

ANIMAL PRODUCTION SCIENCE

CONTENTS Volume 57, Issue 3, 2017, 401–600

Review

Hair cortisol and its potential value as a physiological measure of stress response in human and non-human animals

C. Burnard, C. Ralph, P. Hynd, J. Hocking Edwards and A. Tilbrook 401–414

Genetics and Genomics

Genetic analyses on bodyweight, reproductive, and carcass traits in composite beef cattle

Bruno Carlos Pires, Patrícia Tholon, Marcos Eli Buzanskas, Ana Paula Sbardella, Jaqueline Oliveira Rosa, Luiz Otávio Campos da Silva, Roberto Augusto de Almeida Torres Júnior, Danisio Prado Munari and Maurício Mello de Alencar 415–421

Pedigree-based analysis of genetic variability in the registered Normande cattle breed in Colombia

Derly Rodríguez Sarmiento, Emanuela Tullo and Rita Rizzi 422–429

Population genetic structure and milk production traits in Girgentana goat breed

Salvatore Mastrangelo, Marco Tolone, Maria Montalbano, Lina Tortorici, Rosalia Di Gerlando, Maria Teresa Sardina and Baldassare Portolano 430–440

Physiology, Endocrinology and Reproduction

Effect of dietary fish oil with or without vitamin E supplementation on fresh and cryopreserved ovine sperm

M. Habibi, M. J. Zamiri, A. Akhlaghi, A. H. Shahverdi, A. R. Alizadeh and M. R. Jaafarzadeh 441–447

Nutrition and Metabolism

Methionine concentration in the pre-starter diet: its effect on broiler breast muscle development

D. J. Powell, S. G. Velleman, A. J. Cowieson and W. I. Muir 448–457

Development of cecal-predominant microbiota in broilers during a complete rearing using denaturing gradient gel electrophoresis

J. E. Blajman, M. V. Zbrun, M. L. Signorini, J. A. Zimmermann, E. Rossler, A. P. Berisvil, A. Romero Scharpen, D. M. Astesana, L. P. Soto and L. S. Frizzo 458–465

Examining the impacts of red deer hind body condition score and pasture forage mass on calf weaning weight

D. R. Stevens, B. R. Thompson, G. W. Asher and I. C. Scott 466–472

Responses to various protein and energy supplements by steers fed low-quality tropical hay. 1.

Comparison of response surfaces for young steers

S. R. McLennan, M. J. Bolam, J. F. Kidd, K. A. Chandra and D. P. Poppi 473–488

Responses to various protein and energy supplements by steers fed low-quality tropical hay. 2.

Effect of stage of maturity of steers

S. R. McLennan, J. M. Campbell, C. H. Pham, K. A. Chandra, S. P. Quigley and D. P. Poppi 489–504

Effect of feeding whole-crop corn silage as dietary roughage on physiological and digestive response of sheep under heat exposure

Md. Mostafizar Rahman, Paramitra Vinitchaikul, Arvinda Panthee, Xue Bi and Hiroaki Sano 505–512

Effect of β -carotene supplementation on the expression of lipid metabolism-related genes

and the deposition of back fat in beef cattle

Q. Jin, H. B. Zhao, X. M. Liu, F. C. Wan, Y. F. Liu, H. J. Cheng, W. You, G. F. Liu and X. W. Tan 513–519

Changes in body composition during the winter gestation period in mature beef cows grazing different herbage allowances of native grasslands

A. Casal, A. L. Astessiano, A. C. Espasandin, A. I. Trujillo, P. Soca and M. Carriquiry 520–529

Continued on next page

Different forms and frequencies of soybean oil supplementation do not alter rumen fermentation in grazing heifers
M. C. A. Santana, G. Fiorentini, J. D. Messina, P. H. M. Dian, R. C. Canesin, R. A. Reis and T. T. Berchielli 530–538

Feed Quality and Nutritional Value

Replacing synthetic N with clovers or alfalfa in bermudagrass pastures. 1. Herbage mass and pasture carrying capacity
P. Beck, T. Hess, D. Hubbell, M. S. Gadberry, J. Jennings and M. Sims 539–546

Replacing synthetic N with clovers or alfalfa in bermudagrass pastures. 2. Herbage nutritive value for growing beef steers
P. Beck, T. Hess, D. Hubbell, M. S. Gadberry, J. Jennings and M. Sims 547–555

Replacing synthetic N with clovers or alfalfa in bermudagrass pastures. 3. Performance of growing steers
P. Beck, T. Hess, D. Hubbell, J. Jennings, M. S. Gadberry and M. Sims 556–562

Sugarcane tops as a substitute for sugarcane in high-concentrate diets for beef bulls
Julião R. L. Couto, Severino D. J. Villela, Mário H. F. Mourthé, Adalfredo R. Lobo-Jr, Roseli A. Santos and Paulo G. M. A. Martins 563–568

Behaviour, Well-being and Health

Physiological and growth parameters of fattening lambs after shearing under heat-stress conditions
F. Moslemipur and S. Golzar-Adabi 569–575

Mechanical nociceptive threshold testing in *Bos indicus* bull calves
Gabrielle C. Musk, Michael Laurence, Teresa Collins, Jonathan Tuke and Timothy H. Hyndman 576–582

Environment, Technology and Production Systems

The use of walk over weigh to predict calving date in extensively managed beef herds
Michael N. Aldridge, Stephen J. Lee, Julian D. Taylor, Greg I. Popplewell, Fergus R. Job and Wayne S. Pitchford 583–591

Meat Science and Product Quality

Quality characteristics of premium mutton nuggets enriched with almond-based functional components
R. R. Kumar, B. D. Sharma, S. K. Mendiratta, O. P. Malav, S. Talukder and S. R. Ahmad 592–600