

EXPERIMENTAL AGRICULTURE

VOLUME 25 1989

Editor

DR F. G. H. LUPTON

Managing Editor

DR SUSAN CARR

Book Review Editor

PROFESSOR M. K. V. CARR

Editorial Board

DR M. H. ARNOLD (*Chairman*)

DR M. G. R. CANNELL

PROFESSOR I. D. CARRUTHERS

DR R. H. V. CORLEY

DR J. C. DAVIES

DR D. J. GREENLAND

DR P. J. GREGORY

PROFESSOR J. M. HIRST

PROFESSOR J. P. HUDSON

DR N. W. HUSSEY

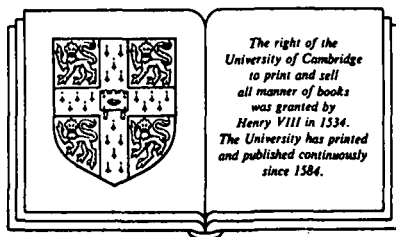
PROFESSOR J. L. MONTEITH

PROFESSOR N. W. SIMMONDS

DR R. D. STERN

DR R. J. SUMMERFIELD

PROFESSOR R. W. WILLEY



CAMBRIDGE UNIVERSITY PRESS

Cambridge

New York Port Chester Melbourne Sydney

PUBLISHED BY
THE PRESS SYNDICATE OF THE UNIVERSITY OF CAMBRIDGE

The Pitt Building, Trumpington Street, Cambridge CB2 1RP

40 West 20th Street, New York, N.Y. 10011, USA

10 Stamford Road, Oakleigh, Melbourne 3166, Australia

©Cambridge University Press 1989

Printed in Great Britain at the University Press, Cambridge

CONTENTS

Part 1 (January 1989)

P. A. Francis and A. N. Atta-Krah: Sociological and Ecological Factors in Technology Adoption: Fodder Trees in Southeast Nigeria (Farming Systems Series - Number 18)	1
D. J. Finney: Was This in Your Statistics Textbook? IV. Frequency Data	11
Mysore N. Shashirekha and Pattisapu Narasimham: Pre-planting Treatment of Seed Potato Tuber Pieces to Break Dormancy, Control Tuber Piece Decay and Improve Yield	27
M. S. El-Shazly and I. B. Warboys: The Use of Transparent Flexible Tubes for Studying the Root Extension and Elongation of Beans (<i>Vicia faba</i>)	35
R. Pundarikakshudu: Studies of the Phosphate Dynamics in a Vertisol in Relation to the Yield and Nutrient Uptake of Rainfed Cotton	39
V. N. Tiwari, L. K. Lehri and A. N. Pathak: Effect of Inoculating Crops with Phospho-microbes	47
R. C. Nageswara Rao, L. P. Simmonds, S. N. Azam-Ali and J. H. Williams: Population, Growth and Water Use of Groundnut Maintained on Stored Water. I. Root and Shoot Growth	51
L. P. Simmonds and J. H. Williams: Population, Growth and Water Use of Groundnut Maintained on Stored Water. II. Transpiration and Evaporation from Soil	63
S. N. Azam-Ali, L. P. Simmonds, R. C. Nageswara Rao and J. H. Williams: Population, Growth and Water Use of Groundnut Maintained on Stored Water. III. Dry Matter, Water Use and Light Interception	77
L. P. Simmonds and S. N. Azam-Ali: Population, Growth and Water Use of Groundnut Maintained on Stored Water. IV. The Influence of Population on Water Supply and Demand	87
Michael J. Potts and Evariste Biranguza: The Evaluation of Alternative Fodder Crops under African Highland Conditions	99
M. J. Potts, E. Biranguza and C. Bweyo: Evaluation of Alternative Legumes for Green Manure and Grain under African Highland Conditions	109
R. J. Summerfield, F. J. Muehlbauer and R. W. Short: Controlled Environments as an Adjunct to Field Research on Lentils (<i>Lens culinaris</i>). IV. Cultivar Responses to Above- and Below-average Temperatures during Vegetative Growth	119

Book Reviews	135
Notes for Contributors	141

Part 2 (April 1989)

A. S. R. Juo: New Farming Systems Development in the Wetter Tropics (Farming Systems Series - Number 19)	145
D. J. Finney: Was This in Your Statistics Textbook? V. Transformation of Data	165
Apurba Sarkar: Effect of Coated and Uncoated Urea on the Carry-over of Nitrogen from Jute to Paddy Rice in the Humid Sub-tropics	177
B. A. Kalu, J. C. Norman, U. R. Pal and D. K. Adedzwa: Seed Yam Multiplication by the Mini-sett Technique in Three Yam Species in a Tropical Guinea Savanna Location	181
Aliza Benzioni, David Mills and Meir Forti: Effect of Irrigation Regimes on the Water Status, Vegetative Growth and Rubber Production of Guayule Plants	189
M. S. Bajwa and A. S. Josan: Effects of Alternating Sodic and Non-sodic Irrigations on the Build-up of Sodium in the Soil and on Crop Yields in Northern India	199
A. Olu Obi: Long-term Effects of the Continuous Cultivation of a Tropical Ultisol in Southwestern Nigeria	207
J. McIntire and L. K. Fussell: On-farm Experiments with Millet in Niger: Crop Establishment, Yield Loss Factors and Economic Analysis	217
Gordon Browning and Andrew Dorward: A Survey Methodology for Assessing Yield Potential and Coffee Berry Losses in Peasant Coffee	235
J. R. Pardales Jr and D. V. Belmonte Jr: Comparative Patterns of Dry Matter Production in Bushy and Spreading Sweet Potato Cultivars	243
B. N. Sponchiado, J. W. White, J. A. Castillo and P. G. Jones: Root Growth of Four Common Bean Cultivars in Relation to Drought Tolerance in Environments with Contrasting Soil Types	249
I. T. Jolliffe, O. B. Allen and B. R. Christie: Comparison of Variety Means Using Cluster Analysis and Dendrograms	259
Book Reviews	271

Part 3 (July 1989)

Wolfgang Bayer and Ann Waters-Bayer: Adapting Tropical Pasture Research to the Production System: from Australian Ranching to African Pastoralism (Farming Systems Series - Number 20)	277
---	-----

D. J. Finney: Was This in Your Statistics Textbook? VI. Regression and Covariance	291
M. G. R. Cannell: Food Crop Potential of Tropical Trees	313
R. J. Summerfield, F. J. Muehlbauer and R. W. Short: Controlled Environments as an Adjunct to Field Research on Lentils (<i>Lens culinaris</i>). V. Cultivar Responses to Above- and Below-average Temperatures during the Reproductive Period	327
Tom I. Ofuya: Effect of Weeds on Pre-flowering Insect Infestation and Seed Yield of Cowpea (<i>Vigna unguiculata</i>) in a Rainforest Area of Nigeria	343
S. S. Parihar and R. S. Tripathi: Dry Matter, Nodulation and Nutrient Uptake in Chickpea (<i>Cicer arietinum</i>) as Influenced by Irrigation and Phosphorus	349
D. MacColl: Studies on Maize (<i>Zea mays</i>) at Bunda, Malawi. I. Yield in Relation to Rainfall	357
D. MacColl: Studies on Maize (<i>Zea mays</i>) at Bunda, Malawi. II. Yield in Short Rotations with Legumes	367
A. Wahbi and P. J. Gregory: Genotypic Differences in Root and Shoot Growth of Barley (<i>Hordeum vulgare</i>). I. Glasshouse Studies of Young Plants and Effects of Rooting Medium	375
A. Wahbi and P. J. Gregory: Genotypic Differences in Root and Shoot Growth of Barley (<i>Hordeum vulgare</i>). II. Field Studies of Growth and Water Use of Crops Grown in Northern Syria	389
Gurbachan Singh, I. P. Abrol and S. S. Cheema: Effects of Spacing and Lopping on a Mesquite (<i>Prosopis juliflora</i>)-Karnal Grass (<i>Leptochloa fusca</i>) Agroforestry System on an Alkaline Soil	401
A. M. Ali: Effects of Planting on Different Sides of the Ridge on Emergence, Plant Growth, Yield and Quality of Potato (<i>Solanum tuberosum</i>) in the Sudan	409
Book Reviews	417

Part 4 (October 1989)

Sam Fujisaka: A Method for Farmer-participatory Research and Technology Transfer: Upland Soil Conservation in the Philippines (Farming Systems Series - Number 21)	423
Derek Byerlee, Muzaffar Iqbal and K. S. Fischer: Quantifying and Valuing the Joint Production of Grain and Fodder from Maize Fields: Evidence from Northern Pakistan	435
R. A. Date and D. Ratcliff: Growth, Nodulation and Nitrogen Fixation in	

<i>Stylosanthes</i> : Effect of Different Root Temperatures at Two Shoot Temperatures	447
R. A. Date : Growth, Nodulation and Nitrogen Fixation in <i>Stylosanthes</i> : Effect of Different Day/Night Root Temperatures	461
B. A. Oyejola and R. Mead : On the Standard Errors and Other Moments for Ratios of Biological Measurements	473
A. L. Singh and P. K. Singh : A Comparison of the Use of Azolla and Blue-green Algal Bio-fertilizers with Green Manuring, Organic Manuring and Urea in Transplanted and Direct-seeded Rice	485
S. K. Yau, M. S. Mekni and I. Naji : Effects of Green-stage Grazing on Rainfed Barley in Northern Syria. I. Tiller Production and Other Agronomic Characters	493
S. K. Yau and M. S. Mekni : Effects of Green-stage Grazing on Rainfed Barley in Northern Syria. II. Yield and Economic Returns	501
R. J. Lawn : Agronomic and Physiological Constraints to the Productivity of Tropical Grain Legumes and Prospects for Improvement	509
J. T. Russell and R. M. Caldwell : Effects of Component Densities and Nitrogen Fertilization on Efficiency and Yield of a Maize/Soyabean Intercrop	529
Virendra Singh, Y. P. Joshi and S. S. Verma : Studies on the Productivity of Egyptian Clover and Oats under Intercropping	541
William Stephens and M. K. V. Carr : A Water Stress Index for Tea (<i>Camellia sinensis</i>)	545
Book Reviews	559
Index	565

Continued from inside front cover

Preparation and submission of manuscripts. Detailed instructions on the preparation of manuscripts are printed at the back of the first number of each volume of this journal.

Potential contributors are asked to give careful attention to these instructions. This will greatly assist the editors and thus speed the processing of their contributions.

Copying: This journal is registered with the Copyright Clearance Center, 27 Congress St., Salem, Mass. 01970. Organizations in the USA who are also registered with 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 0014-4797/89 \$5.00 + .00.

ISI Tear Sheet Service, 3501 Market Street, Philadelphia, Pennsylvania 19104, 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.

EXPERIMENTAL AGRICULTURE

Volume 25, Number 4 October 1989

CONTENTS

Sam Fujisaka: A Method for Farmer-participatory Research and Technology Transfer: Upland Soil Conservation in the Philippines (Farming Systems Series – Number 21)	423
Derek Byerlee, Muzaffar Iqbal and K. S. Fischer: Quantifying and Valuing the Joint Production of Grain and Fodder from Maize Fields: Evidence from Northern Pakistan	435
R. A. Date and D. Ratcliff: Growth, Nodulation and Nitrogen Fixation in <i>Stylosanthes</i> : Effect of Different Root Temperatures at Two Shoot Temperatures	447
R. A. Date: Growth, Nodulation and Nitrogen Fixation in <i>Stylosanthes</i> : Effect of Different Day/Night Root Temperatures	461
B. A. Oyejola and R. Mead: On the Standard Errors and Other Moments for Ratios of Biological Measurements	473
A. L. Singh and P. K. Singh: A Comparison of the Use of Azolla and Blue-green Algal Bio-fertilizers with Green Manuring, Organic Manuring and Urea in Transplanted and Direct-seeded Rice	485
S. K. Yau, M. S. Mekni and I. Naji: Effects of Green-stage Grazing on Rainfed Barley in Northern Syria. I. Tiller Production and Other Agronomic Characters	493
S. K. Yau and M. S. Mekni: Effects of Green-stage Grazing on Rainfed Barley in Northern Syria. II. Yield and Economic Returns	501
R. J. Lawn: Agronomic and Physiological Constraints to the Productivity of Tropical Grain Legumes and Prospects for Improvement	509
J. T. Russell and R. M. Caldwell: Effects of Component Densities and Nitrogen Fertilization on Efficiency and Yield of a Maize/Soyabean Intercrop	529
Virendra Singh, Y. P. Joshi and S. S. Verma: Studies on the Productivity of Egyptian Clover and Oats under Intercropping	541
William Stephens and M. K. V. Carr: A Water Stress Index for Tea (<i>Camellia sinensis</i>)	545
Book Reviews	559
Index	565

CAMBRIDGE UNIVERSITY PRESS

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

Printed in Great Britain at the University Press, Cambridge