

Bruce M. Rathgeber

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Education

Doctor of Philosophy - 2000

University of Saskatchewan

Department of Applied Microbiology and Food Science - Specialization - Poultry Meat Science

Master of Science - 1994

University of Arkansas

Department of Poultry Science - Specialization - Poultry Microbiology and Food Safety

Bachelor of Science in Agriculture - 1987

University of Saskatchewan

Department of Animal and Poultry Science (Poultry Major)

Dissertation (Supervisor - Dr. Phyllis Shand)

Title Influence of the rate of postmortem muscle pH and temperature decline and postrigor muscle temperature on turkey breast meat quality and myofibrillar protein degradation.

Awards

2005 Graduate Student Supervisor of the Year – Nova Scotia Agricultural College

1997 C. Auerhamner Postgraduate Scholarship

1997 M. Pedersen Postgraduate Scholarship

1997 S.N. Horner Postgraduate Scholarship

1997 University of Saskatchewan College of Graduate Studies Unit Scholarship

1996 Fred Thompson Trust Scholarship - Canadian Dairy and Food Industry Supply Association

1996 University of Saskatchewan College of Graduate Studies Unit Scholarship

1995 University of Saskatchewan College of Graduate Studies Unit Scholarship

1994 Phi Kappa Phi Honor Society (University of Arkansas)

1987 Canadian Feed Industry Association Award in Poultry Production, Saskatchewan Division

1986 Saskatchewan Poultry Industry Research Award

1986 NSERC Summer Scholarship

1986 Fredeen Bursary

1985 University Undergraduate Scholarship

1985 Carl Auerhamner Bursary

1984 University Undergraduate Scholarship

1984 Carl Auerhamner Bursary

MICROBIOLOGICAL EVALUATION OF POULTRY HOUSE WALL
MATERIALS AND INDUSTRIAL CLEANING AGENTS

Publications

- Rathgeber, B.M., Thompson, K.L., Ronalds, C. M. and Budgell, K.L. 2009. Microbiological evaluation of poultry house wall materials and industrial cleaning agents. *J. Appl. Poult. Res.* (in press).
- Silversides, F. G., Song, Y.Y., Renema, R.A., Rathgeber, B.M. and Classen, H.L. 2008. Cryopreservation of germplasm from chickens kept in Canadian research institutions. *Can. J. Anim. Sci.* 88:577-580.
- Rathgeber, B.M., Budgell, K.L., MacIsaac, J.L., Mirza, M.A. and Doncaster K.L. 2008. Growth performance and spleen and bursa weight of broilers fed yeast beta-glucan. *Can. J. Anim. Sci.* 88:469-473.
- Wang, B., Rathgeber, B.M., Astatkie, T., and MacIsaac, J.L. 2008. The stress and fear levels of microwave toe-treated broiler chickens grown with two photoperiod programs. *Poult. Sci.* 87:1248–1252.
- Wilson, J.D., Zheljiazkov, V.D., Rathgeber, B.M., Burton, D.L., and Caldwell, C.D. 2008. Reduction of P availability in poultry and dairy manure using mineral amendments. *Soil Sci. & Plant Nutr.* 54: 600–605.
- Rathgeber, B.M., MacKenzie, M., and MacIsaac, J.L. 2007. Feeding turkeys a highly digestible supplement during preslaughter feed withdrawal. *Poult. Sci.* 86:2029-2033.
- MacIsaac, J. L., Burgoyne, K. L., Anderson, D. M., and Rathgeber, B. M. 2005. Roasted full-fat soybeans in starter, grower, and finisher diets for female broiler turkeys. *J. Appl. Poult. Res.* 14:116-121.
- Olkowski, A.A., Wojnarowicz, C., Rathgeber, B.M., Abbott, J.A., and Classen, H.L. 2003. Lesions of the pericardium and their significance in the aetiology of heart failure in broiler chickens *Res. Vet. Sci.* 74:203-211.
- Olkowski, A. A., B. M. Rathgeber, G. Sawicki, and H. L. Classen, 2001. Ultrastructural and molecular changes in the left and right ventricular myocardium associated with ascites syndrome in broiler chickens raised at low altitude. *J. Vet. Med.* 48:1-14.
- Boles, J. A., B. M. Rathgeber, and P. J. Shand, 2000. Recovery of proteins from beef and the functionality of these proteins in sausage batters. *Meat Sci.* 55:223-231.
- Rathgeber, B. M., J. A. Boles, I. J. Xavier, A. R. McCurdy, and P. J. Shand, 1999. Thermally induced changes in protein extractability of postrigor turkey breast meat measured by two methods. *J. Food Sci.* 64:1005-1009.
- Rathgeber, B. M., M. D. Pato, J. A. Boles, and P. J. Shand, 1999. Rapid postmortem glycolysis and delay chilling of carcasses cause alterations to protein extractability and degradation of turkey breast muscle proteins. *J. Agric. Food Chem.* 47:2529-2536.
- Olkowski, A. A., D. Korver, B. M. Rathgeber, and H. L. Classen, 1999. Cardiac index, oxygen delivery, and tissue oxygen extraction in slow growing and fast growing chickens, and in chickens with heart failure and ascites: A comparative study. *Avian Path.* 28:137-146.
- Rathgeber, B. M., J. A. Boles, and P. J. Shand, 1999. Rapid postmortem pH decline and delayed chilling reduce quality of turkey breast meat. *Poult. Sci.* 78:477-484.
- Rathgeber, B. M., and A. L. Waldroup, 1995. Antibacterial activity of a sodium acid pyrophosphate product in chiller water against selected bacteria on broiler carcasses. *J. Food Prot.* 58:530-534.

- Waldroup, A. L. and B. M. Rathgeber, 1993. Microbiological aspects of counter current scalding. *J. Appl. Poult. Res.* 2:203-207.
- Waldroup, A. L., B. M. Rathgeber, R. E. Hierholzer, L. Smoot, M. Martin, S. F. Bilgili, D. L. Fletcher, T. C. Chen, and C. J. Wabeck, 1993. Effects of reprocessing on microbiological quality of commercial prechill broiler carcasses. *J. Appl. Poult. Res.* 2:111-116.
- Waldroup, A. L., B. M. Rathgeber, and R. H. Forsythe, 1992. Effects of six modifications on the incidence and levels of spoilage and pathogenic organisms on commercially processed postchill broilers. *J. Appl. Poult. Res.* 1:226-234.

Conference Papers

- Rathgeber, B.M., D.M. Anderson, K.L. Thompson, J.L. MacIsaac and S. Budge, 2009. Color and fatty acid profile of abdominal fat pads from broiler chickens fed lobster meal. XIX European Symposium on the Quality of Poultry Meat, XIII European Symposium on the Quality of Eggs and Egg Products, Turku, Finland.
- Currie, R., B.M. Rathgeber, and K. L. Thompson, 2009. Postmortem cathepsin B activity in breast muscle of non commercial chicken breeds. *Poult. Sci.* 88: (supple 1.)
- Rathgeber, B.M., K. L. Thompson, K.L. Budgell, and J.L. MacIsaac, 2009. Vaccination response in pullets from different genetic backgrounds and the impact of dietary yeast beta glucan. *Poult. Sci.* 88: (supple 1.)
- Kaur, R., B.M., Rathgeber, M. Jendral, K. L. Thompson, and R. Robinson, 2009. Effects of different levels of calcium and vitamin D on egg quality of commercial and heritage breeds from twenty-two to thirty-three weeks of age. *Poult. Sci.* 88: (supple 1.)
- Jendral, M.J. and B.M., Rathgeber, 2009. Productivity, health and welfare of 3 strains of laying hens housed in conventional battery and furnished colony cages. *Poult. Sci.* 88: (supple 1.)
- Jendral, M.J., B.M., Rathgeber, and E. Yiridoe, 2009. Determining the economic and welfare added value of natural and load-bearing movement in 3 strains of laying hens housed in furnished colony cages. Atlantic Poultry Conference, Greenwich, NS.
- Kaur, R., B.M., Rathgeber, Jendral, M.J., K.L., Thompson, and R. Robinson, 2009. Relation of uterine proteins with eggshell quality. Atlantic Poultry Conference, Greenwich, NS.
- Rathgeber, B., T. McLaughlin, and K. Doncaster, 2008. Method development for collection and SDS-PAGE of uterine fluid proteins in laying hens. *Can. J. Anim.* (abst.)
- Currie, R., B. Rathgeber, K. Doncaster and F.G., Silversides, 2008. Post-mortem pH decline of breast muscle from broilers and three non commercial strains of chicken. *Can. J. Anim.* (abst.)
- Rathgeber, B., K. Doncaster, C. Ronalds, K. Budgell and D. Anderson, 2008. Microbiological evaluation of poultry house wall materials and industrial cleaning agents. *Can. J. Anim.* (abst.)
- Ronalds, C., V. Rupasinghe, B. Rathgeber, R. Robinson, 2008. Metabolic profiling of dietary quercetin in broiler chickens. CFIST, Charlottetown, PE.
- Budgell, K., B. Rathgeber and K. Doncaster, 2008. Bacterial populations of broiler chickens fed yeast products in place of antibiotics. *Poult. Sci.* 87: (supple 1.)
- Doncaster, K., A. Schuurmans and B. Rathgeber, 2008. Use of artificial turf in colony cage nest boxes for single comb white leghorn hens in mid-lay. *Poult. Sci.* 87: (supple 1.)

- Currie, R., K. Doncaster and B. Rathgeber, 2008. Texture of frankfurters manufactured from chicken thigh and enriched with plant-based fat sources. *Poult. Sci.* 87: (supple 1.)
- Budgell, K. and B. Rathgeber, 2007. Effect of yeast (*saccharomyces cerevisiae*) cell wall components on the growth performance of broilers. 16th European Symposium on Poultry Nutrition, Strasbourg, France.
- Cooper, A., B. Rathgeber and V. Zheljzkov, 2007. Evaluation of Cu bioavailability in poultry tissues from exposure to compost amended soils. XVIII European Symposium on the Quality of Poultry Meat, XII European Symposium on the Quality of Eggs and Egg Products, Prague, Czech Republic.
- Currie, R. and B. Rathgeber, 2007. Post mortem pH decline of breast meat from four breeds of chicken and the influence of delaying carcass chilling. XVIII European Symposium on the Quality of Poultry Meat, XII European Symposium on the Quality of Eggs and Egg Products, Prague, Czech Republic.
- Rathgeber, B. and S. Haines, 2007. Variability of acute phase proteins in non-commercial chicken lines. XVIII European Symposium on the Quality of Poultry Meat, XII European Symposium on the Quality of Eggs and Egg Products, Prague, Czech Republic.
- Rathgeber, B. M., Haines, S. 2007. Variability of acute phase proteins in non-commercial chicken lines. Atlantic Agricultural Science and Technology Workshop, Truro, NS
- Budgell, K., J. MacIsaac and B. Rathgeber, 2006. Comparison of methods for weighing broilers – manual vs. computerized scales. *Poult. Sci.* 85: (supple 1.)
- Currie, R., J. MacIsaac and B. Rathgeber, 2006. Increasing the number of phases fed to broiler chickens by blending diets. *Poult. Sci.* 85: (supple 1.)
- MacIsaac, J., D.M Anderson, S. J. Butt and B. Rathgeber, 2006. Evaluation of a mineral chelate for late cycle laying hens. *Poult. Sci.* 85: (supple 1.)
- MacKenzie, M., J. MacIsaac and B. Rathgeber, 2006. Cathepsin activity in two commercial broiler chicken strains fed supplementary tryptophan. *Poult. Sci.* 85: (supple 1.)
- McKillop, N., J. MacIsaac and B. Rathgeber, 2006. Feeding white leghorn hens yeast beta-glucans to influence egg quality. *Poult. Sci.* 85: (supple 1.)
- Ronalds, C., H.P.V. Rupasinghe and B. Rathgeber, 2006. Apple by-products as poultry feed ingredients. *Poult. Sci.* 85: (supple 1.)
- Budgell, K. and B. Rathgeber, 2006. Growth performance and organ weights of broiler chicks fed a yeast beta-glucan. *Poult. Sci.* 85: (supple 1.)
- Fraser, E. and B. Rathgeber, 2006. Collagenase activity in skin of broiler chickens subjected to two lighting regimens and microwave toe-treatment. *Poult. Sci.* 85: (supple 1.)
- Isenor, K. and B. Rathgeber, 2006. Monitoring skin color of broilers fed blueberry by-products. *Poult. Sci.* 85: (supple 1.)
- McKillop, N. and B. Rathgeber, 2006. Egg quality measurements from White Leghorn hens fed yeast beta-glucans. *Poult. Sci.* 85: (supple 1.)
- Spurgeon, D., MacIsaac, J., and B. Rathgeber, 2006. Growth performance and postmortem pH decline of broiler chickens fed blueberry by-products. *Poult. Sci.* 85: (supple 1.)
- Rathgeber, B. M., M. E. MacKenzie, and J. L. MacIsaac, 2004. Postmortem breast muscle pH of turkeys offered a feed supplement during preslaughter feed withdrawal. *Can. J. Anim.* (abst.)

- Wang, B., J. L. MacIsaac, and B. M. Rathgeber, 2004. Carcass scratches and growth rate of microwave toe-treated broiler chickens. *Poult. Sci.* 83: (supple 1.)
- Rathgeber, B. M., M. E. MacKenzie, and J. L. MacIsaac, 2004. Bacterial load of the crop of turkeys offered a feed supplement during preslaughter feed withdrawal. *Poult. Sci.* 83: (supple 1.)
- Wang, B., J. L. MacIsaac, L. A. MacLaren, and B. M. Rathgeber, 2004. Type II collagen in skin from broilers reared on two different lighting programs. 22 (abstract) International Poultry Scientific Forum, Atlanta Georgia.
- Masoodi, A. R., J. L. MacIsaac, and B. M. Rathgeber, 2004. Weight loss for turkeys offered a feed supplement during the preslaughter feed withdrawal period. 23 (abstract) International Poultry Scientific Forum, Atlanta Georgia.
- MacKenzie, M. E., J. L. MacIsaac, and B. M. Rathgeber, 2004. Stress levels in broiler chickens provided dietary tryptophan. 25 (abstract) International Poultry Scientific Forum, Atlanta Georgia.
- MacKenzie, M. E., J. L. MacIsaac, and B. M. Rathgeber, 2003. Plasma creatine kinase activity and postmortem pH decline in broilers fed supplemental tryptophan. *Poultry Sci.* 82: (suppl. 1) 67 (abstract).
- Rathgeber, B. M., and J. L. MacIsaac, 2003. Condition of broiler carcasses from two lighting programs. *Poultry Sci.* 82: (suppl. 1) 222 (abstract).
- Rathgeber, B. M., K. Budgell, and J. MacIsaac, 2002. Growth performance and plasma creatine kinase activity of two commercial broiler strains fed supplemental tryptophan. International Poultry Scientific Forum, Atlanta Georgia.
- Rathgeber, B. M., J. A. Boles, and P. J. Shand, 2000. Myosin degradation and gelation properties of pork longissimus with rapid postmortem pH decline. *Agri-Food 2000*, Winnipeg.
- Rathgeber, B. M., J. A. Boles, and P. J. Shand, 1998. Rapid postmortem glycolysis and delayed chilling have detrimental effects on turkey muscle proteins. *Poult. Sci.* 77: (suppl. 1) .
- Olkowski, A. A., D. Korver, B. M. Rathgeber, and H. L. Classen, 1998. Cardiac index, oxygen delivery, and tissue oxygen extraction in slow growing and fast growing chickens, and in chickens with heart failure and ascites: A comparative study. *Poult. Sci.* 77: (suppl. 1) .
- Rathgeber, B. M., P. J. Shand, and A. R. McCurdy, 1996. Evaluation of protein solubility methods for the determination of thermally induced changes in turkey breast meat. *Poult. Sci.* 75: (suppl. 1) 54 (abstract).
- Rathgeber, B. M., N. Imel, and A. L. Waldroup, 1994. Microbiological aspects of aspects of counter current scalding. *Poult. Sci.* 73: (suppl. 1) 158 (abstract).
- Rathgeber, B. M., and A. L. Waldroup, 1994. Mechanical removal of bacteria from broiler carcasses by "repicking". *Poult. Sci.* 73: (suppl. 1) 22 (abstract).
- Kopeck, M., B. M. Rathgeber, and A. L. Waldroup, 1993. Use of a chlorous acid formulation to control microorganisms on skinless, deboned broiler thigh meat. *Poult. Sci.* 72: (suppl. 1) 99 (abstract).
- Rathgeber, B. M., R. E. Hierholzer, and A. L. Waldroup, 1993. Effects of reprocessing on microbiological quality of commercial prechill broiler carcasses. *Poult. Sci.* 72: (suppl. 1) 99 (abstract).

Rathgeber, B. M., and A. L. Waldroup, 1992. Incidence and levels of salmonellae on processed turkeys. *Poult. Sci.* 71: (suppl. 1) 170 (abstract).

Trade Publications

- Rathgeber, B. and Rupasinghe, V. 2008. Development and evaluation of value-added poultry feed from apple byproducts. *Canadian Poultry* 95 (12):42.
- Rathgeber, B. and MacIsaac, J. 2007. Feeding blueberry by-products to improve broiler chicken health and meat quality. *Canadian Poultry* 94 (12):42.
- Rathgeber, B., MacIsaac, J. and Wang, B. 2007. Toe-trimmed broiler chickens. Examining carcass quality and skin integrity. *Canadian Poultry* 94 (8):22,24.
- Rathgeber, B., MacIsaac, J. and Wang, B. 2007. Poulets à griller dégriffés. Evaluation de la qualité des carcasses et de l'intégrité de la peau. *Canadian Poultry* 94 (8):15-17.
- Rathgeber, B. M., MacIsaac, J. L. and MacKenzie, M. 2007. Feeding turkeys a highly digestible supplement during preslaughter feed withdrawal. *Feedinfo News Service Scientific Reviews*. December 2007.
- MacIsaac, J. L., Burgoyne K. L., Anderson, D. M., and Rathgeber, B. M. 2006. Plant-based Diets for Heavy Hen Turkeys. *Canadian Poultry* 93 (7):28-29.
- MacIsaac, J. L., Butt, S.J., Anderson, D. M., and Rathgeber, B. M. 2006. Investigating the Effects of Trace Mineral Chelate on Egg Quality for Late-Cycle Laying Hens. *Canadian Poultry* 93 (10):19-34,35.
- Rathgeber, B. M., MacIsaac, J. L., Oderkirk, A. 2006. Feeding Turkeys a Highly Digestible Supplement During Preslaughter Feed Withdrawal. *Canadian Poultry* 93 (12):42.

Invited Presentations

- Rathgeber, B. M. 2008. Innovations in poultry feed. Poultry Industry Council, Poultry Innovations Conference. November, Kitchener, ON.
- Rathgeber, B. M. 2008. Bird management and carcass quality. Poultry Industry Council, Poultry Innovations Conference. November, Kitchener, ON.
- Rathgeber, B. M. 2007. Manure driers impact on barn environment & egg production. Atlantic Poultry Conference. February, Wolfville, NS.
- Rathgeber, B. M. 2007. Comparison of stunning techniques. Atlantic Poultry Conference. February, Wolfville, NS.
- Rathgeber, B. M. 2005. Feed withdrawal supplement. Atlantic Poultry Conference. February, Wolfville, NS.
- Rathgeber, B. M. 2005. Blueberries and spent hens. Atlantic Poultry Conference. February, Wolfville, NS.
- Rathgeber, B. M. 2004. Carcass quality. Management for Today's Broiler Workshop. February, Kentville, NS.
- Rathgeber, B. M. 2004. Equipment, waste handling and environmental issues. Fine Tuning Pullet and Layer Management Workshop. January, Truro, NS.
- Rathgeber, B. M. 2003. Bruising and Lighting. Atlantic Poultry Conference. February, Moncton, NB.
- Rathgeber, B. M. 2003. Poultry research facility. Atlantic Poultry Conference. February, Moncton, NB.

- Rathgeber, B. M. 2002. The future use of antibiotics. Poultry Health Workshop. February, Kentville, NS.
- Rathgeber, B. M. 2001. Dynamic poultry research. Atlantic Poultry Conference. February, Dartmouth, NS.
- Rathgeber, B. M. 2001. Spent layer disposal. Atlantic Poultry Conference. February, Dartmouth, NS.
- Rathgeber, B. M. 2000. What role do protein degrading enzymes play in turkey meat quality? Saskatchewan Poultry Industry Conference March 2 & 3, Saskatoon, SK.
- Rathgeber, B. M. 2000. Egg formation. Atlantic Poultry Short Course. February Truro, NS

Training of Highly Qualified Personnel

Undergraduate research project supervisor for twenty two students
Master of Science committee member for eleven students
Master of Science supervisor for ten students

Professional Association Memberships

Poultry Science Association
World's Poultry Science Association
Canadian Society of Animal Science
Nova Scotia Institute of Agrologists

Work Experience

Research Scientist

Agriculture and Agri-Food Canada
Atlantic Food & Horticulture Research Centre, Kentville, NS
Stationed at Nova Scotia Agricultural College
Truro, Nova Scotia

Length of Employment: February 2006 – present

Duties: Research

Research duties focus on poultry products from the egg, chicken and turkey industries. Factors that impact the quality of poultry products produced for human consumption from the time a bird is hatched, through growth, including production of eggs, slaughter and product processing are of primary interest.
Currently have four masters' level students.

Duties: Teaching:

ANSC4003 (One full semester of lectures and laboratories focusing on the commercial production of poultry)

RESM4002 & RES4003 Project-Seminar I & II (Supervision of fourth year undergraduate research projects utilizing poultry as the model)

AGRI5610 Special Topics in Animal Product Technology (One semester – graduate level)

AGRI5710 Graduate Level Module Courses (Deliver graduate level poultry courses in module format - one third of a semester of lectures and laboratories per module)

Modules offered to date - Poultry products (Focus on poultry microbiology), Advanced broiler production

Duties: Outreach

Program Session Chair (Products and Processing session) – Poultry Science Association annual meeting 2006

Program Chair – Atlantic Poultry Conference 2002 – present

Co-coordinator – Atlantic Poultry Conference 2008 - present

Assistant Professor

Nova Scotia Agricultural College

Department of Plant and Animal Science

Truro, Nova Scotia

Length of Employment: January 2000 – February 2006

Duties: Teaching:

ANSC2001 Animal Agriculture II (Poultry production lectures and laboratory sessions - 40% of one semester)

MICR3000 Food Microbiology (One full semester of lectures and laboratories focusing on the microorganisms in a food system)

NUTR3001 Applied Animal Nutrition (One lecture on practical aspects of poultry nutrition)

ANSC4003 (One full semester of lectures and laboratories focusing on the commercial production of poultry)

BIOL4000 Avian Biology (One full semester of lectures and laboratories focusing on the unique features of avian biology)

RESM4002 & RES4003 Project-Seminar I & II (Supervision of fourth year undergraduate research projects utilizing poultry as the model)

AGRI5610 Special Topics in Animal Product Technology (One semester – offered when there is demand from graduate students.)

AGRI5710 Graduate Level Module Courses (Deliver graduate level poultry courses in module format - one third of a semester of lectures and laboratories per module)

Modules offered to date - Poultry products (Focus on poultry microbiology), Advanced broiler production

Duties: Research

Research duties focus on poultry products from the egg, chicken and turkey industries.

Factors that impact the quality of poultry products produced for human consumption from the time a bird is hatched, through growth, including production of eggs, slaughter and product processing are of primary interest.

Duties: Outreach

Chair of Graduate Program Committee – NSAC

Program Session Chair (Products and Processing session) – Poultry Science Association annual meeting 2006

Research Assistant

University of Saskatchewan

Department of Applied Microbiology

Laboratory.

Length of Employment: March 1998 - August 1998

Duties: Conduct research in Meat Science

& Food Science
Saskatoon, Saskatchewan

Research Assistant

University of Arkansas
Center of Excellence
for Poultry Science
Fayetteville, Arkansas

Length of Employment: August 1991 - March 1994
Duties: Conduct research and purchase supplies for
Poultry Microbiology laboratory.

Store Manager

Aquarium Toronto & Pedigree Pets
220 Yonge Street South
Toronto, Ontario

Length of Employment : March 1989 - June 1990
Duties: Order merchandise and livestock , manage
personnel and general retail store duties.

Landscaper

Marlo Landscapes Ltd.
248 Mississauga Street
Oakville, Ontario

Length of Employment : May 1988 - October 1988
Duties: Installation of interlocking brick, planting
trees and shrubs and placing sod.

Artificial Insemination Technician

Cuddy Chicks
Nanticoke Creek Parkway
Jarvis, Ontario

Length of Employment : Dec 1987 - April 1988
Duties: Artificial insemination of broiler breeders,
production records.

Manager Trainee

Shaver Poultry Breeding Farms Ltd.
P.O. Box 400
Cambridge, Ontario N1R 5V9

Length of Employment: May 1987 - Nov 1987
Duties: Artificial insemination of chickens, blood
collection, assistant in vet lab.