# ANIMAL PRODUCTION SCIENCE

# **CONTENTS** Volume 58, Issue 5, 2018, 767–972

### Review

Agroforestry for ruminants: a review of trees and shrubs as fodder in silvopastoral temperate and tropical production systems Sophie Vandermeulen, Carlos Alberto Ramírez-Restrepo, Yves Beckers, Hugues Claessens and Jérôme Bindelle 767–777

# **Genetics and Genomics**

Polymorphisms of kappa-casein gene and their effects on milk production traits in Holstein, Jersey and Brown Swiss cattle *Murad Gurses, Huseyin Yuce, Ebru Onalan Etem and Bahri Patir* 778–784

Bayesian estimates of genetic relationship between calving difficulty and productive and reproductive performance in Holstein cows *Navid Ghavi Hossein-Zadeh, Mohammad Hossein Salimi and Abdol Ahad Shadparvar* 785–790

Litter size at lambing influences genetic evaluation of maternal rearing ability *Kim L. Bunter, Andrew A. Swan, Daniel J. Brown, Forbes D. Brien and Jennifer Smith* 791–800

# Nutrition and Metabolism

Bone mineral density in the tail-bones of cattle: effect of dietary phosphorus status, liveweight, age and physiological status D. B. Coates, R. M. Dixon, R. M. Murray, R. J. Mayer and C. P. Miller 801–810

Effect of quantity and source of rumen nitrogen on the efficiency of microbial protein synthesis in steers consuming tropical forage *M. K. Bowen, D. P. Poppi and S. R. McLennan* 811–817

Growing goats of different sexes have distinct metabolic responses to continuous feed restriction Nhayandra C. D. Silva, Carla J. Härter, Fernanda O. M. Figueiredo, Rafael F. Leite, José M. Santos Neto, João A. Negrão, Izabelle A. M. A. Teixeira and Kléber T. Resende 818–827

Relationship between the fatty acid composition of uropygial gland secretion and blood of meat chickens receiving different dietary fats *Khaled Kanakri, Beverly Muhlhausler, John Carragher, Robert Gibson, Reza Barekatain, Carolyn Dekoning, Kelly Drake and Robert Hughes* 828–833

# Feed Quality, Nutritional Value and Toxicology

Effect of replacing a commercial pelleted calf meal with lucerne leaf-meal on performance of neonatal and transitional Holstein heifer calves *Joyce L. Marumo, Florence V. Nherera-Chokuda, Jones W. Ng'ambi and Mukengela C. Muya* 834–840

Comparison of ruminal fermentation parameters, fatty acid composition and flavour of beef in finishing bulls fed active dry yeast (*Saccharomyces cerevisiae*) and yeast culture *C. Y. Geng, Q. X. Meng, L. P. Ren, Z. M. Zhou, M. Zhang and C. G. Yan* 841–847

Effects of partially replacing barley with sugar beet pulp, with and without roasted canola seeds, on performance, rumen histology and fermentation patterns in finishing Arabian lambs *S. Asadollahi, M. Sari, N. Erafanimajd, M. Chaji, M. Mamoui and A. Kiani* 848–855

Production responses in young bulls fed glycerine as a replacement for concentrates in feedlot diets A. C. B. de. Barros, J. N. M. Neiva, J. Restle, R. L. Missio, F. R. C. Miotto, D. A. G. Elejalde and R. P. Maciel 856–861 Rumen-buffering capacity using dietary sources and *in vitro* gas fermentation Sungchhang Kang and Metha Wanapat 862–870

Phosphorus supplementation with or without other minerals, ionophore and antibiotic did not affect performance of Nellore bulls receiving high-grain diets, but increased phosphorus excretion and dietary costs

V. C. Souza, P. Malafaia, B. R. Vieira, Y. T. Granja-Salcedo and T. T. Berchielli 871–877

Methionine supplementation of low-protein diet and subsequent feeding of low-energy diet on the performance and blood chemical profile of broiler chickens

P. Jariyahatthakij, B. Chomtee, T. Poeikhampha, W. Loongyai and C. Bunchasak 878–885

Feed efficiency and enteric methane production of Nellore cattle in the feedlot and on pasture L. F. Oliveira, A. C. Ruggieri, R. H. Branco, O. L. Cota, R. C. Canesin, H. J. U. Costa and M. E. Z. Mercadante 886–893

Associative effects between *Arachis pintoi* and dwarf elephantgrass hays on nutritional value in sheep *A. C. Dall-Orsoletta, T. Reiter, G. V. Kozloski, V. Niderkorn and H. M. N. Ribeiro-Filho* 894–899

The use of certain medicinal plant extracts reduced *in vitro* methane production while improving *in vitro* organic matter digestibility *Abiodun M. Akanmu and Abubeker Hassen* 900–908

### Behaviour, Well-being and Health

Assessing and mitigating post-operative castration pain in *Bos indicus* cattle *M. Laurence, A. Barnes, T. Collins, T. Hyndman and G. C. Musk* 909–919

Performance and behaviour of Nellore steers on integrated systems L. F. Domiciano, M. A. Mombach, P. Carvalho, N. M. F. da Silva, D. H. Pereira, L. S. Cabral, L. B. Lopes and B. C. Pedreira 920–929

Early mother–young relationship and feeding behaviour of lambs are unaffected by low pasture allowance until the beginning of the last third of gestation in single-bearing ewes *A. Freitas-de-Melo, R. Ungerfeld, A. Orihuela, M. J. Hötzel and R. Pérez-Clariget* 930–936

### **Environment, Production Systems and Management**

Revised greenhouse-gas emissions from Australian dairy farms following application of updated methodology *K. M. Christie, R. P. Rawnslev, C. Phelps and R. J. Eckard* 937–942

Using temporal associations to determine maternal parentage in extensive beef herds

D. Menzies, K. P. Patison, N. J. Corbet and D. L. Swain 943-949

### **Meat Science and Product Quality**

Carcass and meat quality of young Cika and Simmental bulls finished under similar conditions *Mojca Simčič, Marko Čepon and Silvester Žgur* 950–957

Sex and breed affect plasma glucose, lactate, cortisol, meat quality but not muscle glycolytic potential of Dorper and Merino lambs

T. Stempa, V. Muchenje, A. M. Abrahams and G. Bradley 958–964

Influences of dietary supplementation of peanut skin powder (*Arachis Hypogaea*) on growth performance, carcass traits, blood chemistry, antioxidant activity and meat quality of broilers *M. E. Abd El-Hack, E. A. Ashour, Gh. M. Elaraby, A. O. Osman and M. Arif* 965–972