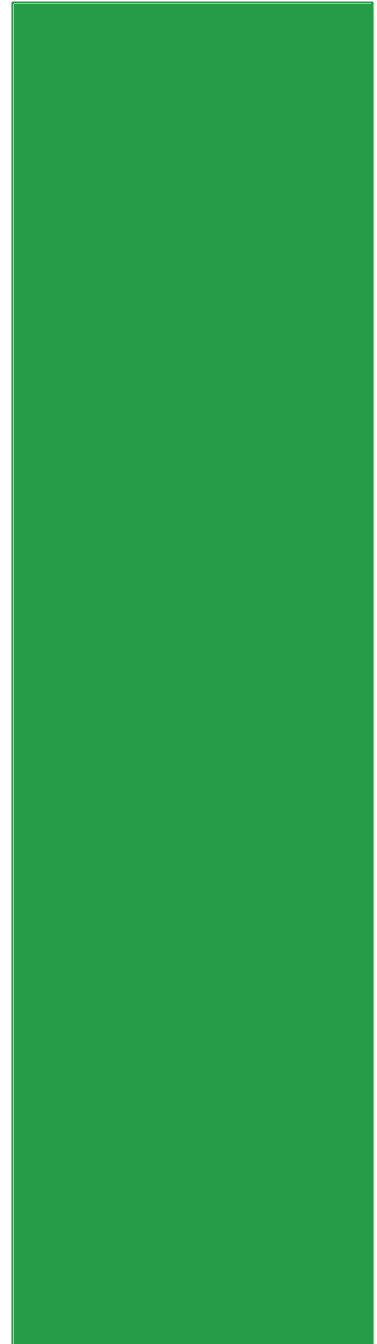


*Proceedings
of the
British Society
of Animal Science*

2001

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The Proceedings of the British Society of Animal Science constitute summaries of papers presented at the Society's Annual Meeting in Scarborough in March 2000.

The summaries have not been edited and the Society can accept no responsibility for their accuracy. Views expressed in all contributions are those of the authors and not those of the British Society of Animal Science.

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System Requirements

Macintosh

68020-68040 processor with 2MB application RAM, or Power Macintosh® with 4MB application RAM

Apple® System Software version 7.0 or later

4 MB of available hard disk space

Windows

386, 486 or Pentium® processor-based computer with 4MB of RAM

Microsoft® Windows 3.1, Windows 95, or Windows NT 3.5 or later

4 MB of available hard disk space

Sun and Solaris

Sun SPARCstation® workstation with 32 MB of RAM

SunOS™ version 4.1.3 or later, or Solaris® version 2.3 or 2.4

OpenWindows™ (version 3.0 or later) or the Motif™ window manager (version 1.2.3 or later)

8 MB of available hard disk space

HP-UX

HP Series 9000 workstation, model 700 or higher with 32 MB of RAM

HP-UX 9.0.3 or later

HP VUE desktop environment

6 MB of available hard disk space

PROGRAMME

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Towards a continuous culture (Rusitec) model of rumen acidosis: effects of buffer concentration, non-protein nitrogen and concentrate level on pH and feed degradation

130 *C U Haubi, F L Mould, C K Reynolds & E Owen*

Influence of peptides and amino acids on ammonia assimilation by cellulolytic ruminal bacteria

131 *R J Wallace, C Atasoglu & C J Newbold*

Comparison of sheep rumen liquor and rusitec fluid as inoculum for determining the *in vitro* digestibility of hays

132 *M L Tejido, M J Ranilla & M D Carro*

Non-additivity of feedstuffs examined *in vitro* and the influence of incubation medium pH

133 *F L Mould, D Colombatto, G Hervas, F Ibrir, E Owen & C K Reynolds*

Relationship between the production of short chain fatty acids and gas when proteins are incubated *in vitro*

134 *C Rymer, S Fakhri, A R Moss & D I Givens*

MINERALS ACROSS SPECIES

The effect of sodium supplementation of pregnant cows on the preference of their calves for concentrate with added sodium

135 *M O Mohammed & C J C Phillips*

Plasma inorganic iodine values in beef cows following rumen bolus or dietary mineral supplementation

136 *J J Parkins, R G Hemingway, G Fishwick & N S Ritchie*

A new source of magnesium and phosphorus for dairy heifers fed a grass silage based diet

137 *A S Chaudhry, W Taylor, J I Harland & P Rowlinson*

Phosphorous pollution by dairy cows and its mitigation by dietary manipulation

138 *E Kebreab, L A Crompton, J A N Mills & J France*

The effect of different levels of inorganic sulphur on the rumen parameters of Raini goat

139 *Y Rouzbehan, H Shahbazi & K Rezi Yazdi*

The effect of molybdenum, iron and sulphur supplementation on growth rate and copper status of lambs

140 *C L Williams, A M Mackenzie, D V Illingworth & R G Wilkinson*

Effects of short and long term sodium supplementation on copper accumulation in sheep

141 *M O Mohammed, P C Chiy & C J C Phillips*

Effect of Ca: P ratio on grower-finisher pig performance and mineral excretion

142 *S M Brady, J J Callan, D Cowan, M McGrane & J V O'Doherty*

Influence of Natuphos® phytase and organic acids on the performance of growing/finishing pigs

143 *P J Blanchard, C Coonan, J H Guy & D Feuerstein*

Growth performance and bone strength of piglets fed Natuphos®

144 *J H Guy, K Scott, P Blanchard, C Coonan, M Tomblin & N Dixon*

RUMEN AND *in vitro* METABOLISM

Ruminal peptide-N concentration in Iranian Balochi lambs fed diets containing lucerne hay or silage

145 *A R Heravi Moosavi & M Danesh Mesgaran*

The potential of urinary metabolites of plant compounds as indicators of botanical composition of the diet of goats

146 *B L Keir, R W Mayes & E R Ørskov*

The biohydrogenation of n-3 polyunsaturated fatty acids determined *in vitro*

147 *S L Cooper, L A Sinclair, J A Huntington, R G Wilkinson, S Chikunya, M Enser & J D Wood*

Rumen microbial breakdown of plant secondary compounds in ruminants consuming mixed diets

148 *A J Duncan & S A Young*

Effects of fibre level and particle size on rumen microbial fermentation and protein metabolism using liquid and solid associated bacteria

149 *M Rodríguez, S Calsamiglia & A Ferret*

Flow of microbial and non-microbial N fractions entering the omasal canal in dairy cows

150 *S Ahvenjärvi, A Vanhatalo & P Huhtanen*

Effect of fibre source on the efficiency of microbial synthesis by mixed microorganisms from the sheep rumen *in vitro*

151 *M J Ranilla, S López, M D Carro, R J Wallace & C J Newbold*

In vitro microbial growth as affected by the type of carbohydrate and the source of N

152 *M L Tejido, M D Carro, M J Ranilla & S López*

Variation between feedstuff degradabilities assessed using short-term *in vitro* incubations and a comparison with *in sacco* derived values

153 *C A Butler, F L Mould & E Owen*

The effect of diet on rumen chitin content in sheep

154 *M Rezaeian, G W Beakes & D S Parker*

Effect of zeolite nutrition on rumen ecosystem in dairy cow

155 *G Mogaddam & A Taghizadeh*

Characterisation of proteolytic activity of rumen microbes and commercial proteases

156 *G Gizzi & G A Broderick*

The impact of hexose partitioning in sheep *in vivo*

157 *A R Moss, C J Newbold & D I Givens*

Pigs

The effects of lysine energy density on performance and nitrogen balance of 50, 65 and 80 kg pigs.

158 *A B G Leek, J J Callan, B Flynn & J V O'Doherty*

The relationships between plasma glucose and insulin concentrations, and growth performance in German Pietrain and Large White porcine genotypes

159 *J C Litten, A M Corson, P C Drury, A D Hall & L Clarke*

Use of soluble spray dried porcine plasma in the water supply enhances piglet growth and intestinal integrity post weaning

160 *H M Miller, P Toplis, L J Broom & S Ilsley*

The effect of liquid feed on the small intestine mucosa and performance of finishing pigs at different water to feed ratios

161 *D Hurst, I J Lean & A D Hall*

The effect of liquid feed on the small intestine mucosa and performance of piglets at 28 days postweaning

162 *D Hurst, I J Lean & A D Hall*

Influence of diet acid binding capacity on gut morphology and digesta pH in piglets

163 *J A Pickard, J Wiseman & M A Varley*

Enzyme linked immuno-absorbent assay (ELISA) to determine the effectiveness of anti-adhesive factors in blocking the binding of F4 (K88)ac E coli to pig intestine

164 *B G Miller, P H Jones, S Rizvi, J Gibson & D Patel*

The effect of temperature and fermentation time on the survival of *Salmonella typhimurium* DT104:30 in liquid piglet feed fermented with *Pediococcus pentosaceus*

165 *J D Beal, A Campbell & P H Brooks*

Transfer of vitamin E to piglet tissue, placenta, colostrum and milk from sows supplemented with vitamin E and vitamin C

166 *A Pinelli-Saavedra, J R Scaife, H Celaya & M Birnie*

The effect of pellet size on the voluntary food intake and performance of young pigs

167 *H L Edge, J A Dalby, P Rowlinson & M A Varley*

Food intake and performance of newly-weaned pigs: effect of pairing with an experienced pig

168 *C A Morgan, A B Lawrence, J Chirside & L A Deans*

Herbage intake of growing pigs in an outdoor organic production system

169 *D Mowat, C A Watson, R W Mayes, H Kelly, H Browning & S A Edwards*

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A survey to investigate the influence of commercial human-animal interaction during rearing on the welfare and subsequent production of the dairy heifer

170 *C Bertenshaw, P Rowlinson & M Ness*

The use of texture analysis to assess the structural strength of hoof horn of dairy cows

171 *B Winkler, J K Margerison & C Brennan*

Relationship between the scoring of hoof lesions and lameness in dairy cows

172 *B Winkler & J K Margerison*

Passive infrared detection (PID) of activity in groups of broiler chickens growing at different rates

173 *B L Nielsen, J B Kjaer & N C Friggens*

- Hut space requirements for outdoor sows
174 *M Cooper, M Wijnberg & S A Edwards*
- The effects of farrowing system design on welfare sows and piglets of different genotypes
175 *J N Marchant, D M Broom & S Corning*
- An investigation into the effect of different protein and energy intakes on the tail chewing behaviour of growing pigs
176 *J McIntyre & S A Edwards*
- The effect of varying lengths of chopped straw bedding on the behaviour of growing pigs
177 *J E L Day, H Chamberlain, H A M Spooler & S A Edwards*
- The effects of chain and feeder position on lying and dunging behaviour of finishing pigs in the presence and absence of straw
178 *J J Zonderland & H A M Spooler*
- The effect of mixing piglets at different ages pre-weaning on pre-weaning behaviour
179 *M J Allen, A H Stewart & A M Mackenzie*
- The influence of mineral blocks on the behaviour of newly weaned pigs
180 *G Mas Reixach, S Felius, C Coonan, P R English & S A Edwards*

DAIRY COW NUTRITION

- Effect of replacing soyabean meal with maize distillers grains on feed intake and milk yield of lactating dairy cows
181 *R H Phipps, J D Sutton, A K Jones, J G Perrott & M Witt*
- The effect of level of concentrate feeding on the response of lactating dairy cows to dietary inclusion of fodder beet
182 *D C Patterson, C P Ferris & F J Gordon*
- Factors influencing individual predicted total dry matter intake of dairy cattle on farms
183 *H C F Wicks & J D Leaver*
- Effects of the ratio of effective rumen degradable protein to fermentable metabolizable energy on voluntary intake and milk yields of dairy cows
184 *A R J Cabrita, A J M Fonseca, C Sampaio, E Gomes & R J Dewhurst*
- Lactational performance and body weight change in cows fed the fungal treated wheat straw
185 *H Fazaeli, Z A M Jelani, Y Rouzbehan, H Mahmodzadeh, B J Laing, A Azizi & Osman Awang*
- Production of lactating dairy cows fed diets with lucerne or red clover silage with or without supplemental maize silage
186 *G A Broderick & R P Walgenbach*
- Evaluation of legume silages offered to Holstein-Friesian cows with small amounts of concentrates
187 *R J Dewhurst, D W R Davies, W J Fisher, J Bertilsson & R J Wilkins*
- Late summer concentrate supplementation of dairy cows at grass
188 *L A Wilson, D J Roberts & A R Henderson*
- Extended grazing of dry cows
189 *R J Dewhurst, D W R Davies & W J Fisher*
- Close up dry period protein supplementation influences milk, fat and protein yields of multiparous Holstein dairy cows in the first half of their next lactation
190 *P H Robinson & J M Moorby*
- Late gestation protein supplementation influences milk, fat and protein yields of primiparous Holstein dairy cows in the first half of their first lactation
191 *J M Moorby & P H Robinson*
- The effects of feeding different starch sources and concentrations on milk production of high yielding Holstein cows
192 *R E Lawson, A R Moss, C Rymer & J S Blake*
- The effects of adding oil to liquid feed supplements on feed intakes and milk production of high yielding Holstein cows
193 *R E Lawson, R Derrick & J S Blake*

The relationship between milk composition and volatile fatty acids in the rumen in cattle

194 *T Yan & R E Agnew*

Replacing grazing with a maize silage-based indoor diet for lactating dairy cows in autumn

195 *O Hernandez-Mendo & J D Leaver*

Development of empirical models to describe the response in lactating dairy cattle to changes in nutrient intake

196 *V B Woods, D J Kilpatrick & F J Gordon*

The development of a system based on near infrared spectroscopy to predict the intake of grass silage as the sole feed by the dairy cow

197 *R E Agnew, N W Offer, B McNamee & R S Park*

The determination of meal criteria for cows: the use of mixed distribution models

198 *M P Yeates, B J Tolkamp, D J Allcroft & I Kyriazakis*

Relationship between fish oil intake by dairy cows and the yield of eicosapentaenoic acid and docosahexaenoic acid in their milk

199 *C Rymer, C Dyer, D I Givens & R Allison*

Influence of protein level of supplement on diet selection by dairy cows given a choice of grass or maize silages, and on intake of forages when offered separately

200 *J S Syed & J D Leaver*

Nutritional strategies to maximise forage intake in high yielding dairy cows

201 *R H Phipps, A K Jones, C K Reynolds, A R Henderson & B S Woodacre*

Live weight, condition score and *Longissimus dorsi* responses to energy and protein supplied during the dry period in dairy cows

202 *G Jaurena, J M Moorby, W J Fisher & D W R Davies*

Lactational responses to energy and protein supplied during the dry period in dairy cows

203 *G Jaurena, J M Moorby, W J Fisher & D W R Davies*

The utilization of a commercial rapeseed meal product (RaPass) as a protein supplement for lactating dairy cows

204 *E C C de Sousa Lamy, S P Williams, M B Salawu & C J Hammond*

The influence of body condition and level of feeding on the heat production of non-pregnant, non-lactating dairy cows

205 *R E Agnew, J W Birnie, F J Gordon & T Yan*

In vivo estimation of body composition of lactating dairy cattle from urea space measurements

206 *R E Agnew, W J McCaughey, J D McEvoy, D C Patterson, M G Porter, R W J Steen & T Yan*

An examination of metabolisable energy requirements of lactating dairy cows

207 *R M Kirkland & F J Gordon*

MONOGASTRIC FEEDS

The effect of graded levels of 'Greenwich Gold' on the performance of growing-finishing pigs

208 *P H Brooks & P J Russell*

Utilization of three biodegraded agro-industrial by-products (AIBs) by layers

209 *E A Iyayi, R J Dosumu & Z Aderolu*

Effect of barley variety, year and location of production on overall and ileal digestibility in growing pigs

210 *M E E McCann, J D G McEvoy & K J McCracken*

The effects of barley variety, the location of production and enzyme addition on overall and ileal digestibility in growing pigs

211 *M E E McCann, J D G McEvoy & K J McCracken*

The effect of variety and location of production on the chemical composition of barley

212 *M E E McCann, R Urquhart & K J McCracken*

Bushel weight of wheat and enzyme supplementation did not affect weaner pig performance

213 *H M Miller, P Toplis, P Blanchard & R Rawling*

Use of sunflower seed meal (SSM) in broiler ration

214 *M Rezaei*

GENETICS, BREEDING & REPRODUCTION

Effect of acute nutritional restriction on periovulatory oestradiol & IGF-I in beef heifers

215 *D R Mackey, A R G Wylie, J F Roche, J M Sreenan & M G Diskin*

Glucose metabolism of *in vitro*-produced bovine embryos in cell-free and co-culture systems

216 *N M Orsi, J B Reischl & H J Leese*

A comparison of the fertility of Holstein Friesian and Norwegian Dairy Cattle under low and high nutrient input systems

217 *A D Crawford, C S Mayne, M A McCoy & D Lennox*

The effect of breed and parity on the relationship between condition score and live weight in dairy cows

218 *N C Friggens, H M Nielsen, P Lovendahl, K L Ingvarsen & J Jensen*

Genetic correlations between 305-day and monthly test day milk yield records in primiparous Iranian Holsteins

219 *H Farhangfar, P Rowlinson & M B Willis*

The effect of feeding calcium soaps of fatty acids on the reproductive physiology of lactating dairy cows

220 *L M Hicking, A P F Flint, P C Garnsworthy & G E Mann*

Comparison of changes in peripheral plasma inhibin in relation to estrous cycle between cows and buffaloes

221 *S Mondal, B S Prakash & P Palta*

Synchronisation of oestrus using a 14 day progestagen sponge treatment in the absence of a corpus luteum does not reduce fertility in ewes

222 *A P Beard, S Madgwick, K M Quinn & A C O Evans*

Improving lamb performance from Welsh Mountain sheep breeding groups

223 *B M L McLean, O D Davies & D E Evans*

Genetic analysis of birth weight and related traits in Dorset Down and Hampshire Down sheep

224 *J A Roden, J M Finch & W Haresign*

The effect of crossbred ewe type and ram genotype on lamb output and carcass quality

225 *L E R Dawson & A F Carson*

Effect of long and short term protein nutrition on the metabolic status, body composition and reproductive performance of gilts

226 *J Slevin, J Wiseman, M G Hunter, R M Walker & R Webb*

In vitro differentiation of a cloned bovine mammary epithelial cell

227 *M T Rose, H Aso, S Yonekura, K Ozutsumi & Y Obara*

INVITED THEATRE PRESENTATIONS

ENDOCRINE DISRUPTING COMPOUNDS AND THEIR IMPLICATIONS FOR DOMESTIC

ANIMAL AND HUMAN HEALTH (EU CONCERTED ACTION)

Introduction to endocrine disrupting compounds

228 *S M Rhind, MLURI, Aberdeen*

Epidemiological evidence of effects of EDC on ruminant reproduction

229 *Th A M Kruip, G A L Meijer & M Boerjan, Institute of Animal Science & Health, The Netherlands*

Empirical studies of effects of endocrine disrupting compounds on male reproductive physiology

230 *T Sweeney, J Fox, A G Morrison, C Wright, S Ni Cheallaigh & N Evans University College Dublin & University of Glasgow*

Empirical studies of effects of EDC on reproductive physiology (particularly in females)

231 *Dr H Picton, University of Leeds*

FUTURE DIRECTIONS FOR THE LIVESTOCK INDUSTRY

Biotechnology and livestock production

232 *A J Webb, Cotswold Pig Development Co Ltd, UK*

Food safety issues: safe meat and a prosperous industry?

235 *T Humphrey, PHLS Food Microbiology, UK*

Understanding the consumer

237 *C Lamb, Meat & Livestock Commission, UK*

THE SCIENCE OF MEAT AND MILK QUALITY

Meat tenderisation - the role of calpains

239 *P L Sensky, T Parr, R G Bardsley & P J Buttery, University of Nottingham, UK*

Muscle lipids and meat quality

243 *M Enser, University of Bristol, UK*

Meat structure and quality

247 *P Purslow, Royal Veterinary & Agricultural University, Denmark*

Computerised tomography for carcass analysis

250 *M J Young, G Simm & C A Glasbey, SAC - Edinburgh, UK*

Milk fat composition and nutritional value

255 *J J Murphy, Teagasc, Ireland*

Gene regulation of muscle, meat and milk

258 *J Bass & S Davis, Agresearch, New Zealand*

Mapping genes for milk and meat quality

275 *C S Haley, Roslin Institute Midlothian, UK*

TROPICAL ANIMAL PRODUCTION

An overview of Yak production

261 *G Wiener, Roslin Institute & CTVM Edinburgh, UK*

ETHICAL ISSUES IN ANIMAL SCIENCE

Animal rights and wrongs

262 *R Scruton, Sunday Hill Farm, Brinksworth, UK*

The legacy of positivism and the role of ethics in animal science

263 *P B Thompson, Purdue University, USA*

Ethical issues in animal biotechnology

265 *P Sandøe, S B Christiansen & J Lassen, Centre for Bioethics & Risk Assessment, Denmark*

The ethical basis of intensive livestock production systems

266 *G Gatward, The Arthur Rank Centre, Stoneleigh Park, UK*

IMPROVING BEEF PRODUCTION SYSTEMS - THE WAY FORWARD

Nutrition and production - the scientist

267 *M Lewis & B G Lowman, SAC Edinburgh, UK*

Genetic improvement of beef cattle - the scientist

268 *D Pullar, MLC, UK*

Genetic improvement of beef cattle - the farmer/practioner

270 *R Fuller, JSR Farms, York, UK*

Animal health - the scientist

272 *D S Edwards & A M Johnston, Royal Veterinary College, Potters Bar, UK*

Land use and the environment - the scientist

274 *J A Milne, MLURI, Aberdeen, UK*

International Society of Applied Ethology Programme

OPEN COMMUNICATIONS SESSION

- OC1 Early experience of ammoniated environments and subsequent avoidance behaviour in domestic fowl.
E. K. M. Jones, C. M. Wathes, and A. J. F. Webster
- OC2 The effect of demonstrator reward on social learning of operant key pecking by domestic hens.
C. M. Sherwin, C. M. Heyes, C. Leeb, and C. J. Nicol
- OC3 The chewing behaviour of growing pigs presented with tail models soaked in different fractions of blood as a test for tail biting predisposition.
J. McIntyre, V. E. Beattie, K. Breuer and S. A. Edwards
- OC4 Heart rate and behavioural correlates of anxiety assessment in horses.
J. N. Marchant, D. S. Mills and E. Schofield
- OC5 Can we predict which hens will feather peck?
M. J. Albentosa and C. J. Nicol
- OC6 Behavioural diversity within groups of juvenile pigs.
S. M. Hayne and H. W. Gonyou
- OC7 The effect of boar team size on reproductive behaviour in a dynamic service system.
D. F. Grigoriadis, S. A. Edwards, P. R. English and F. Davidson
- OC8 The behavioural responses of mink (*Mustela vison*) to deprivation of highly valued resources.
L. Lewis, J. J. Cooper and G. J. Mason
- OC9 The effect of relative abundance on diet choice in fallow deer.
U. Alm, B. Birgersson and O. Leimar
- OC10 Long-term psychophysiological response of dairy calves to hot-iron dehorning.
R. M. Forde, D. M. Weary and J. N. Marchant

POSTER SESSION I

- PC1 Relationship between rooting behaviour and foraging in growing pigs.
V. E. Beattie and N. E. O'Connell
- PC2 The effect of salt deficiency on the behaviour of finishing pigs in a tail chew test.
V. E. Beattie, K. Breuer, L. M. Dunne, E. C. Slade, N. E. O'Connell, J. T. Mercer, K. A. Rance, I. A. Sneddon, M. E. M. Sutcliffe and S. A. Edwards
- PC3 Does group composition, in terms of latent aggressiveness, affect the feeding behaviour of growing pigs?
H. L. I. Bornett, C. A. Morgan and A. B. Lawrence
- PC4 Responses to ACTH challenge of previously stall-housed sows, housed in groups with free-access stalls.
L. A. Boyle, A. Tergny and P. B. Lynch
- PC5 The effect of paddock rotation management on pasture damage by organic dry sows.
H. Kelly, H. Browning, J. E. L. Day and S. A. Edwards
- PC6 The effect of rearing environment upon behaviour and the rate of 5-HT synthesis and hypothalamic 5-HT levels in pigs.
M. S. Burrows, B. W. Moss and V. E. Beattie

POSTER SESSION II

- PC7 Technology versus ethics in the animal experimentation debate.
I. R. B. Bergin
- PC8 A survey to investigate the level of commercial human-animal interaction during rearing and fear of humans in commercial dairy heifers.
C. Bertenshaw, P. Rowlinson and M. Ness
- PC9 The influence of positive human-animal interaction during rearing on the approach behaviour of young dairy heifers.
C. Bertenshaw and P. Rowlinson
- PC10 Treatment with gonadotrophin releasing hormone increases male-male mounting behaviour in 8 week old beef bull calves.
S. Madgwick, A. P. Beard and N. C. Rawlings
- PC11 Does consistent choice of one side of a milking parlour by dairy cows relate to their behaviour in novel and competitive situations?
I. Prella, C. J. C. Phillips and D. M. Broom