

ANIMAL PRODUCTION SCIENCE

CONTENTS Volume 54, Issues 11–12, 2014, 1883–2131

MODELLING NUTRIENT DIGESTION AND UTILISATION IN FARM ANIMALS 8th INTERNATIONAL WORKSHOP

Foreword iii

PERSPECTIVES ON ANIMAL BIOSCIENCES

Brief history and future of animal simulation models for science and application

J. L. Black 1883–1895

REVIEWS

The challenges and opportunities when integrating animal models into grazing system models for evaluating productivity and environmental impact

R. J. Eckard, V. O. Snow, I. R. Johnson and A. D. Moore 1896–1904

Potential integration of multi-fitting, inverse problem and mechanistic modelling approaches to applied research in animal science: a review

L. M. Vargas-Villamil and L. O. Tedeschi 1905–1913

DIGESTION, METABOLISM AND CONSEQUENCES FOR PRODUCTIVITY

Development of a dynamic, mechanistic model of nutritional and reproductive processes in dairy cattle

K. Huber, A. Kenez, J. P. McNamara and S. L. Shields 1914–1917

Prediction of nitrogen use in dairy cattle: a multivariate Bayesian approach

K. F. Reed, L. E. Moraes, J. G. Fadel, D. P. Casper, J. Dijkstra, J. France and E. Kebreab 1918–1926

Development of mathematical models to predict volume and nutrient composition of fresh manure from lactating Holstein cows

J. A. D. Ranga Niroshan Appuhamy, L. E. Moraes, C. Wagner-Riddle, D. P. Casper, J. France and E. Kebreab 1927–1938

Comparison of *in vivo* and *in silico* growth performance and variability in pigs when applying a feeding strategy designed by simulation to control the variability of slaughter weight

L. Brossard, B. Vautier, J. van Milgen, Y. Salaun and N. Quiniou 1939–1945

Modelling of the nitrogen deposition and dietary lysine requirements of Redbro broilers

P. A. dos Santos, C. B. V. Rabello, N. K. Sakomura, E. P. da Silva, J. C. P. Dorigam, M. J. B. dos Santos and I. M. B. Lorena-Rezende 1946–1952

Modelling the maximum potential of nitrogen deposition and requirements of lysine for broilers

Juliano Cesar De Paula Dorigam, Nilva Kazue Sakomura, Edney Pereira Da Silva and João Batista Kochenborger Fernandes 1953–1959

ENTERPRISE AND SYSTEMS MODELS FOR PRODUCTION AND ENVIRONMENTAL IMPACT

Using a modelling approach to evaluate two options for improving animal nitrogen use efficiency and reducing nitrous oxide emissions on dairy farms in southern Australia

K. M. Christie, R. P. Rawnsley, M. T. Harrison and R. J. Eckard 1960–1970

The potential of diverse pastures to reduce nitrogen leaching on New Zealand dairy farms

P. C. Beukes, P. Gregorini, A. J. Romera, S. L. Woodward, E. N. Khaembah, D. F. Chapman, F. Nobilly, R. H. Bryant, G. R. Edwards and D. A. Clark 1971–1979

Modelling methane emissions from remotely collected liveweight data and faecal near-infrared spectroscopy in beef cattle

L. A. González, E. Charmley and B. K. Henry 1980–1987

Northern Australian pasture and beef systems. 1. Net carbon position

Steven Bray, Natalie Doran-Browne and Peter O'Reagain 1988–1994

Northern Australian pasture and beef systems. 2. Validation and use of the Sustainable Grazing Systems (SGS) whole-farm biophysical model
Natalie A. Doran-Browne, Steven G. Bray, Ian R. Johnson, Peter J. O'Reagain and Richard J. Eckard 1995–2002

Development of the BeefSpecs fat calculator to assist decision making to increase compliance rates with beef carcass specifications
B. J. Walmsley, M. J. McPhee and V. H. Oddy 2003–2010

BeefSpecs fat calculator to assist decision making to increase compliance rates with beef carcass specifications: evaluation of inputs and outputs
M. J. McPhee, B. J. Walmsley, D. G. Mayer and V. H. Oddy 2011–2017

Modelling pasture management and livestock genotype interventions to improve whole-farm productivity and reduce greenhouse gas emissions intensities
Matthew T. Harrison, Karen M. Christie, Richard P. Rawnsley and Richard J. Eckard 2018–2028

The case for and against perennial forages in the Australian sheep–wheat zone: modelling livestock production, business risk and environmental interactions
Andrew D. Moore 2029–2041

Prediction of nutrient flows with potential impacts on the environment in a rabbit farm: a modelling approach
Bertrand Méda, Laurence Fortun-Lamothe and Mélynda Hassouna 2042–2051

ADVANCES IN MODELLING METHODOLOGY

The evolution and evaluation of dairy cattle models for predicting milk production: an agricultural model intercomparison and improvement project (AgMIP) for livestock
Luis O. Tedeschi, Luigi F. L. Cavalcanti, Mozart A. Fonseca, Mario Herrero and Phillip K. Thornton 2052–2067

Bayesian analysis of energy balance data from growing cattle using parametric and non-parametric modelling
L. E. Moraes, E. Kebreab, A. B. Strathe, J. France, J. Dijkstra, D. P. Casper and J. G. Fadel 2068–2081

The production of acetate, propionate and butyrate in the rumen of sheep: fitting models to ¹⁴C- or ¹³C-labelled tracer data to determine synthesis rates and interconversions
J. V. Nolan, R. A. Leng, R. C. Dobos and R. C. Boston 2082–2088

MODELLING FEED INTAKE

Predicting feed intake and liveweight gain of Ongole (*Bos indicus*) cattle in Indonesia
D. E. Mayberry, T. M. Syahniar, R. Antari, G. P. Ningrum, Marsetyo, D. Pamungkas and D. P. Poppi 2089–2096

Mechanistic model of intake of tropical pasture, depending on the growth and morphology of forage at a vegetative stage
M. Boval, O. Coppoly and D. Sauvant 2097–2104

Precision of estimating individual feed intake of grazing animals offered low, declining pasture availability
Margaret Lukuyu, David R. Paull, William H. Johns, Dominic Niemeyer, Jessica McLeod, Bruce McCorkell, Darryl Savage, Ian W. Purvis and Paul L. Greenwood 2105–2111

Development of a mechanistic model of intake, chewing and digestion in cattle in connection with updated feed units
D. Sauvant, P. Nozière and R. Baumont 2112–2120

Modelling the reduction in enteric methane from voluntary intake versus controlled individual animal intake of lipid or nitrate supplements
David Cottle and Richard Eckard 2121–2131