDGE, R. J., MULLEN, L. A., PLUMB, R. T., ROSS, G. J. S., TODD, A. D., WIDDOWSON, F. V. and WOOD, D. W.	297
Effects of seven factors on the growth and yield of winter barley grown as a third consecutive take-all susceptible crop and of growing the barley after oats or a fallow	303
CUTTLE, S. P., HALLARD, M., DANIEL, G. and SCURLOCK, R. V. Nitrate leaching from sheep-grazed grass/clover and fertilized grass pastures NEWTON, P. C. D., HAY, M. J. M., THOMAS, V. J. and DICK, H. B. Viability of axillary	335
buds of white clover (<i>Trifolium repens</i>) in grazed pasture O'BRIEN, P. J. and Allen, E. J. Effects of seed crop husbandry, seed source, seed tuber	345
weight and seed rate on the growth of ware potato crops DUA, R. P. Differential response of chickpea (<i>Cicer arietinum</i>) genotypes to salinity LLOYD, A. Urea as a nitrogen fertilizer for grass cut for silage	355 367 373
STEVENS, R. J., LAUGHLIN, R. J. and FROST, J. P. Effects of separation, dilution, washing and acidification on ammonia volatilization from surface-applied cattle slurry	383
STEVENS, R. J., LAUGHLIN, R. J., FROST, J. P. and ANDERSON, R. Evaluation of separation plus acidification with nitric acid and separation plus dilution to make cattle slurry a balanced, efficient fertilizer for grass and silage	391
ANIMALS	
COATES, D. B. and TERNOUTH, J. H. Phosphorus kinetics of cattle grazing tropical pastures and implications for the estimation of their phosphorus requirements JAAKKOLA, S. and HUHTANEN, P. Rumen fermentation and microbial protein	401
synthesis in cattle given intraruminal infusions of lactic acid with a grass silage based diet	411
DEGEN, A. A. and KAM, M. Body mass loss and body fluid shifts during dehydration in Dorper sheep	419
NEWBOLD, C. J., FRUMHOLTZ, P. P. and WALLACE, R. J. Influence of Aspergillus oryzae fermentation extract on rumen fermentation and blood constituents in sheep	
given diets of grass hay and barley	423
BOOK REVIEWS	429
INDEX	435