ANIMAL PRODUCTION

JOURNAL OF
THE BRITISH SOCIETY OF ANIMAL PRODUCTION

Edited by

J. A. F. ROOK
R. C. CAMPLING
W. G. HILL
C. J. M. HINKS
J. HODGSON
J. M. MANSON
A. M. RAVEN
J. C. TAYLER

VOLUME 28 1979

A. J. F. WEBSTER
M. B. WILLIS

LONGMAN

COPYRIGHT © 1979 THE BRITISH SOCIETY OF ANIMAL PRODUCTION

PRINTED IN GREAT BRITAIN BY
T. & A. CONSTABLE LIMITED, EDINBURGH

CONTENTS OF VOLUME 28

(LISTED ALPHABETICALLY BY AUTHOR)

	PAGE
Adalsteinsson, S. The independent effects of live weight and body condition on fecundity and productivity of Icelandic ewes	13
ADU, I. F. and OLALOKU, E. A. A note on nutrition during late pregnancy in West African Dwarf sheep	123
ALLISTON, J. C. and Lucas, I. A. M. Response of Welsh Mountain ewes to flushing and to housing for all or part of the winter	257
AMAKIRI, S. F. and Funsho, O. N. Studies of rectal temperature, respiratory rates and heat tolerance in cattle in the humid tropics	329
ARCHIBALD, A. L., BRADLEY, J. S. and SPOONER, R. L. Evidence for phenotypic change at the amylase I locus in cattle—an explanation of the apparent heterozygote excess	337
ASTON, K., see Tayler, J. C.	
BATEMAN, N. and Slee, J. Growth, food intake and cold exposure in mice. 1. Cold exposure of adolescent mice	157
BECCARO, P. V., see Enne, G.	
Bradley, J. S., see Archibald, A. L.	
Brennan, P. J., see McPhee, C. P.	
BRUCE, J. M. and CLARKE, J. J. Models of heat production and critical temperature for growing pigs	353
BRYANT, M. J. The flock-mating of progestagen-synchronized ewes. 3. A note on the influence of flock size upon mating behaviour and lambing performance	127
BRYANT, M. J., see also HAMRA, A. M.	
CAMMELL, S. B., Spooner, M. C. and Thomson, D. J. A note on the use of electronic doors for individual feeding of group-housed lambs	407
CLARKE, G. P. Y., see RICHARDSON, F. D.	
Clarke, J. J., see Bruce, J. M.	
COOK, K. N. and Newton, Jennifer M. A comparison of Canadian Holstein and British Friesian steers for the production of beef from an 18-month grass/cereal system	41
Daley, S. R., see Tayler, J. C.	
Duncalfe, F., see McPhee, C. P.	
EADIE, J., see RUSSEL, A. J. F.	
ENNE, G., BECCARO, P. V. and TAROCCO, C. A note on the effect of climate on fertility in pigs in the Padana Valley of Italy	115
EVANS, D. G. and KEMPSTER, A. J. A comparison of different predictors of the lean content of pig carcasses. 2. Predictors for use in population studies and experiments	97
Evans, D. G., see also Kempster, A. J.	
Fenlon, J. S., see Geisler, P. A.	

iv CONTENTS

	PAGE
FOOT, JANET Z. and RUSSEL, A. J. F. The relationship in ewes between voluntary food intake during pregnancy and forage intake during	
lactation and after weaning	25
Funsho, O. N., see Amakiri, S. F.	
Geisler, P. A. and Fenlon, J. S. The effects of body weight and its components on lambing performance in some commercial flocks in Britain.	245
GORDON, F. J. The effect of protein content of the supplement for dairy cows with access ad libitum to high digestibility, wilted grass silage	183
Gosling, J. P., see Quirke, J. F.	
GWAZDAUSKAS, F. C., see THOMAS, H. R.	
HAMRA, A. M. and BRYANT, M. J. Reproductive performance during mating and early pregnancy in young female sheep	235
HEADY, E. O., see MELTON, B. E.	
HINTZ, H. F., see SLAGSVOLD, P.	
HOLZER, Z., ILAN, D. and LEVY, D. A note on the effects of monensin on the performance and on rumen metabolites of intact male cattle	135
HOPKINS, I. R. Dynamic and static selection policies when generations overlap.	149
HOPKINS, I. R. and JAMES, J. W. Genetic response in the early years of selection programmes using genetic differences between generations .	65
HOPKINS, I. R. and JAMES, J. W. The effect of deviations from steady-state selection responses when generations overlap	139
ILAN, D., see Holzer, Z.	
JAMES, J. W., see HOPKINS, I. R.	
JORDAN, C., see SMITH, C.	
KATTESH, H. G., see THOMAS, H. R.	
Kempster, A. J. and Evans, D. G. A comparison of different predictors of the lean content of pig carcasses. 1. Predictors for use in commercial classification and grading	87
KEMPSTER, A. J., see also Evans, D. G.	
KNIGHT, J. W., see THOMAS, H. R.	
Kornegay, E. T., see Thomas, H. R.	
Land, R. B. and Scaramuzzi, R. J. A note on the ovulation rate of sheep following treatment with clomiphene citrate	131
Leibholz, Jane, see Wilson, R. H.	
LEVY, D., see HOLZER, Z.	
LISHMAN, W. B. and SMITH, W. C. A note on the comparative growth performance of pigs sired by Piétrain × Hampshire, Hampshire × Large White and Large White boars	119
LISTER, D., see Wood, J. D.	
Lodge, G. A., see Wood, J. D.	
Lucas, I. A. M., see Alliston, J. C.	
MACDONALD, A. J., see Russel, A. J. F.	

CONTENTS

MCILMOYLE, W. A. and MURDOCH, J. C. The effect of formic acid and a formalin and sulphuric acid mixture on the intake and digestibility of	PAGI
grass silage	223
McPhee, C. P., Brennan, P. J. and Duncalfe, F. Genetic and phenotypic parameters of Australian Large White and Landrace boars performance-tested when offered food <i>ad libitum</i> .	79
MEACHAM, T. N., see THOMAS, H. R.	
Melton, B. E., Heady, E. O. and Willham, R. L. Estimation of economic values for selection indices	279
MORTON, J. R., see WYLLIE, D.	
MURDOCH, J. C., see McIlmoyle, W. A.	
NEWTON, J. E., see ORR, R. J.	
Newton, Jennifer M., see Cook, K. N.	
Olaloku, E. A., see Adu, I. F.	
OLIVER, J., see RICHARDSON, F. D.	
ORR, R. J., NEWTON, J. E. and YOUNG, N. E. A note on a comparison of different weaning policies for ewes suckling triplets at pasture	275
Ørskov, E. R., see Petchey, A. M.	
OWEN, J. B., see PETCHEY, A. M., see also Wyllie, D.	
PEART, J. N., see RUSSEL, A. J. F.	
Petchey, A. M., Owen, J. B., Mackie, I. M., Ritchie, A. H. and Ørskov, E. R. A comparison of undried and dried fish-protein hydrolysate as a protein source for calf milk replacers	191
Quirke, J. F. Effect of body weight on the attainment of puberty and reproductive performance of Galway and Fingalway female lambs .	297
Quirke, J. F. and Gosling, J. P. Pre-puberal plasma luteinizing hormone concentrations and progesterone concentrations during the oestrous cycle and early pregnancy in Galway and Fingalway female lambs	1
Reed, K. F. M. A note on the feeding value of grass and grass/clover silages for store lambs	271
RICHARDSON, F. D. Analysis of some factors which affect the productivity of beef cows and of their calves in a marginal rainfall area of Rhodesia. 4. The growth and efficiency of live-weight gain of weaned and sucking calves at different ages	213
RICHARDSON, F. D., OLIVER, J. and CLARKE, G. P. Y. Analysis of some factors which affect the productivity of beef cows and of their calves in a marginal rainfall area of Rhodesia. 3. Factors affecting calf birth weight, growth to 240 days and use of concentrates by cows and their calves	199
RITCHIE, A. H., see PETCHEY, A. M.	
Russel, A. J. F., Peart, J. N., Eadie, J., Macdonald, A. J. and White, I. R. The effect of energy intake during late pregnancy on the production from two genotypes of suckler cow	309

vi CONTENTS

RUSSEL, A. J. F., see also FOOT, JANET Z.	PAG
RYDER, M. L. Thyroxine and wool follicle activity	109
SCARAMUZZI, R. J., see LAND, R. B.	
SCHRYVER, H. F., see SLAGSVOLD, P.	
SLAGSVOLD, P., HINTZ, H. F. and SCHRYVER, H. F. Digestibility by ponies of oat straw treated with anhydrous ammonia	347
SLEE, J., see BATEMAN, N.	
SMITH, C., STEANE, D. E. and JORDAN, C. Progeny test results on Hereford bulls weight-recorded on the farm	49
SMITH, C., see also STRANG, G. S.	
SMITH, W. C., see LISHMAN, W. B.	
SPOONER, M. C., see CAMMELL, S. B.	
SPOONER, R. L., see ARCHIBALD, A. L.	
STEANE, D. E., see SMITH, C.	
STEELE, W. The performance of lambs reared by ewes given protected lipids during late pregnancy and early lactation	287
STRANG, G. S. and SMITH, C. A note on the heritability of litter traits in pigs	403
TAROCCO, C., see Enne, G.	
Tayler, J. C., Aston, K. and Daley, S. R. Milk production from diets of silage and dried forage. 3. Effect of formalin-treated ryegrass silage of high digestibility given ad libitum with and without urea	171
THOMAS, H. R., KATTESH, H. G., KNIGHT, J. W., GWAZDAUSKAS, F. C., MEACHAM, T. N. and KORNEGAY, E. T. Effects of housing and rearing on age at puberty and libido in boars	231
THOMSON, D. J., see CAMMELL, S. B.	
WHITE, I. R., see RUSSEL, A. J. F.	
WILLHAM, R. L., see MELTON, B. E.	
WILSON, R. H. and LEIBHOLZ, JANE. Protein, fat and carbohydrates in the diets of pigs between 7 and 28 days of age.	391
Wood, J. D., Lodge, G. A. and Lister, D. Response to different rates of energy intake by Gloucester Old Spot and Large White boars and gilts	251
given the same total feed allowance	371
Wood, P. D. P. A simple model of lactation curves for milk yield, food requirement and body weight	55
WYLLIE, D., MORTON, J. R. and OWEN, J. B. Genetic aspects of voluntary food intake in the pig and their association with gain and food conversion efficiency	381
Young, N. E., see Orr, R. J.	
By-products and Wastes in Animal Feeding, Harrogate, 28 to 29 November 1978	411
TITLES AND ABSTRACTS OF PAPERS FOR PRESENTATION AT THE 72nd MEETING OF THE BRITISH SOCIETY OF ANIMAL PRODUCTION, Harrogate, 19 to 21 March	
1979	411

Photographed diagrams are also accepted. Lettering inside the framework of the diagram should be avoided as far as possible but if unavoidable it should be included on a fly-leaf. Marginal lettering should be inserted lightly in pencil on the original diagram or on a fly-leaf.

- (b) Photographs intended for half-tone reproduction should be on glossy paper. They will be accepted only if found necessary by the Editors.
- (c) Colour plates are unlikely to be accepted unless authors bear the cost.

Tables should be as simple and as few as possible. Each table should be typed on a separate sheet.

Abstract: Every article should have a short abstract (not more than 250 words) complete in itself and understandable without reference to the paper. The abstract will be printed at the beginning of the paper.

References: Only papers closely related to the author's work should be referred to; exhaustive lists should be avoided. The arrangement of references should be as in recent papers in *Animal Production*; details are given in the notes for guidance.

Proofs are supplied once and must be returned corrected to the Editors within seven days. Only essential corrections should be made.

Reprints: Twenty-five reprints of each paper will be supplied free to authors on request. Further copies may be purchased if the order is sent at the proof-stage.

Animal Production is published six times a year in two volumes. Annual subscription is £28.00 (or \$67.00 in the U.S.A. and Canada) and the price for a single part is £5.00 (or \$12.00) net.

Proceedings of the British Society of Animal Production (New Series) ceased publication in 1975 and the material is now published as a separate section in the June issue of Animal Production.

Business matters, including regular subscriptions and sales (current and back numbers of the Journal and the Proceedings) should be addressed to Longman Group, Periodicals and Directories Division, 43/45 Annandale Street, Edinburgh EH7 4AT.

Senior Editor

J. A. F. Rook, Hannah Research Institute.

Editors

R. C. Campling, Wye College, University of London.

W. G. Hill, Institute of Animal Genetics.

C. J. M. Hinks, Animal Breeding Research Organisation.

J. Hodgson, Hill Farming Research Organisation.

J. M. Masson, East of Scotland Agricultural College.

A. M. Raven, West of Scotland Agricultural College.

A. J. F. Webster, University of Bristol.

M. B. Willis, University of Newcastle upon Tyne.

Assistant Editors

Jill M. Read

P. D. Wilson

CONTENTS

	AGE
MELTON, B. E., HEADY, E. O. and WILLHAM, R. L. Estimation of economic values for selection indices	279
STEELE, W. The performance of lambs reared by ewes given protected lipids during late pregnancy and early lactation	287
Quirke, J. F. Effect of body weight on the attainment of puberty and reproductive performance of Galway and Fingalway female lambs . 2	297
Russel, A. J. F., Peart, J. N., Eadie, J., Macdonald, A. J. and White, I. R. The effect of energy intake during late pregnancy on the production from two genotypes of suckler cow	309
AMAKIRI, S. F. and Funsho, O. N. Studies of rectal temperature, respiratory rates and heat tolerance in cattle in the humid tropics	329
Archibald, A. L., Bradley, J. S. and Spooner, R. L. Evidence for phenotypic change at the amylase I locus in cattle—an explanation of the apparent heterozygote excess	337
SLAGSVOLD, P., HINTZ, H. F. and SCHRYVER, H. F. Digestibility by ponies of oat straw treated with anhydrous ammonia	347
BRUCE, J. M. and CLARK, J. J. Models of heat production and critical temperature for growing pigs	353
Wood, J. D., Lodge, G. A. and Lister, D. Response to different rates of energy intake by Gloucester Old Spot and Large White boars and gilts given the same total feed allowance	371
WYLLE, D., MORTON, J. R. and OWEN, J. B. Genetic aspects of voluntary food intake in the pig and their association with gain and food conversion efficiency	881
WILSON, R. H. and LEIBHOLZ, JANE. Protein, fat and carbohydrates in the diets of pigs between 7 and 28 days of age	891
STRANG, G. S. and SMITH, C. A note on the heritability of litter traits in pigs 4	103
CAMMELL, S. B., SPOONER, M. C. and THOMSON, D. J. A note on the use of electronic doors for individual feeding of group-housed lambs 40	107
By-products and Wastes in Animal Feeding, Harrogate, 28 to 29 November 1978	11
TITLES AND ABSTRACTS OF PAPERS FOR PRESENTATION AT THE 72ND MEETING OF THE BRITISH SOCIETY OF ANIMAL PRODUCTION, Harrogate, 19 to 21 March 1979	111

COPYRIGHT © 1979 THE BRITISH SOCIETY OF ANIMAL PRODUCTION Printed in Great Britain by T. & A. CONSTABLE LIMITED

ISSN 0003-3561