CORRIGENDUM

Comparisons between the establishment, growth and yield of winter wheat on three clay soils, in experiments testing nitrogen fertilizer in combination with aphicide and fungicides, from 1980 to 1982

R. J. DARBY, F. V. WIDDOWSON AND M. V. HEWITT

J. agric. Sci., Camb. (1984), 103, 595-611

The authors regret the following error:

In Table 9, page 602, the yield at Hexton with 68 kg nitrogen/ha, and without aphicide and fungicide sprays, should be 9.15, and not 8.15 as printed.

THE JOURNAL OF AGRICULTURAL SCIENCE

EDITED BY

R. B. AUSTIN, D.SC., Plant Breeding Institute, Cambridge

B. W. BACHE, M.A., PH.D., C.CHEM., F.R.S.C., Department of Applied Biology, Cambridge

PROF. SIR J. W. L. BEAMENT, SC.D., F.R.S., Department of Applied Biology, Cambridge

G. D. H. BELL, C.B.E., PH.D., SC.D.(h.c.), D.SC.(h.c.), F.R.S., 6 Worts Causeway, Cambridge

SIR K. L. BLAXTER, PH.D., N.D.A. (HONS.), D.SC., F.R.S.E., F.R.S., Rowett Research Institute, Bucksburn, Aberdeen

PROF. A. D. CARE, D.SC., M.R.C.V.S., Department of Animal Physiology and Nutrition, Leeds

J. A. CURRIE, PH.D., 6 Falconers Field, Harpenden

S. K. ELTRINGHAM, PH.D., Department of Applied Biology, Cambridge

- PROF. J. L. JINKS, C.B.E., D.SC., F.I.BIOL., F.R.S., Agricultural and Food Research Council, 160 Great Portland Street, London W1N 6DT
- D. B. LINDSAY, B.SC., M.A., D.PHIL., Agricultural and Food Research Council, Institute of Animal Physiology, Babraham, Cambridge

PROF. J. B. OWEN, B.SC., PH.D., M.A., Department of Agriculture, Bangor

W. J. RIDGMAN, M.A., Department of Applied Biology, Cambridge

PROF. E. W. RUSSELL, C.M.G., D.SC., F.INST.P., Department of Soil Science, University of Reading

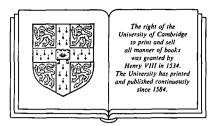
F. YATES, C.B.E., SC.D., F.R.S., Rothamsted Experimental Station, Harpenden

VOLUME 104

CAMBRIDGE UNIVERSITY PRESS CAMBRIDGE

LONDON NEW YORK NEW ROCHELLE MELBOURNE SYDNEY

1985



PUBLISHED BY

THE PRESS SYNDICATE OF THE UNIVERSITY OF CAMBRIDGE

The Pitt Building, Trumpington Street, Cambridge CB2 1RP 32 East 57th Street, New York, NY 10022, USA 10 Stamford Road, Oakleigh, Melbourne 3166, Australia

© Cambridge University Press 1985

Printed in Great Britain by the University Press, Cambridge

Contents

P.	ART	1 (FEBRUARY	1985)	j.
----	-----	-----	----------	-------	----

	PAGE
KENNEDY, S. J., GARDINER, S. J., GILLILAND, T. J. and CAMLIN, M. S. The use of electro- phoretic techniques to distinguish perennial ryegrass cultivars when sown in mixtures.	1
TUDOR, G. D., MCGUIGAN, K. R. and NORTON, B. W. The effects of three protein sources on the growth and feed utilization of cattle fed cassava	11
DAHIYA, I. S., GREWAL, K. S., ANLAUF, R. and RICHTER, J. Desalinization of a salt- affected soil in plots of various sizes under two modes of water application	19
ABOUL-NAGA, A. M., ABOUL-ELA, M. B. and HASSAN, F. Oestrous activity of Suffolk, Mutton Merino and their crosses with subtropical Ossimi sheep	27
SILIM, S. N., HEBBLETHWAITE, P. D. and HEATH, M. C. Comparison of the effects of autumn and spring sowing date on growth and yield of combining peas (<i>Pisum sativum</i> L.) .	35
ASIEDU, F. H. K. and KARIKARI, S. K. Energy and protein content and intake by stall-fed lambs of pure and mixed swards of <i>Centrosema pubescens</i> Benth., <i>Pueraria phaseoloides</i> Benth. and <i>Brachiaria mutica</i> Stapf. under a mango plantation	47
BA-ANGOOD, S. A. and HUBAISHAN, M. A. Effect of sowing date and cultivars of sorghum on infestation by Atherigona yorki, Sesamia cretica and Chilo partellus in Yemen	61
PRAKASA RAO, E. V. S., SINGH, MUNNU, GANESHA RAO, R. S. and RAJESWARA RAO, B. R. Effect of plant spacing and application of nitrogen fertilizer on herb and essential oil yields of palmarosa (<i>Cymbopogon martini</i> Stapf. var. motia)	67
DURRANT, M. J., BROWN, S. J. and BOULD, A. The assessment of the quality of sugar-beet seed	71
LARGE, R. V., COBBY, J. M. and BAKER, R. D. The design and conduct of experiments to measure animal and herbage production responses to fertilizer nitrogen under cutting and grazing managements	85
NARWAL, S. S. and MALIK, D. S. Response of sunflower cultivars to plant density and nitrogen	95
SEKHON, H. S. and SINGH, M. Effect of growth regulators and nitrogen on the growth, number and size of seed tubers and yield of potatoes	99
COLBORNE, G. J. N. and STAINES, S. J. Soil erosion in south Somerset	107
WILLIAMS, P. C. and CORDEIRO, HELENA M. Effect of calibration practice on correction of errors induced in near-infrared protein testing of hard red spring wheat by growing location and season	113
CHANEY, K., HODGSON, D. R. and BRAIM, M. A. The effects of direct drilling, shallow cultiva- tion and ploughing on some soil physical properties in a long-term experiment on spring	
barley	125 135
MARSHALL, C. and BOYD, W. J. R. A comparison of the growth and development of biculm wheat lines with freely tillering cultivars	163
SMITH, M. A. and WHITEMAN, P. C. Animal production from rotationally-grazed natural and sown pastures under coconuts at three stocking rates in the Solomon Islands	173

Contents

	PAGE
SMITH, M. A. and WHITEMAN, P. C. Grazing studies on the Guadalcanal Plains, Solomon Islands. 3. Comparison of existing mixtures with koronivia (<i>Brachiara humidicola</i>) and with natural pastures	181
GUTTERIDGE, R. C. The productivity of native grasslands oversown with legumes and grazed at five stocking rates in north-east Thailand	191
RAI, R., NASAR, S. K. T., SINGH, S. J. and PRASAD, V. Interactions between <i>Rhizobium</i> strains and lentil (<i>Lens culinaris</i> Linn.) genotypes under salt stress	199
RAI, R. Studies on associative nitrogen fixation by antibiotic-resistant mutants of Azo- spirillum brasilense with genotypes of lentil (Lens culinaris) Rhizobium strains in cal-	
careous soil	207
SENGUPTA, K., BHATTACHARYYA, K. K. and CHATTERJEE, N. B. Intercropping of upland rice with blackgram [Vigna mungo (L.)]	217
SHORT NOTES	
SPARLING, G. P. and BERROW, M. L. Effects of airdrying, γ -irradiation and chloroform fumigation of soil on extractability of trace elements	223
ALLINSON, D. W., SPEER, G. S., TAYLOR, R. W. and GUILLARD, K. Nutritional character- istics of kura clover (<i>Trifolium ambiguum</i> Bieb.) compared with other forage legumes.	227
ALHASSAN, W. S., BUVANENDRAN, V. and EHOCHE, O. W. Seasonal influences on milk pro- duction in Friesian-Bunaji crosses in northern Nigeria	231
GREEN, C. F. and IVINS, J. D. Time of sowing and the yield of winter wheat	235
WEDGWOOD, R. B. Some effects of type and rate of application of N fertilizer, and stage of growth at which it was applied, to winter wheat on a Gault Clay soil	239
TAYO, T. O. The effect of ridging on the performance of pigeon pea (<i>Cajanus cajan</i> (L.) Millsp.) in the lowland tropics	243
RAY, P. K. and SHARMA, S. B. Viability of <i>Litchi chinensis</i> seeds when stored in air and in water	247
SARKAR, A. K. and DEB, D. L. Fate of fertilizer zinc in a black soil (Vertisol)	249
OSINOWO, O. A. and EKPE, GRACE, A. Post-partum intervals to oestrus and conception in Yankasa sheep	253

PART 2 (APRIL 1985)

SADANA, U. S. and BAJWA, M. S. Manganese equilibrium in submerged sodic soils as in-	
fluenced by application of gypsum and green manuring	257
NATARAJAN, M. and WILLEY, R. W. Effect of row arrangement on light interception and yield in sorghum-pigeonpea intercropping	263
BRUCKENTAL, I., HALEVI, A., AMIR, S., NEUMARK, H., KENNIT, HANNA and SCHROEDER, G. The ratio of naturally occurring ¹³ C and ¹² C isotopes in sheep diet and faeces as a measure- ment for direct determination of lucerne hay and maize grain digestibilities in mixed diets	271
SADANA, U. S. and TAKKAR, P. N. Effect of salt, alkali and zinc on iron equilibrium in sub- merged soils	275
KEATINGE, J. D. H., DENNETT, M. D. and RODGERS, J. The influence of precipitation regime on the management of three-course crop rotations in northern Syria	281

C	้ดา	ıte	nts
---	-----	-----	-----

v

	PAGE
REYNOLDS, L. P., FERRELL, C. L., NIENABER, J. A. and FORD, S. P. Effects of chronic environmental heat stress on blood flow and nutrient uptake of the gravid bovine uterus and foetus	289
EBERSOHN, J. P., MOIR, K. W. and DUNCALFE, F. Inter-relationships between pasture growth and senescence and their effects on live-weight gain of grazing beef cattle	299
SHARMA, P. K., SINHA, A. K. and CHAUDHARY, T. N. Upward flux of water and deep-placed P in relation to soil texture, water table depth and evaporation rate	303
CHOUDHARI, S. D., UDAYKUMAR, M. and SASTRY, K. S. K. Physiology of bunch groundnuts (Arachis hypogaea L.)	309
STARR, CAROL, SUTTLE, JANET, MORGAN, A. G. and SMITH, D. B. A. comparison of sample preparation and calibration techniques for the estimation of nitrogen, oil and glucosino- late content of rapeseed by near infrared spectroscopy	317
PINK, D. A. C. and WALKEY, D. G. A. Effect of temperature and light intensity on resistance in marrow (<i>Cucurbita pepo</i>) to cucumber mosaic virus	325
CHAMBERLAIN, D. G., THOMAS, P. C., WILSON, WILMA, NEWBOLD, C. J. and MACDONALD, J. C. The effects of carbohydrate supplements on ruminal concentrations of ammonia in animals given diets of grass silage	331
RAI, R. Competitiveness and effectiveness of carbendazim-resistant mutant and indigenous Rhizobium strains of chick pea (Cicer arietinum Linn.) in calcareous soil	341
DHILLON, S. S. and LARSSON, S. Screening technique for frost resistance in Brassica oil seeds	345
COLEMAN, G. S. The cellulase content of 15 species of entodiniomorphid protozoa, mixed bacteria and plant debris isolated from the ovine rumen	349
ZYGOYIANNIS, D., STAMATARIS, C. and CATSAOUNIS, N. The melting point, iodine value, fatty acid composition and softness index of carcass fat in three different breeds of suckled lambs in Greece	361
STANLEY PRICE, M. R. Game domestication for animal production in Kenya: feeding trials with oryx, zebu cattle and sheep under controlled conditions	367
STANLEY PRICE, M. R. Game domestication for animal production in Kenya: the nutritional ecology of oryx, zebu cattle and sheep under free-range conditions	375
KIRBY, E. J. M., APPLEYARD, MARGARET and FELLOWES, GWYNNETH. Variation in develop- ment of wheat and barley in response to sowing date and variety	383
FOLDES, A., DONNELLY, J. B., MAXWELL, C. A., JAMES, S. B. and CLANCY, S. L. Circadian rhythm in wool depilation force in Merino and Merino × Border Leicester sheep	397
GREEN, C. F., FURMSTON, D. T. and IVINS, J. D. Time of sowing and the yield of winter barley	405
RAMOS, J. M., GARCIA DEL MORAL, L. F. and RECALDE, L. Vegetative growth of winter barley in relation to environmental conditions and grain yield	413
KATYAL, J. C., DOSHI, S. P. and MALHOTRA, P. K. Use of cluster analysis for classification of Benchmark soil samples from India in different micronutrient availability groups.	421
SINGH, S. and PRASAD, R. Studies on the nitrification inhibitor, dicyandiamide (DCD), for increasing the efficiency of nitrogen applied to rice	425
ESECHE, H. A. Relationship of stalk morphology and chemical composition to lodging re- sistance in maize (Zea mays L.) in a rainforest zone	429
JANES, A. N., WEEKES, T. E. C. and ARMSTRONG, D. G. Carbohydrase activity in the pan- creatic tissue and small intestine mucosa of sheep fed dried-grass or ground maize-based	
diets	435

Contents

vi

	PAGE
CORBET, SARAH A. and PLUMRIDGE, JANETTE R. Hydrodynamics and the germination of oil- seed rape pollen	445
WILMAN, D. and HOLLINGTON, P. A. Effects of white clover and fertilizer nitrogen on herbage	
production and chemical composition and soil water	453
SHORT NOTES	
PARSONS, C. M. Influence of caecectomy on digestibility of amino acids by roosters fed	
distillers' dried grain with solubles	469
HASSAN, G. A., EL-NOUTY, F. D. and SALEM, M. H. Relationship between milk intensity and	
pituitary-thyroid function in water buffaloes	473
PRAKASA RAO, E. V. S., SINGH, M., GANESHA RAO, R. S. and RAMESH, S. Effect of urea and neem cake coated urea on yield, and concentration and quality of essential oil in Java	
citronella (Cymbopogon winterianus Jowitt)	477

PART 3 (JUNE 1985)

KAYODE, G. O. Responses of yield, components of yield and nutrient contents of cow pea to magnesium fertilizer in a tropical rainforest region	481
SMITH, T., SIVITER, J. W. and MERRY, R. J. Further comparisons of energy and protein sources for growing cattle	485
HOOGENDOORN, J. The basis of variation in date of ear emergence under field conditions among the progeny of a cross between two winter wheat varieties	493
HAVAUX, M. and LANNOYE, R. Drought resistance of hard wheat cultivars measured by a rapid chlorophyll fluorescence test	501
MORANT, S. V. A stochastic model of the reproductive performance of dairy herds	505
DHAWAN, A. K. Freezing in oil-seed Brassica spp.: some factors affecting injury	513
BUTLER-HOGG, B. W., WOOD, J. D. and BINES, J. A. Fat partitioning in British Friesian cows: the influence of physiological state on dissected body composition	519
PAPANICOLAOU, E. P., SKARLOU, V. D., NOBELI, C. and KATRANIS, N. S. Methods and time of application of labelled nitrogen and phosphorus fertilizers in maize (Zea mays L.) cultivation	529
BROSTER, W. H., SUTTON, J. D., BINES, J. A., BROSTER, VALERIE J., SMITH, T., SIVITER, J. W., JOHNSON, V. W., NAPPER, D. J. and SCHULLER, E. The influence of plane of nutrition and diet composition on the performance of dairy cows	535
LAUGHLIN, J. C. The effect of delayed harvest and leaching on the morphine concentration of poppy (<i>Papaver somniferum</i> L.) capsules	55 9
OSMAN, H. E. and NOUR, A. M. Response of sesame varieties to environment in the Sudan central rainlands	565
VAISHAMPAYAN, A. Mutagenic activity of alachlor, butachlor and carbaryl to a N ₂ -fixing cyanobacterium Nostoc muscorum	571
PASRICHA, N. S. Potassium (Q/I) relationships as influenced by calcium and magnesium treated as separate ionic species, and by soil submergence	577
TIWARI, R. C. and ADINARAYANA, J. The effect of rate of application of nitrogen fertilizer on soil copper uptake by barley under unirrigated conditions	583
TAYO, T. O. Assessment of the effect of ratooning pigeon pea (<i>Cajanus cajan</i> (L.) Millsp.) in the lowland tropics	589

Contents	vii
	PAGE
HOLLINGTON, P. A. and WILMAN, D. Effects of white clover and fertilizer nitrogen on clover and grass leaf dimensions, percentage cover and numbers of leaves and tillers	595
SHARMA, K. N., BHANDARI, A. L., KAPUR, M. L. and RANA, D. S. Influence of growing various crops in five different fixed rotations on the changes in nitrate and total nitrogen content of soils	609
BENJAMIN, L. R., SUTHERLAND, R. A. and SENIOR, D. The influence of sowing rate and row spacing on the plant density and yield of red beet	615
CHOPRA, R. K., KOUNDAL, K. R. and KANSAL, MADHU. Comparative behaviour of seedlings of sorghum and some tropical legumes in relation to leaf expansion and growth	625
WURR, D. C. E. and FELLOWS, JANE R. The influence of sowing depth and seed press wheel weighting on seedling emergence of crisp lettuce	631
BOYD, J. W. Studies on thiaminase I activity in ruminant faeces and rumen bacteria	637
SHORT NOTE	
KAYODE, G. O. Response of maize to magnesium in tropical rainforest and savannah region	643

	PAGE
SHARMA, K. N., BHANDARI, A. L., KAPUR, M. L. and RANA, D. S. Influence of growing various crops in five different fixed rotations on the changes in nitrate and total nitrogen content of soils	609
BENJAMIN, L. R., SUTHERLAND, R. A. and SENIOR, D. The influence of sowing rate and row spacing on the plant density and yield of red beet	615
CHOPRA, R. K., KOUNDAL, K. R. and KANSAL, MADHU. Comparative behaviour of seedlings of sorghum and some tropical legumes in relation to leaf expansion and growth	625
WURR, D. C. E. and FELLOWS, JANE R. The influence of sowing depth and seed press wheel weighting on seedling emergence of crisp lettuce.	631
BOYD, J. W. Studies on thiaminase I activity in ruminant faeces and rumen bacteria .	637
SHORT NOTE	
Kenner C. O. Berner (for the second state in the interview) of the second state in the	(1)

KAYODE, G. O. Response of maize to magnesium in tropical rainforest and savannah region 643

THE JOURNAL OF AGRICULTURAL SCIENCE

CONTENTS

Vol. 104 Part 3 June 1985

	PAGE
KAYODE, G. O. Responses of yield, components of yield and nutrient contents of cow pea to magnesium fertilizer in a tropical rainforest region	481
SMITH, T., SIVITER, J. W. and MERRY, R. J. Further comparisons of energy and protein sources for growing cattle	485
HOOGENDOORN, J. The basis of variation in date of ear emergence under field conditions among the progeny of a cross between two winter wheat varieties.	493
HAVAUX, M. and LANNOYE, R. Drought resistance of hard wheat cultivars measured by a rapid chlorophyll fluorescence test	501
MORANT, S. V. A stochastic model of the reproductive performance of dairy herds	505
DHAWAN, A. K. Freezing in oil-seed Brassica spp.: some factors affecting injury	513
BUTLER-HOGG, B. W., WOOD, J. D. and BINES, J. A. Fat partitioning in British Friesian cows: the influence of physiological state on dissected body composition	519
PAPANICOLAOU, E. P., SKARLOU, V. D., NOBELI, C. and KATRANIS, N. S. Methods and time of application of labelled nitrogen and phosphorus fertilizers in maize (Zea mays L.) cultivation.	529
BROSTER, W. H., SUTTON, J. D., BINES, J. A., BROSTER, VALERIE J., SMITH, T., SIVITER, J. W., JOHNSON, V. W., NAPPER, D. J. and SCHULLER, E. The influence of plane of nutrition and diet composition on the performance of dairy cows	535
LAUGHLIN, J. C. The effect of delayed harvest and leaching on the morphine concentration of poppy (<i>Papaver somniferum</i> L.) capsules	559
OSMAN, H. E. and NOUR, A. M. Response of sesame varieties to environment in the Sudan central rainlands	565
VAISHAMPAYAN, A. Mutagenic activity of alachlor, butachlor and carbaryl to a N ₂ -fixing cyanobacterium Nostoc muscorum	571
PASRICHA, N. S. Potassium (Q/I) relationships as influenced by calcium and magnesium treated as separate ionic species, and by soil submergence	577
TIWARI, R. C. and ADINARAYANA, J. The effect of rate of application of nitrogen fertilizer on soil copper uptake by barley under unirrigated conditions	583
TAYO, T. O. Assessment of the effect of ratooning pigeon pea (<i>Cajanus cajan</i> (L.) Millsp.) in the lowland tropics	589
HOLLINGTON, P. A. and WILMAN, D. Effects of white clover and fertilizer nitrogen on clover and grass leaf dimensions, percentage cover and numbers of leaves and tillers	595

Continued on inside back cover

© Cambridge University Press 1985

COPYING. This journal is registered with the Copyright Clearance Center, 21 Congress Street, Salem, Mass. 01970. Organizations in the USA who are also registered with the copyright Clearance Center, 21 Congress Street, 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 \$05.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 0021-8596/85/2828-0001 \$05.00.

ISI Tear Service, 3501 Market Street, Philadelphia, Pennsylvania 19106, USA, is authorized to supply single copies

For all other use, permission should be sought from Cambridge or New York offices of Cambridge University Press. POSTMASTER: send address changes in USA and Canada to The Journal of Agricultural Science, Cambridge University Press, 32 East 57th Street, New York, NY 10022.