

British Society of Animal Production

50th Winter Meeting

BSAP JUBILEE WINTER MEETING

21-23 March 1994

**Spa Complex
Scarborough**

Programme and Summaries

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**BSAP WINTER MEETING 1994
PROGRAMME**

DAY	TIME	THEATRE SESSIONS			POSTER SESSIONS
Monday 21 March		SPA THEATRE	REGENCY ROOM	MUSIC ROOM	Sheep Production Vita Dome Session opens 1410 Authors in attendance 1410-1510 Discussion 1610-1710 Ruminant Nutrition & Digestion Grand Hall Session opens 1410 Authors in attendance 1410-1520 Silage Grand Hall Session opens 1410 Authors in attendance 1410-1520
	1400	The President			
	1410	Food Intake in Ruminants	Pig Genetics I		
	1550	TEA			
	1610	Manipulation of Milk Components	Pig Genetics II		
	1900	SCARBOROUGH TOWN COUNCIL RECEPTION			
	1930	JUBILEE DINNER 1994			
Tuesday 22 March	0900	HAMMOND MEMORIAL LECTURE			Tropical Feeds Vita Dome Session opens 0900 Authors in attendance 1030-1130 Discussion 1130-1230 Cattle Grand Hall Session opens 0900 Authors in attendance 1030-1130 Pigs Grand Hall Session opens 0900 Authors in attendance 1600-1700 Poultry (in conjunction with theatre papers) Music Room Authors in attendance 1500-1520 Meat Quality Vita Dome Session opens 1340 Authors in attendance 1340-1440 Discussion 1600-1700
	1010	COFFEE			
	1030	Ruminant Reproduction & Breeding	Nutrient Metabolism	Pig Feeding & Nutrition	
	1230	LUNCH			
	1340	Milk Production	Pigs	Poultry	
	1540	TEA			
	1600	Sheep	Impact of EC Reforms on Animal Production Systems		
	1800	AGM			
	1945	DINNER			
Wednesday 23 March	0900	Nutrition Production & Health			Pig Housing & Welfare Vita Dome Session opens 0900 Authors in attendance 0930-1030 Discussion 1050-1150 Sheep Goats & Deer Grand Hall Session opens 0900 Authors in attendance 1050-1150
	1030	COFFEE			
	1050	Pollution	Digestion & Rumen Metabolism		
	1230	LUNCH			
	1340	Beef Production	WPSA Spring Meeting		
	1520	BSAP Meeting Closes			
	1700	WPSA Gordon Lecture			
	2000	WPSA BRANCH DINNER			
Thursday 24 March		WPSA Spring Meeting - Mini Symposium and Poster Session			

FOOD INTAKE IN RUMINANTS

Chairman - Dr F Gordon

1400 Opening Remarks by the President - Dr J J Robinson

- 1410 1 The use of electrometric titration to improve the routine prediction of silage intake by lambs and dairy cows
N W Offer, R J Dewhurst & C Thomas
- 1430 2 Effects of ensilage and silage fermentation pattern on the intake and performance of lactating dairy cows
A Cushnahan & C S Mayne
- 1450 3 The effect of feeding juice extracted from ensiled grass after varying times of fermentation on the voluntary intake of chopped hay by sheep
J A Rooke & N W Offer
- 1510 4 The effects of either dietary addition or intraruminal infusion of amines or juice extracted from grass silage on the voluntary intake of steers offered grass silage
L E R Dawson & C S Mayne
- 1530 5 The effect of dry matter content of a straw/sugar beet pulp mixture used as a buffer feed when fed to dairy cows at different stages of lactation
A Hameleers, T Bronda & D J Roberts
- 1550 *TEA*

MANIPULATION OF MILK COMPONENTS

Chairman - Prof D Leaver

- 1610 6 Changes in milk components through breeding
Mr G J T Swanson, R A Mrode & M S Winters, Milk Marketing Board
- 1640 7 Physiological manipulation of milk protein content
Dr C H Knight, Hannah Research Institute
- 1710 8 Nutritional regulation of milk constituent synthesis and its manipulation
Prof D E Beever, G E Lobley, M A Lomax, J C MacRae & J D Sutton
University of Reading and Rowett Research Institute
- 1800 Session Ends

1900 **SCARBOROUGH TOWN COUNCIL RECEPTION**

1930 **JUBILEE DINNER 1994**

PIG GENETICS 1

Chairman - Dr M Bichard

- 1400 See opposite page
- 1410 9 Selection for components of efficient lean growth in Large White pigs
N D Cameron
- 1430 10 Selection for components of efficient lean growth in Landrace pigs
M K Curran & N D Cameron
- 1450 11 Responses in performance test traits to selection on components of efficient lean growth
N D Cameron & M K Curran
- 1510 12 Selection for lean growth in pigs with a restricted feeding regime
M K Curran, N D Cameron & J C Kerr
- 1530 13 Genotype with feeding regime interaction in pigs
N D Cameron & M K Curran

1550 *TEA*

PIG GENETICS II

Chairman - Dr N Cameron

- 1610 14 Reproductive performance of pigs selected for components of efficient lean growth
J C Kerr & N D Cameron
- 1630 15 Carcass composition in pigs selected for components of efficient lean growth
E A Bruce, N D Cameron & M K Curran
- 1650 16 Preselection of pigs for performance testing
B Grundy
- 1710 17 Effect of selection for growth, FCR and lean% on feed intake curves in pigs
H A M van der Steen & P W Knap
- 1740 Session Ends

1900 **SCARBOROUGH TOWN COUNCIL RECEPTION**

1930 **JUBILEE DINNER 1994**

SIR JOHN HAMMOND MEMORIAL LECTURE

Chairman - Dr J J Robinson

0900 18 The growth and development of the scientific qualities of BSAP
Prof P N Wilson, ECRR, Edinburgh

1010 *COFFEE*

RUMINANT REPRODUCTION & BREEDING

Chairman - Dr P Broadbent

1030 19 Genetic progress in the CAMDA group breeding scheme nucleus
G Pollott, D Croston & D R Guy

1050 20 Effects of performance testing on superovulatory response in juvenile Simmental heifers
L D Tregaskes, P J Broadbent & J A Roden

1110 21 Comparative performance of two primiparous continental genotypes in a hill suckler herd
i Reproductive performance
R Keatinge, K A Christensen & P Rowlinson

1130 22 Comparative performance of two primiparous continental genotypes in a hill suckler herd:
ii Metabolic profiles
K A Christensen, P Rowlinson & R Keatinge

1150 23 Factors associated with dystocia following embryo transfer to heifers
D Pullar & A E Wrathall

1210 24 The effect of a teaser bull on the return to oestrus of post-partum spring calving suckler cows
D Pullar, P Rowlinson, C Miller & J Scatcherd

1230 *LUNCH*

0900 SIR JOHN HAMMOND MEMORIAL LECTURE - See opposite page

1010 COFFEE

NUTRIENT METABOLISM

Chairman - Dr R Dewhurst

- 1030 25 Effect of dietary crude protein level on protein metabolism in the mammary gland of the dairy cow
B J Bequette, J A Metcalf, D Wray-Cahen, F R C Backwell, J D Sutton, M A Lomax,
G E Lobley & J C MacRae
- 1050 26 Peptide utilisation by the mammary gland of lactating dairy goats
F R C Backwell, B J Bequette, J A Metcalf, D Wray-Cahen, J France, L Crompton,
D E Beever, G E Lobley & J C MacRae
- 1110 27 The effects of feeding maize grain harvested at 2 stages of maturity on net nutrient metabolism by
splanchnic tissues of lactating dairy cows
C K Reynolds, G B Huntingdon & H F Tyrrell
- 1130 28 Effect of intraduodenal starch infusion on net portal absorption of amino acids in
growing steers fed lucerne
C J Seal, D S Parker, J C MacRae & G E Lobley
- 1150 29 The effects of effective rumen degraded dietary protein and digestible undegraded protein on
rumen fermentation and microbial protein synthesis in wether sheep given high levels of molasses
T Yan, D J Roberts & N W Offer
- 1210 30 Whole-body fat metabolism in cattle fed forage-based diets
H M R Greathead, J M Dawson, A B McAllan & P J Buttery

PIG FEEDING AND NUTRITION

Theatre Session
Music Room

Chairman - Dr J Chadwick

- 1030 31 Braude Scholarship 1993 - J A Dalby
- 1050 32 Effect of lysine/DE ratio on growth performance and nitrogen deposition of hybrid boars, gilts and
castrates
T A Van Lunen & D J A Cole
- 1110 33 Effect of enzyme supplementation on intestinal parameters in the pig
H Graham, J Inbarr & M Bedford
- 1130 34 Evaluation of the choice feeding system for growing and finishing pig production
B P Gill, A P Sanchez-Serrano, P R English, M Robledo & J Roden
- 1150 35 Diet selection of weaned piglets - is a training period necessary?
J A Dalby, J M Forbes, M A Varley & S Jagger
- 1210 36 Food bulk: Its measurements and their relationship to the voluntary food intake of pigs
I Kyriazakis, G C Emmans & G W Horgan

MILK PRODUCTION

Chairman - Dr D Roberts

- 1340 37 The effects of dietary fat on the yield and relative proportions of different milk protein fractions from dairy cows
J M Moorby, R J Dewhurst & S Marsden
- 1400 38 The effect of concentrate type and supplementary lactic acid or soya-oil on milk production in dairy cows offered restricted or extensively fermented grass silages
J G Doherty & C S Mayne
- 1420 39 The response of dairy cows given high levels of molasses to dietary levels of fermentable metabolisable energy
T Yan & D J Roberts
- 1440 40 The effect of protected amino acid supplementation on the performance of dairy cows receiving grass silage plus soyabean meal
J C Robert, B K Sloan & C Denis
- 1500 41 The influence of genetic merit for milk production on the response to complete diet feeding
D C Patterson, F J Gordon & C S Mayne

PIGS

Chairman - Dr P H Simmins

- 1340 42 The effects of dry sow housing conditions on bone strength and muscle conformation
J N Marchant & D M Broom
- 1400 43 Level of skin damage in sows when mixed in groups in early pregnancy
A Burfoot, R M Kay & P H Simmins
- 1420 44 Cortisol response of sows to alternative farrowing systems
A R Rudd, M T Mendl, D M Broom & P H Simmins
- 1440 45 Evidence that feeding motivation alone cannot explain oral stereotypy in sows
M Haskell, E M C Terlouw, A B Lawrence & H W Erhard
- 1500 46 The effect of food deprivation on the expression of foraging and exploratory behaviour in the pig
J E L Day, I Kyriazakis, E M C Terlouw & A B Lawrence
- 1520 47 The effect of routine handling of pigs on behaviour and subsequent meat quality
T A Abbott, E J Hunter, H J Guise & R H C Penny

Theatre Session
Music Room

POULTRY

Chairman - Prof J M Forbes

- 1340 48 The effect of feeding barley fractions on viscosity and non-starch polysaccharide levels in broiler chickens
S T Petersen, J Wiseman & M Bedford
- 1400 49 The effect of processing technology on feed content of vitamin A and its retention in the livers of broiler chicks
M S Kenny, P E V Williams, M A Overend & J R Scaife
- 1420 50 The use of magnetic resonance imaging to estimate the mass of the *pectoralis* muscle of chickens *in vivo*
N D Scollan, L J Caston, Z Liu, A K Zubair, S Leeson, B W McBride
- 1440 51 Heritability estimates for juvenile bodyweight by least squares and DFREML in a commercial broiler breeder dam line
A Morris & G E Pollott
- 1500 POSTER DISCUSSION SESSION (papers 172, 173, 174)
- 1540 TEA

SHEEP

Chairman - Dr J Vipond

- 1600 52 The response of finishing lambs to additional metabolisable energy supplied from silage or concentrate
S D Johnston, R W J Steen & D M B Chesnutt
- 1620 53 Effect of supplementing grass silage with sugar beet feed on methane production by sheep
A R Moss, E R Deaville & D I Givens
- 1640 54 Lamb production from grass in Galicia (North West Spain): The effect of pasture height and creep feeding on ewe and lamb performance
M Cropper, X Garcia, G Flores & J Zea
- 1700 55 Effect of diet on behaviour of individually penned lambs
J J Cooper, G C Emmans & N C Friggens
- 1720 56 The efficacy of citric acid mycelium in the prevention of uptake and the removal of caesium 137 in sheep
P A Owens, S B Telfer & C L Johnson
- 1740 57 The effect of rumen pH or osmolality upon the diet selections made by sheep
S D B Cooper, I Kyriazakis, J V Nolan, D H Anderson & J D Oldham

1800 AGM

1945 *DINNER*

Tuesday 22 March 1994

Theatre Session
Regency Room

IMPACT OF EC REFORMS ON ANIMAL PRODUCTION SYSTEMS

Chairman - Dr S Marsden

- 1600 58 An economists viewpoint
Prof A Buckwell, Wye College
- 1625 59 The pig sector viewpoint
Dr W Jorgensen, Institute of Agricultural Economics, Denmark
- 1650 60 The ruminant sector viewpoint
Dr B Lowman, GABS, SAC, Edinburgh
- 1745 Session Ends

1800 AGM

1945 *DINNER*

NUTRITION, PRODUCTION AND HEALTH

Chairman - Dr J J Robinson

- 0900 61 Limitations to productivity
Prof A J F Webster, University of Bristol
- 0925 62 Developmental disorders limiting productivity in poultry
Dr C C Whitehead, Roslin Institute (Edinburgh)
- 0950 63 The immune response to diet and implications for disease
Dr B G Miller, University of Bristol

1030 *COFFEE*

POLLUTION - JOINT WPSA/BSAP SESSION

Chairman - Mr C Nielsen

- 1050 Introduction - Mr C Nielsen
- 1100 64 Current and proposed future legislation in the UK concerning the pollution of land and water
MAFF, Environmental Protection Policy Division
- 1125 65 Ruminants and their affects on pollution in Denmark
Dr E Steen Christensen, National Institute of Animal Science, Denmark
- 1150 66 Non-ruminant production and its effects on the the environment
Dr P Lee & S Tucker, ADAS Hereford
- 1215 67 Effects of animal production on aerial pollution
Dr B Pain, AFRC IGER, Oakhampton

1240 *LUNCH*

BEEF PRODUCTION

Chairman - Dr D Pullar

- 1340 68 Effects of forage: concentrate ratio in the diet and restricted dry matter intake on the performance and carcass composition of steers
R W J Steen
- 1400 69 Effect of different forage concentrate ratios and intake restriction on the rumen fermentation and hormone profiles of finishing beef steers
C L Thorp, R W J Steen, A R G Wylie, J McEvoy & C Shaw
- 1420 70 Feed intake and growth rate in growing and finishing steers offered a diet of silage plus concentrates with varying levels of ardacin
M G Keane & M P Read
- 1440 71 Ammonia treated whole barley and wheat for beef cattle
M Lewis, B G Lowman & M Ford
- 1500 72 Performance of weaning and post-weaned steers fed partial or complete extruded diets
X Serrano Masip, M D B Sanchez & F P Mas

0900 See opposite page

1030 *COFFEE*

DIGESTION AND RUMEN METABOLISM

Chairman - Dr I Givens

- 1050 73 Factors affecting the prediction of organic matter digestibility of grass silage by near infrared reflectance spectroscopy
E R Deaville & D I Givens
- 1110 74 Observations on the stability of rumen metabolism and their implications for experimental design
J A Huntingdon & N W Offer
- 1130 75 Total phenols and protein precipitation assays as indicators of the inhibitory effects of phenols on rumen micro-organisms
C D Wood & V E Plumb
- 1150 76 The ability of polyethylene glycol to enhance the digestion of tropical forage legumes of varying tannin content
A C Longland, M K Theodorou, S J Lister, P Morris & E M Gill
- 1210 77 Effect of feeding napier or groundnut hay as supplements to sheep consuming poor quality natural pasture (veld) hay
B Manyuchi, F D Deb Hovell, L R Ndlovu, J H Topps & A Tigere

1230 *LUNCH*

SHEEP PRODUCTION

- 78 Melatonin treatment of donor and recipient ewes in an embryo transfer programme: effects on ovulation rate and embryo survival during normal seasonal anoestrus
J J Robinson, T G McEvoy, R P Aitken & I Robertson
- 79 Maternal recognition of pregnancy following blastocyst transfer to ewes induced to ovulate at 28 days post-partum
J M Wallace, R P Aitken & M A Cheyne
- 80 Effect of undernutrition on corpus luteum function, jugular and ovarian venous progesterone profiles and endometrial progesterone concentration in sheep
J A Abecia, S M Rhind, P J Goddard & S R McMillen
- 81 The effects of excess rumen degradable protein in ewes on ovulation rate, fertilisation and embryo survival *in vivo* and during *in vitro* culture
C Bishonga, J J Robinson, T G McEvoy, R P Aitken, P A Findlay & I Robertson
- 82 The effect of pre-ovulatory nutrition on the subsequent development of superovulated sheep ova in an *in vitro* culture system
J Creed, T G McEvoy, J J Robinson, R P Aitken, R M Palmer & I Robertson
- 83 The effect of exogenous melatonin on the ovulation rate can be modified by the plane of nutrition after weaning in Salz ewes lambing in seasonal anoestrus
L Zarazaga, F Forcada, J A Abecia & J Mozota
- 84 Pregnancy associated glycoprotein and progesterone concentrations in plasma of sheep during gestation and postpartum period
M J Ranilla, J Sulon, M D Carro, A R Mantecon & J F Beckers
- 85 Comparison of MOET in Texel ewe lambs and yearling ewes
B T Wolf & I McDougall
- 86 Influence of age of donor ewe on MOET in Texel sheep
B T Wolf & M J A Mylne
- 87 Multiple ovulation and embryo transfer in hill ewes: effects of mating system on embryo quality, and its relationship with pregnancy rates
W Haresign, B Merrell, R I W A Richards
- 88 Multiple ovulation and embryo transfer in hill ewes
W Haresign, B Merrell, R I W A Richards
- 89 The effects of ewe diet on progesterone concentration and colostrum production
J V O'Doherty, C T Whittle, D O'Callaghan, P J Quinn & T F Crosby

Session Opens 1410

RUMINANT NUTRITION AND DIGESTION

- 90 Biotechnology and ruminant nutrition (Jerry Hughes Scholarship)
A S Chaudry
- 91 The gas production capacity of purified chemicals and feedstuffs when incubated with *in vitro* rumen microbes as a possible indicator of energy availability in the rumen
A T Chamberlain
- 92 The use of neural networks to derive prediction relationships for feed composition from near-infra-red monochromator scans
E A Chadoulos, M Bishop, A T Chamberlain & C Piotrowski
- 93 Use of the rumen simulation technique (RUSITEC) to provide micro-organisms for assessing forage rate-of-fermentation *in vitro*: effect of solid food input to RUSITEC
J H T Barbi, E Owen & M K Theodorou
- 94 Use of the rumen simulation technique (RUSITEC) to provide micro-organisms for assessing forage rate-of-fermentation *in vitro*: effect of soluble carbohydrate inputs to RUSITEC
J H T Barbi, E Owen & M K Theodorou
- 95 Peptide uptake from the gastrointestinal tract of sheep
M R Hipolito-Reis, J C MacRae & F R C Backwell
- 96 Response of autumn calving suckler cows to the feed additive Avotan
B G Lowman & N A Scott
- 97 Effect of proteinated minerals and yeast culture on growth and carcass characteristics of fattening heifers
R J Fallon, M Drennan & M P Boland
- 98 The effect of yeast culture addition to diets of grass and grass silage on rumen bacterial numbers
S M El Hassan, C J Newbold & R J Wallace
- 99 The dry matter and nitrogen degradation of whole crop wheat cut at three stages of crop maturity
J Hill, J D Leaver & D I Givens
- 100 Use of fresh or frozen cow faeces instead of sheep rumen liquor to provide micro-organisms for *in vitro* digestibility assays of forages
S Akhter, E Owen, A Fall, F O'Donovan & M K Theodorou
- 101 Differentiation of yeast cultures in ruminant feedingstuffs using a rapid DNA fingerprinting technique
E Moore & D R Headon
- 102 Comparative digestibility of fresh herbage cut at 2 maturity stages by 2 breeds of sheep
F J Giraldez, S Lopez, J S Gonzalez & A R Mantecon
- 103 Prediction of digestibility and intake of sheep fed *leguminosae* or *graminae* hays: comparison between the *in vitro* digestibility, kinetics of gas production or dry matter degradation
M T Dentinho, K Khazaal, J M Ribeiro & E R Orskov

Continued.....

Session Opens 1410

RUMINANT NUTRITION AND DIGESTION

- 104 *In vitro* rumen microbial degradation of a selection of oilseeds and legume seeds under consecutive batch culture (CBC)
Ismartoyo, C S Stewart & T Acamovic
- 105 Purine derivatives in urine and plasma of lactating cows given different levels of feed intake
Z M Daniels, X B Chen, D J Kyle, K Sinclair & E R Ørskov
- 106 Effect of hindgut fermentation on urinary excretion of purine derivatives
J C E Surra, J A Guada, J Balcells & C Castrillo
- 107 Glucose, α amino-nitrogen and urea uptake by hind-limb in bulls offered different amounts of concentrate
J L Hornick, A Clinquart, C Van Eenaeme, S Gauthier & L Istasse
- 108 Conditioning calves to accept high Na feeds
C J C Phillips & M Youssef
- 109 Use of near infrared spectroscopy (NIRS) to monitor changes in the composition of rumen fluid
R Sanderson, S J Lister & M S Dhanoa
- 110 Effect of rumen fill on voluntary intake by steers
A A Akingbade & F D Deb Hovell
- 111 Predicting the voluntary intake of barley straw with near infra red reflectance spectroscopy (NIRS)
A V Goodchild, F Jaby El-Haramein & T T Treacher
- 112 The effect of metabolisable protein supply on milk nitrogen capture in dairy cows
R J Mansbridge, J S Blake, J R Newbold, B R Cottrill
- 113 Effects of metabolisable protein on intake of grass silage and milk protein yield in dairy cows
J R Newbold, B R Cottrill, R M Mansbridge & J S Blake

Session Opens 1410

SILAGE

- 114 Effect of slurry application on the microflora of grass and silage
D R Davies & R J Merry
- 115 Effects of adding a *latobacillus plantarum* inoculant to grass ensiled at different dry matter concentrations and offered to beef cattle
P O'Kiely
- 116 Evaluation of silage additive based on granular sulphuric acid
A Breeze
- 117 An evaluation of cows preferences and rate of intake of silages differing in fermentation characteristics
T W J Keady & J J Murphy
- 118 Prediction of the voluntary intake of grass silages by sheep from rumen degradation characteristics measured by the polyester fibre bag or by gas production
M J Morrin, J A Rooke, N W Offer & F D Deb Hovell
- 119 Analysis of undried grass silage by near-infrared spectroscopy:
H W Morris, S P Fisher, J R Newbold, S Wilson, C W Ashby & M N Reece
- 120 A comparison of whole crop fodder beet and grass silages when fed to ewes in late pregnancy
C Whittle, J V O'Doherty & T F Crosby
- 121 A comparison of grass silage and whole crop fodder beet silage when fed to sheep
T F Crosby, J J Callan, P J Quinn & J V O'Doherty
- 122 The effects of ensiling molassed sugar beet pulp with grass and protein supplementation on pregnant ewe performance
J V O'Doherty, P J Quinn & T F Crosby
- 123 The effects of adding molassed sugar beet pulp on the nutritive value of silage
J V O'Doherty, J J Callan, P J Quinn & T F Crosby
- 124 Effect of level of urea treatment of straw offered with grass silage on the performance of dairy cattle
M Iqbal & J D Leaver
- 125 Feeding of urea treated wholecrop wheat in grass silage based rations for growing beef cattle
S H Raza & P Rowlinson
- 126 Methane production in cattle and sheep fed grass silage plus a barley based concentrate
C J Newbold, A R Moss & G S Mollinson
- 127 The effect of concentration level on performance of dairy sheep offered grass silage *ad-libitum*
C Ewbank, C M Minter & R G Wilkinson
- 128 Protein supplementation of different silages for growing steers
A Sargeant, G Daniel & A B McAllan
- 129 Intake and production responses by Holstein-Friesian cows to the level and pattern of crude protein supplied in a fixed concentrate diet given with *ad libitum* grass silage
K Aston, W J Fisher & A B McAllan
- 130 Finishing performance of hill lambs fed clover rich baled silage to UKROFS standards.
R Keatinge & W A Murray

TROPICAL FEEDS

- 131 Cut-and-carry feeding of indigenous grass in Indonesian sheep production: effect of amounts of grass and rice bran offered on grass intake and on yield of compost made from refusals and excreta
J C Tanner, E Owen, H M Winugroho & M Gill
- 132 Digestibility of passion fruit residues and elephant grass silages for sheep
P C de A Paiva & C A P de Rezende, J doz Reis, I M E V von Tiesenhausen
- 133 *Sesbania* leaves as sole feed for growing black Bengal goats
Md Shahjalal, M J Khan, M A Akbar, A M M Tareque & H Galbraith
- 134 Effect of inclusion of *Sesbania sesban var nubica* on cumulative gas production from *Lolium perenne* during *in vitro* incubation with rumen contents
M J Bryant & A M B E T Scholten
- 135 *In vitro* fermentation of the non-starch polysaccharide fraction of tropical forage legumes
A C Longland, R D Pilgrim, J Thorp, S J Lister, P Morris & M K Theodorou
- 136 Influence of African multipurpose trees on activity of rumen protozoa and bacteria *in vitro*
C J Newbold, S M El Hassan, R J Wallace, X B Chen, A V Goodchild & L Arthaud
- 137 Dry matter and protein degradability of leucaena
T Fekadu, T Acamovic, C S Stewart & J H Topps
- 138 Feeding African palm oil and *gliricidia sepium* to dairy cattle in the Tropics
J K Margerison, T R Preston & C J C Phillips
- 139 Evaluation of the nutritional characteristics of tropical feeds using the pressure transducer gas measurement technique
Z Sileshi, E Owen, M K Theodorou, M S Dhanoa & J France
- 140 Relationship between polyphenolics and the *in vitro* fermentability of tropical forage legumes
A C Longland, M K Theodorou, C Powell & E M Gill

Session Opens 0900

CATTLE

- 141 To determine the effect of feeding a 'protected' soyabean meal on milk production in high yielding dairy cows
R J Mansbridge
- 142 The effect of level of supplement feeding and source of protein on milk production and nutrient flows of dairy cows
F P O'Mara, J J Murphy & M Rath
- 143 Organic dairy farming (UKROFS standards): milk production and stocking rates during the first year of conversion
R F Weller, A Cooper & A B McAllan
- 144 Restricted suckling of dairy cattle in the humid tropics
J K Margerison, T R Preston & C J C Phillips
- 145 A dual purpose cattle system combining milk and beef production
R F Boden & J D Leaver
- 146 The effect of different genetic lifts and gains on milk production on the potential long-term benefits of using new breeding technologies in commercial dairy herds
C M Yates, A T Chamberlain, T Rehman, H Neal & B J Frost
- 147 The use of velocity of ultrasound to monitor body composition in lactating cows
A Cooper, K Aston, M S Dhanoa & A B McAllan
- 148 The effect of plane of nutrition on the response by Trypanotolerant cattle to infection with Trypanosomiasis
D L Romney, A Njie, P Holmes & M Gill
- 149 Extensification of beef production - effects of fertiliser N level on herbage yield, grazing days and performance of beef steers
M G Keane
- 150 Effects of rape-seed meal at different incorporation rates on food intakes and digestibility in a diet for growing fattening bulls
A P Mayombo, I Dufrasne, M Gielen, C Van Eenaeme, L Istasse
- 151 Effects of nutrition and weaning on immune responses in calves: implications for welfare assessment
A M Mackenzie, T G Rowan, S D Carter, J B Dixon & J Tebble

Session Opens 0900

PIGS

- 152 Consequences of diet fed *ad libitum* to the farrowing and lactating crated sow
A R Rudd & P H Simmins
- 153 Response of breeding sows to long term dietary supplementation with folic acid
P B Lynch & P J A Sheehy
- 154 Intake and digestibility of silage by pregnant sows and effects of treatment with Maxgrass
S A Edwards, J Weddell, C Fordyce, A Cadenhead & J Rooke
- 155 Effect of different lysine: energy ratios in the lactation diet on sow performance
A C Shoniwa, P R English, D Llopart, O McPherson, J A Roden & S A Edwards
- 156 Effect of different lysine: energy ratios in the diet on performance and rebreeding of lactating gilts
P Peral, S A Edwards, J A Roden, J Mora, A Ortega, O McPherson & P R English
- 157 Metabolic effects of fibrous ingredients in pig diets
F Brouns, S A Edwards, P R English
- 158 Voluntary intake and digestibility by pigs of diets containing pectin rich raw materials and the effects of enzyme treatment
S Offredo, F Brouns, S A Edwards & J Inbarr
- 159 Effect of the inclusion of an extruded mixture in the diets of weaned piglets
M D Baucells Sanchez, X Serrano Masip, F Puchal Mas
- 160 Evaluation of an enzymatically treated soya protein in the diet of weaned pigs
C A Weeks, B G Miller, L Green, S Rivzi, C Beck, J Sissons & S Jagger
- 161 Measurements of the acid binding capacity of ingredients used in diets for starter pigs
P G Lawlor, P B Lynch & P J Caffrey
- 162 Effect of chemical structure of fats upon their apparent digestible energy value when fed to young pigs
J Powles, J Wiseman, D J A Cole & B Hardy
- 163 The effect of Phytase and dietary phosphorus intake on bone strength and total body phosphorus of young pigs
N Khan & D J A Cole
- 164 Performance of post-weaned piglets when offered choice of diet
G Dams, B Edwards, S Tibble P Toplis & W H Close,
- 165 Use of the choice-feeding system to enhance the health & performance of early weaned piglets fed low-cost diets
B P Gill, M Robledo , P R English & A P Sanchez-Serrano
- 166 Nutritional limitations to growth in the post-weaned piglet
G Dams, B Edwards, S Tibble, P Toplis & W H Close,
- 167 The number of feeding spaces required for large groups of early-weaned pigs
P H Simmins & S Malkin

Continued.....

Tuesday 22 March 1994

**Poster Session
Vita Dome
Authors in attendance 1340-1440
Discussion 1600-1700
Chairman - Dr J D Wood**

Session Opens 1340

MEAT QUALITY

- 175 **Effects of molassed sugar beet feed on pigmeat quality.**
 J D Wood, G R Nute, F M Whittington, R M Kay & J G Perrott
- 176 **Effects of pasture type and weaning on weight loss during cooking of roast lamb leg joints and grilled chops**
 J E Vipond & S Marie
- 177 **Effects of short-term high-level feeding of vitamin E on colour shelf life in beef**
 L Vega Robles, A A Taylor, J D Wood & M Angold
- 178 **Comparison of proteolytic enzyme levels in lamb, pig, rabbit and chicken muscle: role in meat tenderization post mortem**
 P J Blanchard, J P Chadwick & D Mantle
- 179 **Eating quality of beef from different breeds**
 D B Lowe, A Cuthbertson, D L M Homer & P McMenamin
- 180 **Effects of grilling to 80°C on the physical and chemical composition of pork loin steaks**
 J D Wood, G R Nute, R C Ball, G A J Fursey & G Harrington
- 181 **Beef tenderness variation due to animal production factors and the effects of electrical stimulation, carcass suspension method, chill rate and ageing duration.**
 A V Fisher, G Cook, G A J Fursey & G R Nute

PIG HOUSING AND WELFARE

- 182 Characterisation of behavioural types in pigs: the relationship between behaviour in an open field situation and social rank
H A M Spoolder, J A Burbidge, A B Lawrence, P H Simmins & S A Edwards
- 183 An assessment, using physiological parameters, of the welfare of group housed gilts on three feeding systems
A H Stewart, S A Edwards & A M Mackenzie
- 184 The effect of liquid feeding in a deep straw system on sow behaviour and welfare
P J Baynes, E J Hunter, H J Guise & R H C Penny
- 185 Dry sow housing-induced anatomical differences and the effects on lying behaviour
J N Marchant & D M Broom
- 186 Lying behaviour of dry sows in relation to housing conditions
J N Marchant & D M Broom
- 187 Observations on dynamic groups of sows in semi-outdoor systems, effects of communal floor feeding versus individual voluntary stalls
N Walker
- 188 The effect of a simple conversion of a tether house on sow welfare
P J Baynes, E J Hunter, H J Guise & R H C Penny
- 189 Effect of 3 lactation housing systems on sow and piglet performance and behaviour
G Hatet, S A Edwards, K Gall & D S Arey
- 190 Welfare and production implications of piglet husbandry treatments in outdoor systems
J M E Brown, S A Edwards, W J Smith, E Tompson & J Duncan
- 191 A study of the influence of shredded paper bedding at parturition on hypothermia, survival and growth of piglets and indices of sow welfare
A Ortega, P R English, J A Roden, O McPherson, P Peral and J Mora
- 192 Evaluation of three strawflow systems as alternatives to traditional flatdeck accommodation in pigs
R Hardiman & H A M van der Steen
- 193 The effect of enrichment on the behaviour, welfare and performance of early-weaned piglets in slatted flatdeck housing
E A Moore, D M Broom & P H Simmins
- 194 Effects of early environment on the subsequent behaviour of the pig
V E Beattie, N Walker & I A Sneddon
- 195 A comparison of the performance and behaviour of growing pigs housed in straw yards or fully-slatted pens
J H Guy, P Rowlinson, J P Chadwick & M Ellis
- 196 Braude Scholarship 1993 - A review of sow group-housing in Germany and Holland with respect to animals welfare - N Hodgkiss
- 197 Pig Housing & Welfare - Denmark
B Pedersen

Session Opens 0900

SHEEP, GOATS AND DEER

- 198 The growth of 3 Greek dairy breeds of lamb to 3 slaughter weights as affected by different levels of nutrition
D Zygoyiannis, C Stamataris, N Katsaounis, N Friggens & G C Emmans
- 199 Meal patterns of 2 Spanish sheep breeds with different types of food
J Amor, J P Barrio & F F Bermudez
- 200 Meal patterns in pregnancy and lactation of 2 Spanish sheep breeds
J Amor, J P Barrio & F F Bermudez
- 201 Effect of supplementary feeding with maize bran on the milking potential of the indigenous Malawi goat
R A Cooper, L Kamwanja & J A Kirk
- 202 A comparison of the performance of Turkish and Syrian strains of Awassi ewes at 2 levels of nutrition
T T Treacher, F Bahhady, H Heritani & A Termanini
- 203 Grazing of barley stubble by sheep in Syria: effects of stocking rate and supplementation on selective intake of stubble fractions
S Rihawi, A V Goodchild, E Owen, A Termanini & T T Treacher
- 204 The effects of shepherding and nutritional inputs in an extensive hill sheep system
S E Pattinson, A Waterhouse & J T B Wyllie
- 205 Effects on ewe and lamb performance of supplementing housed twin bearing/rearing crossbred ewes with self-help feed-blocks and liquid feed during late pregnancy and early lactation
B G Merrell & S P Marsh
- 206 An evaluation of molassed sugar beet feed and distillers barley dark grains as concentrate supplements for out-wintered single-bearing hill ewes during late pregnancy
B G Merrell & J J Hyslop
- 207 The relative importance of energy and protein in the concentrate on intake and yield of milk constituents by Freisland ewes offered hay ad-libitum
R G Wilkinson, C M Minter, G Duffy & J Celerier
- 208 Beans (*vicia faba*) as a finishing supplement for hill lambs under organic management
W A Murray & R Keatinge
- 209 Prediction of body fat from body condition score and live body weight in adult Churra ewes
P Frutos, A R Mantecon, P R Revesado & J S Gonzalez
- 210 Growth, carcass composition and its prediction in the indigenous Malawi goat
J A Kirk, R A Cooper & L Kamwanja
- 211 Intramuscular fat analysis of intensively and commercially reared British Angora goats
J A Kirk, V S A Russell Dawe & S Austin

Continued.....

Session Opens 0900

SHEEP, GOATS AND DEER

- 212 Body chemical composition of Churra lambs at 20 kg live-weight: effect of level of milk intake and protein content in the post-weaning diet
T Manso, A R Mantecon, T Castro & P Lavin
- 213 The effect of rearing nutrition on the reproductive performance in red deer hinds
D G Chapple, M H Davies & A P Wade
- 214 Effect of clover content in the diet on the performance of weaned lambs on grass/clover swards previously grazed by goats or sheep
M Del Pozo, I A Wright, P Colgrove & T K Whyte
- 215 Effect of dietary supplements based on urea or whitefish meal on growth and fleece characteristics of Siberian and Australasian crossbred Cashmere goats
H Galbraith, Md Shahjalal & J H Topps
- 216 Fine wool production from UK hill land resources
A J F Russel, H M Sangster, G T Gittus & H Redden
- 217 Nutritional and seasonal effects on fibre production in Llamas
A J F Russel & H Redden
- 218 Comparison of the response of secondary hair follicles of Cashmere and Angora goats to Prolactin and Melatonin *in vitro*
M Ibraheem, H Galbraith & J R Scaife
- 219 *In vitro* fibre production and protein synthesis in secondary hair follicles of the Cashmere and Angora goat
D R Lee, H Galbraith & J R Scaife
- 220 Effect of isolation stress on B-endorphin and LH levels in ovariectomized ewes
A M X Eloy & R G Rodway
- 221 Oestrous activity and ovulation rate in Rasa Aragonesa ewes maintained at 2 different body condition levels implanted or reimplanted in the seasonal anoestrous with exogenous melatonin
L Zarazaga, Z Rondon, F Forcada, J A Abecia & M A Sanz
- 222 Effects of body condition and level of nutrition before mating on fertility of Awassi ewes
S Filo, A V Goodchild & T T Treacher
- 223 The effect of concentrate supplementation and prolificacy on hay intake and performance of pregnant Manchega ewes
J Gasa, P Prio, A Ferret, G Caja
- 224 A comparison of the rate of genetic gain and inbreeding in a centralised and a dispersed open nucleus breeding system for sheep
J a Roden
- 225 Comparative performance of castrated male lambs from two crossing-sire breeds
B G Merrell & B A Hedley
- 226 Use of radiophosphorus kinetics in the blood of sheep to compare four sources of supplementary phosphorus
A L Abdalla & D M S S Vitti