



Lincoln University

Te Whare Wānaka o Aoraki
CHRISTCHURCH • NEW ZEALAND

New Zealand's specialist land-based university



Lincoln University Blossom

Contacts for Department of Agricultural Sciences

Faculty of Agriculture & Life Sciences
PO Box 84
Lincoln University
Lincoln 7647
New Zealand
Phone: (64) (3) 325 2811
Fax: (64) (3) 325 3851
Website: www.lincoln.ac.nz

Dean

Professor Bruce McKenzie

Email: Bruce.Mckenzie@lincoln.ac.nz

Head of Department

Professor Andrew Sykes

Email: Andrew.Sykes@lincoln.ac.nz

Department Secretary

Jan Haldane

Email: Jan.Haldane@lincoln.ac.nz

Introduction to the Faculty of Agriculture & Life Sciences

The Faculty of Agriculture and Life Sciences at Lincoln University provides knowledge and expertise to lead New Zealand into a dynamic, innovative and sustainable future in a wide range of disciplines related to Agriculture, Food and the Environment. It is a multidisciplinary research and teaching Faculty with 16 Professors and 150 staff. The Faculty of Agriculture and Life Sciences provides expertise throughout the 'farm to fork' value chain.

The Faculty is a centre of excellence for postgraduate education. It provides a continuum of postgraduate programmes from the fundamental areas of science through to the applied in disciplines relating to soils, the environment and its management, plants, animals, viticulture and oenology, food, farm management and ecology. The Faculty also provides undergraduate degrees in: Agricultural Science, Viticulture & Oenology, Science (which includes a number of majors), and Diplomas in Agriculture, Horticulture and Agricultural and Horticultural Management

Most importantly, there are wide ranging employment opportunities for the Faculty's graduates who are sought after by innovative and progressive organisations in New Zealand and worldwide.

The Faculty has excellent collaborations with the agriculture and horticulture industries and research in these areas is directed towards solving industry problems. Collaboration is also very strong with government-funded research organisations that are based in Lincoln or elsewhere in New Zealand. Notably, the Faculty is an integral

part of the Marlborough Wine Research Centre, a new initiative to provide leading research to this important industry. This is only one of many examples of our credibility with industry partners: meeting expectations and solving problems in a modern society. The Faculty of Agriculture and Life Sciences also has extensive links to a wide range of international research organisations.

The Faculty has access to excellent facilities, including well-equipped laboratories, controlled environment rooms, animal laboratories, a winery, advanced analytical instruments and computing facilities. The Faculty's field facilities incorporate a wide range of production systems including arable cropping and pastures (three research farms totalling 430 ha), a vineyard, horticultural research area, lysimeters, access to a 'best practice' commercial dairy farm and a new purpose-built research dairy farm. The Faculty also has access to a wide range of livestock including sheep, beef and dairy cattle, and deer.

There are four departments in the Faculty:

- Agricultural Sciences
- Ecology
- Soil and Physical Sciences
- Wine, Food and Molecular Biosciences

The Faculty is research led and has a number of specific research centres, including the:

- Centre for Soil and Environmental Quality
- Centre for Viticulture and Oenology
- Centre for Advanced Computational Solutions

Introduction to the Department of Agricultural Sciences

The Department of Agricultural Sciences is responsible for teaching and research in the plant and animal sciences and in crop and livestock production. The teaching and research brings a strategic and applied focus to the technologies which are of particular relevance to New Zealand's low-cost export-oriented land-based industries.

The department comprises 18 academic and 35 support staff. It has major responsibilities for teaching in the flagship land-based programmes, especially the Bachelors degrees in Agricultural Science, in Science (Animal Science and Plant Science) and in Commerce (Agricultural) and in the Diploma in Farm Management.

The department has a very active commitment to research through postgraduate programmes and contracted research. Masters programmes (Masters of Agricultural Science and Applied Science) are generally of two years duration and include taught and research components or, in the case of honours graduates, may be entirely research based. PhD programmes are entirely research based, though students may be required to undertake specified preparative study.



The discipline areas of study are listed on page 4 but prospective candidates are encouraged to study and contribute within one of several theme based programmes of work for which the department receives external funding of over \$1.5M from Sustainable Farming Funds, DairyNZ, Foundation for Research Science and Technology, Meat and Wool New Zealand and many commercial partners. The programmes include the agronomy of dryland pastures and arable crops, including biomass to energy programmes. Dairy industry programmes focus on; optimisation of forage production (including brassicas) and utilisation in irrigated pastoral systems. Nutritional studies include the optimisation of forage utilisation and mitigation of environmental problems and molecular approaches to rumen microbiology to understand problems of lameness and liver abcessation. Sheep studies include; grazing nutrition, immunology of the host-nematode parasite relationship; novel approaches to reduce chemical anthelmintic usage; molecular genetic approaches to improve disease control in flocks (e.g. nematode parasitism and footrot). Work with red deer (*Cervus elaphus*) is focussed on the physiology of seasonal reproduction. Modelling approaches are used at the levels of farm systems and plant and animal physiology.

The postgraduate school generally numbers 40-50 students, is vibrant and active. Academic and support staff have a strong commitment to the best quality educational experience for New Zealand and international students as they research real-world problems.

Research and Teaching Strengths within the Faculty include:

Agricultural Sciences

- Animal production; dairy, sheep, beef and deer
- Plant production; crops, pasture and horticulture
- Animal genetics
- Animal health
- Nutrition; animal and plant
- Physiology; animal and crop
- Agronomy
- Animal products
- Animal welfare
- Grazing ecology
- Parasitology and immunology
- Reproductive physiology
- Rumen function

Ecology

- Agro-ecology and organics
- Bio-control and bio-protection
- Biodiversity
- Conservation, wildlife and invasion biology
- Ecology
- Ecology and Maori
- Ecotoxicology
- Entomology
- Evolutionary biology
- Fungal genetics
- Integrated pest management
- Invertebrate taxonomy
- Molecular, spatial and behavioural ecology
- Molecular systematics
- Plant pathology
- Vertebrate pest management

Soil and Physical Sciences

- Agricultural greenhouse gas science, measurement, mitigation and modelling
- Antarctic soils
- Environmental biochemistry
- Nitrate leaching and mitigation
- Remediation of contaminated soils
- Rhizosphere process science
- Soil and environmental physics
- Soil biology, biochemistry and molecular biology
- Soil fertility and nutrient management
- Soil geomorphology, quaternary geology and soil-landscape modelling
- Soil micro-morphology
- Soil nutrient cycling and management
- Stable isotope methodologies
- Sustainable land management
- Trace elements in soils

Wine, Food and Molecular Biosciences

- Animal models for human health
- Biochemistry and cell biology
- Biotechnology
- Computer modelling
- Food biochemistry
- Immunology
- Microbiology
- Molecular biology
- Plant biology
- Systems biology
- Toxicology
- Wine science
- Viticulture

Mitchell Andrews



Associate Professor in Agronomy

BSc(Hons) (Bot. Univ
Dundee), PhD (Dundee),
MBA (Sunderland)

Editor of *Annals of Applied
Biology* (Wiley-Blackwell
Publishing).

Member of:
Association of Applied
Biologists (AAB); AAB Applied
Plant Physiology and Crop
Improvement; and Applied
Mycology and Bacteriology
specialist groups.

Teaching

Plant Science I; Crop Science; Experimentation; Plant Cell
Physiology; Agronomy; Plant and Crop Physiology.

Research

- Positive plant microbial interactions
- Nitrogen assimilation in plants
- Plant environmental physiology

Selected publications

- Andrews, M., Hodge, S. (2010). Climate change, a challenge or cool season grain legume crop production. Chapter 1. In: Shyam S. Yadav, David L McNeil, Robert Redden, Sharanagouda A Patil editor(s). *Climate Change and Management of Cool Season Grain Legume Crops*. Springer, p. 1-9, 2010.
- Raven, J.A., Andrews, M. (2010). Evolution of tree nutrition. *Tree Physiology* 30: 1050-1071.
- Andrews, M., Lea, P.J., Raven, J.A. Azevedo, R.A. (2009). Nitrogen use efficiency 3. Nitrogen fixation: genes and costs. *Annals of Applied Biology* 155: 1-13.
- Andrews, M., Maule, H.G., Hodge, S., Cherrill, A., Raven, J.A. (2009). Seed dormancy, nitrogen nutrition and shade acclimation of *Impatiens glandulifera*: implications for successful invasion of deciduous woodland. *Plant Ecology and Diversity* 2: 145-153.
- Cummings, S.P., Gyaneshwar, P., Vinuesa, P., Farruggia, F.T., Andrews, M., Humphry, D.R., Elliott, G.N., Nelson, A., Orr, C., Pettitt, D., Shah, G.R., Santos, S.R., Krishnan, H.B., Odee, D., Moreira, F.M.S., Sprent, J.I., Young, J.P.W., James, E.K. (2009). Nodulation of *Sesbania* species by *Rhizobium (Agrobacterium)* strain IRBG74 and other rhizobia. *Environmental Microbiology* 11: 2510-2525.
- Liu, W.Y.Y., Williams, L., Carter, C., Andrews, M. (2009). The mechanism of action of growth promoting *Rhizobium radiobacter* strain 204 on cereals: an assessment. *Aspects of Applied Biology* 98: 183-188.

Graham Barrell



Associate Professor in Animal Physiology

BSc, DipSc, PhD (Massey)

Ext: 8064

Hilgendorf 234

graham.barrell@lincoln.ac.nz

Member of:

New Zealand Society of
Endocrinology;

Physiological Society of New
Zealand;

New Zealand Society of Animal
Production;

New Zealand Veterinary
Association (Deer Branch);

Royal Society of New Zealand
(Canterbury Branch).

Teaching

Human and animal physiology to undergraduate classes.

Mammalian reproduction and endocrinology at graduate level.

Research

- Mammalian reproduction
- Endocrinology and its links with immunology
- Markers of bone growth
- Deer lactation and antler biology
- Climate stress in dairy cows

In particular:

- The role of c-type natriuretic peptide (CNP) as a potential marker for disorders of bone growth in children with the Christchurch School of Medicine.
- The biology of lactation in red deer hinds and the hardening process in bones.
- The effects of climate stress on thermoregulation in lactating dairy cows.

Selected Publications

- Prickett, T.C., Ryan, J.F., Wellby, M.P., Barrell, G.K., Yandle, T.G., Richards, A.M., Espiner, E.A. (2010). Effect of nutrition on plasma C-type natriuretic peptide forms in adult sheep: evidence for enhanced C-type natriuretic peptide degradation during caloric restriction. *Metabolism Clinical and Experimental* 59: 796-801.
- Barrell, G.K., Archer, J A, Wellby, M, Ridgway, M.J. & Evans, M. J. (2009). Bovine somatotrophin stimulates milk production in red deer hinds. *Animal Production Science* 49: 619-623.
- McNeill, B.A., Barrell, G.K., Wellby, M., Prickett, T.C.R., Yandle, T.G. & Espiner, E.A. (2009). C-type natriuretic peptide forms in pregnancy: maternal plasma profiles during ovine gestation correlate with placental and fetal maturation. *Endocrinology* 150: 4777-4783.
- Barrell, G.K. Immunological influences on reproductive neuroendocrinology. (2007). In: Juengel, J.L., Murray, J.F., Smith, M.F. (eds). *Reproduction in Domestic Ruminants VI*, Nottingham University Press, Nottingham. 109-122.
- Eisert, R., Oftedal, O.T., Lever, M., Ramdohr, S., Breier, B.H. and Barrell, G.K. (2005). Detection of food intake in a marine mammal using marine osmolytes and their analogues as dietary biomarkers. *Marine Ecology Progress Series* 300: 213-228.

Alistair Black



Lecturer in Plant Science

BAgrSc(Hon), PhD (Lincoln)

Ext: 8110

Field Service Centre 108

alistair.black@lincoln.ac.nz

Member of:

New Zealand Grassland Association; British Grassland Society; Irish Grassland Association

Teaching

Plant Husbandry; Pasture Management; Plant Production Systems; Pasture Agronomy; Pasture Ecosystems.

Research

- Growth and development of perennial and annual species of pasture and crop plants, specifically: annual legumes, Caucasian clover, high sugar ryegrasses and forage brassicas.
- Pasture growth and management.
- Efficient use of nitrogen fertiliser.
- Grazing systems and grass/clover swards for beef production in Ireland.

Selected publications

- Lejeune A, Monahan F J, Moloney A P, Earley B, Black A, Campion D P, Englishby T, Reilly P, O'Doherty J, Sweeney T. (2010). Peripheral and gastrointestinal immune systems of healthy cattle raised outdoors at pasture or indoors on a concentrate-based ration. *BMC Veterinary Research* 6: 19-28.
- Tunney H, Kirwan L, Fu W, Culleton N, Black A D. (2010). Long-term phosphorus grassland experiment for beef production – impacts on soil phosphorus levels and liveweight gains. *Soil Use and Management* 26: 237-244.
- Black A.D., Laidlaw A.S., Moot D.J. and O'Kiely P. (2009). Comparative growth and management of white and red clovers. Proceedings of an International Conference on: Forage Legumes in Temperate Pasture-Based Systems, Cork, Ireland, October 15-16, 2009. *Irish Journal of Agriculture and Food Research Draft Issue*: 30-50.
- Black A.D. and O'Kiely P. (2008). Pasture establishment from different seed mixtures of grass and clover species under varied seeding conditions. *Grassland Science in Europe* 13: 215-217.
- O'Kiely P. and Black A.D. (2008). Red clover for silage: management impacts on chemical composition in the season after sowing. *Grassland Science in Europe* 13: 492-494.
- Black A.D. and Moloney A.P. (2008). Performance of continental weanling heifers grazing pasture or consuming grass silage during winter in Ireland. *Grassland Science in Europe* 13: 786-788.

Racheal Bryant



Postdoctoral Fellow

BAppSc, Hons (Massey), PhD
Animal Science (Lincoln)

Ext: 8272

Hilgendorf 240

racheal.bryant@lincoln.ac.nz

Member of:

NZ Grassland Association

Teaching

Plant Husbandry; Plant Production Systems; Pasture Management.

Research

- Role of endophyte and high sugar grasses on pasture ecology.
- Grazing preference.
- Nitrogen use efficiency in dairy pastures

Selected Publications

- Bryant, R.H., Parsons, A.J., Rasmussen S., and Edwards G.R. (2009). Pasture production and botanical composition of high sugar and control ryegrasses with or without endophyte under irrigation in Canterbury. *Proceedings of the New Zealand Grassland Association* 71: 177-185
- Bryant, R.H., Nicol, A.M. Edwards, G.R. (2008). Are the cost-benefits of grazing perennial ryegrass cultivars related to preference? *Australian Journal of Experimental Agriculture* 48: 885-888.
- Bryant, R H, Nicol, A M, Wilson, F & Sedcole, J R. (2008). Between-cultivar variability in breaking force of components of perennial ryegrass (*Lolium perenne*). *Grass and Forage Science* 63: 350-359.
- Edwards, G, Parsons, A J & Bryant, R H. (2008). Manipulating preference to improve animal performance. *Australian Journal Experimental Agriculture* 48: 773-779.
- Edwards, G.R., Parsons, A.J., Rasmussen, S., Bryant, R.H. (2007). High sugar ryegrasses for livestock systems in New Zealand. *Proceedings of the New Zealand Grassland Association*. 69: 161-172.
- Bryant, R.H. (2002). Development of measurement techniques for use in a nutritive value index for ryegrass breeding. *PhD Thesis*, Lincoln University.

Anthony C. (Tony) Bywater



Professor of Agricultural Systems

BScHons(Agric) (Reading), PhD
(Nottingham)

Ext: 8338
Hilgendorf 223
tony.bywater@lincoln.ac.nz

Research Economist, AERU,
Lincoln College, NZ; 1977-78;
Assist. and Assoc. Prof., Dept
of Animal Science, UC, Davis,
USA; 1978-84; Snr Agric.
Economist, MAF Econ. Div,
Ruakura ARC, NZ; 1985-87;
Prof. of Farm Management and
HoD of Farm & Hort. Mgt,
Lincoln Univ., NZ: 1987-95;
Acad. Programme Dir. for
Science & Primary Production,
Lincoln Univ., NZ; 1995-97;
Dir., Animal & Food Sciences
Div., Lincoln University, NZ;
1998-2004.

Member of: NZ Inst. Primary
Industry Mgt; NZ Soc. of
Animal Production; NZ
Grasslands Association

Teaching

Animal Science (Yr 1 degree); Primary Industry Systems (Yr 1 degree); Sheep Productions Systems (final year degree); Information and Decision Systems (postgraduate); and Systems Modelling (postgraduate).

Research

Farming systems analysis:

- Improving pasture quality in high performance dryland sheep and beef systems and effects on ewe efficiency and farm productivity.
- Effects of alternative wintering systems on production, cow health & welfare, and dairy farm productivity.

Systems analysis and modelling:

- Simulating flexible options to manage variable climate and pasture growth in dryland sheep and beef systems.
- Analysis of nitrogen dynamics on intensive dairy farms.

Information and decision systems:

- Remote monitoring and control systems for environmental and health management on dairy farms.
- Selection systems for commercial beef cows.

Selected Publications

- Bennett, M.R., Pangborn, M.C., Bywater, A.C. (2010). Perceptions of sustainability of farmers with dairy support land. *Proceedings of the 4th Australasian Dairy Science Symposium*. 107-111.
- Bloomberg, M. & Bywater, A.C. (2007). Modelling the effect of shade on heat stress in New Zealand dairy cows using two published models. *Proceedings of the International Congress on Modelling and Simulation* 10-13 December, University of Canterbury, Christchurch 420-426.
- Thomas, C.W, Bywater, A.C. & Miller, S.P. (2007). Evaluation of a practical weaning weight index for extensively-grazed beef cows. *Proceedings of the New Zealand Society of Animal Production*; 20-22 June; Lake Wanaka Centre, Wanaka. p.370-376.
- Webby, R. & Bywater, A.C. (2007). Principles of feed planning and management. In: PV Rattray, IM Brookes, AM Nicol, ed. *Pasture and Supplements for Grazing Animals. Occasional Publication 14. New Zealand Society of Animal Production*. Hamilton. Chapter 12: NZSAP; 189-220.
- Kelly, T., Bywater, A.C. (2005). The whole-farm systems approach. In: Nicola Shadbolt, Sandra Martin (eds.) *Farm Management in New Zealand*, Oxford University Press, Victoria, Australia. 62-79.

Michael Cripps



Postdoctoral Fellow

BSc (Guelph) MSc (Idaho)
PhD (Lincoln)

Ext: 8272
Hilgendorf 240
Michael.cripps@lincoln.ac.nz

Member of:
NZ Protection Society
Entomological Society of NZ
Ecological Society of NZ

Research

- Pasture grass endophytes and ecosystem function
- Plant invasion ecology and biological control of weeds

Selected Publications

- Cripps, M.G., Edwards, G.R., Bourdôt, G.W., Saville, D.J., Hinz, H.L., Fowler S.V. (2010). Effects of pasture competition and specialist herbivory on the performance of *Cirsium arvense*. *Biocontrol Science and Technology* 20: 641-656.
- Cripps, M.G., Edwards, G.R., Bourdôt, G.W., Saville, D.J., Hinz, H.L., Fowler S.V. (2010). Enemy release does not increase performance of *Cirsium arvense* in New Zealand. *Plant Ecology* 209: 123-134.
- Waipara, N.W., Barton, J., Smith, L.A., Harman, H.M., Winks, C.J., Massey, B., Wilkie, J.P., Gianotti A.F. and Cripps, M.G. (2009). Safety in New Zealand weed biocontrol: A nationwide pathogen survey for impacts on non-target plants. *New Zealand Plant Protection* 62: 41-49.
- Cripps, M.G., Edwards, G.R., Waipara, N.W., Bourdôt, G.W., Saville, D.J., Fowler S.V. (2009). Does transmission of the rust pathogen, *Puccinia punctiformis*, require stem mining vectors? *Biocontrol Science and Technology* 19: 447-454.
- Cripps, M.G., Schwarzlaender, M., McKenney, J.L., Hinz H. and Price W.J. (2009). No evidence for an evolution of increased competitive ability for the invasive *Lepidium draba*. *Basic and Applied Ecology* 10: 103-112.
- Eigenbrode, S.D., Andreas, J.E., Cripps, M.G., Ding, H., Biggam R.C. and Schwarzländer, M. (2008). Induced chemical defenses in invasive plants: a case study with *Cynoglossum officinale* L. *Biological Invasions* 10: 1373-1379.
- McKenney, J.L., Cripps, M.G., Price, W.J., Hinz, H., Schwarzlaender, M. (2007). No difference in competitive ability between invasive North American and native European *Lepidium draba* populations. *Plant Ecology* 193(2): 293-303.
- Cripps, M.G., Schwarzlaender, M., McKenney, J.L., Hinz, H. and Price, W.J. (2006). Biogeographic comparison of the arthropod herbivore communities associated with *Lepidium draba* in its native, expanded and introduced ranges. *Journal of Biogeography* 33: 2107-2119.

Grant R. Edwards



Professor of Dairy Production

BAgrSc(Hons) (Lincoln) DPhil (Oxon)

Ext: 8398

Hilgendorf 226c

grant.edwards@lincoln.ac.nz

Member of: New Zealand Grassland Association; New Zealand Ecological Society; Advisory Panel (Plants) National Biosecurity Strategy.

Awarded: Lincoln University Teaching Excellence Award 2007.

Teaching

Dairy Production, Pasture Management. Supervision of PhD, Masters and Honours students working in dairy production, pasture and grazing management, weed control, diet selection and preference.

Research

- Environmentally sustainable dairy production systems.
- Feeding and nutrition to alter nitrogen partitioning in dairy cows.
- Intake, diet preference and grazing behaviour of dairy cows.
- Evaluation of new forage species and traits for dairy production, including high sugar ryegrasses.
- Pasture and grazing management for improved milk production.
- Winter feeding systems for dairy cows, particularly the use of kale and fodder beet.

Selected Publications

- Cripps, M.G., Edwards, G.R., Bourdôt, G.W., Saville, D.J., Hinz, H.L., Fowler S.V. (2010). Effects of pasture competition and specialist herbivory on the performance of *Cirsium arvense*. *Biocontrol Science and Technology* 20: 641-656.
- Cripps, M.G., Edwards, G.R., Bourdôt, G.W., Saville, D.J., Hinz, H.L., Fowler S.V. (2010). Enemy release does not increase performance of *Cirsium arvense* in New Zealand. *Plant Ecology* 209: 123-134.
- Eliis, J.L., Bannick, A., Dijkstra, J. Parsons, A.J., Rasmussen, S., Edwards G.R. Kebreab, E. France, J (2009). A modelling approach to evaluate the feeding of high sugar grasses to cattle: nitrogen and methane. *Canadian Journal of Animal Science* 532-533.
- Perring, M.P., Edwards, G.R., de Mazanacourt C. (2009). Removing phosphorus from ecosystems through nitrogen fertilization and cutting with biomass removal. *Ecosystems* 12: 1130-1144.
- Cripps, M, Edwards, G.R., Waipara, N.W., Bourdot, G.W., Saville, D.J., Fowler, S.V. (2009). Does transmission of the rust pathogen, *Puccinia punctiformis* require stem mining vectors? *Biocontrol Science and Technology* 19: 447-454.

Alan Gash



Senior Lecturer in Agronomy
BSc (Hons) Agric Zoology
(Leeds), PhD (Birmingham).

Ext: 8653
Field Service Centre 104
alan.gash@lincoln.ac.nz

Member of:
Agronomy Society of New
Zealand; Foundation for
Arable Research; NZ
Grassland Association.

Teaching

Plant Science; Plant Production; Arable Cropping Systems;
Plant Pathology.

Research

- Growth and development of arable crops including cereals.
- Cereal pests and diseases.
- Arable crop inputs including seed rates and nutrient applications.
- Postharvest technology.

Selected publications

- Phasey, S and Gash, A.F.J. (2010). Efficacy of 1-Methylcyclopropene on 'Holly' tomatoes treated at pre-grading and post-grading operations. *Acta Hort.* (in press).
- Gash, A.F.J. and Phasey, S. (2010). Effect of 1-methylcyclopropene on juiciness of tomatoes. *ISHS Acta Hort.* (in press).
- Gash, A.F.J (2007). 1-Methylcyclopropene (1-MCP): UK Apple Growers' experiences in 2006. *Proc. Conf. on Storage of Fresh Vegetables, Fruits and Flowers*, Ohrid, Macedonia. Faculty of Agricultural Science and Food, Skopje (Pub): 87–92.
- Phasey, S. Gash, A.F.J. Tully, M. and Bishop, C. (2007). Effect of 1-Methylcyclopropene on quality aspects of 'Encore' tomatoes. *Proc. First Int. Sym. on Fresh Food Quality.* Acta Hort. 741: 141–149.
- Gash, A.F.J. (2006). Module Examples. *Proceedings of the International Conference: Students Assessments and the Workplace*, Bila Tserkva State Agrarian University, Ukraine, 5-8 June 2006.
- Gash, A.F.J. (2005). Modules in Practice. *Proceedings of the International Conference: Students Assessments and the Workplace*, Bila Tserkva State Agrarian University, Ukraine, 6-9 June 2005.
- Gash, A.F.J. (2004). Sustainable Crop Production. *Proceedings of the International Conference: Students Assessments and the Workplace*, Bila Tserkva State Agrarian University, Ukraine, 1-3 June 2004.

Jim Gibbs



Senior Lecturer in Livestock Health and Production

B.VSc(Hons1), B.Sc., PhD (Q'ld), MACVSc

Ext: 8951
Hilgendorf 213
jim.gibbs@lincoln.ac.nz

Member of:
Australian College of Vet. Sci. (Ruminant Nutrition) by examination 2003; Aust. Soc. of Animal Production.; New Zealand Soc. of Animal Production.

Teaching

Beef and Deer Production

Research

- Lameness in dairy cattle.
- Rumen function in high production pasture based ruminants.
- Rumen pH and redox assessment by indwelling sensors in grazing ruminants.
- Rumen motility influence in pasture based ruminants.
- Diurnal and seasonal shifts in rumen microbiota in grazing ruminants.
- Pasture and supplement feed evaluation.
- Methanogenesis activity across the diurnal cycle in high production dairy cows on pasture.
- Nematode control in replacement heifers.
- Nutritional manipulation of immunity to endoparasitism in sheep.
- *Fusobacterium necrophorum* hepatic abscessation in pasture bulls.
- Near infrared Spectroscopy to develop effective, rapid and inexpensive methods of estimating quality, biochemical content, physically effective fibre or species composition of pastures.

Selected Publications

- Greer A W, McAnulty R W, Gibbs, S J. (2010). Performance-based targeted selective anthelmintic treatment regime for grazing dairy calves. *Proceedings of the 4th Australasian Dairy Symposium 2010*, Lincoln University, 31 August – 2 September. 385-389.
- Nicol, A M, Barrell, G K, Gibbs, S J, Frizzell, A N, McPhee, J F (2009). Assessment of the production of analgesia induced by application of a rubber ring or local anaesthetic to the antler pedicle of yearling stags. *New Zealand Veterinary Journal* 57: 153-159.
- Bennett, G N, Hickford, J G, Zhou, H, Laporte-Urbe, J, Gibbs, S J. (2009). Detection of *Fusobacterium necrophorum* and *Dichelobacter nodosus* in lame cattle on dairy farms in New Zealand. *Research Veterinary Science* 87: 413-415.
- Laporte-Urbe, J, Gibbs, J. (2007). The effect of handling and extraction methodology on the PCR-DGGE profile of rumen bacteria. *New Zealand Society for Biochemistry and Molecular Biology, Canterbury Branch Regional Meeting*, 3 September. Memorial Hall, Lincoln University.
- Gibbs, S J, Sykes, A R, McAnulty, R W & Logan, C M. (2006). Lincoln University's research of the role of nutrition in gastrointestinal nematode control. *Proceedings of the 36th Seminar, Society of Sheep & Beef Cattle Veterinarians of the NZVA*, 7-9 June, 151-156.

Sabrina Greenwood



Lecturer in Animal Science

BSc (Guelph), MSc (Alberta),
PhD (Guelph)

Extn: 8073

Hilgendorf 232

sabrina.greenwood@lincoln.ac.nz

Member of: American Dairy
Science Association.

Teaching

Nutrition, Livestock Production Science, Animal Science II.

Research

- Protein turnover and nitrogen partitioning in dairy cows
- Dietary supplementation in dairy production systems
- Manipulation of milk components

Selected Publications

- Greenwood S. (2010). Effect of subacute ruminal acidosis on milk fat concentration, yield and fatty acid profile of dairy cows receiving soybean oil. *Journal of Dairy Research* 77: 376-384.
- Xue Y, Liao S F, Son K W, Greenwood S, McBride B W, Boling J A, Matthews J C. (2010). Metabolic acidosis in sheep alters expression of renal and skeletal muscle amino acid enzymes and transporters. *Journal of Animal Science* 88: 707-717.
- Greenwood, S. L., O. AlZahal, K. C. Swanson, J. C. Matthews, and B. W. McBride. (2009). Influence of glutamine infusion on ubiquitin, caspase-3, cathepsins L and B, and m-calpain expression in sheep with nutritionally induced metabolic acidosis. *Journal of Animal Science* 87: 2073-2079.
- Greenwood, S. L., T. C. Wright, N. G. Purdie, J. Doelman, J. P. Cant, and B. W. McBride. (2009). Lactation induces upregulation of the ubiquitin-mediated proteolytic pathway in skeletal muscle of dairy cows but does not alter hepatic expression. *Can. J. Anim. Sci.* 89: 309-313.
- Odongo, N. E., S. L. Greenwood, M. Or-Rashid, D. Radford, O. AlZahal, A. K. Shoveller, M. I. Lindinger, J. C. Matthews, and B. W. McBride. (2009). Effects of nutritionally induced metabolic acidosis with or without glutamine infusion on acid-base balance, plasma amino acids and plasma non-esterified fatty acids in sheep. *Journal of Animal Science* 87: 1077-1084.
- AlZahal, O., M. Or-Rashid, S. L. Greenwood, M. S. Douglas, and B. W. McBride. (2009). The effect of dietary fiber level on milk fat concentration and fatty acid profile of cows fed diets containing low levels of polyunsaturated fatty acids. *Journal of Dairy Science* 92: 1108-1116.

Andy Greer



Lecturer in Animal Science
BAgrSc (Hons) PhD (Lincoln)

Ext: 8082
Hilgendorf 202
andy.greer@lincoln.ac.nz

Member of:
New Zealand Society of Animal
Production (President).
World Association for the
Advancement in Veterinary
Parasitology.

Awarded:
New Zealand Society of Animal
Production Young Member
Award 2005.
AgMARDT post-doctoral
fellowship 2006-2008.

Teaching

Livestock Production and Nutrition.

Research

- Nutritional cost of immunity to parasites in sheep.
- Mucosal tolerance to parasites in sheep.
- Managing refugia to slow the development of anthelmintic resistance in parasite populations.
- Nutritional manipulation of immunity to gastrointestinal parasites in sheep.

Selected Publications

- Greer A W, McAnulty R W, Gibbs, S J. (2010). Performance-based targeted selective anthelmintic treatment regime for grazing dairy calves. *Proceedings of the 4th Australasian Dairy Symposium 2010*, Lincoln University, 31 August – 2 September. 385-389.
- Greer A W, McAnulty R W, Logan C M, Hoskin S O. (2010). Suitability of the Happy Factor decision support model as part of a targeted selective anthelmintic treatment in Coopworth sheep. *Proceedings of the New Zealand Society of Animal Production* 70: 213-216.
- Greer, A W, Kenyon, F, Bartley, D J, Jackson, E B, Gordon, Y, Donnan, A A, McBean, D W & Jackson, F. (2009). Development and field evaluation of a decision support model for anthelmintic treatments as part of a targeted selective treatment (TST) regime in lambs. *Veterinary Parasitology*, 164: 12-20.
- Greer, A W, Boisclair, Y R, Stankiewicz, M, McAnulty, R W, Jay, N P & Sykes, A R. (2009). Leptin concentrations and the immune-mediated reduction of feed intake in sheep infected with the nematode *Trichostrongylus colubriformis*. *British Journal of Nutrition*, 102: 954-957.
- Kenyon, F, Greer, A W, Coles, G C, Cringoli, G, Papadopoulos, E, Cabaret, J, Berrag, B, Varady, M, Van Wyk, J A, Thomas, E, Vercruysse, J & Jackson, F. (2009). Refugia-based approaches to the control of gastrointestinal nematodes of small ruminants. *Veterinary Parasitology*, 164: 3-11.
- Greer, A W, Sedcole, J R, Jay, N P, McAnulty, R W, Green, R S, Stankiewicz, M & Sykes, A R. (2009). Metabolizable protein influences the metabolic disruption caused by the immune response during *Trichostrongylus colubriformis* infection in lambs. *Animal* 3: 437-445.
- Greer, A W. (2008). Trade-offs and benefits: implications of promoting a strong immunity to gastrointestinal parasites in sheep. *Parasite Immunology* 30: 123-132.
- Greer, A W, Huntley, J, Mackellar, A, McAnulty, R W, Jay, N P, Green, R, Stankiewicz, M & Sykes, A R. (2008). The effect of corticosteroid treatment on local immune responses, intake and performance in lambs infected with *Teladorsagia circumcincta*. *International Journal for Parasitology* 38: 1717-1728.

Jonathan (Jon) Hickford



Associate Professor in Animal Breeding and Genetics

BSc(Hons), (Cant) PhD (Otago)

Ext 8186

Hilgendorf 204

jon.hickford@lincoln.ac.nz

Companion of the Royal
Society of New Zealand
(CRSNZ);

President of the New Zealand
Institute of Agricultural and
Horticultural Science;

Directs the operation of the
Gene-Marker Laboratory;

Two awards for being a 'Top
Teacher'.

Teaching

Science and agriculture degree programmes.

Biochemistry I and II, Food Biochemistry and Biotechnology,
Animal Biochemistry and Physiology, Population Biology,
General Immunology and Options in Immunology.

Examiner for subjects, Animal Breeding and Genetics
Molecular Biology, Molecular Genetics and Molecular
Biotechnology.

Research

Molecular genetics of livestock including sheep, goats and
cattle with particular emphasis on gene marker technology to
breed healthier livestock.

Selected Publications

- Bennett G N, Zhou H, Hickford J G H. (2010). Undetected 1kA genes within *Fusobacterium necrophorum*? *Journal of Medical Microbiology* 59 (4): 499-500.
- Forrest R, Itenge-Mweza T O M, McKenzie G W, Zhou H, Frampton C M, Hickford J G H. (2010). Polymorphism of the ovine beta-adrenergic receptor gene (ADRB3) and its association with wool mean staple strength and yield. *Animal Genetics* 40: 958-962.
- Forrest R, Zhou H, Fang Q, Smyth A V, Frampton C M, Hickford J G H. (2010). No evidence for a universal association between variation in faecal egg count for a mixed field-challenge of gastrointestinal parasites and the presence of the Ovar-DQA1 null haplotype in sheep. *Veterinary Immunology Immunopathology* 135 (3-4): 303-305.
- Hickford J G H, Forrest R, Zhou H, Fang Q, Han J, Frampton C M, Horrell A L. (2010). Polymorphisms in the ovine myostatin gene (MSTN) and their association with growth and carcass traits in New Zealand Romney sheep. *Animal Genetics* 41 (1): 64-72.
- Itenge-Mweza T O M, Hickford J G H, Forrest R H, McKenzie G W, Frampton C M. (2010). Association of variation in the ovine KAP1.3 and K33 genes with wool traits. *International Journal of Sheep and Wool Science* 58: 1-20.

George Hill



Associate Professor of Agronomy

RD VRD JP BSc(Agric)(Hons)
MSc(Agric) (WAust), FASNZ
CPAg

Ext: 7862

Field Service Centre 103
george.hill@lincoln.ac.nz

Past President, Fellow and Council Member Agronomy Society of New Zealand; Secretary/Treasurer International Lupin Assoc. Member of the Editorial Board, *New Zealand Journal of Crop and Horticultural Science* and *Spanish Journal of Agricultural Research*. Technical Editor (Plants) *Communications in Biometry and Crop Science*, Editor *Agronomy New Zealand*.

Teaching

Botany and Introductory Plant Physiology to first year degree and diploma classes, Cropping to third year degree students and second year diploma students, Weed control to diploma students and agronomy and weed control to masters students.

Research

- Agronomy and use of legumes and their use as forage for ruminant animals and a protein source for monogastric animals and their use in sustainable cropping systems.

Selected Publications

- Mihailovic, V, Hill, G D, Lazarevic, B, Eickmeyer, F, Mikic, A, Krstic, D & Dugalic, G. (2008). Performance of blue lupin (*Lupinus angustifolius* L.) cultivars on a pseudogley in Serbia. *Proceedings of the 12th International Lupin Conference*, 14-18 September, Fremantle, Western Australia 51-54.
- Mihailovic, V, Hill, G D, Mikic, A, Cupina, B & Vasiljevic, S. (2008). White lupin as a forage crop on alkaline soils. *Proceedings of the 12th International Lupin Conference*, 14-18 September, Fremantle, Western Australia 79-82.
- McKenzie, B A, Andrews, M, Hill, G D. (2007). Nutrient and irrigation management. In: Yadav SS, McNeil DL, Stevenson PC (eds) *Lentil: An Ancient Crop for Modern Times*, The Netherlands, Springer. Chapter 9: 145-158.
- McNeill, D L, Hill, G D, Materne, M & McKenzie, B A. (2007). Global production and world trade. In: Yadav SS, McNeil DL, Stevenson PC (eds) *Lentil: An Ancient Crop for Modern Times*, The Netherlands, Springer. Chapter 6: 95-105.
- Sixtus, C R, Scott, R & Hill, G D. (2007). The phenology of *Cydia succedana* on gorse in Canterbury. *New Zealand Plant Protection Society (Inc.)*, 13-16 August, Napier War Memorial and Convention Centre 60: 141-156.
- Hill, G D. The use of lupin seed in human and animal diets - revisited. (2006). In: E. van Santen, G.D. Hill(ed.) *Proceedings of the 11th International Lupin Conference*, Guadalajara, Jalisco, Mexico, 4-9 May 2005. 252-266.
- McKenzie, B A, Edwards, G & Hill, G D. (2006). Are New Zealand cereal, arable and pastoral rotations sustainable? *Aspects of Applied Biology* 80: 29-41.

Nigel Jay



Senior Technical Officer

Nat.Cert.Agric.(UK)

Ext: 8623

Johnstone Memorial Lab

nigel.jay@lincoln.ac.nz

Awarded:

Prince and Princess of Wales
Award.

Lincoln University Foundation
Award.

Research

- Use of computer tomography to measure body composition in live farm animals.
- Development of protocols and provide technical requirements for running advanced sheep breeding programmes.
- Techniques, laparoscopic artificial insemination, embryo transfer, embryo and semen freezing and micromanipulation.

Selected Publications

- Palmer, D N, Mitchell, N L, Barry, L A, Xu, Jay, N P, Xu, B, Kay, G W. (2009). Intercellular communication in ovine batten disease: prospects for therapy. *12th International Congress on Neuronal Ceroid Lipofuscinoses (NCL)*. 3-6 June, Hamburg, Germany, p46.
- Madibela, O R, Nicol, A M, Sykes, A R & Jay, N P. (2008). Brief Communication: High crude protein in autumn pasture does not impair reproductive performance in sheep. *New Zealand Society of Animal Production (Inc.)* 24-27 June, University of Queensland, St Lucia, Australia. 156-157.
- Barrell, G K, Ridgway, M, Jay, N P, Bell, S T & Wellby, M P. (2008). Antler growth and skeletal bone turnover: a quantitative computed tomography study. *Proceedings of the Deer Branch of the New Zealand Veterinary Association*, Christchurch. 16 July, 160-163.
- Kay, G.W., Jay, N.P., Mitchell, N., Bell, S.T., Palmer, D.N. (2007). CLN/6 normal chimeric sheep: A test model for cross-correction by cell transplantation. *11th International Congress on Neuronal Ceroid Lipofuscinosis (Batten disease)*, Hyatt Regency, Rochester, New York, p19.
- Kay, G.W., Jay, N.P., Sedcole, J.R. (2001). Monozygotic twin lamb production by embryo bisection: factors affecting twinning rate. *Animal Technology* 52(2): 103-112.
- Davis, G.H., Dodds, K.G., Wheeler, R., Jay, N.P. (2001). Evidence that an imprinted gene on the x chromosome increases ovulation rate in sheep. *Biology of Reproduction* 64: 216-221.

Chris Logan



**Animals Programme Manager,
Manager Flock-Linc**
DipAgr Dist (Lincoln)

Ext: 8620
Hilgendorf 211
chris.logan@lincoln.ac.nz

Technical Advisor to Coopworth Sheep Society of N.Z; Member of Technical Committee of Sheep Improvement Ltd (SIL); South Island YFC Field Days Committee; Speaker and advisor to outside farming groups and research organisations.

Teaching

Animal Health, Reproduction, Breeding and Genetics, Nutrition, Anatomy, Growth, Body Composition to undergraduate classes both degree and diploma, from first year to course completion.

Technical advice, guidance and assistance to postgraduate students.

Research

Animal Breeding and Genetics particularly animal reproduction body growth and composition. Application of advanced animal breeding techniques.

Selected Publications

- Jopson, N.B., McEwan, J.C., Logan, C.M., Muir, P.D. (2009). Genetic parameters for primal cut meat yield traits in sheep. *Proceedings of the New Zealand Society of Animal Production*, 24-26 June, Lincoln University 69: 215-219.
- McLean, N.J., Dodds, K.G., Knowler, K.J., Jopson, N.B., Behrent, M., Logan, C.M., Muir, P.D., Shackell, G.H., McEwan, J.C. (2008). Brief Communication: Artificial insemination success rates for Meat and Wool New Zealand central progeny test sires. *Proceedings of the New Zealand Society of Animal Production* 68: 77-78.
- Gibbs, J.S, Sykes, A.R, McAnulty, R.W & Logan, C M. (2006). Lincoln University's research of the role of nutrition in gastrointestinal nematode control. In: Stefan Smith(ed.) *Proceedings of the 36th Seminar, Society of Sheep & Beef Cattle Veterinarians of the NZVA* 7-9 June, Grand Chancellor Hotel, Christchurch. 151-156.
- Herve, M. McAnulty, R.W., Logan, C.M., Sykes, A.R. (2003). Regional variations in the nematode worm populations of breeding ewes in New Zealand. *New Zealand Veterinary Journal* 51 (4): 159-164.
- Rutherford, L., Nicol, A.M., Logan, C.M. (2003). Recognising the limits to liveweight reproduction relationships in ewes. *Proceedings of the New Zealand Society of Animal Production* 63: 140-143.
- Familton, A.S., Gogolewski, R.P., McAnulty, R., Logan, C., Barrick, R.A., Eagleson, J.S. (1997). Control of gastrointestinal parasitism in sheep with ivermectin delivered via an intraruminal controlled-release device. *Fourth International Congress for Sheep Veterinarians. Australian Sheep Veterinary Society Conference Proceedings*, p361.

Robin McAnulty



Technical Officer

BSc(Cant) MAppSc (Lincoln)

Ext: 8625

Johnstone Memorial Lab
robin.mcanulty@lincoln.ac.nz

Member of:

Technical Advisory Group for
Wormwise National Worm
Mngt Strategy; Consortium for
Anthelmintic Resistance SNPs.

Current President:

New Zealand Society for
Parasitology.

Research

- Epidemiology and control of gastro-intestinal parasites of ruminants.
- Nematode parasite-nutrition interactions.
- Molecular identification of gastro-intestinal parasite species.

Selected Publications

- Greer A W, McAnulty R W, Gibbs, S J. (2010). Performance-based targeted selective anthelmintic treatment regime for grazing dairy calves. *Proceedings of the 4th Australasian Dairy Symposium 2010*, Lincoln University, 31 August – 2 September. 385-389.
- Greer, A W, Boisclair, Y R, Stankiewicz, M, McAnulty, R W, Jay, N P, Sykes, A R. (2009). Leptin concentrations and the immune-mediated reduction of feed intake in sheep infected with the nematode *Trichostrongylus colubriformis*. *British Journal of Nutrition* 102: 194-197.
- Hutchings, M R, Knowler, K J, McAnulty, R W & McEwan, J C. (2007). Genetically resistant sheep avoid parasites to a greater extent than do susceptible sheep. *Proceedings of the Royal Society Bulletin: Biological Sciences* 274: 1839-1844.
- Sykes, A R, Xie, H, Stankiewicz, M, Huntley, J, Mackellar, A, Sedcole, J R, McAnulty, R W & Green, R. (2007). The effect of vaccinating infection during pregnancy and dietary protein supply on the peri-parturient immune response of sheep to mixed nematode infection with *Teladorsagia circumcincta* and *Trichostrongylus colubriformis* larvae. *Animal* 1: 249-260.
- McAnulty, R W, Xie, H, Stankiewicz, M, Logan, C M, Keeley, M J, Jay, N P, Gibbs, J S & Sykes, A R. (2005). Four years of studies on protein supplementation of peri-parturient ewes at Lincoln University. *20th International Conference of the World Association for the Advancement of Parasitology (WAAVP)* 16-22 October, p138.
- Greer A W, Stankiewicz M, Jay N P, McAnulty R W & Sykes A R. (2005). The effect of concurrent corticosteroid induced immuno-suppression and infection with the intestinal parasite *Trichostrongylus colubriformis* on food intake and utilisation in both immunologically naive and competent sheep. *Animal Science* 80: 89-99.
- Iposu, S.O., Greer, A.W., McAnulty, R.W., Stankiewicz, M. & Sykes, A. R. (2005). The role of suckling on the parasite status of very young lambs infected with *Teladorsagia circumcincta*. Lincoln University, 2005. *Proceedings of the New Zealand Society of Animal Production* 65: 182-185.
- Jackson, F., Greer, A. W., Huntley, J. F., McAnulty, R. W., Bartley, D.J., Stanley, A., Stenhouse, L., Stankiewicz, M. & Sykes, A.R. (2004). Studies using *Teladorsagia circumcincta* in an in vitro direct challenge method using abomasal tissue explants. *Veterinary Parasitology* 124: 73-89.

Annamaria Mills



Postdoctoral Fellow in Plant Science

BSc(Hons), PhD (Lincoln)

Ext: 8341

Field Service Centre 101
anna.mills@lincoln.ac.nz

Member of:

New Zealand New Zealand
Grassland Association.

Research

- Explain the effects of temperature, water and nitrogen.
- Explain differences in animal production caused by differences in the quantity, quality and persistence of pasture on offer.

Selected Publications

- Moot D J, Mills A, Lucas R J. Scott W R. New Zealand. (2010). In: JM Suttie, SG Reynolds editor(s). *Country Pasture/Forage Resource Profiles*. on-line; Parts 1-3.
- Mills, A.; Moot, D.J.; Jamieson, P.D. (2009). Quantifying the effect of nitrogen on productivity of cocksfoot (*Dactylis glomerata* L.) pastures. *European Journal of Agronomy* 30: 63-69.
- Mills, A.; Smith, M.C.; Lucas, R.J.; Moot, D.J. (2008). Dryland pasture yields and botanical composition over 5 years under sheep grazing in Canterbury. *Proceedings of the New Zealand Grassland Association* 70: 37-44.
- Moot, D.J., Brown, H.E., Pollock, K., Mills, A. (2008). Yield and water use efficiency of temperate pastures. *Proceedings of the New Zealand Grassland Association* 70: 51-57.
- Evans, P.M., Mills, A. (2008). Arrowleaf clover: its potential as a new species for dryland farming systems in dry regions of New Zealand. *Proceedings of the New Zealand Grassland Association* 70: 239-244.
- Mills, A.; Smith, M.C.; Moot, D.J. (2008). Liveweight production from dryland lucerne, cocksfoot or ryegrass based pastures. In: Global Issues, Paddock Action. *Proceedings of the 14th ASA Conference*, 21-25 September 2008, Adelaide, South Australia. Online access:
http://www.regional.org.au/au/asa/2008/concurrent/managing_pastures/5830_millsa.htm#TopOfPage.
- Mills A., Moot D.J., McKenzie B.A. (2006). Cocksfoot pasture production in relation to environmental variables. *Proceedings of the New Zealand Grassland Association* 68: 89-94.

Derrick J. Moot



Professor in Plant Science
BAgrSc(Hons) (Cant) PhD
(Lincoln)

Ext: 8990

Field Service Centre 106
derrick.moot@lincoln.ac.nz

Member of:

New Zealand Institute of
Agricultural Science (Inc.); New
Zealand Grassland Association;
Agronomy Society of New
Zealand; Editorial Board for
European Journal of Agronomy

Awarded:

Sustained Excellence in
Teaching Award (NZQA -
National Award); Sustained
Excellence in Teaching Award -
Lincoln University.

Teaching

Pasture Management, Plant Production Systems, Crop Science, Pasture Agronomy, Agronomy and Pasture Ecosystems; Supervision of PhD, Masters and Honours students on annual crop production and pasture science.

Research

Environmental influences on the growth and development of perennial and annual plant species.

Specifically:

- Dryland pastures; lucerne, annual legumes, cocksfoot, nitrogen management, water relations, pasture growth and development
- Cereal crops; wheat, barley, oats - quality and quantity of production
- Grain legumes; field peas, ideotype selection.

Selected Publications

- Moot D J, Mills A, Lucas R J. Scott W R. New Zealand. (2010). In: JM Suttie, SG Reynolds editor(s). *Country Pasture/Forage Resource Profiles*. on-line; Parts 1-3.
- Monks D P, Moot D J. Scott W R. (2010). Photoperiod affects the flowering time of field-sown balansa clover. *Crop & Pasture Science* 61: 639-644.
- Neto A F G, Garcia R, Moot D J. Gobbi K F. (2010). Morphological acclimation of temperate forages to patterns and levels of shade. *Revista Brasileira de Zootecnia* 39: 42-50.
- Brown, H.E. Moot, D.J., Teixeira, E.I. (2009). A framework for quantifying water extraction and water stress responses of perennial lucerne. *Australian Journal of Pasture and Crop Science* 60: 785-794.
- Lonati, M, Moot, D J, Aceto, P, Cavallero, & Lucas, R J. (2009). Thermal time requirements for germination, emergence and seedling development of adventive legume and grass species. *New Zealand Journal of Agricultural Research* 52: 17-29.
- Mills, A, Moot, D J & Jamieson, P D. (2009). Quantifying the effect of nitrogen on productivity of cocksfoot (*Dactylis glomerata* L.) pastures. *European Journal of Agronomy* 30: 63-69.
- Teixeira, E.I. Moot, D.J., Brown, H.E. (2009). Modelling seasonality of dry matter partitioning and root maintenance respiration in lucerne (*Medicago sativa* L.) crops. *Australian Journal of Pasture and Crop Science* 60: 778-784.

Alastair Nicol



Senior Lecturer in Animal Science

BSc(Glas) MAgrSc (Cant) PhD (Alta)

Ext: 8076
Hilgendorf 212
alastair.nicol@lincoln.ac.nz

Honorary Life Membership of New Zealand Society of Animal Production.

Member of:
New Zealand Society of Animal Production;
New Zealand Grassland Association.

Teaching

Beef Cattle and Deer Production, Animal Nutrition and grazing ecology.

Research

- Grazing behaviour and intake with special emphasis on mixed grazing
- Animal Behaviour and Animal Production Systems.

Selected Publications

- Foote, S A, Nicol, A M, Ridgway, M J. (2010). The influence of sheep and cattle on the grazing preference of red deer. *Proceedings of the New Zealand Society of Animal Production*, Massey University, Palmerston North, 23-25 June, 70: 3-7.
- Nicol, A M, Barrell, G K, Gibbs, J S, Frizzell, A N, McPhee, J F. (2009). Assessment of the production of analgesia induced by application of a rubber ring or local anaesthetic to the antler pedicle of yearling stags. *New Zealand Veterinary Journal* 57 (3): 153-159.
- Madibela, O R, Nicol, A M, Sykes, A R & Jay, N P. (2008). Brief Communication: High crude protein in autumn pasture does not impair reproductive performance in sheep. *Proceedings of the New Zealand Society of Animal Production*, University of Queensland, St Lucia, Brisbane, 24-26 June, 68: 156-157.
- Nicol, A M, O'Connor, R P, Williams, S J & Bryan, S J. (2008). Short Communication: Variation in diet preference between sheep. *Proceedings of the New Zealand Society of Animal Production*, University of Queensland, St Lucia, Brisbane, 24-26 June, 68: 57-62.
- Nicol, A M, Brookes. I M. (2007). The metabolisable energy requirements of grazing livestock. In. PV Rattray, IM Brookes, AM Nicol (ed.). Pasture and Supplements for Grazing Animals. Occasional Publication 14. *New Zealand Society of Animal Production*. ISBN: 0-473-05236-9. Chapter 10: 151-172.
- Nicol, A M, Edwards, G, Ridgway, M J & Griffiths, W M. (2007). Comparison of the effect of simultaneous grazing of sheep or cattle with hinds during fawning. *Proceedings of the New Zealand Society of Animal Production*, Lake Wanaka Centre, Wanaka, 20-22 June, 280-284.

J. Richard Sedcole



Senior Lecturer in Applied Biometrics and Statistics

MAgrSc (Massey) PhD (Iowa State)

Ext: 8009

Hilgendorf 305

richard.sedcole@lincoln.ac.nz

Conference speaker:

New Zealand Grasslands Conference; Animal Behav. Conference; New Zealand Land Treatment Collective; Economies of Scale - a second look at the data N.Z. Statistical Soc. Conference; National Symposium and Workshop on Grain Legumes; N.Z. Institute of Chemistry and N.Z. Biochemical Society; N.Z. Genetical Society.

Teaching

Biometrics, Applied Statistical Methods, and Experimentation.

Research

Statistical consulting and collaboration.

Selected Publications

- Bennett, G N, Hickford, J G, Sedcole, J R & Zhou, H. (2009). *Dichelobacter nodosus*, *Fusobacterium necrophorum* and the epidemiology of footrot. *Anaerobe* 15: 173-176.
- Greer, A W, Sedcole, J R, Jay, N P, McAnulty, R W, Green, R S, Stankiewicz, M & Sykes, A R. (2009). Protein supply influences the nutritional penalty associated with the development of immunity in lambs infected with *Trichostrongylus colubriformis*. *Animal* 3: 437-445.
- Sedcole, J R, Bloomberg, M, Mason, E & Buchan, G D. (2009). Hydrothermal time germination models for radiata pine (*Pinus radiata* D. Don). *Seed Science Research* 19: 171-182.
- Bryant, R H, Nicol, A M, Wilson, F & Sedcole, J R. (2008). Between-cultivar variability in breaking force of components of perennial ryegrass (*Lolium perenne*). *Grass and Forage Science* 63: 350-359.
- Tozer, K N, Chapman, D F, Quigley, P E, Dowling, P M, Cousens, R D, Kearney, G A & Sedcole, J R. (2008). Controlling invasive annual grasses in grazed pastures: population dynamics and critical gap sizes. *Journal of Applied Ecology* 45: 1152-1159.
- Black, A D, Lucas, R J, Moot, D J & Sedcole, J R. (2007). Liveweight gains of lambs from Caucasian clover/ryegrass and white clover/ryegrass swards on soils of high and low fertility. *Grass and Forage Science* 62: 225-238.
- Kelliher, F M, Sedcole, J R, Emery, I & Condron, L M. (2007). Grassland soil microbial respiration responses to urea and litter applications. *New Zealand Journal of Agricultural Research* 50: 321-326.
- Sykes, A R, Xie, H, Stankiewicz, M, Huntley, J, Mackellar, A, Sedcole, J R, McAnulty, R W & Green, R. (2007). The effect of vaccinating infection during pregnancy and dietary protein supply on the per-parturient immune response of sheep to mixed nematode infection with *Teladorsagia circumcincta* and *Trichostrongylus colubriformis* larvae. *Animal* 1: 249-260.

Andrew Sykes



**Head of Department
Professor of Animal Science**
DSc (Wales) PhD (Edinburgh)

Ext: 8058
Hilgendorf 241
andrew.sykes@lincoln.ac.nz

Consultant to:
FAO/International Atomic Energy Agency, joint programmes in Livestock Development; Member and past Chairman, Int. Symposia Series on the Nutrition of Herbivores; Member: National Technical Advisory Group for Control of Nematodes 'Wormwise'. Past President NZ Society of Animal Production; Past President Asia Australasian Association of Animal Production Societies.

Awards:
McMeekan Award of the New Zealand Society of Animal Production; Ira Cunningham Award: New Zealand Veterinary Association.

Teaching

Animal nutrition at postgraduate level.

Research

- Nematode parasite-host immune system interactions; effect of host nutrition.

This work is being done in collaboration with Moredun Research Institute, Edinburgh.

Mineral nutrition.

- Improved methods of diagnosis of Co/vitamin B₁₂ deficiency
- Modelling of magnesium metabolism in dairy cattle

Selected Publications

- Furlong, J M., Sedcole, J R. & Sykes, A R. (2010). An evaluation of plasma homocysteine in the assessment of vitamin B₁₂ status of pasture-fed sheep. *New Zealand Veterinary Journal* 58: 11-16.
- Grace, N D, Knowles, S, Sykes, A R. (2010). *Managing Mineral Deficiencies in Grazing Livestock*. New Zealand Society of Animal Production, Hamilton. ISBN: 978-0-473-15154-6 1st edition, pp203.
- Sykes, A R. (2010). Calcium. In: N Grace, S Knowles, A Sykes (eds). *Managing Deficiencies in Grazing Livestock*, NZSAP, 151-163.
- Sykes, A R. (2010). Chromium. In: N Grace, S Knowles, A Sykes (eds). *Managing Deficiencies in Grazing Livestock*, NZSAP, 35-38.
- Sykes, A R. (2010). Magnesium. In: N Grace, S Knowles, A Sykes (eds). *Managing Deficiencies in Grazing Livestock*, NZSAP, 165-176.
- Sykes, A R. (2010). Mineral nutrition, biochemistry and supplementation issues. In: N Grace, S Knowles, A Sykes (eds). *Managing Deficiencies in Grazing Livestock*, NZSAP, 23-27.
- Sykes, A R. (2010). Phosphorus. In: N Grace, S Knowles, A Sykes (eds). *Managing Deficiencies in Grazing Livestock*, NZSAP, 177-184.
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Craig Trotter



PhD Candidate and Teaching Fellow

BAGSci (Hons1; Lincoln)

Ext: 8620

Hilgendorf 211

craig.trotter@lincoln.ac.nz

Member of:

New Zealand Society of
Animal Production;

The International Society of
Microbial Ecology.

Awarded:

International Stockmen's
Educational Foundation
student fellowship to attend
the International Livestock
Congress, 2007.

Teaching

Intensive animal production and nutrition; The role of supplementation in pastoral based livestock production systems.

Research interests

- PhD topic - liver abscessation in New Zealand pasture based beef bulls.
- Intensive beef production systems, ruminant nutrition and microbiology.
- The role of nutrition on rumen function.
- Animal grazing behaviour and selection.

Selected Publications

- Gibbs, J., Trotter, C. G., Laporte-Urbe, J., and Nicol, A. M. (2008). Liver abscesses in pasture based bull beef systems. *Proceedings of the Society of Sheep and Beef Cattle Veterinarians of the New Zealand Veterinary Association* 38: 149-153.
- Gibbs, J., Laporte-Urbe, J., Trotter, C., and Noel, J. (2007). The incidence of liver abscessation in pasture based bull beef systems of New Zealand. *Journal of Animal Science* 85: Supp. 1, 355.
- Trotter, C. G. (2007). International Stockmen's Educational Foundation student fellowship report. *International Stockmen's Educational Foundation Student Reports. Denver, Colorado, United States of America.*
- Trotter, C. G., Nicol, A. M., Ridgway, M. J. (2006). Sheep and deer grazing of pasture close to cattle dung pats. *Proceedings of the New Zealand Society of Animal Production* 66: 59-63.

Huitong Zhou



Senior Research Officer

BAgrSc, MAgrSc, PhD (Lincoln)

Ext 8168/8144

Hilgendorf 205

huitong.zhou@lincoln.ac.nz

Member of:

New Zealand Society of
Biochemistry and Molecular
Biology (NZSMB);

New Zealand Institute of
Agricultural Science (NZIAS).

Research

- Polymorphism screening and genotyping of polymorphic genes
- Gene marker technology for livestock improvement
- PCR-based diagnostics

Over 70 refereed publications since 2000

- Zhou H, Hu J, Luo Y, Hickford JG. (2010). Variation in the ovine C-type lectin dectin-1 gene (CLEC7A). *Developmental & Comparative Immunology* 34: 246-249.
- Zhou H, Lottner S, Ganter M, Hickford JGH. (2010). Identification of two new *Dichelobacter nodosus* strains in Germany. *Veterinary Journal* 184: 115-117.
- Zhou H, Bennett G, Hickford JGH. (2009). Variation in *Fusobacterium necrophorum* isolates from sheep, goats and cattle infected with footrot. *Veterinary Microbiology* 135: 363-367.
- Zhou H, Bennett G, Kennan RM, Rood JI, Hickford JGH. (2009). Identification of a leukotoxin sequence from *Fusobacterium equinum*. *Veterinary Microbiology* 133: 394-395.
- Zhou H, Hickford JGH, Gong H. (2009). Identification of allelic polymorphism in the ovine leptin gene. *Molecular Biotechnology* 41: 22-25.
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- Zhou H, Byun SO, Frampton CM, Bickerstaffe R, Hickford JGH. (2008). Lack of association between CAST SNPs and meat tenderness in sheep. *Animal Genetics* 39: 331-332.
- Zhou H, Hickford JGH, Fang Q. (2008). Variation in the coding region of the myostatin (*GDF8*) gene in sheep. *Molecular and Cellular Probes* 22: 67-68.
- Zhou H, Hickford JGH. (2008). Polymorphism of Toll-like receptor 9 (*TLR9*) gene in sheep. *Veterinary Immunology and Immunopathology* 121: 140-143.
- Zhou H, Hickford JGH. (2008). Allelic polymorphism of the caprine calpastatin (*CAST*) gene identified by PCR-SSCP. *Meat Science* 79: 403-405.
- Zhou H, Hickford JGH, Fang Q, Lin YS. (2007). Allelic variation of the ovine Toll-like receptor 4 gene. *Developmental & Comparative Immunology* 31: 105-108.
- Zhou H, Hickford JGH, Fang Q. (2006). A two-step procedure for extracting genomic DNA from dried blood spots on filter paper for polymerase chain reaction amplification. *Analytical Biochemistry* 354: 159-161.

Department of Agricultural Sciences Staff

Name	Designation
Sykes Andrew	Head of Department, Professor of Animal Science
Haldane, Jan	Department Secretary
Andrews, Mitchell	Associate Professor
Barnes, Kim	Technician
Barrell, Graham	Associate Professor
Bell, Stephen	Senior Computer Consultant
Black, Alistair	Lecturer
Bryant, Racheal	Postdoctoral Fellow
Bywater, Tony	Professor
Cripps, Michael	Postdoctoral Fellow
Curtis, Jeff	Manager, Research Dairy Farm
Dastgheib, Farhad	Senior Lecturer
Dash, Daniel	Field Technician
Edwards, Grant	Professor
Edwards, Roy	Lecturer
Fang, Freeman	Technician
Fasi, Vonny	Technician
Gash, Alan	Senior Lecturer
Gibbs, Jim	Senior Lecturer
Greenwood, Sabrina	Lecturer
Greer, Andy	Lecturer
Heffer, Don	Technical Officer
Hickford, Jon	Associate Professor
Hill, George	Associate Professor
Hind, Alison	Flock-Linc Computer Operator
Hogan, Andrea	Technician

Name	Designation
Jack, Dave	Technical Officer
Jay, Nigel	Senior Technical Officer
Kidd, Judith	Technical Officer
Logan, Chris	Manager Animals Programme
Lucas, Dick	Researcher
Marshall, Alan	Manager, Field Service Centre
McAnulty, Robin	Technical Officer
Meachen, Leona	Nursery Assistant
Meikle, Geoffrey	Technician, Ashley Dene
Mills, Annamaria	Postdoctoral Fellow (MWNZ)
Monson, Diane	Senior Research Technician
Moot, Derrick	Professor
Mottram, Warwick	Technician
Nicol, Alastair	Senior Lecturer
Paton, Nathan	Field Technician
Pettigrew, Colin	Livestock Manager (Ashley Dene)
Pollock, Keith	Technical Officer
Price, Matt	Technician
Richards, Brent	Technical Officer
Ridgway, Martin	Manager JML/Deer Farm
Sedcole, Richard	Senior Lecturer
Smith, Malcolm	Technician, (MWNZ)
Thackwell, Jeffery	Technician
Trotter, Craig	Teaching Fellow
Tung, Rosy	Technician
Walpot, Valerie	Research Technician (Research Dairy Farm)
Zhao, Jenny	Technical Officer
Zhou, Huitong	Senior Research Officer

