

## Contents

### ANIMAL BREEDING AND GENETICS

75. Heritability Estimates under Single and Multi-Trait Animal Models in Murrah Buffaloes / *A. Jain and D. K. Sadana* ..... 575
76. Comparison of Growth, Milk Yield and Draughtability of Murrah-Philippine Crossbred and Philippine Native Buffaloes / *R. C. D. Salas, T. van der Lende, H. M. J. Udo, F. V. Mamuad, E. P. Garillo and L. C. Cruz* ..... 580

### ANIMAL REPRODUCTION AND PHYSIOLOGY

77. Isolation and Genetic Transformation of Primordial Germ Cell (PGC)-Derived Cells from Cattle, Goats, Rabbits and Rats / *C. K. Lee, K. Moore, N. Scales, M. Westhusin, G. Newton, K. S. Im and J. A. Piedrahita* ..... 587
78. Effect of Superovulatory Regimens on Ovarian Response and Embryo Production in Fine Wool Sheep in Tropics / *S. M. K. Naqvi, R. Gulyani and S. R. Pareek* ..... 595

### RUMINANT NUTRITION AND FORAGE UTILIZATION

79. Supplementation of Cassava Hay to Replace Concentrate Use in Lactating Holstein Friesian Crossbreds / *M. Wanapat, A. Petlum and O. Pimpa* ..... 600
80. Nutrient Requirements of Exercising Swamp Buffalo, *Bubalus bubalis*, from Materials Balance and *In Vivo* Body Composition by the Body Density Method. I. Aspects of Energy and Protein Metabolism in Working Cows / *I. G. Mahardika, D. Sastradipradja, T. Sutardi and I. K. Sumadi* ..... 605
81. Growth and Carcass Characteristics of Goats Given Diets Varying Protein Concentration and Feeding Level / *M. Shahjalal, M. A. A. Bishwas, A. M. M. Tareque and H. Dohi* ..... 613
82. Ensiled Banana Wastes with Molasses or Whey for Lactating Buffaloes during Early Lactation / *H. M. Khattab, A. M. Kholif, H. A. El-Alamy, F. A. Salem and A. A. El-Shewy* ..... 619
83. Heat Production and Thermoregulatory Response of Sheep Fed Different Roughage Proportion Diets and Intake Levels When Exposed to a High Ambient Temperature / *A. Sudarman and T. Ito* ..... 625
84. Cutting Frequency Effects on Forage Yield and Stand Persistence of Orchardgrass and Alfalfa-Orchardgrass Fertilized with Dairy Slurry / *D. H. Min and L. R. Vough* ..... 630

---

85. Moisture Effect on Fermentation Characteristics of Cup-Plant Silage / <i>K. J. Han, K. A. Albrecht, R. E. Muck and D. A. Kim</i> .....	636
86. Comparison of <i>In Vitro</i> Digestion Kinetics of Cup-Plant and Alfalfa / <i>K. J. Han, K. A. Albrecht, D. R. Mertens and D. A. Kim</i> .....	641

#### **NONRUMINANT NUTRITION AND FEED PROCESSING**

87. Effects of Extruded Full Fat Soybean in Early-Weaned Piglets / <i>X. S. Piao, J. H. Kim, J. Jin, J. D. Kim, W. T. Cho, I. S. Shin and In K. Han</i> .....	645
88. Effects of Lipoic Acid on Plasma Metabolites and Metabolic Response to Intravenous Injection of Isoproterenol in Broilers / <i>Y. Hamano, Y. Kamoto and S. Sugawara</i> .....	653
89. Effect of Protein Deprivation on Subsequent Efficiency of Dietary Protein Utilization in Finishing Pigs / <i>K. Y. Whang, S. M. Donovan and R. A. Easter</i> .....	659
90. Use of Chinese Sunflower Meal as a Nonconventional Protein Feedstuff for Growing-Finishing Pigs / <i>Defa Li, G. F. Yi, S. Y. Qiao, C. T. Zheng, X. X. Xu, X. S. Piao, In K. Han and P. Thacker</i> .....	666
91. Evaluation of the Efficacy of Crude Phytase Preparations in Broiler Chickens / <i>I. K. Paik, J. S. Um, S. J. Lee and J. G. Lee</i> .....	673

#### **ANIMAL PRODUCTION AND APPLIED SCIENCE**

92. The Effect of Automatic Environment Control by Image Analysis System on the Performance of Pigs in Different Seasons / <i>D. I. Chang, C. S. Park, H. S. Lee, B. D. Lee and H. H. Chang</i> .....	681
93. Manure Based Duckweed Production in Shallow Sink : Effect of Genera on Biomass and Nutrient Yield of Duckweed under the Same Nutritional and Management Conditions / <i>S. A. Chowdhury, N. Sultana, K. S. Huque and Q. M. E. Huque</i> .....	686
94. The Effect of Light and Darkness on Acclimatization of Laying Hens / <i>B. Izzeldin and H. Kassim</i> .....	694
95. The Processing of Livestock Waste Through the Use of Activated Sludge -Treatment with Intermittent Aeration Process- / <i>T. Osada</i> .....	698

#### **REVIEW PAPERS**

96. Metabolic Components of Energy Expenditure in Growing Beef Cattle / <i>J. S. Caton, M. L. Bauer and H. Hidari</i> .....	702
97. The Influence of Lipids on Exocrine Pancreatic Secretions in Pigs / <i>S. Jakob, R. Mosenthin and W. C. Sauer</i> .....	711
98. Neem ( <i>Azadirachta indica</i> ) Seed Cake in Animal Feeding-Scope and Limitations / <i>S. K. Gowda and V. R. B. Sastry</i> .....	720

---