

## Research Facilities *continued*

**Water quality activity meter:** Enables evaluation of water availability to microorganisms during shelf life. This measure forms the basis for packaging considerations prior to market.

**Geographic information system (GIS):** Spatial management of cattle is done over wide spaces and many months within a year. This system includes GIS Software, cattle location collars, computers and mapping and modeling software to allow display of cattle location and condition, land base attributes and predictions for future scenarios.

**Secure server and data storage:** This system serves as the license manager and data repository for spatial information concerning forest and grassland range areas in the southern interior region of BC, supporting 4 terabytes of storage information, and allowing researchers and students to access and share state of the art GIS software.

**GPS cattle collars:** These collars track the position of nine different cattle at one time and allow movements to be displayed geographically using GIS software and hardware.

**Wide format plotter:** The plotter produces graphic output (including a variety of maps and projections) from GIS analyses, rendering results accessible to researchers and users.

**Elemental analyzer:** Used for determination of elemental composition of rangeland plants, including carbon, nitrogen, and hydrogen. The determination of vegetation composition is important in evaluating rangeland health, including responses to global warming.

**Ultrasound back fat meter:** An integrated video and ultrasound system allows for the determination of live-cattle condition by monitoring fat thickness of animals.

**Research Greenhouse:** A 2000 square foot computer-automated, climate-controlled facility. The greenhouse contains four separated chambers that can be independently controlled for light, temperature and humidity. The grassland and wetland plants found in southern BC are investigated in the greenhouse. Research undertaken includes climate change experiments, plant trait screening, plant competition, non-native invasive plants, and phytoremediation. This facility was funded by the Canadian Foundation for Innovation and the BC Knowledge Development Fund.

**Retail Meat Facility:** TRU has established a 1500 square foot training facility that includes a retail store, providing a focus on meat safety and the entire industry including sanitation, texture control, nutrition and smoking facilities in which research can be conducted to improve quality and create new value-added products.

*With combination of researchers, research facilities and community linkages, TRU is among the top universities for conducting integrated and multidisciplinary investigations related to sustainability of the ranching industries, including the rangelands on which the industries depend, and the wholesale and retail sectors.*



## BC Regional Innovation Chair in Cattle Industry Sustainability

### Dr. John Church

Dr. John Church is an expert in cattle industry sustainability who comes to Thompson Rivers University after seven years of experience with the Alberta provincial government and five years of work experience in the livestock industry. He held positions of increasing leadership and responsibility with the provincial government of Alberta moving up to the position of Special Projects Manager with the Regulatory Services Division of Alberta Agriculture and Food, where he provided leadership and direction into an effective and efficient Specified Risk Materials removal and disposal program. This work included analyzing, reviewing and monitoring Alberta's voluntary and mandatory Chronic Wasting Disease testing programs. He also worked closely with livestock commodity and welfare organizations to conduct applied research and deliver programs in partnership with livestock industry groups, university researchers and government specialists in areas that impact the welfare of farm animals.

Prior to joining the provincial government Dr. Church was employed by private industry, managing an extensive ranching operation that was uniquely vertically integrated. In this role he gained experience in the benefits of value chains within the industry, and the importance of environmental sustainability. While working for industry, he helped develop new value added meat products, which emphasized sustainable production practices.

With this experience Dr. Church has developed major strengths in planning, policy development and implementation, conducting and disseminating research studies, and developing excellent working relationships with internal and external stakeholders.



**Dr. Church** earned his PhD in Agriculture, Food and Nutritional Science from the University of Alberta in 1997, studying the effects of production practices on the behaviour of ruminant animals. He holds a M.Sc in Biology from Dalhousie University in Nova Scotia (1993), and a B. Sc. in Agriculture from the University of Alberta (1991). Dr. Church is well respected nationally and internationally, and has made significant contributions through scientific publications, conference proceedings, and numerous industry publications and special reports.



THOMPSON RIVERS  
UNIVERSITY  
KAMLOOPS, BC

Research, Innovation Transfer and Graduate Studies  
Thompson Rivers University  
PO Box 3010, 900 McGill Road  
Kamloops, British Columbia  
V2C 5N3  
Phone: 250.371.5586 | [www.tru.ca/research.html](http://www.tru.ca/research.html)

THOMPSON RIVERS UNIVERSITY  
Research, Innovation Transfer & Graduate Studies

## The BC Leading Edge Endowment Fund

The BC Regional Innovation Chair in Cattle Industry Sustainability is supported by an endowment from the BC Leading Edge Endowment Fund, with matching funds provided by the BC Cattle Industry Development Fund, the Real Estate Foundation, and TRU. In support of this appointment, TRU added over \$1 million in new analytical facilities with the support of Western Economic

Diversification, the Southern Interior Development Initiative Trust, and TRU research funds.

The chair is further supported by community connections with federal and provincial agencies, non-governmental organizations, business and industry, along with a strong interdisciplinary research team.

## Cattle Industry Sustainability: The Research Team

As the British Columbia Regional Innovation Chair in Cattle Industry Sustainability, Dr. John Church provides leadership to TRU's initiatives relating to innovation in Ranching, Range Management, and Meat and Rangeland Products. He joins a dedicated team of researchers covering a broad spectrum of applied research related to sustainable ranching industries. The research team includes:

### Thompson Rivers University Faculty

- **Dr. Lauchlan Fraser**, TRU's Tier II Canada Research Chair in Ecosystem Ecology, with expertise on the effects of global climate change on grasslands, trophic interactions in grassland food webs, and the impacts of cattle on grassland-associated wetlands.
- **Mr. Ken Jakes**, Chair of TRU's retail meat program whose research ranges from developing value added meat products to the future of the retail meat industry in British Columbia.
- **Dr. Wendy Gardner**, Assistant Professor, Natural Resource Science, a specialist in range management, reclamation/re-vegetation, and agricultural sciences.
- **Dr. Darryl Carlyle-Moses**, Assistant Professor of Geography and expert on forest and agricultural hydro-meteorology and watershed systems.
- **Dr. Karl Larsen**, Associate Professor of Natural Resource Science, conducting research on the conservation, ecology, and management of grassland wildlife, particularly threatened and endangered species.
- **Dr. Tom Dickinson**, Associate Professor of Biology, with a wide range of interests including the impacts of ranching bi-products on aquatic organisms.
- **Dr. Robert Androkovich**, Assistant Professor of Economics, specializing in natural resource and environmental economics; with a particular interest in land use issues.
- **Dr. John Karakatsoulis**, Assistant Professor of Natural Resource Science, working on successional processes following natural disturbance within range environments.
- **Dr. Mohammad Mahbobi**, Department of Economics, specializing in agricultural economics.
- **Dr. Jon Van Hamme**, Assistant Professor of Chemistry, with expertise in bioproducts related to food and energy for the cattle industry.
- **Dr. Bruno Cinel**, Assistant Professor of Chemistry, with research interests involving the isolation, structure elucidation, and chemical ecology of compounds from terrestrial and marine organisms.
- **Ms. Kimberly Johnstone**, Chair, Culinary Arts Program, and expert in value-added food products.
- **Mr. Derrick Moffat**, Assistant Professor, Culinary Arts Program, with interests and specialization in sustainable food industries and value-added meat products.
- **Dr. Sharon Brewer**, Assistant Professor of Chemistry, conducting research in analytical and environmental chemistry related to analytical method development, environmental analysis and water quality.
- **Mr. Kent Watson**, Assistant Professor of Natural Resource Science, with expertise in Geographical Information Systems and soil science as related to natural resource planning and management.
- **Dr. Mohamed Tawhid**, Assistant Professor, Advanced Technologies and Mathematics, studying the application of optimization and operations research to improving efficiencies of a variety of systems.
- **Dr. Peter Tsigaris**, Associate Professor of Economics, specializing in environmental economics.
- **Mr. Kevin O'Neil**, Assistant Professor, Computing Science, developing technologies for cattle tracking.
- **Dr. Kingsley Donkor**, Assistant Professor of Chemistry, conducting a range of applied research using spectrophotometry to investigate and detect environmental contaminants.

- **Dr. Brian Heise**, Chair of Natural Resource Science and Associate Professor, studying the response of wetland aquatic macroinvertebrate and zooplankton communities to grazing pressure.
- **Mr. Les Matthews**, Assistant Professor of Applied Health, collaborating on the Inhaled Anti-Infective Research Program.
- **Dr. Dave Sedgman**, DVM, TRU Veterinarian and BC Wild Life Park Veterinarian, with interests in large animal health and welfare.

### Thompson Rivers University Adjunct Professors

- **Mr. George Penfold**, BC Regional Innovation Chair in Rural Economic Development, Selkirk College.
- **Dr. Klaas Broersma**, Kamloops Range and Research Unit, Agriculture and Agri-Food Canada, with research expertise on cultivated forage crops, soils, and water within the interior of BC grass and forested rangelands and farmed lands.
- **Dr. Don Thompson**, Kamloops Range and Research Unit, Agriculture and Agri-Food Canada, conducting research related to cattle grazing management, effects of

seasonal grazing on bunchgrass range, rangeland biodiversity, and irrigated forages for interior BC.

- **Dr. Cindy Meays**, BC Ministry of the Environment, with expertise in rangeland resources and water quality.

### Researcher

- **Dr. Jeffrey Lemieux**, Office of Research, Innovation , Transfer & Graduate Studies, TRU, biologist and expert in the application of Geographical Information Systems in geospatial modeling across disciplines.

### Community Linkages

TRU's focus on sustainability of ranching industries is supported by linkages with federal and provincial government ministries, non-governmental organizations, private sector organizations and businesses, and the Advisory Committee to the Chair. TRU has engaged in active research collaborations with the Kamloops Range and Research Unit of Agriculture and Agri-Food Canada.

## Research Facilities



TRU Faculty Bruno Cinel, with the 500 MHz Nuclear Magnetic Resonance (NMR) Spectrometer

**500 MHz Nuclear Magnetic Resonance Facility:** Used in analysis of meat composition including fat and water content, type of fats, and testing for particular organic molecules in meat.

**Foodscan analyzer:** Evaluates meat for its protein, fat and moisture content using near-infra-red technology. Necessary to evaluate food quality and nutritional quality.

**Precision smokehouse:** Allows precise testing of temperature, moisture and content conditions during the smoking processes for sausage, jerky and other smoked products. Necessary for quality control in value-added meat finishing.

**Texture and shear testing equipment:** Used for quality control in pre-processed meat. Equipment consists of table and blades to apply controlled force to simulate human chewing action of meat. Necessary for evaluation of physical quality.

**Nitrate/Nitrite analyzer:** Nitrates and nitrites are natural constituents of meat, which in high quantity can present health concerns. This equipment is necessary to monitor physiological condition of meat pre- and post-processing to meet quality standards.

**Sanitation analyzer:** Bacterial condition of meat is a primary concern, including incidence of E.coli and Coliform sp. This equipment evaluates microbiological condition of meat samples and is necessary in quality control.

*Research Facilities continued >*