

Agriculture Knowledge

COLLEGE OF AGRICULTURE AND BIORESOURCES 01 | 09



EXPERIENTIAL LEARNING

NEW DEGREES OFFERED

INTERVIEW WITH JARED DIAMOND

THE CLASS OF '48



Prairie strong, worldwide.



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Class of 1986

Masters of Science in Agriculture
Class of 1988

University of Saskatchewan

“ For many decades, U of S agros have made important contributions to the grain industry of Western Canada. At the Canadian Wheat Board, we’re fortunate to have knowledgeable U of S grads working in all aspects of the business – from marketing farmers’ wheat and barley to delivering services for producers and developing innovative new strategies for the future. For more than 30 years, the CWB has provided undergraduate scholarships and graduate fellowship programs for U of S agriculture students. We’ve built a strong partnership that will continue for the years to come.”

– **Ward Weisensel**

Chief Operating Officer, Canadian Wheat Board



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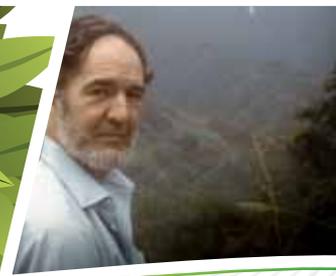
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**UNIVERSITY OF
SASKATCHEWAN**

**College of Agriculture
and Bioresources**



MESSAGE FROM THE DEAN

A YEAR OF CHANGE AND INNOVATION

Welcome to the 2009 issue of *Agknowledge*. With our alumni and other friends scattered throughout the country and indeed around the world, *Agknowledge* is one way for us to keep you informed of recent activities.

The College's work falls into three areas: teaching, research and public service. We hope this issue will allow you to appreciate how these areas support one another: our research provides students with experiential learning, enriching their education and equipping them for future employment; our teaching extends well beyond the traditional classroom and traditional students; our research impacts all areas of the agriculture sector. *Agknowledge* is also our opportunity to recognize those who have supported us through generous donations. The College is fortunate to have a long list of donors who have contributed scholarships, awards for travel and help with infrastructure needs.

This year, our undergraduate enrolment has grown steadily. The relatively new BSc Agribusiness program now has students enrolled in all four years. The BSc Renewable Resource Management debuted this fall, along with two new diploma programs (Agribusiness and Agronomy) which "ladder" completely into degree programs, allowing students to carry forward a full two years of credit into the degree. Enrolment in the Bachelor of Science in Agriculture (BSA) program also shows an increase over last year.

The College's research infrastructure needs continual updating. New expansion is underway at the Crop Science Field Laboratory, which will be the new home of the Grains Innovation Laboratory, the quality-screening work of the Crop Development Centre's breeding program, and a soils archive and new fieldwork staging area for the Soil Science Department. Another major

project, the CFI-funded Feed Technology Research Facility, is in the final planning stages. Despite last year's rise in construction costs, we expect to soon announce an innovative plan to complete the project.

Another major College initiative is the Indigenous Land Management Institute (ILMI), now a reality thanks to the tremendous work of David Natcher and Tom Allen, and support from the University. Building on our experience with the Indigenous Peoples Resource Management (IPRM) program, ILMI will co-ordinate our research in this important area and, we hope, allow us to expand the IPRM program into a diploma.

Our people are the backbone of the College. This year we appointed three excellent new faculty (see opposite), and Mark Wartman joined us as the College's Development Officer. The AgBio family now consists of over 350 employees, many supported by the increased research funds obtained by our professors. One of the next newcomers to that family will be Dr. Mary Buhr, currently a professor of Animal Science at the University of Guelph. Mary will become the College's eleventh Dean on July 1. She joins a college that is positioned to be a significant player in the new bio-economy, but also has firm roots in a proud history of teaching, research and public service.

I have the pleasure of serving as acting Dean until then. I hope to be able to meet with some of you during this winter; meanwhile, I encourage you to contact me by mail, e-mail (graham.scoles@usask.ca) or phone (966-4050) to share your questions or concerns about the College. Best wishes for 2009. 🍀

Graham

FACULTY RENEWAL

NEW FACULTY WELCOMED TO THE COLLEGE

In our commitment to delivering top-quality teaching and leading-edge research, the College of Agriculture and Bioresources is continually welcoming new faculty members. While some of our professors move on to retirement, newcomers continue to infuse the College staff with their enthusiasm and expertise. Meet three of our newest additions:



Eric G. Lamb
Department of Plant Sciences

Joined U of S: November 1, 2008

Academic Background: BSc from University of British Columbia; MSc from Lakehead University; PhD in Biology from University of Alberta, 2007

Focus of Work: Plant ecology, particularly the mechanisms that structure plant community composition and diversity. Analysis of complex datasets.

Passion: "Plant communities are incredibly complex, with dozens or hundreds of species interacting with each other and their environment, yet consistent patterns of plant species composition and diversity can be found everywhere. My research interests lie in understanding how diverse mechanisms – ranging from environmental condition, such as soil moisture, to ecological process, such as competition for soil nutrients – interact to structure plant community diversity. Because my research leads me to collect very complex datasets, I am also very interested in the statistical techniques needed to analyze such data. Currently my research is focused on how the diversity of plant communities influences the diversity of soil bacteria and fungi, and how plant-driven changes in the microbial community can subsequently affect critical ecosystem processes such as nutrient cycling rates."



Michael Rogers
Department of Food & Bioproduct Sciences

Joined U of S: July 1, 2008

Academic Background: BSc from University of Guelph, 2002; MSc in Food Science, 2003; PhD in Food Science from University of Guelph, 2008

Focus of Work: Supramolecular structures of self-assembled surfactant molecules.

Passion: "Two of my passions are teaching and learning. In my opinion, educators should teach how to think rather than what to think, improving the minds around us to enable them to think for themselves. It is with this mindset that I enter an academic career focused on developing the highest possible calibre students. The privilege of the education attained here comes with a great responsibility to alleviate human suffering. My research focuses on improving the nutritional aspects of food by reducing the amounts of trans and saturated fats by applying novel structures to lipid-based food products. Along with my graduate studies, I did one year at the University College Cork in Ireland, looking at enzyme kinetics near the glass transition of milk-based systems, and at the University of Waterloo studying polysaccharides."



Thomas T. Yates
Department of Soil Science

Joined U of S: August 1, 2008

Academic background: BSc from University of Saskatchewan, 1987; MSc in Soil Science from University of Saskatchewan, 2001; PhD in Soil Science from University of Saskatchewan, 2006

Focus of Work: Renewable Resource Management Program.

Passion: "I love to learn, and I enjoy engaging people in the learning process. The opportunity I have been given to teach undergraduate students in the Renewable Resource Management Program will draw upon my academic, industry, administrative and life experience. In addition to my university education, I have worked as an exploration geologist in northern Saskatchewan, Manitoba and the Northwest Territories, and as a geological technician in the oil fields of Alberta. My work experience also includes two years as an agronomist for a company that manufactures organic nutraceuticals, and two years in university administration. It is as if I have been preparing for this over the last 20 years. I think this program will attract students with similar sentiments on life, career and learning. It is very exciting."

STUDENT AWARDS

RECIPIENTS OF AWARDS AND SCHOLARSHIPS

ENTRANCE AWARDS

Arnold and Emily Robinson Scholarship
Kaleb Wagner, Lancer

Beatrice Murray Entrance Scholarship
Brittany Wheler, Vanscoy

Canadian Wheat Board Entrance Scholarship
Lindsey Barber, Biggar
Aimee Eggerman, Watson
Chelsy Ostoforoff, Canora

College Of Agriculture and Bioresources Renewable Entrance Scholarships
Lindsay Griffith, Bangor
Sarah Hardy, Grenfell
Angela Japp, Eston
Alyssa Krone, Saskatoon
Kristin Krone, Saskatoon
Devon Wilson, Tugaske

College of Agriculture and Bioresources Renewable Transfer Scholarships
Rachel Turnquist, Winnipeg MB
Jodi Souter, Pleasantdale
Amber Hamilton, Waldheim
Nicole Avramenko, Strathmore AB

College of Agriculture and Bioresources Entrance Scholarships
Nicole Bohun, North Battleford
Alyssa Anderson, Lloydminster AB
Dustin Brons, Lake Lenore
Matthew Davies, Indian Head
Shelbie Friesen, Saskatoon
Allison Hebert, Moosomin
Katelyn Holba, Goodsoil
Christina Huvenaars, Hays AB
Dylan Knox, Ponteix
Courtney Kotzer, Langenburg
Spencer Maxwell, Nipawin
Katherine Patzwald, Lemberg
Christine Rosser, Ponteix
Holly Severin, Young
Mallory Sittler, Wilkie
Hilary Steinbach, Bushell Park
Sarah Stewart-Rogers, Grandora
Kirsten Theaker, Eatonia

Douglas Christie Ferguson Fund Scholarship
Marissa Moe, Saskatoon
Roxanne Perrault, Zenon Park
Vanessa Vandertweel, Gronlid

Heather Haeusler Memorial Entrance Scholarship
Kathleen Hilsden, Regina Beach

Jim Anderson Entrance Scholarship
Trent Ilott, Eston
Trevor Mattus, Chaplin
Evan Sauer, Edenwold

Saskatchewan Chicken Industry Development Fund Award
Teresa Bergen, Osler
Lisa Hoppe, Nipawin

CONTINUING STUDENT AWARDS

Adeline and William Haberman Memorial Scholarship
Ryan Goodwin, McCord

Albert and Beatrice Trew Memorial Scholarship
Amy Wheeler, Eyebrow

Animal Nutrition Association of Canada (Alberta Division) Scholarship
Misaki Cho, Regina

Arnold and Emily Robinson Scholarship
Angela MacKay, Creston BC

Bert Hargrave Scholarship
Saule Burkitbayeva, Almaty

Bert Salloum Scholarship in Agricultural Economics
Derek Tallon, Lafleche

Brent Ganzer Memorial Scholarship
Dayna Serblowski, Bruno

Canadian Prairie Lily Society Scholarship in Horticulture
Breanne Wilson, Tugaske

Canadian Prairie Lily Society T.A. (Andy) Dingwall Scholarship in Horticulture
Breanne Wilson, Tugaske

Canadian Society of Animal Science Book Prize
Rachel Claassen, Saskatoon

Canadian Wheat Board Undergraduate Awards Program
Hannah Konschuh, Strathmore AB
Anna Shestakova, Saskatoon
Lane Stoll, Neudorf
Evan Chute, Moose Jaw
Travis Neufeld, Dorintosh

Janelle Fouhse, Saskatoon
Robyn Trory, Swift Current
Bailey Wilmot, Carnduff
Adrienne Tastad, Saskatoon
Sabrina de Baat, Burnaby BC
Jordan Hamilton, Langham
Lisa Rudiger, Lac La Biche AB

College of Agriculture and Bioresources Renewable Entrance Scholarship, Second Year
James Paul, Saskatoon
Bradley Pohler, Spalding
Meagan Reed, Dalmeny
Gillian Dobson, Meadow Lake
Amy Larre, St. Walburg

College of Agriculture and Bioresources Renewable Entrance Scholarship, Third Year
Jill Keet, Saskatoon
Bonita McCuaig, Eastend

College of Agriculture and Bioresources Renewable Entrance Scholarship, Fourth Year
Alana DeBusschere, Melfort
Navid Robertson, Swift Current
Jennifer Bentz, Saskatoon

College of Agriculture and Bioresources Renewable Transfer Scholarship, Second Year
Bethany L'Heureux, Glaslyn
Andrea Stone, Loreburn
Breanne Wilson, Tugaske

College of Agriculture and Bioresources Renewable Transfer Scholarship, Third Year
Tracy Meyer, Woking AB

Dairy Farmers of Saskatchewan Scholarship
Roberta Templeton, Coaldale AB
Gwinyai Chibisa, Harare, Zimbabwe

David J. Welch Memorial Prize
Graham Dietrich, Leader

Dow Agrosiences Scholarship in Agriculture
Brandon Edgar, Wolseley
Michael Ritz, Rosetown

E. W. McKenzie Scholarship
Erin Karppinen, Macrorie
Stacey Spent, Waldeck

**Ewald M. & Donna I. Kitsch Scholarship
in Crop Science**

Ryan Goodwin, McCord

**FCC Business Planning Award
Term One 2007–08**

1st Place

Francois Begrand, St. Louis
Wayne Ferguson, Theodore
Russell Lawrence, Saskatoon
Stephanie Meier, Ridgedale

2nd Place

Jeffrey Bennett, Dodsland
Tiffany Gutzke, Weyburn
Lane Martinka, St Benedict
Tiffany Peters, Perdue

**FCC Business Planning Award
Term Two 2007–08**

1st Place

Jamie Gruza, Saskatoon
Laura Hoffman, Bruno
Irma Omaryon, Vancouver BC
Jay Peterson, Frontier

2nd Place

Leah Fullerton, Lacadena
Tanya Gleim, Chaplin
Kyle Mackow, Chaplin
Michael Yeager, Lake Lenore

F. J. Fear Scholarship in Soil Science

Navid Robertson, Swift Current

**Frank & Freda Riecken Scholarship
in Soil Science**

Hannah Konschuh, Strathmore AB

Harvey Scholarship

Rachel Claassen, Saskatoon
Dayle Borchardt, Saskatoon
Suzane Mund, Macnutt
Catlan Dallaire, Bonnyville AB
Catherine Miller, Ponoka AB
Leo Perlinger, Handel
Centaine Raginski, Saskatoon
Brandi-Lynn Petrukovich, Lloydminster AB
Jaclyn Prystupa, Saskatoon

James Donald Hardin Scholarship

Kelsey Dust, Humboldt
Devin Harlick, Eastend

Jickling Agricultural Scholarship

Michael Fedoruk, Kamsack

**Joe McClughan Scholarship
in Agriculture**

Jenna Niebergall, Melville
Kelci Ottenbreit, Grayson

**John and Laura Morris
Agricultural Scholarship**

Kimberly Ede, La Ronge

John Mitchell Memorial Scholarship

Lisa Malo, Wolseley

Kelly Aulie Memorial Scholarship

Nicholas Hawkins, Humboldt

Larry Janzen Memorial Scholarship

Elliott Hildebrand, Rabbit Lake

Molson Canada Book Prize

Jenna Niebergall, Melville
Kelci Ottenbreit, Grayson
Catherine Elmer, Prince Albert

Pat Toderian Scholarship

Rachel Claassen, Saskatoon
Dayle Borchardt, Saskatoon

Robert & Maude Hale Scholarship

Courtenay Large, Duncan BC

**Rosnagel Scholarship for
Academic Improvement**

Dayna Serblowski, Bruno

Russell Fisher Scholarship

Colby Sproat, Kipling

**Saskatchewan Canola Development
Commission Scholarship**

Lisa Malo, Wolseley
Jennelle Montreuil, Rosetown
Alison Higgins, Saskatoon
Graham Dietrich, Leader

**Saskatchewan Institute of Agrologists
Scholarship**

Jordan Dykun, Gilbert Plains MB
Courtney Kosty, Saskatoon
Lyndon Scholer, Luseland
Amy Wheeler, Eyebrow

**SaskPower Shand Greenhouse
Education Prize**

Megan Baron, Brooks AB

Syngenta Achievement Award

Aphroditi Antonopoulos, Saskatoon

**University of Saskatchewan
Scholarships**

Bethany L'Heureux, Saskatoon
Jeffrey Crawford, Saskatoon
Graham Dietrich, Leader
Jennifer Bentz, Saskatoon

University Undergraduate Scholarship

Brandon Edgar, Wolseley
Jenny Soucy, Arborfield
Kyle Esquirol, Edam

**Port Metro Vancouver Authority
Scholarship**

Brittany Chovin, Vanscoy

Walter Scott Scholarship

Rory Gregoire, North Battleford

Westgen Scholarship

Coy Schellenberg, Beechy



**William G. Barclay Scholarship
in Agriculture**
Erin Jackson, Inglis MB

**W. J. Copeland Scholarship
in Crop Science**
Brittany Chovin, Vanscoy

GRADUATION AWARDS

The Fulton Family SIA Award
Bethany Yewsuk

Molson Canada Award of Excellence
Lin Zhou

**William Allen Prize
in Agricultural Economics**
Laura Hoffman

**Norman H. Pearce Prize
in Animal and Poultry Science**
Tamara Bogdan

Saskatchewan Horticulture Prize
Hanny Elsadr

**Saskatchewan Institute of Agrologists
Gold Metal**
Jenna Drinkwater

**Frank Sosulski Graduation Prize
in Plant Sciences**
Jenna Drinkwater

**P. M. and Y. Y. Huang
Distinguished Award in Soil Science**
Cara Drury and Jessica Forrester

POSTGRADUATE AWARDS

Agro Class of '43
Leah Fedoruk

**Alexander & Jean Auckland
Postgraduate Award**
Asim Biswas
Amy Sangster
Dani Xu

**Barbara and Frank Pavelich
Postgraduate Scholarship
in Soil Science**
Henry Chau

**Bernie & Mary Sonntag Scholarship
in Agricultural Economics**
Samira Bakhshi

**Canadian Wheat Board
Graduate Fellowships**
Lyndon Lisitza
Adithya Ramachandran
Lee-Anne Walter

**Canadian Wheat Board Postgraduate
Award in Agricultural Economics**
Eric Froystad

**Candace Savage & Keith Bell
Fellowship in Grasslands Ecology
Studies**
Nadia Mori

**Dollie Hantelman
Agricultural Scholarship**
Nityananda Khanal
Sally Vail
Xin Song
Hossein Zakeri
Thomas King
Maxime Pare
Adelkunbi Adeleke
Darlene Klassen
Lakshmi Kotikalapudi
Samira Bakhshi
Mohammad Shakeri Hosseinabad
Shanghai Liu

**O. M. Elviss Postgraduate Scholarship
in Agriculture**
Asim Biswas

**F. V. MacHardy Graduate Fellowship
in Grasslands Management**
Nadia Mori

**S. N. Horner Graduate Scholarship
in Agriculture**
Nicole Seerey

John Baerg Award
Harsha Marambe

John Blake Memorial Scholarship
Kelly Konecsni

**Paulden F. and Dorathea I. Knowles
Scholarship**
Aurelie Cohen-Skali
Parul Jain
Nadia Mori

L. H. Hantelman
Kate Baker
Adam Gillespie

**Maurice Hanson Sr.
Postgraduate Scholarship**
Ryan Hangs

Roderick Alan McLean Memorial Award
Nadia Mori

Molson Canada Scholarship
Kelly Aasen

**Harris and Lauretta and Raymond
Earl Parr Memorial Scholarship
in Agriculture**
Gwinyal Chibisa
Kiran Doranalli
Arjan Jonker
Gemenu Widyaratne
Joel Ens
Christian Dedzoe
Mohammad Shakeri Hosseinabad
Thomas King

Pedersen Scholarship
Marcus Phillips

Purdy Postgraduate Scholarship
Adithya Ramachandran

Putnam Family Memorial Award
Kelly Konecsni

**Saskatchewan Pulse Crop Development
Board Don Jaques Memorial Fellowship**
Mohammad Tahir

**Saskatchewan Institute of Agrologists
Scholarship**
Ryan Hangs

**Syngenta Scholarship
in Sustainable Agriculture**
Amy Sangster

**Rene Vandeveld Postgraduate
Scholarship in Crop Science**
Jennifer Menat
Mohammad Tahir
Sally Vail

Warburtons Award in Agriculture
Adithya Ramachandran

Wickhorst Memorial Scholarship
Adam Gillespie
Nicole Seerey

**C. Paul W. and Marianne M. Ziehlke
Postgraduate Award in Agriculture**
Zafer Dallal-Bashi
Mohammad Shakeri Hosseinabad
Kelly Konecsni

AGBIO SCHOLARSHIP TRUST FUND "WALL"

08/09 RECIPIENTS OF RENEWABLE SCHOLARSHIPS



Allyssa Krone



Amber Hamilton



Angela Japp



Jodi Soutter



Lindsay Griffith



Nicole Avramenko



Rachel Turnquist



Sarah Hardy



Devon Wilson



Kristin Krone



HANDS-ON EXPERIENCE

NEW DEGREE OFFERINGS BRING STUDENTS TO THE FIELD

With two new degree programs, the College of Agriculture and Bioresources continues to provide students with a hands-on learning experience. Meanwhile, ground-breaking agreements with other institutions are making that experience more accessible than ever.

Experiential learning has long been a keystone of programs offered at the College of Agriculture and Bioresources. "It's always been really important for students coming into this college," says Karen Hughes, co-ordinator of student services. "Field camps, hands-on activities, summer employment opportunities. By the time they leave, they really know the industry." Two new programs at the College ensure that experiential learning stays front and centre.

The 2008–09 academic year marked the inauguration of a brand new Bachelor of Science degree in Renewable Resource Management. "It's quite an innovative program," says Associate Dean Dan Pennock, "in terms of the structure and the focus on participating in group projects." Among the program's building

blocks are field study and project design and implementation—giving students a unique and cutting-edge learning experience.

The program also reflects the evolving demands of today's job market. As sustainable use of land, water and plant resources becomes a keystone of 21st-century endeavour, the need is rising for a workforce equipped with knowledge and ability in applied science, management, economics and policy. Specific skills that students will acquire include the use of computer-based decision support systems and identification of landscape components. Students entering the program can choose between two areas of specialization: resource science, or resource economics and policy.

Though global in their implications, the courses remain relevant to the university's surrounding geography, as students will learn how to apply their new skills and knowledge to specific Western Canadian resource issues. Classes will cover such subjects as greenhouse gas mitigation, the rejuvenation of disturbed land, agroforestry, parks management and indigenous peoples' resource management.

Karen Hughes notes that the RRM degree is infused with experiential learning. "We have field camps where students go out for three to five days and do field work. They love it. One of the things I've noticed that's characteristic of students here is that they are looking for a profession where they aren't tied to a desk. They like outdoor work. That's one of the reasons why they come to this program." And, of course, that kind of practical experience is always attractive to prospective employers.

Dan Pennock is himself a member of the faculty team teaching this program. The recipient of the University's Master Teacher Award in 2006, he's joined on staff by Ken van Rees, Angela Bedard-Haughn, David Natcher and Ken Belcher. The College also recently hired a lecturer, Tom Yates, whose teaching is completely dedicated to the new degree program.

While that degree is in its first year, another will be graduating its first full class in 2009. The Bachelor of Science in Agribusiness has 120 students registered—including Diana Sambrook, who hopes to enter a career in agricultural business planning. "This degree offers me the skills to be able to work in many different sectors," she says. "There are some really interesting classes and options being offered." Overall, Sambrook adds, the environment of the college makes for a quality educational experience. "The College offers a small community," she says, "allowing students to get to know their profs and fellow students quite well."

Pennock describes the Agribusiness degree as "a tremendous success. It's a program that builds on a relationship with the Edwards School of Business. It's a great way for students to access some of their courses without actually being enrolled in their college." Meanwhile, business and arts and science students can transfer to this program by enrolling in the College of Agriculture and Bioresources.

That corresponds to a larger pattern of improvements to the credit transfer system between institutions. Recent milestones include agreements with Lakeland College and the Saskatchewan Institute of Applied Science and Technology. "There's been a recognition at our university that we were making it too difficult for students to transfer in," says Pennock, adding that even within the College of Agriculture and Bioresources it used to be harder for students to turn diploma courses into degree credits. "It's a philosophical change on the part of the university."

Hughes explains that the SIAST agreement is a boon to students who have earned a two-year diploma but want to expand their employment prospects. "It's a great opportunity for those students. Typically they have found that their employment after the two-year program was fairly seasonal. Because they don't have a bachelor's de-

Field work, tours—by the time they leave, they really know the industry.

gree, they're not able to sign off on projects. If they're doing any kind of environmental consulting or consulting agrology, they need that professional designation in order to sign off on a project. [Otherwise] they're not as likely to get year-round employment."

While these agreements help make the college's programs more accessible, Pennock notes that the new degree programs are generating excitement. "The agribusiness, the renewable resources management degree: they allow us to tap into a pool of students that we have not previously been able to tap into. That's very important for the growth of the College. These are growth areas for us."

In Pennock's view, it's a case of onward and upward—as well as outward. "Any farmer or producer can understand the idea of diversification, and that's what these programs are for us," he says. "We're trying to diversify into areas where we have real strength, but we weren't able to draw students to access those strengths. It's trying to take our strengths into new programming areas." ■



DEFENDING GRASSLANDS

KEN WALBURGER TACKLES INVASIVE PLANT SPECIES

Instructors and students at the College of Agriculture and Bioresources travel to a remarkable range of locations to conduct their research. Ken Walburger, who joined the Department of Animal and Poultry Science in 2006, does much of his work at the Grasslands National Park. There, he tracks cattle movement and tests grazing as a weapon against invasive species.

The invader in question is crested wheatgrass. Cattle producers are not threatened by its growth on their land—"It's actually a very good early-season grass for grazing," says Walburger—but in the national park the grass is not welcome. Park officials "are wanting to get back into native grasslands," Walburger says. "Wheatgrass is invasive for them."

Walburger is involved in a project to control the spread of the wheatgrass using a combination of burning and grazing. "We're trying to use burning essentially as a lure to get cattle grazing in specific areas," explains Walburger. Large tracts of the land have not been grazed since the area became a park, "so there's lots of dead plant material sitting there. Our thoughts are that if you can burn the litter, you can promote juvenile plant growth and really entice the animals to go into those areas to graze." Once the grazing has been successfully initiated, Walburger can determine its effect on the spread of the invasive grass.

Part of the park's management plan is to reintroduce naturally occurring disturbance cycles, including grazing. The long-term aim is to build up the bison population for this purpose. Meanwhile, the park acquires

grazing animals from ranchers, putting out a tender specifying the type and quantity of cattle required.

The east block of the park is the site of another endeavour in which Walburger is just one participant. He describes it as "a great big project looking at stocking rates and how they impact biodiversity. It has researchers from Environment Canada, Parks Canada, University of Lethbridge entomologists, University of Manitoba ecologists." Walburger's specific piece of the jigsaw is cattle distribution. "Once we start changing the density of animals, how does that impact their movements across the landscape?" To gather data, Walburger uses GPS technology to track the cattle. Once an animal is tagged with a GPS collar, a reading of its location is broadcast approximately every 20 minutes.

Walburger's findings will be useful to land managers internationally. "There's a lot of interest in preserving what prairie we have left," says Walburger, citing Texas, Oklahoma and Kansas as other jurisdictions where his research may prove helpful. "The application of this is actually quite uniform," he says. "It's just modifying it to meet your conservation goals and the environment you're operating in."

Walburger's research brings him back to the field regularly. From mid-May to mid-June, he spends a lot of time on site as the burning and grazing commences, and for the rest of the summer he returns to the park regularly. It's yet another example of the hands-on research conducted by college faculty—research that attracts international attention. 🍀



KING OF GRAZELAND

A HUMBLE BRUCE COULMAN RECOGNIZED FOR CAREER IN PLANT GENETICS

Bruce Coulman, head of the plant sciences department, has been recognized for his prestigious 32-year career as a plant breeder. He is the recipient of the 2008 Canadian Plant Breeding and Genetics Award, co-sponsored by the Canadian Seed Trade Association and *Germination* magazine.

The prize is given annually to a Canadian researcher whose work has made exceptional contributions to plant breeding and genetics in Canada, in the public or private sectors. Three criteria distinguish recipients of the prize: world-class application of the science of breeding and genetics; creativity and commitment; a major contribution to the advancement of agricultural productivity nationally or internationally.

"I was humbled," says Coulman of receiving the prize. "I've had quite a long career, and it's great when it's recognized, particularly by one of the groups you're producing varieties for."

Looking back over his prolific career, Coulman lists the 1993 release of his first variety, Bellevue reed canarygrass, as a major milestone. "As a plant breeder, releasing your first variety is certainly a highlight." It's also been rewarding to see his varieties embraced by the marketplace: "Some of the varieties that have been quite widely used are highlights."

On the teaching and education side of the fence, Coulman has also enjoyed making an impact as a teacher. "Training graduate students and having them go on to

successful careers," he says, "is something I've got a lot of satisfaction from."

Media coverage of Coulman's career often touts his role in developing AC Grazeland, a variety of alfalfa that greatly reduces the odds that a grazing animal will develop bloat. However, Coulman is quick to deflect the credit for this achievement. "The majority of the work was done by someone else," he says modestly. "I came to Agriculture and Agri-Food Canada and inherited that program and really finished off the variety."

Coulman is quick to credit collaborators and predecessors. "It's highly collaborative," he says of his work. Not only does a plant breeder build upon the work done by others, but also works in tandem with other experts—such as plant pathologists, who study diseases as they evolve. "In our department we have a couple of plant pathologists who are constantly monitoring these threats and doing a lot of screening for them." While they keep tabs on diseases, the plant breeders keep working on new cures. "Again the collaboration comes in," Coulman notes, "between the pathologist and the breeder."

Coulman says plant breeding is crucial to agriculture. "It's important to incorporate developments into adapted varieties that farmers can grow," he says. "We have to stay one step ahead of the plant diseases and stay current on quality requirements. There are always upgrades that are needed. So I think it's absolutely critical to have plant breeding." 🍀

NORTHERN SHIFT

INVESTIGATING CLIMATE CHANGE IN THE FAR NORTH

In an era of climate change, the Arctic has come under increased scrutiny. Climate Impacts on Canadian Arctic Tundra (CICAT) is a major study led by Greg Henry of the University of British Columbia. Among its participants are faculty and students from the College of Agriculture and Bioresources' Department of Soil Sciences. While the professors are contributing to a vital research project, their students are gaining valuable first-hand experience.

"Arctic soils are the tipping point," says Steven Siciliano of the Department of Soil Science. "Can we stop runaway greenhouse warming? There is so much carbon and nitrogen stored in Arctic soils, determining what they do will determine if we are going to tip."

Last summer, Siciliano and department colleague Angela Bedard-Haughn spent a month in the Arctic working on CICAT with two PhD students and an undergraduate. One of the doctoral candidates examined the effect of organic matter quality on nitrogen cycling, while another investigated physical characteristics of the soil. The undergraduate assisted with the field work and, as part of her research thesis, classified all the major vegetation communities in the research area. Back in the lab, a third PhD student is assessing the microbial population based on the samples collected in the Arctic. "What we're trying to do," says Bedard-Haughn, "is assess the vulnerabilities of these systems to climate change. Where is it going to hit hardest? We've got a site at Churchill, and another at Daring Lake north of Yellowknife, and a few in the high Arctic as well."

Studying a range of latitudes helps the researchers extrapolate what might be in store for the Far North. "The idea is that as the climate warms we're going to

see a northward shift in a lot of the ecosystem characteristics," explains Bedard-Haughn. "We might see forest advancing further onto the tundra."

Some CICAT participants stay on-site year-round, but the soil scientists have a small window of opportunity.

"There are only about two months where you can get at the soil, in terms of it being thawed enough to measure anything," says Bedard-Haughn, "and in terms of biological activity that we can measure using our techniques. Most of our techniques were developed down here in the south."

Those techniques, regardless of their origin, have provided the participating students with some first-rate experiential learning. From site selection to collecting samples to measuring greenhouse gases with a Fourier transform infrared spectroscopy instrument, the students have done plenty of field work. "These students got to learn about the logistics of carrying out this kind of field research in remote areas—an important learning opportunity," says Bedard-Haughn.

Last year's Arctic trip was Bedard-Haughn's first. "It was a pretty fascinating experience. Booking flights, finding firearms and bear spray, shipping your food up—all those things you don't have to worry about when you're working in a fallow summer field in Saskatchewan."

The bear spray, it turned out, was not needed—to Bedard-Haughn's relief. "No dramatic bear encounters," she reports. "We saw muskox and caribou. There were some incidents of cables getting gnawed by Arctic foxes. Fortunately, that was the extent of our wildlife encounters." 🍀





MILKING IT

ENHANCING THE DIET OF CATTLE TO BENEFIT BOTH COW AND INDUSTRY

A cattle farmer can boost a cow's health, improve the quality of its milk and reduce its environmental footprint—all by making small changes to the animal's diet. Tim Mutsvangwa of the Department of Animal and Poultry Science is examining how this process can be fine-tuned to improve the economics and sustainability of the beef and dairy industries.

Microbes in a ruminant's digestive system produce ammonia as they degrade dietary protein. That ammonia enters the animal's bloodstream, which puts the liver to work detoxifying it through urea synthesis. Unlike monogastric animals, ruminants have evolved a mechanism to recycle 40 to 60 percent of the urea back to the digestive tract, where it aids microbial protein production. In dairy and beef cattle, microbial protein is the major source of amino acids, essential building blocks for the production of milk and meat. The more urea gets recycled, the healthier the animal and the more efficiently it uses its food. And, because it's processing more of its own urea rather than releasing it, its environmental footprint is diminished.

Mutsvangwa says his research aims to answer a key question: "What are those conditions in the rumen, as dictated by the diet, that promote maximum recycling of urea to the digestive tract?" The balance of amino acids is one answer. "You can choose judicious combinations of different protein ingredients so that you balance the diet as far as you can in terms of its amino acid profile," he explains. "You can reduce the dietary protein content from about 18 percent down to maybe 17, 16.5." The necessary fine-tuning is made easier by software, "but it takes a lot of expertise in using those

computer programs." So Mutsvangwa is looking for alternatives. "Realizing that most dairy producers are going to be feeding diets that are in the 17.5–18 percent protein range, how can we intervene in terms of improving the capture of the dietary protein?"

One key lies in the animal's natural recycling processes. "We're looking at things like increasing the fermentable carbohydrate in the diet," Mutsvangwa says. "The micro-organisms in the rumen need energy to efficiently capture the ammonia. That energy is basically derived from fermentable carbohydrates." A second approach Mutsvangwa is investigating is changing the ratio of rumen-degradable to rumen-undegradable protein to limit the production of ammonia.

For now, Mutsvangwa and his team use cows at the on-campus dairy and feedlot facilities, allowing them better control of the variables than they would have on a farm. It's a costly process—tracking nitrogen through an animal's rumen, blood and milk requires the use of expensive isotopes. "So we use a small number of animals to get a basic understanding of what's going on," Mutsvangwa explains. "Eventually we'll try to go onto a farm and do investigations."

Mutsvangwa is quick to credit the contributions of the graduate students who carry out much of this research with his supervision. "Without students," he says, "this kind of research wouldn't be possible." It's another example of students at the college benefiting from experiential learning—even as they contribute to leading-edge research that may have a significant impact on Canada's agricultural economy. 🍀



FOWL WEATHER FRIENDS

PERFECTING WINTER POULTRY TRANSPORT

When chickens are transported during the winter, do they suffer unduly? How does winter transportation affect the quality of poultry meat? These questions are being tackled in a cross-college collaboration between the College of Agriculture and Bioresources and the College of Engineering. While the engineers provide experimental models for transportation research and develop strategies for improving transportation conditions, agbio researchers are measuring the effects on animal welfare and meat quality.

"We're finding all sorts of interesting things," says Phyllis Shand of the Department of Food and Bioproduct Sciences, who leads the meat quality assessment work on the project. Hank Classen of Animal & Poultry Science is looking at animal welfare aspects, while Trevor Crowe is in charge of the engineering side.

Initially, project scientists documented the temperature and air humidity levels within commercial trucks. They found transporters to be quite adept at controlling the conditions within the load simply by adjusting vent configurations—but difficulties can arise when outside temperatures get too cold, forcing transporters to close more vents. Highly variable temperatures can result. Three-dimensional modelling allowed the team to show industry workers where hot and cold spots were located throughout the load.

The end result of this ambitious program may be redesigned poultry transport trailers. "We're working with a new test trailer which has different features to the ones in use now," says Shand. Designed and built in the Department of Agricultural and Bioresource Engineering, the test trailer uses fans and supplemental heat to control the air conditions while transporting birds under commercial-like conditions. A separate test chamber has also been developed to

expose smaller groups of birds to more tightly controlled temperatures, allowing the research team to simulate transportation of birds from the same flock under different conditions.

For this project, body temperature is measured by sensors lodged in the chickens' gizzards. Once the chicken has been slaughtered, the researchers retrieve the sensor. "They all have their own internal [identification] numbers," says Shand, "and they get downloaded to a computer. We can track their internal body temperature every minute, for hours." This process has proven less invasive and more economical than other methods.

The body temperature measurements help Classen and his team gauge the animal's welfare. Classen also looks for indicators of stress by performing blood smears and analyzing cell types. Quantifying the chicken's energy reserves through liver glycogen analysis further helps to complete the picture. Shand's team measures meat quality using various criteria—colour, tenderness, water retention capacity and pH. "We've analyzed hundreds of chickens as part of this project," says Shand.

Through the project, students from both colleges enjoy a great opportunity for experiential learning—and Shand is quick to heap praise on their contribution. "They are doing all the work," she says. "There are a number of students on this project. It's a large team effort." It's also an inspiring example of teamwork between colleges, with significant outside help. "We are also most grateful to our partners in the poultry industry and agencies such as NSERC and Agriculture and Agri-Food Canada for supporting this type of project," says Shand. "It's really about collaboration across disciplines and across college boundaries." 🍀



NUTRITIOUS PARTNERSHIPS

BOOSTING EFFICIENCY IN THE FOOD OAT INDUSTRY

For over three decades, the University of Saskatchewan has been a partner in one of Canada's longest-standing private-public research partnerships. At the College of Agriculture and Bioresources, faculty are conducting research in oat breeding, oat pathology and oat agronomy, with support from QTG Canada Inc (better known as Quaker Oats). One of North America's biggest and most widely recognized food processors and suppliers, Chicago-based Quaker Oats was established in 1901. Today it produces a wide range of familiar brands, including Aunt Jemima, Cap'n Crunch and Life cereal.

"Quaker Oats' major interest, of course, is in improved grain quality, making their products more marketable," says Brian Rossnagel of the Department of Plant Sciences. He leads the oat breeding portion of the research; Steve Shirliffe is responsible for the oat agronomy portion, Curt McCartney for the oat pathology and Graham Scoles for the oat molecular genetics. "We're looking at genetic improvements, and have been over the past many years," Rossnagel explains. "One is the physical grain quality, so that when they buy a tonne of oat from Saskatchewan and Manitoba, they get a maximum amount of groat—the internal part of the seed itself that we eat as oatmeal and those kinds of products."

That particular area, Rossnagel says, has seen a lot of progress. "We've had a very significant impact in the Crop Development Centre program on dramatically improving the groat percentage of the oat grown in Western Canada, particularly in Saskatchewan and Alberta. Back in the mid-1970s, the varieties of the day averaged a little bit better than 70 percent groat. The varieties that we have now are approaching 80 percent groat. We're not wholly responsible, but the breeding

work that we've done here has helped the whole food oat industry become more efficient."

In addition to improving groat percentage, Quaker Oats is interested in the components of the groat, especially the beta-glucan content and total dietary fibre. "Beta-glucans in oat are the portion that's responsible for helping keep your bad cholesterol down," says Rossnagel, "and there's an increasing body of evidence that suggests these compounds are also very valuable in helping with the prevention of colon cancer."

The arrangement between Quaker and Rossnagel's program began in the mid-1970s as a \$5,000-a-year commitment, and has since blossomed into an annual contribution of more than \$500,000. In recent years, the University of Saskatchewan has become Quaker's primary Canadian research partner.

"Quaker has been a huge supporter of oat research in North America since the Second World War," says Rossnagel. "Traditionally, they spread their funding out over a large number of institutions in the United States and Canada. They have recently made the decision to focus their research contributions at a smaller number of institutions, and we were fortunate enough to be chosen based on their experience of working with us."

That's no small honour—and it represents a major contribution to the college's legacy of co-operative partnerships. For researchers like Rossnagel—and for the quality of prairie-grown oats—the funding is a boon. Quaker Oats, meanwhile, can sustain and improve the quality of its products, reaping the rewards of the college's world-class research. 🍌



SHARING THE WEALTH

COLLEGE INITIATIVES REACH OUT TO THE COMMUNITY

ENTREPRENEURSHIP

For several years, the College of Agriculture and Bioresources has blazed a new educational trail with its Agriculture Entrepreneurship program. Now, with the establishment of the Indigenous Land Management Institute, the program is poised to play a whole new role—and interest from across the nation is skyrocketing.

In 1997, the college initiated non-credit executive education programs, which allowed farmers and other members of the industry to develop their business skills. Then, thanks to a 2004 donation from CIBC, credit courses were developed for undergrad students, and Tom Allen was appointed the CIBC Scholar in Agricultural Entrepreneurship. “We focused on the people end of it,” says Allen. “Courses in leadership, creative thinking skills. We already had a series of courses in

agribusiness which were very similar to a lot of the business school programs. We wanted to complement that by having a series of courses that would focus on the entrepreneur as a person.” In 2007, the Agbio program joined forces with the Wilson Centre for Entrepreneurial Excellence. “It’s been really quite amazing, says Allen, “the interest in entrepreneurship among students.”

June 2008 saw the establishment of the Indigenous Land Management Institute to work directly with Aboriginal communities. Its three pillars are environmental sustainability, land governance and economic development. The CIBC Scholar is now responsible for that latter pillar. “We’re doing quite a bit of work with Aboriginal communities from one side of the country to the other, and from the Arctic right down,” says Allen. “The demand is unbelievable.”

For almost 25 years, a college extension initiative has reached thousands of Saskatchewanians with vital agricultural information. *Market Prospects* is a television program keeping farmers up to date on market conditions worldwide.

Ken Rosaasen, who has been with *Market Prospects* since the beginning, chuckles when he recounts how the program started. In the early 1980s, he and colleague Gary Storey travelled the province providing market information sessions. "Gary and I drove down on a Sunday night to talk at Piapot to about twenty farmers," Rosaasen recalls. "It was early October—a foot of snow. When we got back, we said, 'With technology, we should do something different than just chase our radiator cap.'"

In March 1984, a one-day program was broadcast by satellite from the university to four remote locations.

"People would drive 80, 90 miles to see the satellite program," Rosaasen recalls. By 1986, broadcasts were beamed out to twelve venues. In 1995 *Market Prospects* started airing on CTV, and in 1998 found a regular home on the show CTV Farmgate, which has an estimated weekly audience of 75,000 in Saskatchewan, and is also available on Bell ExpressVu and Star Choice. The show's annual schedule is online at marketprospects.usask.ca.

"We think it's a good way to get important topics out to many different groups," says agricultural economist James Lokken. With subjects ranging from crop outlooks to health and safety, and an impressive international roster of guest experts, *Market Prospects* is a great way for college faculty to share their expertise—without having to chase their radiator cap down snowy roads. 🍀

Freight rates can be costly and complex for farmers. Freight Rate Manager is a computer program created at the College of Agriculture and Bioresources that simplifies the calculations and the decision-making. "For each delivery point you pick and each grain you pick, it will tell you what your freight and elevator deduction is," explains Ken Rosaasen. Along with Jason Skotheim, James Lokken, Rob Roy and several students, he's part of the team that created the software and continues to develop it.

In addition to assisting with transport decisions, Freight Rate Manager helps farmers plan their crops. It can calculate "your cost of production according to the different soil zones in Saskatchewan," says Rosaasen, "for

your spring wheat or your durum or your barley—all of the major crops that we grow."

So far, Freight Rate Manager has been available on disks and CD-ROMs. Now the team is making the program accessible on the Internet. "If you pick a point like Rosetown and you name the elevator," explains Rosaasen, "we're going to have it so that it can show a picture from Google Maps and the phone number, as well as the current freight rates and handling charges." The online program will reflect the latest rate adjustments, quickly translating CWB prices released in PROs into a local elevator price. "It's going to be of significant value to people," says Rosaasen, "in their marketing decisions and their planning decisions, and in terms of understanding policy." 🍀

Almost 6,000 people live on Hutterite colonies in Saskatchewan, occupying approximately 2 percent of the province's agricultural land. An extension initiative involving the College of Agriculture and Bioresources is reaching out to this population. Through a program of short courses in dairy and swine farming, Hutterite farmers can refine their agricultural technique without having to leave the colony for an extended time. "We're going to a group of people that are never going to spend three, four years at the University of Saskatchewan," says Hank Classen, head of the Department of Animal and Poultry Science.

The program was established in 2006 with funding from the Canadian Agricultural Skills Service. Professor Emeritus David Christensen helped establish a dairy course that proved a huge success with its com-

bination of lectures and hands-on learning. Topics included genetics and breeding, herd health, housing, nutrition and human resource management. A swine course was set up shortly afterward. Rather than a degree or diploma, students completing the classes earn participation certificates.

The program allows the latest research and innovation to augment the already considerable agricultural know-how that Hutterites bring to the table. "These are people who work with cattle all the time," says Classen. "So they have an advantage over a student that might come into a program and has had minor exposure." Classen is enthusiastic about the benefit that this program brings to agriculture in the province. "It's a really great thing," he says. "It contributes to rural Saskatchewan in terms of our ability to make our producers better." 🍀



FINDING THEIR ROOTS

THE TOWN OF FLIN FLON GETS A GREEN RESURRECTION

For 80 years, HudBay Minerals has operated mines near Flin Flon, Manitoba, which have left their mark on the surrounding boreal forest. "When you drive through the boreal shield and come to Flin Flon, you hit areas where it's pretty barren. All the vegetation's gone," says Rich Farrell of the Department of Soil Science. Now, the company and the community are looking to revegetate the region—and students and faculty at the College of Agriculture and Bioresources have a significant role to play.

A citizen initiative started the chain of events which would eventually lead to University of Saskatchewan researchers arriving on the scene. Ten years ago, the Flin Flon / Creighton Green Project began an annual tradition to revivify the plant life. "The Green Project gets volunteers together every year," says Farrell, "and they go out and spread limestone. It involves schoolkids, Scout troops, seniors' groups."

As the years passed, though, the Green Project discovered that the problem was trickier than they'd initially thought. "In some areas, putting in the limestone altered the pH of the soils, and plants just started growing. In other areas, they did the exact same thing and nothing happened," says Farrell. "It became apparent it was a much more complex issue than just altering the pH to change metal and nutrient availability."

So in 2007 HudBay asked Prairie Plant Systems of Saskatoon to examine the problem. The environmental manager of Prairie Plants was a graduate of the soils program at the U of S, and he asked Farrell to join him on a scouting trip to the site. As soon as Farrell set foot in the region, he was smitten. "It's one of those

strangely beautiful areas," he enthuses. "I said, 'It would be really neat to do some research here.'"

Farrell and two of his Soil Science colleagues, Angela Bedard-Haughn and Darwin Anderson, acquired grant funding from Hudson Bay Mining & Smelting Co., Limited to perform a soil survey. Last summer they took three undergraduate students and a technician to the area to take samples. It was an excellent experience for the students. "They just had a blast," Farrell says. "They all had to go out and put into practise things they'd been learning in class."

That's the first step in a five-year plan to support the revegetation efforts around Flin Flon. "The larger project involves seven people from the department," says Farrell. He hopes to install students in the area for the duration of this coming summer. "They'll help out with the Green Project and talk to the kids. We're providing more than just a science education. The whole idea is that they'll turn their science into community action. With these large-scale remedial operations, you need to have the community involved."

The collaborative effort promises to meet the needs of everyone involved. HudBay is addressing its environmental management needs. The people of Flin Flon are resurrecting the lost greenery of their region. College faculty members are faced with an excellent opportunity to apply a wide range of research interests and techniques. And their students have the chance to roll up their sleeves and get down to work—precisely the type of hands-on learning that the college strives to provide.

BRAINS TRUST

FOUNDER RICHARD GRAY DISCUSSES THE ROLE OF CAIRN

Led by a professor at the College of Agriculture and Bioresources, the Canadian Agricultural Innovation Research Network (CAIRN) is a network of 20 researchers devoted to informing public policy and giving graduate students the chance to receive training in agricultural innovation. The researchers represent nine universities from six provinces, as well as Industry Canada and the National Research Council. CAIRN is one of five Agricultural Policy Research Networks funded by Agriculture Canada.

The network was established in 2004 by Richard Gray and several of his colleagues at the Department of Bioresource Policy, Business and Economics. "It was clear that the whole research sector was changing a great deal," says Gray. "You had a large presence of private industry in innovation for the first time, particularly in the research end. Public firms and non-profits were trying to react to that." Meanwhile, the public sector was withdrawing much of its support from agricultural research. Student funding was on the wane, and Gray wanted to make it possible for grad students to receive solid, long-term funding for meaningful policy research.

Today, student support accounts for more than half of the network's budget. Students receive funding to assist a CAIRN researcher in a specific project. The projects fall into five categories: international competitiveness and innovation; regional incidence of innovation; the structure of the agri-food sector; entrepreneurship; the knowledge economy.

In all five areas, CAIRN seeks to influence public policy that fosters innovation. "The level of funding for agricultural research and innovation, over time, has gone down in real terms," says Gray. "There's a real

need to revitalize that, because productivity improvements are associated with increases in yield. Without continual investment, you fall behind the rest of the world."

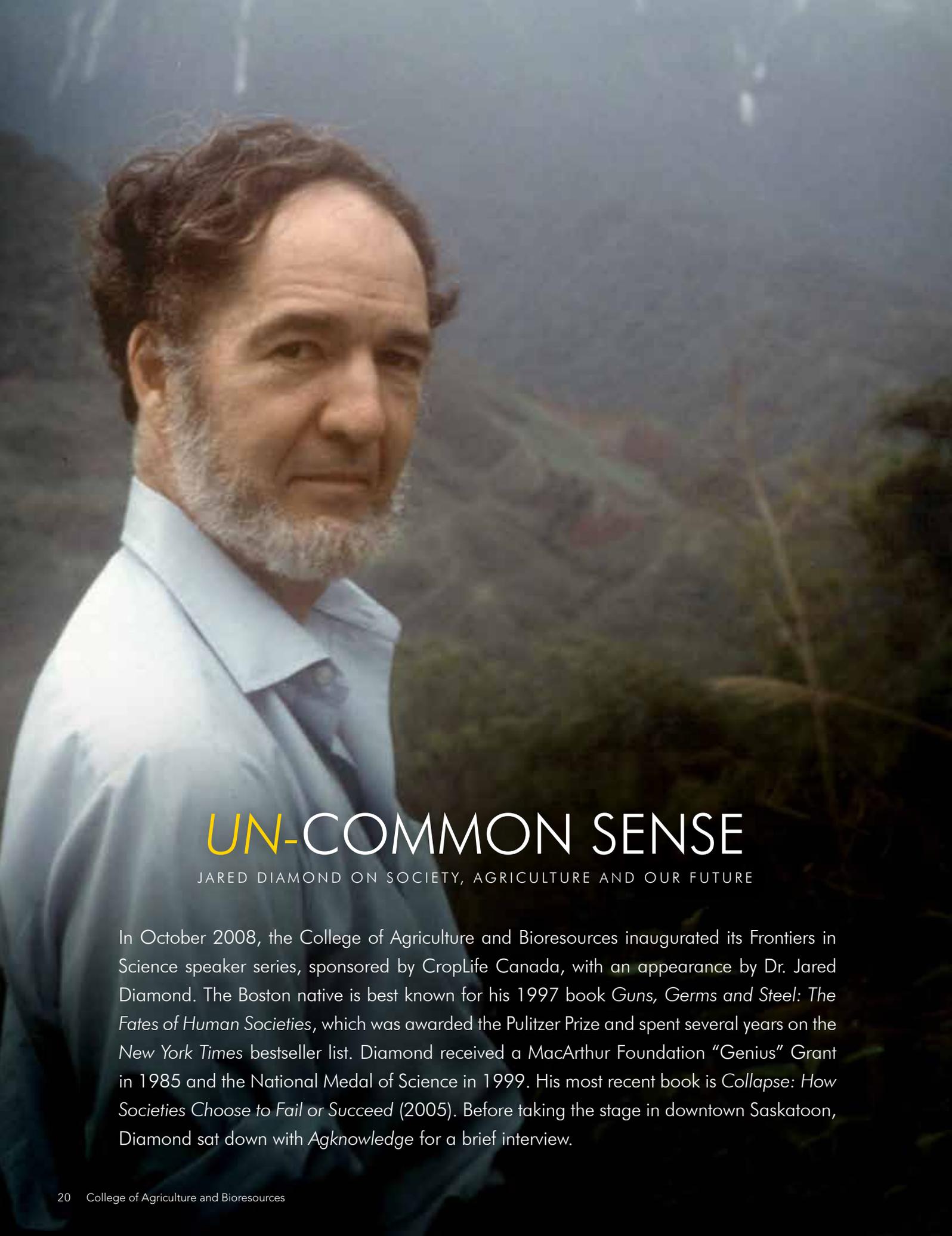
Canada's current regulatory environment can stifle innovation. "It's not unusual," says Gray, "for a company to develop a nutraceutical or a functional food in Canada but then license it in the United States because of our regulatory system." CAIRN's role includes "understanding why the regulations exist, what their impacts are for the objectives they're trying to accomplish—quality, safety—but also the impact they have on innovation."



The private sector is crucial too. "We know from history that the involvement of industry groups and producer groups—which raise money for research and play a co-ordinated role in developing industry strategy—is very important," says Gray. "The Rapeseed Association of Canada and the Canola Council were instrumental in developing that whole industry. The Saskatchewan Pulse Growers is another very good example. We're working with those

groups, trying to work out issues of funding and intellectual property management."

In a mere half-decade of existence, CAIRN has made its presence felt. "We've informed debate," says Gray. "We've developed a working relationship with industry groups." Above all, he says, the work with students has made a significant impact. "We have been very successful with training graduate students that are now going on to positions where they will be decision-makers in industry, the non-profits and the government." Thus the network helps fulfill two of the college's key aims: practical experience for students, and research to address pressing needs in the industry today. 🍀



UN-COMMON SENSE

JARED DIAMOND ON SOCIETY, AGRICULTURE AND OUR FUTURE

In October 2008, the College of Agriculture and Bioresources inaugurated its Frontiers in Science speaker series, sponsored by CropLife Canada, with an appearance by Dr. Jared Diamond. The Boston native is best known for his 1997 book *Guns, Germs and Steel: The Fates of Human Societies*, which was awarded the Pulitzer Prize and spent several years on the *New York Times* bestseller list. Diamond received a MacArthur Foundation “Genius” Grant in 1985 and the National Medal of Science in 1999. His most recent book is *Collapse: How Societies Choose to Fail or Succeed* (2005). Before taking the stage in downtown Saskatoon, Diamond sat down with *Agknowledge* for a brief interview.

Agknowledge (AK): In *Guns, Germs and Steel* you showed the role of agriculture in determining which societies would expand and conquer. And then in *Collapse* you talk about the phenomenon of societies that disappear. So what do you see as the role of agricultural science and innovation in helping us avoid such a fate?

JARED DIAMOND (JD): We have more people than we've ever had in world history: six and a half billion. Of those, several billion are undernourished. Hundreds of millions are starving. The vast majority of people today are living based on agriculture plus fishing. At the same time, we are pressed for land. The challenge is for us to feed more and more people on less and less land, increasing productivity.

AK: What do we have to learn from agricultural mistakes that were made in the distant past?

JD: A short lesson to learn is not to repeat the mistakes of the past, but to repeat the successes of the past. You can regard history as being thousands of natural experiments. So many things have been tried. What works in one place doesn't work in another place. For example, the Norwegians who spread out across the Atlantic. They tried to recreate Norwegian agriculture in Iceland. Big mistake. It took them a couple of centuries to figure out what worked there.

AK: What hopeful developments are you seeing in the area of agriculture?

JD: There's more interest in organic farming. There's more interest in trying to maximize the output on a smaller area of land so that more land can be diverted to non-agricultural purposes. Those are all encouraging signs. And I regard genetically engineered crops as a hopeful sign—there are many people who reflexively object to genetically engineered crops, but basically every crop that we eat is genetically engineered, just genetically engineered 11,300 years ago by people who didn't know genetics. There are movements that try to make agriculture more sustainable. For an example close to home, just across the border, I began *Collapse* with an account of my friends, brothers in the southwest of Montana. When I revisited them two years ago, they were just in the process of installing a methane facility such that they were going to extract methane from cow manure and produce energy. So they were working on making their operation self-sustained. That's good news. The bad news is that the rise in corn prices has come close to pushing them and other Montana dairy farmers over the brink.

AK: Why do societies persist in making dumb decisions?

JD: For the same reason we as individuals persist in making dumb choices. Because we fail to anticipate things because we've never had experience of them. Or because problems, when they develop, often come with slight changes. We might say, why didn't we recognize global warming when the first signs were appearing thirty years ago? If each year the temperature was half a degree warmer than the previous year, in seven years the temperature would have been three-and-a-half degrees warmer and there would be no argument. But instead the temperature fluctuates. So it took twenty years before even expert climatologists began to be convinced that buried within this noise there was a trend. And then, finally, when something bad does happen, often there are people who profit by that bad thing, and they're opposed to making the necessary changes.

AK: Learning lessons, analyzing patterns, understanding the big picture—for you this has been a project drawing on all kinds of disciplines and areas of expertise. Do you think there is a bright future for a more cross-disciplinary approach to science?

JD: It's a constant struggle. On the one hand, many universities do talk about interdisciplinary programs, and there are a lot of interdisciplinary programs. Probably more than there were a couple of decades ago. But there is a lot of resistance. And especially there's a resistance to scientists trying to write about science for the public.

AK: In the years since you wrote *Collapse*, has there been any change in the extent of your optimism apropos western industrialized society?

JD: There are things that make me more optimistic, and there are things that make me more pessimistic. The things that make me more optimistic are, especially within the United States, the increasing acceptance of the reality of global warming. That's a good sign. Another good sign is the increasing numbers of people who join environmental organizations. The really good sign is the increasing number of big businesses, like Wal-Mart, Home Depot, some big oil companies—Chevron is a prime example—that have become major movers in environmental issues. Those are things that make me optimistic. Things that make me pessimistic: there are more people than there were two years ago; there's less forest; there's less fisheries. And we're running out of time. 🍀



GIVING BACK

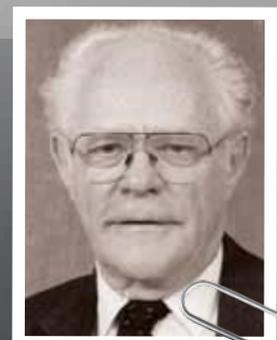
GENEROUS ALUMNI HELP THE COLLEGE EXCEL

The biography of Charles “Red” Williams is an epic one. Born in Regina in 1925, Williams is a World War II veteran, a member of the Order of Canada and a fellow of the Agricultural Institute of Canada. He has taught at the University of Saskatchewan for over 50 years, during which time he served as head of the Animal and Poultry Science department and worked extensively on the university’s extension programs. Although he formally retired in 1991, Williams, as Professor Emeritus, continued to teach at the College of Agriculture and Bioresources until 2008. His lectures and his extension work have taken him all over the world; he has assisted in more than 30 overseas development projects. For over 25 years, he has maintained a radio show and newspaper column.

Williams’s lifelong generosity continues today with his decision to bequeath money to the University of Saskatchewan. “I felt that was an appropriate thing to do,” Williams says. “The university made my life for me and supported me to raise a family. I felt some re-

sponsibility to pay that back.”

Williams believes keenly that agricultural education and extension have a vital role to play. “Throughout the history of agriculture in the West—and I’ve lived a big hunk of it—the advancement of agricultural management has been critical to sustaining the industry here on the prairies,” he says. “In my lifetime, we went from steam engines to combines and GPS. We’ve increased the productivity of livestock in the dairy industry by about fourfold. And, of course, replaced the horse with machinery. It’s been a huge advancement. To make that happen, there had to be an extension effort on the part of university and government.” Thanks to the generosity of Williams and others like him, that tradition of advancement will continue at the College of Agriculture and Bioresources. 🍏



Adam Winisky graduated with a BSA from the College of Agriculture in 1935. In his early career he worked as a land assessor and then as a colonization and land agent, finally setting up his own farm just south of Saskatoon.

Over the years, Winisky built a remarkably supportive relationship with the College, beginning when he rented a portion of his land to the College to help with research projects. As early as 1970, Winisky started planning a research trust fund, though it would be several years before that would become established. In the meantime, though, he continued to be an active donor, supporting 27 different research projects with donations totalling more than \$150,000. In 1987, the A.E. Winisky Research Trust Fund was established with a \$200,000 annuity from which the University would receive over \$25,000 a year for twenty years. The 1988 and 1989 payments went to the Agriculture Building Fund. Since its inception, the fund has supported eight post-graduate students, nine undergraduates and nine summer student assistants.

The Department of Plant Sciences helped Winisky maintain his land during his final years of farming. When the farm was sold in 2000, Winisky gave the College's farming activity a boost with a donation of equipment: a tractor, combine, grain auger, swather, cultivator, disc, truck and drill.

Winisky died in 2005. His estate was liquidated, and according to his instructions the residue of more than \$5-million was donated to a new Adam Winisky Agricultural Research Trust. This money will support the College of Agriculture and Bioresources in its research into bio-products, food safety and soil and crop science, ensuring that agriculture can continue to succeed and prosper in an ever-changing world. Adam Winisky was an unassuming gentleman, but his legacy will live on through his significant generosity. 🍀

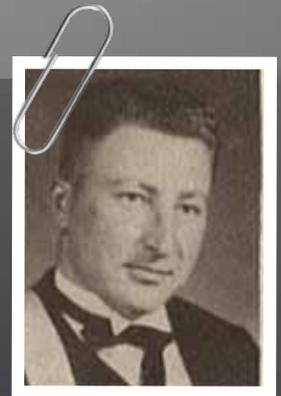


In 1962, Sheho farmer Morris Sebulsky (BSA '61) began teaching during the fall and winter terms at the University of Saskatchewan's department of Agriculture and Bioresource Engineering. For almost 35 years, he taught agricultural mechanics and welding, among other hands-on courses, enabling generations of young farmers to do their work with greater knowledge and skill. During that time, he developed a deep appreciation for the positive role the College played in the life of the province.

Friends and colleagues such as Bill Cooper and Bryan Harvey speak of Sebulsky's commitment and dedication to students. "He'd spend hours working with students' papers and exams," says Harvey, "reading every detail and making helpful comments. He was meticulous in his teaching, always well prepared." Bob Dodds, another friend and fellow teacher, says Morris was "one of the best [teachers] in all my years at the College." Sebulsky's knowledge and genuine care for his students earned him widespread respect.

Others who farmed in the Sheho area appreciated Sebulsky's knowledge and skill too. They would often consult with him about farming practices, even down to details about the correct mix of chemicals for field applications. He was a highly respected member of the farming community.

Sebulsky retired from farming some years ago, and currently lives in Foam Lake. Despite his battle with a very challenging illness, his interest in and commitment to the University and the College are unflagging. He has planned a very significant bequest to the Department of Plant Sciences, the Department of Soil Science, the Department of Animal and Poultry Science, and the Department of Agricultural Bioresource Engineering in the College of Engineering. Throughout his life, Sebulsky says, he found the College to be a tremendous resource from which he benefited greatly. His generosity will make it possible for future students to benefit as he did. 🍀





CLASS ACTION

THE CLASS OF '48 HELPS LAY THE FOUNDATION FOR A NEW GENERATION

by Gordon Wilson, S.V.M.

What a wonderful experience to have 60 years of joy and happiness as a member of the University of Saskatchewan's College of Agriculture and Bioresources Alumni family. Most of us have prospered and upgraded our way of life. We thank the University and the College for the teaching and visionary education which helped make the Class of '48 good citizens of Saskatchewan and Canada.

Many of the College Class of '48 were veterans of World War II who gave up their civilian careers and their education to take part in that war. Although trained for a military career, they were poorly trained for civilian life. The change from military to civilian life was tremendous. Fortunately, the veterans in the Class of '48 had the privilege of mixing with the youth of the day and with sympathetic professors. These thoughtful people helped the veterans bridge the gap from war to peace.

The Class of '48 felt we had a debt to pay to the University of Saskatchewan for our education. Many of the members of our class served on committees to raise funds to help build the new College of Agriculture building. The Class of '48 raised \$27,000 toward this new building from our 47 members.

Following the successful completion of the wonderful new building, the Class of '48 needed a new challenge;

we decided at our 45th reunion that we would raise funds for bursaries for deserving students. Since that date we have issued \$6,000 worth of scholarships

In 2008, the 60th anniversary of the Class of '48 celebrated by presenting ten \$1,000 bursaries to deserving second- and third-year students. As we see it, funding

“We are thankful for the opportunities and success over these 60 years...”

these bursaries is one small way we can give back to the College for the benefits we received from our education.

The University of Saskatchewan and the College of Agriculture and Bioresources have had a tremendous impact on our ability contribute to the well-being of the world and to foster a lifestyle that has brought us happiness and security. We are thankful for our opportunities and successes over these 60 wonderful years—and we appreciate the opportunity to express our gratitude by helping others as we ourselves have been helped. ♥

Fig. 1 Left to right: Jim Clarke, Eldon Norum, Gordon Gardiner, Gordon Wilson, Bill Till



SMARTY PANTS

A NAME OUR STUDENTS STRIVE FOR? NOT EXACTLY.

But they are an incredibly bright bunch. Through your donations in the form of bursaries, scholarships, mentorships and more, we are able to give more students the education they need to succeed. We thank you for your generous support.

To make a gift or set up a monthly donation to the College of Agriculture and Bioresources Enhancement Endowment, go to: www.usask.ca/makeagift or contact Mark Wartman: 51 Campus Drive, U of S, Saskatoon, SK S7N 5A8 Phone: (306) 966-8893



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and Bioresources

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