Contents



Review Paper

373 Perspectives for rare earth elements as feed additive in livestock — A review Hujaz Tariq, Amit Sharma, Srobana Sarkar, Lamella Ojha, Ravi Prakash Pal, Veena Mani (India)

Animal Breeding and Genetics

382 The effectiveness of genomic selection for milk production traits of Holstein dairy cattle

Yun-Mi Lee, Chang-Gwon Dang, Mohammad Z. Alam, You-Sam Kim, Kwang-Hyeon Cho, Kyung-Do Park, Jong-Joo Kim (Korea)

- 390 Expression of lipid metabolism genes provides new insights into intramuscular fat deposition in Laiwu pigs Hui Wang, Jin Wang, Dan-dan Yang, Zong-li Liu, Yong-qing Zeng, Wei Chen (China)
- 398 Expression characterization and transcription regulation analysis of porcine Yip1 domain family member 3 gene Dongjiao Ni, Xiang Huang, Zhibo Wang, Lin Deng, Li Zeng, Yiwei Zhang, Dongdong Lu, Xinhua Zou (China)
- Comparison of the fit of automatic milking system and test-day records with the use of lactation curves
 B. Sitkowska, M. Kolenda, D. Piwczyński (Poland)
- Expression of genes related to lipid transport in meat-type ducks divergent for low or high residual feed intake
 Sihua Jin, Yuan Xu, He Zang, Lei Yang, Zhiqiang Lin, Yongsheng Li, Zhaoyu Geng
 (China)

Animal Reproduction and Physiology

424 Comparison for immunophysiological responses of Jeju and Thoroughbred horses after exercise

Saichit Khummuang, Hyo Gun Lee, Sang Seok Joo, Jeong-Woong Park, Jae-Young Choi, Jin Hyeog Oh, Kyoung Hwan Kim, Hyun-Hee Youn, Myunghoo Kim, Byung-Wook Cho (Korea)

Ruminant Nutrition and Forage Utilization

- Co-ensiling garlic stalk with citrus pulp improves the fermentation quality and feed-nutritional value
 - Youn Hee Lee, Farhad Ahmadi, Young Il Kim, Young-Kyoon Oh, Wan Sup Kwak (Korea)
- 446 Fruit and vegetable discards preserved with sodium metabisulfite as a highmoisture ingredient in total mixed ration for ruminants: effect on *in vitro* ruminal fermentation and *in vivo* metabolism

Farhad Ahmadi, Won Hee Lee, Young-Kyoon Oh, Keunkyu Park, Wan Sup Kwak (Korea)

Vol 33 No 3 · March 2020

Nonruminant Nutrition and Feed Processing

- 456 Effect of oral spray with *Lactobacillus* on growth performance, intestinal development and microflora population of ducklings
 Qi Zhang, Yuchen Jie, Chuli Zhou, Leyun Wang, Liang Huang, Lin Yang, Yongwen Zhu (China)
- Effect of zinc on the immune response and production performance of broilers: a meta-analysis
 Cecep Hidayat, Sumiati, Anuraga Jayanegara, Elizabeth Wina (Indonesia)
- Effects of early commercial milk supplement on the mucosal morphology, bacterial community and bacterial metabolites in jejunum of the pre- and post-weaning piglets

 Ping Hu, Qingyan Niu, Yizhi Zhu, Chao Shi, Jing Wang, Weiyun Zhu (China)
- 490 Effects of mealworm (*Tenebrio molitor*) larvae hydrolysate on nutrient ileal digestibility in growing pigs compared to those of defatted mealworm larvae meal, fermented poultry by-product, and hydrolyzed fish soluble Kyung Hoon Cho, Sun Woo Kang, Jong Sang Yoo, Dae Kil Song, Yi Hyung Chung, Gyoo Taik Kwon, Yoo Yong Kim (Korea)

Animal Products

501 Comparative effects of dry-aging and wet-aging on physicochemical properties and digestibility of Hanwoo beef
Ji-Han Kim, Tae-Kyung Kim, Dong-Min Shin, Hyun-Wook Kim, Young-Boong Kim,
Yun-Sang Choi (Korea)

Animal Biotechnology

- 506 Supplementary prenatal copper increases plasma triiodothyronine and brown adipose tissue uncoupling protein-1 gene expression but depresses thermogenesis in newborn lambs

 Stephen B. Smith, Craig R. Sweatt, Gordon E. Carstens (USA)
- 515 Subpopulations of miniature pig mesenchymal stromal cells with different differentiation potentials differ in the expression of octamer-binding transcription factor 4 and sex determining region Y-box 2

 Ryounghoon Jeon, Sungjo Park, Sung-Lim Lee, Gyu-Jin Rho (Korea)