

# ANIMAL PRODUCTION SCIENCE

**CONTENTS** Volume 57, Issue 6, 2017, 1001–1200

## Review

Smallholder large ruminant health and production in Lao PDR: challenges and opportunities for improving domestic and regional beef supply  
*S. Nampanya, S. Khounsouy, J. R. Young, V. Napasirith, R. D. Bush and P. A. Windsor* 1001–1006

## Genetics and Genomics

Expression of selected genes related to energy mobilisation and insulin resistance in dairy cows  
*E. Fiore, F. Arfuso, M. Colitti, M. Ganesella, E. Giudice, G. Piccione and M. Morgante* 1007–1013

*CAPN1* gene as a potential marker for growth performance and carcass characteristics in pigs  
*K. Ropka-Molik, E. Robert, M. Tyra, K. Piórkowska, M. Oczkiewicz, M. Szyndler-Nędza and A. Bereta* 1014–1021

Random regression model with heterogeneous residual variance reduces polynomial order fitted for permanent environmental effect but does not affect genetic parameters for milk production in Sahiwal cattle  
*V. Prakash, A. K. Gupta, A. Gupta, R. S. Gandhi, A. Singh and A. K. Chakravarty* 1022–1030

Effects of high ambient temperature on meat quality, serum hormone concentrations, and gene expression in the *longissimus dorsi* muscle of finishing pigs  
*Z. B. Shi, X. Y. Ma, C. T. Zheng, Y. J. Hu, X. F. Yang, K. G. Gao, L. Wang and Z. Y. Jiang* 1031–1039

## Physiology, Endocrinology and Reproduction

Pre- and peri-pubertal feed intake: effects on age at puberty and potential litter size of replacement gilts  
*W. H. E. J. van Wettere, M. Mitchell, D. K. Revell and P. E. Hughes* 1040–1046

Effect of parity on changes in udder traits, milk yield and composition of West African dwarf sheep during lactation  
*E. O. Adegoke, N. S. Machebe, A. G. Ezekwe and O. B. Agaviezor* 1047–1057

## Nutrition and Metabolism

Interactive effects of dietary protein concentration, a mono-component exogenous protease and ascorbic acid on broiler performance, nutritional status and gut health  
*A. J. Cowieson, F. Zaefarian, I. Knap and V. Ravindran* 1058–1068

Niacin feeding to fresh dairy cows: immediate effects on health and milk production  
*J. M. Havlin, P. H. Robinson and J. E. Garrett* 1069–1078

Vitamin A deficiency in *Bos indicus* heifers fed a wheat straw diet cannot be corrected with algae lick blocks or intramuscular injectable retinyl palmitate treatments  
*A. J. Parker, J. P. Goopy, M. J. Callaghan, J. J. Vermunt and R. de Nys* 1079–1084

Effects of protected omega-3 fatty acid derived from linseed oil and vitamin E on growth performance, apparent digestibility, blood characteristics and meat quality of finishing pigs  
*Santi D. Upadhaya, Tian Shui Li and In Ho Kim* 1085–1090

Low-level arginine supplementation (0.1%) of wheat-based diets in pregnancy increases the total and live-born litter sizes in gilts  
*P. Guo, Z. Y. Jiang, K. G. Gao, L. Wang, X. F. Yang, Y. J. Hu, J. Zhang and X. Y. Ma* 1091–1096

*Continued on next page*

## **Feed Quality, Nutritional Value and Toxicology**

Production responses of reproducing ewes to a by-product-based diet inoculated with the probiotic *Bacillus amyloliquefaciens* strain H57

*Oanh T. Le, Benjamin Schofield, Peter J. Dart, Matthew J. Callaghan, Allan T. Lisle, Diane Ouwerkerk, Athol V. Klieve and David M. McNeill* 1097–1105

Relationship between time spent eating and nutritionally related blood metabolites of growing pigs fed on diets containing graded levels of fibre

*Archibold G. Bakare and Michael Chimonyo* 1106–1111

## **Behaviour, Well-being and Health**

Survival of lambs from maiden ewes may not be improved by pre-lambing exposure to mature lambing ewes

*S. M. Robertson, M. B. Allworth and M. A. Friend* 1112–1117

Guardian dogs protect sheep by guarding sheep, not by establishing territories and excluding predators

*Lee R. Allen, Ninian Stewart-Moore, Damian Byrne and Benjamin L. Allen* 1118–1127

Effects of different monochromatic LED light colours on fear reactions and physiological responses in Mulard ducks

*Radi A. Mohamed, Usama A. Abou-Ismael and Mustafa Shukry* 1128–1136

Production and health performance of Holstein, Brown Swiss and their crosses under subtropical environmental conditions

*Mahmoud S. El-Tarabany, Elshimaa M. Roushdy and Akram A. El-Tarabany* 1137–1143

Study on the effects of electrical stunning parameters for broilers on biochemical and histological markers of stress and meat quality

*Raffaelina Mercogliano, Serena Santonicola, Nicoletta Murru, Orlando Paciello, Teresa Bruna Pagano, Maria Francesca Peruzy, Tiziana Pepe, Aniello Anastasio and Maria Luisa Cortesi* 1144–1148

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

Resource use and greenhouse gas emissions from grain-finishing beef cattle in seven

Australian feedlots: a life cycle assessment

*Stephen Wiedemann, Rod Davis, Eugene McGahan, Caoilinn Murphy and Matthew Redding* 1149–1162

Performance of cattle reared on rangelands supplemented with farm-formulated diets during the dry season in Zimbabwe

*J. Gusha, T. Chiuta, S. Katsande, P. I. Zvinorova and S. M. Kagande* 1163–1169

## **Meat Science and Product Quality**

Fatty acid profile, carcass traits and meat quality of Nellore steers following supplementation with various lipid sources

*Isabela P. C. Carvalho, Giovani Fiorentini, Josiane F. Lage, Juliana D. Messana, Roberta C. Canesin, Luis G. Rossi, Ricardo A. Reis and Telma T. Berchielli* 1170–1178

Identification of relationship between pork colour and physicochemical traits in American Berkshire by canonical correlation analyses

*Tae Wan Kim, Il-Suk Kim, Seul Gi Kwon, Jung Hye Hwang, Da Hye Park, Deok Gyeong Kang, Jeongim Ha, Sam Woong Kim and Chul Wook Kim* 1179–1185

Carcass and meat properties of six genotypes of young bulls finished under feedlot tropical conditions of Mexico

*O. V. Vazquez-Mendoza, G. Aranda-Osorio, M. Huerta-Bravo, A. E. Kholif, M. M. Y. Elghandour, A. Z. M. Salem and E. Maldonado-Simán* 1186–1192

Effects of nanoparticle chromium on chromium absorbability, growth performance, blood parameters and carcass traits of pigs

*Ti-Ying Li, Chao-Ming Fu and Tu-Fa Lien* 1193–1200