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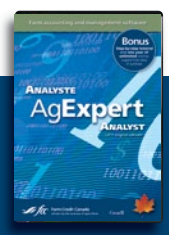

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University of Saskatchewan
College of Agriculture and Bioresources

Agknowledge

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dean's message

INNOVATION LEADS THE WAY

Innovation is always happening and can't be stopped, for which I am incredibly thankful. The natural state of the world is change, and diving into that ebb and flow will take us to places we could not imagine. The college has change at its core, for every year we eagerly seek out new students, new research opportunities and new ways to serve.

This 2011 edition of *Agknowledge* offers you a sampling of some of our newest innovation, in all aspects of our teaching, learning, research and community interaction. Learn what is new and hot: our latest undergraduate program, taught through Food and Bioproduct Sciences; our learning in the new CREATE program; our research in organic agriculture; and community interactions with high schools.

While we celebrate the dynamics that innovation brings us, obviously basing change on a firm high-quality foundation improves its chances for success. We salute with pride and gratitude our long-term relationships and those who gave us our firm footing – our alumni, our partners, our former faculty and all those who have left us but whose legacy remains. Some of these, but by no means all, are celebrated in these pages.

We are honoured and grateful to have benefited from all who have helped us, and recognize our responsibility to do our best with the resources we have been given. Of course we will make mistakes – some more spectacular than others! – but hopefully they will be mistakes primarily bred in action, not inaction; mistakes of leading into a blind alley, not mistakes of blindly following the herd over a cliff. Regardless of the nature of the mistake, the only shame would come in not learning from it and since learning is what we do best, I believe that you will find us driving forward. Our innovative hard work clearly produces excellence, which you will see as you go through this magazine. This college is a wealth of talent!

While change is a certainty, its pace and creativity can be stifled. As dean I need to remove barriers and encourage opportunities. Would you please help me do that, by telling me what is working and what needs improvement? What hurdles do you see and what chances we can take advantage of? Even if it's something that you think I won't want to hear, I promise to listen openly and carefully. Our world needs all of us working together to make agriculture and bioresources the very best it can be!

Sincerely,
Dean Mary Buhr

"The college has change at its core, for every year we eagerly seek out new students, new research opportunities and new ways to serve."

renewal

WELCOMING NEW FACULTY TO THE COLLEGE

AARON BEATTIE
Plant Sciences

Academic Background: BSc (Biology), University of Waterloo, 1994; MSc (Plant Breeding and Genetics), University of Guelph, 1998; PhD (Plant Pathology), University of Saskatchewan, 2007.

Focus of Work: Barley and oat variety development with research directed at understanding the genetic basis of important disease, agronomic and quality traits.

Passion: I've always appreciated the role plant breeding plays in applying knowledge derived from research. It combines the appeal of learning with the satisfaction of using that information to develop new crop varieties that are an important component of economic growth and societal health. I hope to pass along my enjoyment of plant breeding to students by highlighting the diverse nature of this work.

BUNYAMIN TAR'AN
Plant Sciences

Academic Background: Ir. Agronomy (Estate crops), Sriwijaya University (Indonesia); MSc, Plant Genetics and Biotechnology, University of Guelph, 1994; PhD, Plant Breeding and Genetics, University of Guelph, 1999.

Focus of work: Development of high yielding chickpea cultivars with improved resistance to ascochyta blight, early maturity and general agronomic characters with acceptable seed quality characters for export and domestic markets.

Passion: My goal is to develop chickpea cultivars that are best adapted to western Canadian environments and profitable to the industry. Aside from research, I also have a feeling of accomplishment, knowing that through my teaching efforts my students will be more informed and possess the skills and the desire to acquire new knowledge.

RYAN BROOK
Indigenous Land Management Institute & Animal and Poultry Science

Academic Background: BSc in Zoology, University of Manitoba, 1996; Masters of Natural Resource Management, University of Manitoba, 2001; PhD, Environment and Geography, University of Manitoba, 2008; Postdoctoral Fellow, Veterinary Medicine, University of Calgary, 2010

Focus of Work: Wildlife ecology and health issues that involve collaborations together with indigenous and rural communities, utilizing both ecological and social research.

Passion: I have two main passions in my professional work: meaningfully engaging indigenous and rural communities in research, especially youth, and getting university students into the field doing hands-on work that is rigorous, transdisciplinary, community-focused and of real relevance to society.

TOM SCOTT
Animal and Poultry Science

Academic Background: BSA, U of S, 1976; MSc, Macdonald College of McGill University, 1979; PhD, University of Sydney, Australia, 1987

Focus of Work: To make the Canadian Feed Research Centre a national and international centre of excellence in feed bioproduct processing research, innovation, and commercialization, contributing to the expansion of the Saskatchewan and Canadian economies.

Passion: The majority of my career has been spent learning how to feed and look after a chicken so that it can produce the most preferred animal protein of choice. An important component will be to understand how we can utilize processing to improve the animal's utilization of its diet. It is also apparent that animal scientists and the agriculture industry must continue to provide learning opportunities for the public.

Michelle Hubbard, Natural Sciences and Engineering Research Council Post-Graduate Scholarship Recipient

Dr. Vladimir Vujanovic

advancing
the food and bioproduct industry

MEETING THE DEMANDS OF AN EVOLVING FOOD AND BIOPRODUCTS SECTOR

Secure Food Supply and Bioproducts: Safe, nutritious and affordable food, beverages and wellness products — as well as bio-based industrial and pharmaceutical products derived from renewable resources — required to meet the demands of a healthy and growing world population.

The College of Agriculture and Bioresources is poised, and has the experience, to make Canada a world leader in the production of safe and high quality food; to be specialists in the supply of food and other bioproducts that are produced in an environmentally sustainable manner; and to be among the most innovative in this rapidly evolving sector. A strategy key to achieving this vision is to grow the value-added food and bioproducts industries. The college committed to significantly enhance its activities in crop utilization (fibre, energy, biodegradable consumer products) and agri-health (food, functional foods, nutraceuticals, biopharmaceuticals). Scientists in the Department of Food and Bioproducts are at the forefront of food and bioproduct research in Canada and are recognized internationally for their specialties in food for health, food chemistry, processing, microbial biotechnology, food authenticity, nanotechnology, meat science and bioenergy.

Dr. Nicholas Low, professor and department head, is involved in diverse food research projects. One is encapsulating bioactive compounds for targeted delivery in both humans and animals. "Professor Michael Nickerson and I work on an encapsulation project where we use proteins from plant materials as a capsule and place bioactive ingredients inside," says Dr. Low. "There are a variety of bioactive ingredients that we've worked on, such as probiotics, those

Andrea Stone, Research Technician

Dr. Michael Nickerson

Nicole Avramenko, Research Assistant

microorganisms believed to improve gut health. We have also incorporated prebiotics into this capsule, which have been associated with improved mineral absorption and are an ideal food source for beneficial organisms in the gastro-intestinal tract."

Dr. Low says that the aim of the encapsulation research is to produce the maximum beneficial health value of the encapsulated bioactives. "We're trying to gear our plant-based capsules to deliver the bioactive compounds at the right time, in the right place and at the right concentration." The encapsulated materials can be used as ingredients and incorporated into many processed foods in the marketplace, including yogurts, breads, drinks, candies, or purchased as a stand-alone nutritional supplement.

"We've also been encapsulating polyphenols, which have been reported to have beneficial effects on cancer and cardiovascular disease." Polyphenols are chemical compounds that are abundant in fruit(s). Professor Low and his colleagues have been isolating polyphenols from fruits that are native to the prairies, such as saskatoons and chokecherries, and encapsulating them with pea protein. In their encapsulated form, they can be readily absorbed through the gastrointestinal tract and then delivered to cells. "We're targeting the mitochondria as this is the powerhouse of the cell, which is readily attacked by free radicals which result in cell disorders and death," says Dr. Low. "It's all about targeted delivery."

Dr. Low's research unit recently began another encapsulation project that involves dairy cattle feeding trials in Ontario. Researchers have encapsulated heart-healthy oils like omega-3 fatty acids, derived from Saskatchewan-grown flax, to boost the omega-3 fatty acid content of milk. Encapsulated omega-3 fatty acids are put in cattle feed so as to produce higher levels of these compounds in the final milk product. Consumers benefit when they ingest milk or products made from this milk such as cheese and yogurt.

While Dr. Low's specialty is food, Dr. Vladimir Vujanovic utilizes his knowledge of microorganisms to create tomorrow's bioproducts. Dr. Vujanovic is a professor in the department and also holds the Agri-Food Innovation Chair in Agricultural Microbiology and Microbial Bioproducts. He has created a Saskatchewan Microbial (Biotechnology) Collection and Database, and is a leading figure in national and international organizations. Vujanovic's specialty is microbiology, with an emphasis on molecular and functional mycology, microbial biotechnology and bioproducts. Using state-of-the-art molecular and proteomic tools, Dr. Vujanovic harnesses microorganisms to produce bioproducts.

Dr. Vujanovic is developing two kinds of bioproducts at the moment. "One is based on plant-fungus symbiosis established at the seed level, or mycovitalism. It is an innovation for biotechnology, being the first to implement the concept of 'prenatal-care' to agricultural crops. The other is a group of biopesticides based on natural fungal 'enemies' of Fusarium plant pathogens. My biocontrol product will not only stop Fusarium, but it will also stop the accumulation of deadly fungal toxins in the grain," he says. "That's food-related, and

Dr. Low's research unit recently began another encapsulation project...

I plan to collaborate with my colleagues to better understand the efficiency of mycoparasites in decreasing the amount of mycotoxins in the food chain. The result will be to produce healthier food, while also protecting the environment."

As a professor and researcher, Dr. Vujanovic understands the importance of mentoring and succession. "My laboratory attracts high-quality students. My interest is not only to progress in research, but also to contribute to the education and development of future leaders in the domain of mycology and microbial bioproducts."

The student experience is greatly enhanced when teaching and scholarship are offered in such a research-rich environment. The new food and bioproducts major (FABS) within the Bachelor of Science in Agriculture is a unique program incorporating knowledge of biology, chemistry, physics, microbiology and engineering. That knowledge is applied to food and bioproduct production from plants, animals and microorganisms.

The multi-disciplinary degree provides students with the tools to solve a number of important issues that face Canada's agri-food sector, including the processing of raw commodities into functional foods and nutraceuticals; conversion of agricultural waste materials into bioproducts; the design and synthesis of nano-structures capable of encapsulating bioactive compounds; and the development of processes and practices to ensure a safe and abundant food and water supply.

"The new program replaces a four-year major called 'applied microbiology', which wasn't as focused on food and bioproduct sciences. FABS is a substantial re-positioning, with a series of new courses," explains Associate Dean Dan Pennock. "Applied microbiology wasn't a term that resonated with people so we wanted to sharpen the focus on food and bioproducts."

According to Dr. Low, AgBio's new FABS program places emphasis on experiential learning. Because the department's faculty are immersed in research, undergraduate and graduate students have access to one of the best interdisciplinary educational and research opportunities at a research-intensive Canadian university. "Our hands-on learning environment is the laboratory. Instead of taking students out and showing them a black Angus, the real experience is in the lab," he says. "We can show students how to take potato waste and convert it into bioethanol or how to take flax fibres and convert them into plastics. We give students hands-on opportunities so they can learn how to do all these things."

> "These are the students that will develop the food industry sector in Saskatchewan in the future..."

Course content includes how micro-organisms affect the food supply, food spoilage and food-borne illness; how to convert agricultural materials to products such as fuels, lubricants, plastics, alcohols, cheese and vinegar; types of food additives currently used in the food industry and the function of these compounds in foods; food processing and preservation operations such as thermal processing, filtration, drying and evaporation; food chemistry and nanotechnology for the encapsulation of unstable food components; and the development of new and novel foods and bioproducts.

"Many Canadian universities and colleges have a food science program and each one is unique in that the faculty and students work with the local commodities that reflect the region," says Pennock. "For example, the U of S has a strong linkage with the pulse industry so students take the harvested commodity right through to the final processing and delivery to the consumer."

Pennock also says that professors and students in the FABS program contribute a true value-added part to the sector, where their focus is on the time from when the commodity leaves the farm gate to when it's delivered to the consumer. Students in the program can also take an entrepreneurship minor to keep in-step with the latest food industry trends. "These are the students that will develop the food industry sector in Saskatchewan in the future, especially with the emphasis on locally produced foods for restaurants and markets. The whole industry is a growth sector and we certainly see it that way at the college."

Graduates with a major in food and bioproducts will be faced with numerous career opportunities. They may occupy food industry positions to develop new products, packaging and processing methods that improve the nutritional aspects of foods. They may investigate current and emerging methods for ensuring food safety and quality. Similar positions in the field of bioproducts are emerging with the development of commercial products such as fertilizers, plastics, inks and fuels. In the public sector, graduates are ideally positioned for careers with provincial and Federal governments. Those who choose to continue their education to the masters or doctoral degree level are highly sought individuals who fill senior positions in industry, government and academia.

The Department of Food and Bioproduct Sciences is committed to developing sustainable environmental solutions for the production, utilization and handling of agriculturally based commodities while it adds value to the Canadian agri-food industry. The department's goal is to improve the quality, safety and nutritional aspects of today's food, but also to look at new ways to create other uses for agricultural biomass.

tapping into aboriginal talent

ABORIGINAL PROGRAMMING AND RESEARCH CREATES NEW OPPORTUNITIES FOR CANADA'S FIRST NATIONS STUDENTS

Above, left to right:

Dan Pennock, Associate Dean (Academic)

Tom Allen, CIBC Chair in Agricultural Entrepreneurship

Candice Pete, Director, Indigenous Peoples Resource Management Program

David Natcher, Assistant Dean (Aboriginal Programs and Research)

The College of Agriculture and Bioresources is a leader in the development of Aboriginal programming and research which focuses on land, environment and resource management. The college is home to the Indigenous Peoples Resource Management Program (IPRM), a Post-Graduate Diploma in Aboriginal Agriculture and Land Management, and the Indigenous Land Management Institute. The college is also actively engaging with First Nations and First Nation organizations within Saskatchewan for the purpose of developing new and innovative programming in the area of Aboriginal land, environment and resource management.

Launched in 2006, IPRM is a one-year program designed to train land managers to examine the basic environmental, legal and economic aspects of land and resource management. While the program is designed for those already working as land managers, it's also concerned with land and resource issues on First Nations across Canada.

In order to accommodate professional work lives, the IPRM program academic year consists of three modules with students completing two, three-credit unit courses per module. Students are required to be on campus in Saskatoon three times a year, for a two-week time period. Classroom hours are comprised of lectures, labs and field trips, while the home study consists of readings, assignments and web discussion groups.

Program Director Candice Pete, who joined the college team in 2007, says the program has a high success rate. "This is our fifth year delivering the program. The graduation rate between 2007 and 2010 is 79 per cent". Pete indicates that one of the

key success factors is the unique blended delivery model of the program. It's designed such that students don't have to move away from their communities, families and employment, but they still obtain that university education and experience. The IPRM program has graduated four classes of 89 students, with 12 of those awarded distinction or great distinction.

Esther Osche, land manager with the Whitefish River First Nation in Ontario, completed the program in 2008 and speaks to the experience. "The IPRM courses have enabled me, as a First Nation lands manager, to develop increased capacity and expertise in the area of Aboriginal lands management, and has helped me to provide meaningful assistance to our community at a complex stage in the evolution of our lands management regime. The courses have conveyed integrated training in the areas of Aboriginal rights and title issues, sustainable management of ecosystems, key considerations for economic development initiatives and provided valuable knowledge in the area of consultations, planning and natural resources management. The program has integrated the subjects in an excellent approach to facilitate immediate application of the skills gained, to direct on the job application. The results have been effective in helping our community move forward more efficiently in decision-making processes that address environmental and natural resources management issues."

Some Aboriginal students may look beyond the Certificate of Proficiency offered by the IPRM program. "We're approaching Aboriginal academic programs using a laddering process," explains David Natcher, Assistant Dean, Aboriginal Programs and Research. "Students who complete the six courses for the IPRM program in one year receive a professional certificate in land management, which is great, but what we're planning to do is also offer that program as a stepping stone." Natcher believes it's a great way to introduce Aboriginal students to university in a way that's not so intimidating. "By wading into the academic world, people can become comfortable with an unfamiliar environment," he says.

Professor Natcher has a dual role as assistant dean and as Director of the Indigenous Land Management Institute (ILMI), which is a research-oriented centre housed in the college. It's an interdisciplinary institute with faculty associates from native studies and geography, as well as AgBio, all contributing to the research program of the institute. The mandate of ILMI is to address the applied research needs of Aboriginal communities in the area of land and resource management, focusing on three pillars: Wealth Creation, Environmental Sustainability and Governance. Research activities focus on the expressed needs of Aboriginal leaders for relevant and practical information that can inform policy development, support self-determined resource management objectives and enhance their own management practices. "It's really to help co-ordinate all the different activities going on in the college geared towards both the different programs we offer to Aboriginal students and further develop Aboriginal research programs at the U of S," he says.

The Indigenous Land Management Institute was approved by the university in 2008, after a year of planning and consultations. "In only two years, we're very pleased with the success and number of graduate students and research associates all working through the institute. We've been able to establish partnerships with First Nations, Inuit and Métis communities." ILMI associates will be extending the results of their research at workshops throughout the 2010/2011 winter term. The workshops will take place at the new office and meeting facility on the English River First Nation south of Saskatoon.

To continue the 'laddering' process for Aboriginal education, the popular BSc Renewable Resource Management (RRM) is an area expected to attract students. The RRM program is an applied science degree that focuses on management of land, biological and water resources. The advanced technical skills of graduates ensure that they are highly employable in the resource sector. The rapid expansion in both renewable and non-renewable resource sectors in western Canada has created a growing demand for graduates. Students can choose one of two career tracks: Natural science-based or policy. "Within the policy track,

Graduation Class of 2009

The mandate of ILMI is to address the applied research needs of Aboriginal communities in the area of land and resource management, focusing on three pillars:

Wealth Creation, Environmental Sustainability and Governance.

we have developed a curriculum to address Aboriginal land management issues. I teach a third-year course in Aboriginal Peoples and Natural Resource Management," says Natcher. "Those IPRM program courses are transferable right into the RRM so a student isn't starting from scratch."

The next step on the ladder approach is a new Post-Graduate Diploma in Aboriginal Agriculture and Land Management, which commences this January. Tom Allen, professor and holder of the CIBC Chair in Entrepreneurship, was instrumental, along with David Natcher, in establishing ILMI. "At the time I was working as an adviser to the dean and asked to be involved in strategic planning." Allen serves as leader of the economic development pillar of ILMI. "More importantly right now, I have a lead role in the Post-Graduate Diploma in Aboriginal Agriculture and Land Management." The diploma provides students holding a bachelor's degree in a non-agricultural discipline with sufficient training in agribusiness and land management to enable them to operate at the interface between the Aboriginal community and the agribusiness sector. Fifteen students will be admitted in the first year and up to 20 students each year afterward.

Establishment of the diploma has been made possible by a donation, reported in a previous issue of Agknowledge, from the Sprott Foundation. The $1 million donation was made specifically to develop a training program for Aboriginal agricultural land management. The Sprott Foundation also provided the initial seed money for the One Earth Farms venture, a widely reported initiative. One Earth Farms has its headquarters at the English River First Nation office complex. "The biggest use of Aboriginal land in Saskatchewan is for agriculture," says Allen. "There are several hundred First Nation farmers in Saskatchewan, mostly small farmers, and a few larger commercial farmers. But in a bigger way, they mostly have a partnered/tenant relationship with One Earth Farms and right now that operation is farming 38,000 hectares."

There is an important connection for AgBio, according to Professor Allen. "This industry venture requires agriculture workers, agriculture managers, agrologists and on and on. So the program we've developed is an effort to fast-track people into the agriculture industry at a management level." Prospective students don't need to have an agricultural background to take the program, but the student must have a university degree. The program is intended to equip graduates for management positions in the agri-food and bioresource industry, not just for First Nations companies.

Prior to designing the program, a market assessment was conducted to find out if there would be jobs for graduates of this type of program. Consultants met with over 16 companies, such as Viterra and Farm Credit Corporation, and they found that those types of companies would be very interested in

Roxanne Brass (Class '09) receiving her certificate

graduates of the proposed program, for numerous reasons. One reason is that the agri-food industry has the highest median age of workers of any sector of the Saskatchewan economy. The college has struggled to attract Aboriginal students to its undergraduate programs. Two of the students committed to begin the program in January are graduates from education and native studies. "Many Aboriginal high school graduates choose education as their entry degree because they have role models on their First Nation and it becomes the degree of choice, even though there may not be many job openings after graduation," says Allen.

Because of this, Allen says there are many Aboriginal graduates who are either looking for a career change or a professional career. "This program has been developed specifically for the agriculture industry with a heavy mix of ag science and ag business," he says. The intensive one-year program features 20 credit units of graduate level courses or senior undergraduate courses. It includes two semesters with a job placement course in the spring. Students will be employed through the summer months in an agricultural operation, with support from a faculty member. "In the fall, a tour course is scheduled where students start at the plant breeding stage and work right through to retail stores," says Allen.

Students will have the opportunity to participate in an international component that includes a trip to the University of Arizona at Tucson to meet officials from the Udall Center for Studies in Public Policy. The Udall Center is affiliated with the Harvard Project on American Indian Economic Development which, according to Allen, have been "the gurus of Aboriginal economic development in North American for 20 years."

David Natcher believes that the three programs currently offered for Aboriginal students, laddered from certificate to graduate studies, will allow them to succeed in either the public or private sector. "We provide skills that allow for real career choices. We don't expect all of our graduates to go back to work in their home communities," he says. "We just want to give them the best skills to allow them to pursue whatever career path they choose — just like everybody else." ■

student excellence

ENTRANCE AWARDS

AGBIO Renewable Entrance Scholarships
- Melanie Hawrysh, Borden
- Larissa Langlois, Wolseley
- Tory Shynkaruk, Kerrobert
- Kathryn Stolle, Christopher Lake
- Steven Tetreault, Leoville
- Patricia Tomchuk, Martensville

AGBIO Renewable Transfer Scholarship
- Jason Boutet, Prince Albert

AGBIO Entrance Scholarships
- Shaunti Bergen, Drake
- Kelsey Biro, Mistatim
- Justin Blechinger, Annaheim
- Kira Casavant, Blaine Lake
- Cameron de Wolf, Bow Island, AB
- Meaghan Dimmel, Lloydminster
- Mallory Dyck, Saskatoon
- Jennifer Ellis, Gull Lake
- Alyssa Grywacheski, Norquay
- Sarah Hamelin, Zenon Park
- Andrew Hanson, Saskatoon
- Leah Hilbig, Kuroki
- Timothy Hilger, Prelate
- Alexina Labrecque, Saskatoon
- Kendra Laing, Gallivan
- Jenna Miller, Avonlea
- Brendan Mowchenko, Mossbank
- Jaycee Peutert, Assiniboia
- Carson Ramsay, Saskatoon
- Allan Walter, Lampman

Arnold and Emily Robinson Scholarship
- Kerrie Andreas, Sheho

Beatrice Murray Entrance Scholarship
- Amanda Schurman, Bethlehem

Canadian Wheat Board Diploma Entrance Award
- Carson Dyck, Blumenhof
- Steven Malo, Wolseley

Douglas Christie Ferguson Fund Scholarship
- Earl Kieper, Radisson
- Tahirih Robertson, Swift Current
- Christian Scott, Humboldt

Jim Anderson Scholarship in Agriculture
- Tyler Edwardsen, Crystal Springs
- Tess Strand, Preeceville
- Christine Young, Yorkton

Robert and Maude Hale
- Kaitlin Kelly, Swift Current

Saskatchewan Chicken Industry Development Fund Award in Agriculture
- Stefan Trischuk, Saskatoon

CONTINUING STUDENT AWARDS

AGBIO Renewable Entrance Scholarships, Second Year
- Stephanie Derbawka, Borden
- Kaitlyn Schurmann, Abbotsford, BC
- Blake Weiseth, Shaunavon

AGBIO Renewable Entrance Scholarships, Third Year
- Lindsay Griffith, Bangor
- Sarah Hardy, Grenfell
- Angela Japp, Eston
- Alyssa Krone, Saskatoon
- Kristin Krone, Saskatoon
- Devon Wilson, Eyebrow

AGBIO Renewable Entrance Scholarships, Fourth Year
- James Paul, Saskatoon

AGBIO Renewable Transfer Scholarships, Second Year
- Graham Parsons, Kinistino
- David Pratt, Osler

AGBIO Renewable Transfer Scholarships, Third Year
- Kendra Purton, Yorkton

Adeline and William Haberman Memorial Scholarship
- Gina Kelln, Strasbourg

Albert and Beatrice Trew Memorial Scholarship
- Kyle Froese, Gravelbourg
- Jonathan Katzman, Saskatoon

Animal Nutrition Association of Canada Scholarship
- Michael McLeod, Caronport

BASF Canada Scholarship in Plant Sciences
- Curtis deGooijer, Kelliher
- Lindsay Griffith, Bangor

Bayer Crop Science: InVigor Canola Scholarship
- Travis Brisebois, Kincaid
- Curtis deGooijer, Kelliher

Bert Hargrave Scholarship
- Christine Ulrich, Saskatoon

Bert Salloum Scholarship in Agriculture Economics
- Saule Burkitbayeva, Kazakhstan

Brent Ganzer Memorial Scholarship
- Courtney Kosty, Saskatoon

Canadian Prairie Lily Society John Bond Scholarship
- Kaila Hamilton, Radisson

Canadian Prairie Lily Society T.A. (Andy) Dingwall Scholarship
- Vanessa Vandertweel, Gronlid

Canadian Society of Animal Science Book Prize
- Cindy Lukianchuk, Erickson, MB

Canadian Wheat Board Undergraduate Awards Programs
- Sarah Hardy, Grenfell
- Janell Healy, Prince Albert
- Katelyn Holba, Goodsoil
- Paige Knox, Ponteix
- Kristopher Novak, Okotoks AB
- Justin Shepherd, Moosomin
- Darren Bacon, Dodsland
- Meghan Johnson, Moose Jaw
- Erin Karppinen, Macrorie
- Britni Keay, Inglis, MB
- Michelle Nordick, Saskatoon
- David Pratt, Osler
- James Paul, Saskatoon

Carlson Scholarship in Renewable Resource Management
- Graham Parsons, Kinistino

Charles C. Cook Agriculture Student Leadership Award
- Katie MacMillan, Asquith

Dairy Farmers of Saskatchewan Undergraduate Scholarship
- Allison Foth

David J. Welch Memorial Prize
- Codie Nagy, Ogema

Dow Agrosciences Scholarship in Agriculture
- Alison Foth, Osler
- Conrad Nagel, Mossbank

Ewald M. & Donna I. Kitsch Scholarship in Crop Science
- Paige Knox, Ponteix

FCC Business Planning Award Term 1st Place
- Chelsy Ostoforoff, Canora
- Adam Sheppard, Lucky Lake
- Robyn Waldenberger, Hodgeville
- Dana Walker, Rosetown

FCC Business Planning Award 2nd Place
- Norman Detillieux, Bruno
- Marlowe Glassford, Caronport
- Kurt Printz, Gravelbourg
- Brie Vany, North Battleford

FCC Business Planning Award 3rd Place
- Brett Blaquiere, Edam
- Jocelyn Fournier, Rivercourse, AB
- Jenna Lessner, Lloydminster
- Logan Priddy, Saskatoon

FCC Business Planning Award 4th Place
- Daniel Erlandson, Outlook
- Lindsay Kreway, Ituna
- Russel Monette, Neville
- Evan Schafer, Mankota

F.J. Fear Scholarship in Soil Science
- Courtney Kosty, Saskatoon

Frank and Freda Riecken Scholarship in Soil Science
- Sarah Hardy, Grenfell

Gillian Hughes Memorial Travel Fellowship
- Curtis deGooijer, Kelliher

Harvey Scholarship
- Saule Burkitbayeva, Kazakhstan
- Angela Japp, Eston
- Jae Hee Kim, Toronto ON
- Alyssa Krone, Saskatoon
- Kristin Krone, Saskatoon
- Lisa Malo, Wolseley
- Alex Newmann, Lumsden

James Donald Hardin Scholarship
- Blaine Cowan, Storthoaks

Jickling Agricultural Scholarship
- Kirsten Theaker, Eatonia

John and Laura Morris Scholarship
- Kendra Purton, Yorkton

John Mitchell Memorial Scholarship
- Cindy Lukianchuk, Erickson, MB

Kelly Aulie Memorial Scholarship
- Devon Wilson, Eyebrow

Larry Janzen Memorial Scholarship
- Kaitlyn McLean, Birch Hills

Molson Canada Book Prize
- Caitlin Olauson, Delisle

Port Metro Vancouver Scholarship
- Raea Gooding, Saskatoon

CONTINUING STUDENT AWARDS
(continued)

Pat Toderian Scholarship
- Alison Foth, Osler
- Cindy Lukianchuk, Erickson, MB

R.K. Baker Prize for Excellence in Poultry Science
- Jill Keet, Asquith

Robert and Maude Hale Scholarship
- Jonathan Katzman, Saskatoon

Rossnagel Scholarship for Academic Improvement
- Danica Fichtner, Abbotsford, BC

Russell Fisher Scholarship
- Teresa Bergen, Osler

Saskatchewan Institute of Agrologists Diploma Scholarship
- Codie Nagy, Ogema

Saskatchewan Institute of Agrologists Scholarship
- Seraina Giovanoli, Switzerland
- Samuel McClinton, Yellow Grass
- Devon Wilson, Eyebrow

SaskPower Shand Greenhouse Education Prize
- Kimberly Hardy, Grenfell

Syngenta Achievement Award
- Catherine Vermette, Peace River, AB

University of Saskatchewan Scholarship
- Mark Sigouin, Arborfield
- Blake Weiseth, Shaunavon
- Amanda Guy, Saskatoon
- Brittany Wheler, Moose Jaw

University Undergraduate Scholarship
- Brodie Haugan, Orion, AB
- Kirsten Schafer, Gravelbourg
- Samantha Sentes, Raymore
- Thomas Sunderland, Rose Valley
- Andrea De Roo, Fairlight
- Stephanie Derbawka, Borden
- Danielle Saelman, Chilliwack BC
- Petra Jebbink, Thompson MB
- Brianna Schoenau, Clavet
- Savannah Gleim, Chaplin
- Brittany Johnsgaard, Swift Current
- Claire Kincaid, Wawanesa MB
- Caitlin Labach, Saskatoon

Westgen Scholarship
- Matthew Kumlin, Calgary AB

W.J. Copeland Scholarship in Crop Science
- Claire Kincaid, Wawanesa, MB

William G. Barclay Scholarship
- Megan Keis, Abbotsford, BC

student spotlight

GRAD STUDENT FINDS CHALLENGING CAREER IN SOIL SCIENCE

Jennifer Bentz is just as comfortable on the soccer pitch playing midfield as she is mapping out the metal concentrations at a Flin Flon mining site.

This young grad student, who plays in three soccer leagues, was sidelined last winter from her active sporting life when a knee injury took her out of the game. Jennifer took the setback in stride and she's chosen to hit the books even harder while she recovers.

This type of resilience will serve the first-year graduate student well as she pursues a MSc in soil science. Jennifer worked during the summer of 2009 on a field project led by Dr. Rich Farrell. The Flin Flon mining project, a re-vegetation plan for Hudson Bay Mining and Smelting Company, is now the focus of Jennifer's MSc program.

"I've always really wanted a hands-on, challenging career," says Bentz. "My high school science teacher convinced me to look at the study of toxicology, but once I took soil science in AgBio, I just started falling in love with it."

To rationalize her passion, Bentz says that soil is actually "a lot cooler than people think." It's quite complicated too, Bentz asserts. "You have to deal with the minerals in the soil, the water, the gas, organic matter, microbes and it's constantly variable in the environment."

> "...once I took soil science in AgBio, I just started falling in love with it."

The AgBio Scholarship Trust was established to encourage students like Jennifer. The trust, which is funded through donations, provides renewable entrance scholarships. Jennifer, who was a Greystone Scholar at Bedford Road Collegiate in Saskatoon, qualified for renewal of the annual scholarship throughout her BSA program. Her hard work as an undergraduate was rewarded when she was the top AgBio grad in 2010. As a graduate student, Jennifer is the recipient of both a Dean's Scholarship and a prestigious NSERC-CGSM grant.

GRADUATION AWARDS

The Fulton Family and Saskatchewan Institute of Agrologists Award
- Aimee Eggerman, Watson

Norman H. Horace Pearce Prize in Animal and Poultry Science
- Matt Kumlin, Cochrane AB
- Jill Keet, Asquith

Molson Canada Award of Excellence
- Andrea Stone, Loreburn

P.M. and Y.Y. Huang Distinguished Award in Soil Science
- Jennifer Bentz, Saskatoon

Saskatchewan Institute of Agrologists Gold Medal
- Jennifer Bentz, Saskatoon

Frank Sosulski Graduation Prize in Plant Science
- Jodi Souter, Saskatoon

William Allen Memorial Prize in Agriculture Economics
- Nikki Gannon, Gouldtown

POST-GRADUATE AWARDS

Ajinomoto Heartland/Halchemix Scholarship
- Stephanie Nilson

Alexander and Jean Auckland Post-graduate Award
- Misaki Cho
- Parul Jain
- Clare Sullivan

John Baerg Award
- Douglas Grahame

John Blake Memorial Post-graduate Scholarship
- Allison Ozog

Class of '43 60th Anniversary Award
- Melissa Arcand

Canadian Wheat Board Graduate Fellowship
- Marija Pavleska
- Xiaoyu Liu

Canadian Wheat Board Fellowship in Agriculture Economics
- Buwani Dayananda

Dairy Farmers of Saskatchewan Scholarship
- Rachel Claassen

Dollie Hantelman Post-graduate Scholarship
- Yong Liu

F. V. MacHardy Graduate Fellowship in Grasslands Management
- Christiane Catellier

O.M. Elviss Post-graduate Scholarship
- Misaki Cho

Maurice Hanson Sr. Post-graduate Award
- Lindsay Tallon

L.H. Hantelman Post-graduate Scholarship
- Douglas Grahame

S.N. Horner Post-graduate Scholarship
- Dayna Dreger
- Lindsay Tallon

Paulden F. and Dorathea I. Knowles Post-graduate Scholarship
- Aron Cory
- Manu Pratap Gangola
- Udhaya Kannan
- Yang Lin

Norman and Kathleen Lean Post-graduate Scholarship
- Asim Biswas

Roderick Alan McLean Memorial Award
- Teketel Haile
- Parul Jain

Molson Canada Scholarship
- Aura Helena Corredor Quinonez

Harris and Lauretta and Raymond Earl Parr Memorial Scholarship in Agriculture
- Asli Can Karaca
- Aman Deep
- Majed El Feghaly
- Hanny Elsadr
- Digit Guedo
- Yong Liu
- Krystalee Wiebe

Barbara and Frank Pavelich Post-graduate Scholarship
- Morgan Sather

Martin Pedersen and Family Post-graduate Scholarship
- Hannah Konschuh
- Zaharias Matheos
- Kaitlin Strobbe

Purdy Post-graduate Scholarship
- Samiran Banerjee
- Asim Biswas

Putnam Family Memorial Award
- Alana DeBusschere

Dr. Robert E. Redmann Memorial Graduate Scholarship in Plant Sciences
- Digit Guedo

Saskatchewan Pulse Crop Development Board Dr. Alfred E. Slinkard Scholarship
- Clare Sullivan

Saskatchewan Pulse Crop Development Board Don Jaques Memorial Fellowship
- Janelle Fouhse

Saskatchewan Institute of Agrologists Scholarship
- Jocelyn Stefankiw

Syngenta Scholarship in Sustainable Agriculture
- Dilshan Benaragama

Rene Vandeveld Post-graduate Scholarship in Crop Science
- Gwinyai Chibisa
- Hanny Elsadr
- Udhaya Kannan
- Yang Lin
- Yong Liu

Warburtons Award in Agriculture Post Graduate Scholarship
- Krystalee Wiebe

John Wickhorst Memorial Scholarship
- Melissa Arcand
- Jocelyn Stefankiw

C. Paul W. and Marianne M. Ziehlke Post-graduate Award
- Gwinyai Chibisa
- Yang Lin

faculty honours

JULY 1, 2009 - JUNE 30, 2010

ANIMAL AND POULTRY SCIENCE

Dr. Phil Thacker
Canadian Animal Industries Award
in Extension and Public Service

Professor Emeritus Red Williams
'Top 25 Canadians'
Canadian Association of Retired Persons

Professor Emeritus David Christensen
University of Saskatchewan
Distinguished Researcher (2010-2013)

FOOD AND BIOPRODUCT SCIENCES

Dr. Nicholas Low
Teaching Award of Merit
North American Colleges and Teachers of Agriculture (NACTA)

Dr. George Khachatourians
Canadian College of Microbiology's highest designation of Academic and Research Microbiologist in recognition of his leadership in the education of Canadian microbiologists and his contributions to the advancement of knowledge in microbiology.

Dr. Vladimir Vujanovic
2010 finalist for the SABEX Award of Innovation

PLANT SCIENCES

Dr. Curtis Pozniak
2010 New Researcher Award
University of Saskatchewan
and
Canadian Society of Agronomy
Young Researcher Award

Dr. Gordon Rowland
Canadian Society of Agronomy
Distinguished Agronomist Award and Recognition from the Saskatchewan Flax Commission and SECAN for his outstanding contributions to the flax industry in Canada.

Dr. Brian Rossnagel
Outstanding Service Award
American Oat Workers and University of Saskatchewan
Distinguished Researcher (2010-2013)

Dr. Sabine Banniza mentored Ms Rui Song, a high school student who won first prize at the National Sanofi-Aventis Biotalent Challenge

Drs. Bryan Harvey and **Brian Rossnagel**, developers of Harrington barley, which was selected as 2009 "Seed of the Year" in recognition of its contribution to the economy, agriculture and the Canadian public in general.

SOIL SCIENCE

Dr. Dan Pennock
Fellow of the Canadian Society of Soil Science

Dr. Jeff Schoenau
2010 USSU Teaching Excellence Award

Dr. Angela Bedard-Haughn
2010 Provost's Outstanding New Teacher Award and Dean's Award for Teaching Excellence

Dr. Ken Van Rees
Provost's College Award for Outstanding Teaching

Dr. Fran Walley
Agricultural Students' Association
Professor of the Year and Honorary President

Professor Terry Tollefson
Dean's Award for Teaching Excellence

Dr. Bert Vandenberg
NSERC Industrial Research Chair

organic opportunities

ORGANIC INTEREST INCREASES DEMAND FOR RESEARCH

Dr. Steve Shirtliffe, Dr. Diane Knight

"After I give a talk on organic agronomy, I almost always experience a scrum of organic farmers peppering me with questions," says associate professor Dr. Steve Shirtliffe, whose research focuses primarily on organic applications. "There's a huge hunger right now for research that can help organic farmers since they were marginalized for so many years."

In North America, Saskatchewan boasts more organic farmers per capita than any other region. International demand for organic grains and organic pulses requires advanced research for improved crop yields. Dr. Shirtliffe in Plant Sciences and Dr. Diane Knight in Soil Science are two key figures in the organics research field at the College of AgBio.

When Dr. Shirtliffe arrived at the U of S in 1998 from the University of Manitoba, he studied conventional agriculture techniques. But in 2000, he began field crop agronomy and weed ecology research on organic farms. Dr. Shirtliffe's current research focus involves creating agronomic techniques to reduce weed growth and increase crop yields. The 2008 ASA (Agricultural Students' Association) Professor of the Year also teaches several undergraduate courses that include Weed Control in Organic Agriculture, Weed Biology and Sustainable Crop Production.

Shirtliffe says organic farming requires a different approach to weeds than conventional farming methods. "That's essentially the theme of most of my research, which is to develop ways of managing weeds agronomically. Organic farmers develop a tolerance to weeds — a different aesthetic — that their fields will never be as clean as conventional agriculture. However, we've found that by employing multiple techniques, we've really been able to reduce weed pressures found in organic agriculture."

Dr. Shirtliffe says the big story in weed control is when researchers combine all their techniques for an 'additive effect.' "By using optimized agronomy, we see noticeable weed reduction and increased crop yields. If we double our seeding rate, seed a more competitive crop variety and use in-crop harrowing, we're starting to see a 70 per cent weed reduction," says Dr. Shirtliffe, who with colleagues Eric Johnson, Dilshan Benaragama and Julia Baird, find especially promising results. "Essentially, good agronomy can be a very effective weed control method."

While Dr. Shirtliffe studies the plants above the soil, Dr. Diane Knight's research in the Soil Science department delves below the ground. Dr. Knight completed her doctoral work at the U of S and joined the College of AgBio in 1997. The Saskatchewan Ministry of Agriculture Research Chair and professor spends about 70 per cent of her time on Organic Management research. "My focus right now is — and always has been — on soil fertility," says Knight. "My colleagues and I focus mainly on two of the nutrients that make things grow: nitrogen and the big one in organic production, phosphorus. Nitrogen is easier to manage because of the involvement of pulse crops and forage legumes, such as alfalfa and clovers, all of which fix nitrogen. Phosphorus is a bigger challenge."

Dr. Knight's present research focuses on soil fertility management in organic production systems. One soil management process, green manuring, incorporates living plants such as lentil plants, into the soil as fertilizer.

"We want to find out what works on the Prairie provinces where we don't have a lot of access to animal manures that traditionally supply many of the plant nutrients," says Dr. Knight. "We put in organic fertilizers to supply nitrogen and phosphorus, but we're also looking at microbial inoculants such as different kinds of bacteria and fungi that increase the availability of the nutrients for plants to take up." Dr. Knight and Dr. Shirtliffe's applied research focus is primarily for organic applications. Yet their findings do contain industry crossover potential for international agriculture applications.

"Even though much of what Dr. Shirtliffe and I do is organic, we're also looking for ways to communicate our research information to conventional farmers," says Dr. Knight. "Most of the information is just basic management. It'll benefit anyone. There's a big focus to overlap into both sectors and make organic research more accessible."

breeding success

DR. CURTIS POZNIAK PRESENTED WITH TWO MAJOR AWARDS

In October 2010, Dr. Curtis Pozniak is in the field, harvesting the last of an estimated 35,000 test plots around Saskatoon. "We have plots all over Western Canada, from Brandon, Manitoba to Alberta's Peace River country where we have collaborators that harvest some of those plots for us," says Pozniak. "Most of what we harvest is within an hour-and-half drive from Saskatoon."

Pozniak, 35, was born into agriculture on a family farm near Rama in east-central Saskatchewan, so he understands the challenges that face today's farmer. Pozniak and his wife, Maureen, both have undergraduate degrees in agriculture from the U of S.

"I don't get to the farm much anymore because of the demands of my job with research grants, training graduate students and a large breeding program," says Pozniak. "The reality is that we're out seeding, spraying and harvesting at the same time as farmers."

Since he joined the U of S in 2003, Dr. Pozniak has established an internationally recognized wheat breeding and genetics program at the university. His genetic research focuses on understanding the genes underlying expression of key traits in wheat, and the DNA markers he has developed are utilized by his research group and by laboratories in Mexico, the U.S., Australia and the E.U.

"...Our program at the U of S has developed a couple of new wheat varieties that could have a significant impact on Western Canadian agriculture..."

Pozniak's molecular screening capability has benefited other researchers and his research program has attracted millions of dollars in funding from a variety of public and private agencies; in 2009–2010 alone, his program received ten new grants. Since 2004, Pozniak, in collaboration with his colleagues and students, has published 24 scientific manuscripts.

Last year, Dr. Pozniak received The Canadian Society of Agronomy's Young Agronomist Award, which has been handed out since 1993. The award was established to recognize new and emerging agronomists, under-40, that are making a significant contribution to Canadian agriculture. "I was recognized more for my plant breeding work. Our program at the U of S has developed a couple of new wheat varieties that could have a significant impact on Western Canadian agriculture," says Dr. Pozniak.

"...his research program has attracted millions of dollars in funding from a variety of public and private agencies..."

The durum variety, CDC Verona, is the first wheat cultivar (new variety) developed at the U of S in 18 years. "It took a long time, but we were able to get it to the finish line." Dr. Pozniak feels the Young Agronomist Award was a nod to his contribution to the plant breeding effort and to some extent the development of the new DNA marker technologies being used in AgBio wheat breeding programs. "We're also collaborating with other plant breeding programs in Canada and internationally."

Dr. Pozniak's award run continued in 2010. At the U of S convocation ceremony in October, Pozniak was awarded the University of Saskatchewan New Researcher Award. The award is presented annually to a member of the U of S research community that has received their PhD within the last ten years. It recognizes faculty members for significant contributions to knowledge or artistic creativity in their areas of expertise, with an emphasis on work undertaken while employed at the U of S.

"Much like the Young Agronomist Award, the New Researcher Award recognizes young scientists like myself who are becoming leaders in their field," says Pozniak. His productivity, in terms of research dollars that he's brought into the U of S, the publications and the training of graduate students to produce the next generation of scientists, has made him an international leader. "Being invited to give presentations at international conferences in your area of expertise is a good indicator that the rest of the world is paying attention to what you're doing," says Pozniak.

Pozniak's research work is conducted in the Crop Development Centre (CDC), which is a plant-breeding unit within the Department of Plant Sciences. "As a plant breeder, my job is to develop new varieties of durum wheat, high-yielding wheat for feed and fuel and the Canada Prairie spring wheat class, which is a higher quality but lower protein alternative to bread wheat."

What Dr. Pozniak adds, and what is different from other Canadian university research, is to apply the latest in DNA sequencing efforts to plant breeding so farmers can take advantage of it. "What makes my research unique is that not only am I running a breeding program but I'm integrating the latest technologies into not only my program but also other wheat breeding programs at the CDC and around Western Canada," he explains. "We're doing a lot of genomic research where we're attempting to identify, sequence and characterize some of the genes that are causing the phenotype that we're looking for — higher yields, earlier maturity, disease resistance and enhanced end-use quality."

Pozniak is also working on a number of traits in durum wheat that have propelled the U of S to the international stage. "We've sequenced a couple of very important genes for the bright yellow colour in durum wheat and are currently targeting a gene that reduces heavy metal contamination in the grain for a healthier product."

As for expanded market potential, Dr. Pozniak says that durum is increasingly exported to the eastern Mediterranean region for couscous and flat breads. "Durum has a nice nutty flavour and consumers in that region especially like the yellow colour," he says.

With two major awards to his credit, this young academic still has many career milestones ahead. "I'm ambitious," he laughs.

Pozniak attributes some of his success to strong mentors within the Crop Development Centre. For his PhD, he studied under wheat breeder Dr. Pierre Hucl at the U of S and still collaborates extensively with his former professor.

"He's still very much a mentor. When you're starting out, you are constantly faced with new challenges, so you learn a lot along the way," says Pozniak. "Working with a strong group of world-renowned plant breeders at the CDC has been a rewarding experience and my success has very much been a team effort." ■

risky ex

AgBio can boast another first. In September, the U of S created the first training program in North America for human and ecological risk assessment.

The Natural Sciences and Engineering Research Council (NSERC) has awarded a $1.6 million federal grant to Professor Steven Siciliano. NSERC's CREATE (Collaborative Research and Training Experience) program is an initiative to train a new class of professional — one that's in-demand by industry and government agencies — at the national or international level. The training initiative prepares research trainees for future careers and by improving areas such as communication, collaboration and professional skills, it also improves the mentoring and training environment for Canada's 21st century researchers.

The U of S is one of 20 recipients of a CREATE grant. In addition to the $1.6 million, funding will come from industry internships ($500,000), stipends provided by students' supervisors ($2.2 million) and from U of S graduate student and competitive scholarships ($460,000). The majority (60 per cent) of CREATE funding is directed at these priority areas: environmental science and technologies; natural resources and energy; health and related life sciences, and technologies; and information and communications technologies.

The CREATE grant will be applied to the new Human and Ecological Risk Assessment (HERA) program in the College of AgBio, which began in September 2010. HERA's objective is to train students as risk assessors, those individuals who will strive to minimize the health hazards and impact industry has on human health.

This new type of professional will possess 'real world' skills that can assist governments determine and regulate health and ecological hazards from possible contaminants and new products, such as bisphenol A content in household plastics and lead levels in imported toys.

Dr. Siciliano, a soil toxicologist in the Department of Soil Science, is project leader. Over the next six years, Dr. Siciliano will direct the CREATE program at the College of AgBio. Siciliano, who conducts much of his research in the Arctic, says that companies urgently require risk assessors yet it's difficult to locate and hire trained individuals for this highly specialized vocation.

To fill this need, the HERA program has enrolled 60 PhD or JSD (Juridical Science Doctor) students that will participate in the

ploration

AN NSERC GRANT CREATES THE FIRST TRAINING PROGRAM IN NORTH AMERICA FOR HUMAN AND ECOLOGICAL RISK ASSESSMENT

CREATE HERA program's four distinct components: advanced specialized course work, Summer Institute of Risk, work placement and professional development.

"Canadians face an increasing number of potential health risks from environmental contaminants," says Dr. Siciliano. "This program will establish a standardized, interdisciplinary framework for risk assessment that is unique in North America — if not the world."

HERA's objective is to train students as risk assessors, those individuals who will strive to minimize the health hazards and impact industry has on human health.

The reason for the term 'collaborative' in the CREATE acronym is because of the high quality of its participating individuals, explains Dr. Siciliano. "We have specialists from Dalhousie University who are environmental lawyers that are concerned with how regulations in Canada pertain to regulating environmental pollutants, both in humans and in consumer products, we have public health professionals such as nurses, MD PhDs who work on workplace exposure and toxicologists such as myself, including professional risk assessors."

To provide local expertise for HERA, Siciliano will work with U of S toxicologists Lalita Bharadwaj, John Giesy and Markus Hecker.

The CREATE program has brought together people who are involved from the basic chemistry all the way to the applied societal dimensions in communications. "For instance, we have two people who are experts in working with small northern communities on not only how you communicate risk but also to interface with those communities to understand what they think is considerable risk and what you should be looking at for them."

The professor teaches four classes in the Toxicology Centre and soil science department: Environmental Fate and Transport of Toxic Substances; Soil Toxicology Risk Assessment; Exposure Assessment, which studies how many chemicals a human has absorbed; and Human Health Risk Assessment, which calculates decisions on what might pose a risk to human health.

His time is evenly split between teaching and research. "The CREATE program requires a heavy teaching commitment," explains Dr. Siciliano. "The benefit is that the majority of the funds will go towards students. They need to be taught the technical aspects of risk assessment."

The HERA training is hands-on and deals with current hazards to human health. "For example, our students are looking at things in the courses like the risk from all the dental materials that dentists put in your mouth. This provides experiences so that students are able to analyse consumer products as well as industrial operations."

In the Exposure Assessment course, students study the Gulf of Mexico oil spill and what that means for exposures globally.

"So we go from the small — what dentists put in your mouth — to the very large such as what will happen to the world because we've just had the largest oil spill in history," says Dr. Siciliano.

Dr. Siciliano recently returned from a research trip to Tasmania, Australia where he worked with the Antarctic Research Division, which has links to our own Arctic region. "One of the reasons I was invited there was to understand the risks to the

Antarctic ecosystems." Siciliano, together with other international scientists, has committed to more Antarctic trips and expeditions over the next decade. "One of the problems is that when people work in the southern polar region, often there are a lot of spills and since the science is so limited, risk assessment is also limited in the Antarctic."

He was able to help other scientists plan how to advance the risk assessment for eastern Antarctic, which is very similar to Canada's Arctic. Land farming applications that will be deployed at the Casey Research Station in eastern Antarctic are very similar to a land farm Siciliano is working on in Iqaluit, Nunavut.

"The Antarctic has almost the exact same problems as we do in Canada's Arctic: they have melt water issues, the thaw period is very limited in duration, the same engineering limitations, the same soil problems and the same sorts of risk."

adapting in a climate of change

PLANNING FOR AGRONOMIC ISSUES

Ever since the work of the Intergovernmental Panel on Climate Change (IPCC) in the early 1990s, climate change has become a very popular 'buzz-word' around the world. Although some controversy does exist, there is consensus that this change is already taking place. By the late Nineties, Environment Canada had completed a major review of climate change in Canada called "Canada Country Study: Climate Impacts and Adaptation". This seven part series raised a number of concerns and brought about much-needed awareness of climate change in Canada. AgBio Professor Suren Kulshreshtha was associated with this review of water resources.

Early in the 21st Century, impacts of changing climate were evident in Canada and globally. Adaptation was regarded as a necessary complement to mitigation in addressing climate change. In 2005, Natural Resources Canada was entrusted with a review of current knowledge in this area. Dave Sauchyn of the University of Regina and Professor Kulshreshtha were selected to be co-leaders of an assessment of the Prairie region. Together with 12 other scientists in various areas related to climate change, they prepared a chapter for the Natural Resources Canada Report entitled "From Impacts to Adaptation: Canada in a Changing Climate 2007". This assessment, released in 2008, included issues surrounding water resources, ecosystems and biodiversity. Also included were impacts on sectors such as agriculture, forest management, transportation, social landscape, health and government institutions. The authors had written an extensive review of over 300 studies pertaining to the region. Since there were limits to the overall size of the document (which was being prepared for the policy makers), some of the details of the document so prepared had to be left out.

At the same time, Professor Kulshreshtha was also involved in a project funded by Social Science and Humanities Research Council of Canada called "Institutional Adaptation to Climate Change – Comparative Study of Dryland River Basins in Canada and Chile." This was a comparative study of climate change and its socio-economic implications for the two river basins – South Saskatchewan River basin in Canada and Elqi River Basin in Chile. This project was completed by December of 2009.

The leftover pieces of work for the Natural Resources Canada Assessment and work completed under the Institutional Adaptation to Climate Change project became the start of a book project. Dave Sauchyn, Polo Diaz and Suren Kulshreshtha edited a book entitled: "The New Normal: The Canadian Prairies in a Changing Climate". Kulshreshtha contributed to seven of the 25 chapteres in the book, which conculded that, "whatever options we choose, the future ecosystems that result from climate change would be unprecedented. We have options, but the past is not one of them."

Many studies can be developed based on the material that is contained in some of these publications. With the past assessments of climate change in mind, what are the implications for farmers in the Canadian prairies?

In 1867, Captain John Palliser led an expedition to study the agricultural potential of Canadian prairies and concluded much of it was wholly unsuitable for agriculture. A decade later, Canadian botanist John Macoun toured the same area and came to the opposite conclusion – a view endorsed by the new Canadian government, which supported building the Canadian Pacific Railway through the southern prairie and encouraging settlers to follow in its wake. But this is not a case where two experts looked at the same data and came to opposite conclusions. Palliser appears to have done his survey following a seven-year drought. What he saw was an area turning to desert and had Macoun been with him at that time, he surely would have had grave doubts as well. Arriving after the drought had passed, Macoun saw something else, a land with rich potential.

"Those farmers who anticipate what might happen and prepare for it will stand a much better chance of survival than those who don't."

This is something the grain and oilseed farmers of today should bear in mind as they consider the merits, or lack of them, in the debate about climate change. This is not to say that Palliser's prairie, one populated by cacti and marked by sand dunes, is about to return. But it is certainly possible. Historical climate data shows that punishing multi-year droughts were a regular occurrence for a very long time. So what we consider normal, really isn't. Even a modest shift in climate could see a return of frequent multi-year droughts and that would have a huge impact on Prairie agriculture.

However, the impact would not be uniform: Those farmers who anticipate what might happen and prepare for it will stand a much better chance of survival than those who don't.

So this article isn't an argument about whether or not climate change is real. Rather, it's an argument that the threat is real enough that producers should be thinking of how climate change could affect their farming operations. Even if you believe all the talk about global warming is nonsense, it doesn't hurt to look at the specifics of the predictions being generated by climate-change models.

Let's start with the positive side. The current models predict that Prairie grain farmers can expect to see more frost-free days, more growing-degree days and about the same level of precipitation.

That's good news, is it not?

Unfortunately, no – for several reasons. First, the models predict a change in precipitation patterns – less snow and more rain. Both have significant implications for farm management. Except for those years when there is a sudden melt in early spring, snow is a much more reliable form of precipitation because it slowly percolates into the soil where it can be utilized by emerging crops. Less snow frequently means less available moisture in spring and when you combine that with more frost-free days – which means generally early springs – farmers will be faced with some difficult decisions on when to begin planting.

This was the case this past year as farmers grappled with the decision on whether to seed earlier than normal and risk a killing frost, or to wait and risk poor germination because the soil had dried out.

There is some evidence that we are already seeing pests and diseases extending their reach northward.

Combined with longer, hotter and more frequently dry summers, this has major implications for what is grown. Cereal crops are likely to suffer most, although canola also benefits from cool nights and suffers when temperatures rise into the 30s and there is little rainfall. If the models prove correct, you can expect to see more pulses being grown and also more corn. The popular wheat-canola-peas rotation model may no longer do the job it once did. What sort of rotation will replace it?

Indeed, that is just one of many, many questions that producers may be facing in the coming years. And you don't need catastrophic climate change to occur – a return to the climate that John Palliser encountered in 1867 would bring about the same scenario.

It's tempting to think, 'Well, if this happens, we can't do anything about it. We'll just have to deal with what Mother Nature throws at us.'

Professor Kulshreshtha wouldn't recommend hope as a strategy. Rather, he would advise producers to do what they can to strengthen the management of their farm business. No doubt, the vast majority of farmers will devote even more attention to agronomic issues: more creative crop rotations, more scouting of diseases and pests, more focus on getting seed in the ground while conditions are optimum and so on. But all of these

"...farmers grappled with the decision on whether to seed earlier than normal and risk a killing frost..."

Of course, most areas had an excess of moisture during much of the growing season, but this is another hazard of climate change – more 'extreme weather events,' such as more intense downpours.

How do farmers prepare for that? Well, it casts drainage in a new light. This past year, it would have been helpful for many farmers to have drainage systems which remove excess moisture as quickly as possible. But if the models are right, this won't be a winning strategy in the future because downpours will more often be followed by weeks of dry weather. In that case, it could be more advantageous to find ways to retain at least some of that water on the land, in retention ponds, and to invest in irrigation systems so you can use that water when rains stop coming. Soil erosion and leaching of nutrients are also going to pose more of a threat.

The models also predict warmer winters. Again, that sounds nice at first but has negative implications. Bitterly cold winters aren't just hard on car batteries, they're also hard on pests and diseases.

decisions will come with a cost and frequently, a risk. Success in farming today already demands knowing the cost-of-production for every field and every crop. This is going to be even more crucial if there is climate change or a reversion to the weather patterns of Palliser's day.

Farmers will need to head into every spring not just with a Plan, but with a Plan B and a Plan C, and maybe a D, E and F as well. Each alternative will need to come with a cost estimate because each will come with a measure of risk attached. If a farmer is unable to 'run the numbers,' he or she will essentially be making a blind wager. That is not a good strategy.

Many in the farming community, as in society as a whole, do not believe in climate change. From a business point of view, it doesn't really matter what your opinion is. No matter which side is right, those who pay attention to the risks, are prepared with alternatives and are ready to implement them will have the advantage. ■

building benefits

AGBIO MOVES AHEAD WITH SUBSTANTIAL CAPITAL PROJECTS AND UPGRADES

Production agriculture continues to be a major focus of AgBio and is an area of excellence that distinguishes this college from other Canadian faculties of agriculture. Changes in all areas of agricultural practice requires continuous upgrading of research facilities to meet the needs of today's agricultural industry. Other changes are required to meet the province's need to see more value-added processing of agricultural products. The college is fortunate to have a number of facilities and land on-campus that support teaching and research in production agriculture and which help to recruit students to programs. However, many of these are showing their age and are no longer suitable for or typical of modern production agriculture.

Several years ago, with support from the Dairy Farmers of Saskatchewan and the Saskatchewan Milk Control Board, the college proposed the redevelopment and expansion of the existing dairy unit to bring teaching and research facilities up to modern standards. "Current facilities were constructed in the 1970s and no longer reflect what one would find on a typical Saskatchewan dairy farm," says Dr. Bernard Laarveld. "An up-to-date facility at the university will improve research productivity and relevance, including new research on sustainable technologies."

The college maintains a Holstein herd of 65 milking cows, which are housed on-campus. The dairy unit plays a significant role in teaching undergraduate and graduate students in AgBio and the Western College of Veterinary Medicine. The new dairy research and teaching unit, which is expected to cost $10.7 million, recently moved from the design stage to the construction phase.

The renewed facility will emphasize teaching, applied research, outreach and technology transfer activities. The benefits of the new dairy barn are numerous. It will feature both robotic and traditional milking capabilities, cattle housing and feed research areas, milk storage and support rooms, staff and visitor spaces, and a public viewing gallery. The existing facility will be renovated to house dry cows and replacement animals.

"We want to develop a site that technology transfer needs of U

Like the new dairy unit, the future beef cattle research and teaching facility will encompass an expanded, technologically advanced facility. Built in 1963, the existing beef unit is a growing and finishing operation with a capacity to hold 750 head of feeder cattle. The college will relocate the beef unit from its current location in the university's north management area off Circle Drive. The university is currently seeking a suitable land base to operate the facility. Land purchase and facility construction carries a price tag of $12.5 million.

Dr. John McKinnon, Saskatchewan Beef Industry Chair in the Department of Animal and Poultry Science, is leading the project. "We want to develop a site that meets the research, teaching and extension technology transfer needs of U of S faculty involved in beef cattle research," says McKinnon.

In co-operation with the western Canadian beef industry, the intent is to be able to develop a modern research facility that's a centre of excellence for beef cattle research. "We're looking at designing state-of-the-art facilities for nutrition research, for animal health research and for more basic metabolic research that would then transfer over to some of the more practical onsite research." Leading-edge research and innovative technology will be targeted at the growth and development of the Canadian beef industry.

Research at the new facility will be conducted by members of the Sustainable Beef Systems Research Group, which is comprised of scientists from AgBio, the College of Engineering and the Western College of Veterinary Medicine. Collaborating scientists from Agriculture and Agri-Food Canada, and faculty from other universities contribute to the work of the group. Members are recognized internationally for their expertise in beef cattle science and for their strong ties with industry.

The new facility will benefit beef production teaching at the undergraduate and graduate levels. Each year, approximately 70 veterinary and 40 animal science students graduate from the U of S and in the past 10 years more than 100 graduate students have been trained by the Sustainable Beef Systems Research Group. Research expertise is in breeding and genetics, health and nutrition, behaviour, meat quality, animal housing, grazing and pasture management; the focus is on beef cattle raised in environmentally sustainable production systems.

Located on the main floor of the ag building, the controlled environment facility, also known as the phytotron, is an indispensable tool in plant and soil science research, and teaching. The phytotron is a plant growth facility that enables three full cycles of plant production in one year. The controlled environment units can simulate a wide range of conditions and have been critical to cold hardiness research. The 183 growth chambers or cabinets provide scientists with the precisely controlled environment — temperature, light, humidity — they need for plant breeding, crop development, plant and soil science research.

However, the ageing facility is currently running at only 63 per cent efficiency. The fluorescent lighting system is outdated and costly to operate. Newer fluorescent lights and ballasts are much more efficient. "We'll

meets the research, teaching and extension of S faculty involved in beef cattle research..."

save approximately 50 per cent on our lighting electrical costs by changing the lighting and in turn we'll also be reducing our heat load by approximately 50 per cent," says Adam Harrison, facility manager.

The phytotron renewal project carries a budget of $12.5 million and is separated into three phases: light system replacement; chiller replacement (the central chiller system removes the heat generated in each unit); and controller replacement (each unit is controlled by a small computer — now 20 years old). The phytotron upgrades will permit scientists to greatly expand their research capacity and for students to gain access to the facility to conduct research related to their education.

Funding from the Saskatchewan Ministry of Agriculture has enabled establishment of a Bioprocessing Pilot Plant. The 279 sq m. (3000 sq. ft) facility has recently been equipped with over $1.2 million in new, industrial-grade scientific equipment designed for the isolation of valuable components from Saskatchewan crops. The new equipment's various functions will allow continued research, increase productivity and teaching capacity, and support the creation of new spin-off businesses in the growing food and bioproducts sector. With its 'industrial scale-up' tools, the pilot plant is the ideal facility from which many areas of crop utilization research can be supported.

The equipment will allow extractions and chemical modification to be conducted under various conditions. The new capability has the capacity to isolate significant quantities of compounds while achieving purity levels previously unattainable at this scale at the U of S. The pilot plant facility is unique to western Canada.

"We're focused on finding valuable natural compounds. There is a wide range of plants that we can study, whether from wild or domesticated crop species," says Dr. Martin Reaney, who holds a Ministry of Agriculture Strategic Research Chair. Dr. Reaney is currently working with flax, which contains cyclic-peptides. Those compounds will be used in pharmaceuticals and industrial applications through a chemical synthesis. "Researchers are extracting high value compounds where no other researchers have looked for high value compounds before, so we're looking for a natural product with a potentially very highly useful application," he says.

According to Reaney, whenever researchers are working with biomass, there will be a silver lining where the value in every biomass is much greater than the typical application of the biomass. "We've looked extensively at the liquid by-product of fuel ethanol processing. It doesn't matter whether it's wheat or corn-based ethanol, we discovered that the waste stream contains a compound used to manufacture an Alzheimer's drug." In 2009, the U of S patented this innovative process for isolating the compound to be used as treatment for Alzheimer's disease.

The new integrated facility will help scientists and industrial partners to develop and enhance innovative industrial processing of agricultural materials and then transfer the technology. "When we do our research in the pilot plant we can take it directly to industry where it can be commercialized," says Dr. Reaney. "This new equipment allows us to add a new capability to the University of Saskatchewan." ■

pivotal partnerships

SASKATCHEWAN PULSE GROWERS CONTINUE TO PLAY AN INTEGRAL ROLE IN THE COLLEGE OF AGBIO

Through a long history of public engagement, the College of Agriculture and Bioresources at the University of Saskatchewan has played a crucial role in the development of the agriculture and food industries in Saskatchewan. Long-standing and new relationships with communities, industry and government continue to be strengthened through co-operative partnerships. Saskatchewan Pulse Growers (SPG) has been an important partner for over two decades.

SPG's mandate is to build a prosperous pulse industry through investment in research and market development.

"We've been partners with SPG for many, many years and they've been very generous to us," says Dr. Mary Buhr, dean of the college.

The partnership with SPG recently resulted in a $1 million donation to the Phytotron Renewal Project. The phytotron is a plant growth facility that enables three full cycles of plant production in one year. The controlled environment simulates a range of global conditions, including extreme prairie weather conditions such as drought and frost. The facility underpins plant and soil science research and teaching at the U of S.

The Crop Development Centre's (CDC) pulse breeding team relies heavily on facilities at the U of S, particularly the phytotron, to develop new pulse varieties. Pulse research encompasses peas, beans, lentils and chickpeas not only for human consumption, but also for other crop development, says Dr. Buhr. "Let's say you want to use the bean for foodstuffs and the remainder of the plant itself for other purposes. Sometimes we can use that remaining biomass for animal feeds and for other end products that include biofuels. SPG funding for infrastructure like the phytotron is a welcome addition; SPG has been very involved in supporting the enhancement of scientific research output, which includes research costs.

Garth Patterson, Executive Director of SPG, says the relationship with the college goes back before the formation of SPG in 1984. "In 1973, the U of S hired Dr. Al Slinkard, who we think of as the father of the pulse industry, for the newly formed Crop Development Centre."

Dr. Slinkard identified pulses as an opportunity for Saskatchewan crops. "There were very few acres of pulse crops planted in Saskatchewan, even into the early 1970s. It wasn't until Dr. Slinkard at the U of S and John Buchan at Saskatchewan Agriculture got the forerunner to SPG, the Saskatchewan Pulse Crop Growers Association, up-and-running in the 1970s that the industry really got going."

SPG currently represents over 18,000 pulse crop producers with a producer-elected board of directors comprised of seven pulse growers. SPG's mandate is to build a prosperous pulse industry through investment in research and market development.

The U of S/SPG partnership continues with an ongoing commitment to research funding. Patterson says the level of funding has increased as the pulse industry grows. Almost 99 per cent of SPG's pulse research funding is targeted towards the high-value human consumption markets in lentil, pea, chickpea and dry bean. The funding for other uses is very small.

"SPG is involved in a number of funding initiatives for the college. We have our current five-year, $9.1 million pulse breeding agreement with the CDC, some project-based funding with the college for 32 projects valued at $5,323,266 and SPG has also committed to infrastructure funding including raising $2.9 million for the Pulse Field Lab, contributing $100,000 for the Grains Innovation Lab, $626,116 for pulse research equipment and the $1 million investment into the phytotron." SPG also provides scholarship funding for graduate students.

Dr. Bert Vandenberg, a U of S pulse crop researcher, was recently awarded a prestigious national research position to conduct a five-year study on lentil genetics that could lead to more resilient and nutritious varieties. Dr. Vandenberg was awarded a Natural Sciences and

Engineering Research Council (NSERC) Industrial Research Chair. The position, intended to support applied industrial research, includes a $3.8 million grant from NSERC, which leveraged $2.6 million of SPG's pulse breeding program funding.

Currently, more than 30 per cent of the global lentil supply originates from lentil varieties developed by Vandenberg. Canada is one of the world's leading lentil producers and Saskatchewan grows 99 per cent of the lentil crop, with $1.8 billion in pulse crops exported in 2009.

Pulse researcher Dr. Sabine Banniza focuses on the area of pulse crop pathology, with particular emphasis on problems in Saskatchewan. Originally a postdoctoral fellow with Dr. Vandenberg, Dr. Banniza now holds a Ministry of Agriculture strategic research program chair. She works closely with the entire pulse breeding team of four plant breeders. Her research program studies the biology of fungal and bacterial pathogens and their interaction with pulse crops.

Dr. Banniza says that the connection between the U of S and SPG has been mutually beneficial. "Our connections to Saskatchewan Pulse Growers has been very strong and we cherish this relationship," says Dr. Banniza. "This close connection has definitely contributed to the success of the research programs in the college, but also to the Saskatchewan pulse industry. Everybody on our team would say the same."

collaborative learning

Students from Evan Hardy Collegiate participate in Bioresource Management Biology 20 class.

Historically, few urban high school students have considered AgBio as a college where they would pursue post-secondary studies. The development of new applied science programming to leverage disciplinary strengths in the college – BSc Agbusiness, BSc Renewable Resource Management, and BSA Food and Bioproducts — was undertaken to attract a broader student base.

"When the college changed its name in 2006, one of the reasons was to broaden focus to include biofuels and other bioresources," says Associate Dean Daniel Pennock. "But there was also a desire to get materials into the high school science curriculum that reflected that part of the puzzle."

Many companies in the agbio industry are concerned about renewing their work forces. They recognize that for the sector to be sustainable over the long term, greater effort must be made to attract bright and enthusiastic individuals as employees. At the same time, there has been an ongoing perception of limited career options in agbio among high school students, teachers and counsellors. Partnering with the secondary school system provides the information needed to combat this misperception. Providing science course resources, presentations and workshops for teachers enables both students and teachers to understand the role science plays in modern agriculture and the great range of employment prospects open to agbio grads.

The college initiative was co-ordinated by Jon Treloar, community liaison co-ordinator. Problem-based learning modules were developed and packaged as a Bioresource Management Biology 20 course. The learning modules reflect the broad focus of the college, introducing it into the high school curriculum through the use of examples relevant to Saskatchewan and to high-school aged audiences.

Doug Njaa, Evan Hardy principal, says the Bioresource Management Biology 20 course was initiated by two progressive science teachers, Tina Rioux and Karen Peterson, who originally met Jon Treloar at a science fair. "There's a lot of maturation that happens in these students throughout a semester of this course," says Njaa. "I would love to see more problem-based learning approaches. But it takes effort and some re-thinking by teachers who have to unlearn some things that have been in the culture for many years."

Treloar and several AgBio student ambassadors worked closely with the Evan Hardy teachers to implement the grade 11 program. Their collaboration resulted in an United Nations Environment Programme award for Education in Sustainable Development, which was awarded to recognize Evan Hardy's innovative content and successful program implementation. "Evan Hardy and the college have also implemented a new grade 12 course this year built on the same problem-based, learning format," says Dr. Pennock. "The recently introduced BSc in Renewable Resource Management is a logical post-secondary option for students who have taken the Bioresource Management Biology 20 and 30 courses."

The partnership with Evan Hardy is one aspect of the college's Experience Science in Agriculture and Bioresources outreach program. The program is built on the message that an in-depth understanding of science and innovation is crucial if the agri-cultural sector is to remain competitive. The program uses an innovative combination of workshops, teaching materials and school visits by agbio student ambassadors to take this message to prospective students throughout western Canada.

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Wiseman, Kelleen L
Wood, James R
Wreford, Dannie B
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with gratitude

REMEMBERING FRIENDS AND FACULTY

William Rekunyk was born in Moose Jaw, SK in 1928. He spent all of his life farming by Dunkirk, 30 miles south of Moose Jaw. Until he abruptly left school to farm with his family full time, Bill was an 'A' grade student, in spite of the large amount of time spent on the farm.

Bill started working for threshing crews at the age of 15. It was difficult work, but he never complained, as he loved farming. Bill also worked for the CP Railroad at 68 cents per hour. With the cattle to care for, he put in many sleepless days. Bill accumulated more than 2000 acres of land and raised cattle and grain in a challenging work environment. He also enlarged the 150 head cow/calf operation over the years.

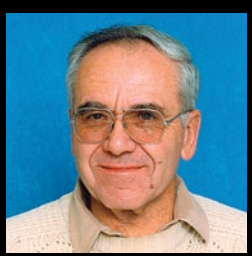
Bill became a top grain grower on very marginal land. A hard working man with a lot of determination, and with the advent of the combine, Bill did his farming without hired help. In 2005, Bill suffered a stroke but stayed on the farm for three more years. Bill passed away in 2009 and his ashes were spread into a strong wind on a high hill on his homeland, where he spent his entire life.

As one of his last wishes, Bill directed funding to the College of Agriculture and Bioresources for the William Rekunyk Fund in support of the Frontiers in Science lecture series in the college. The funding brings in guest lecturers who speak to the student body, as well as the general public, about relevant agriculture and environment issues of the day.

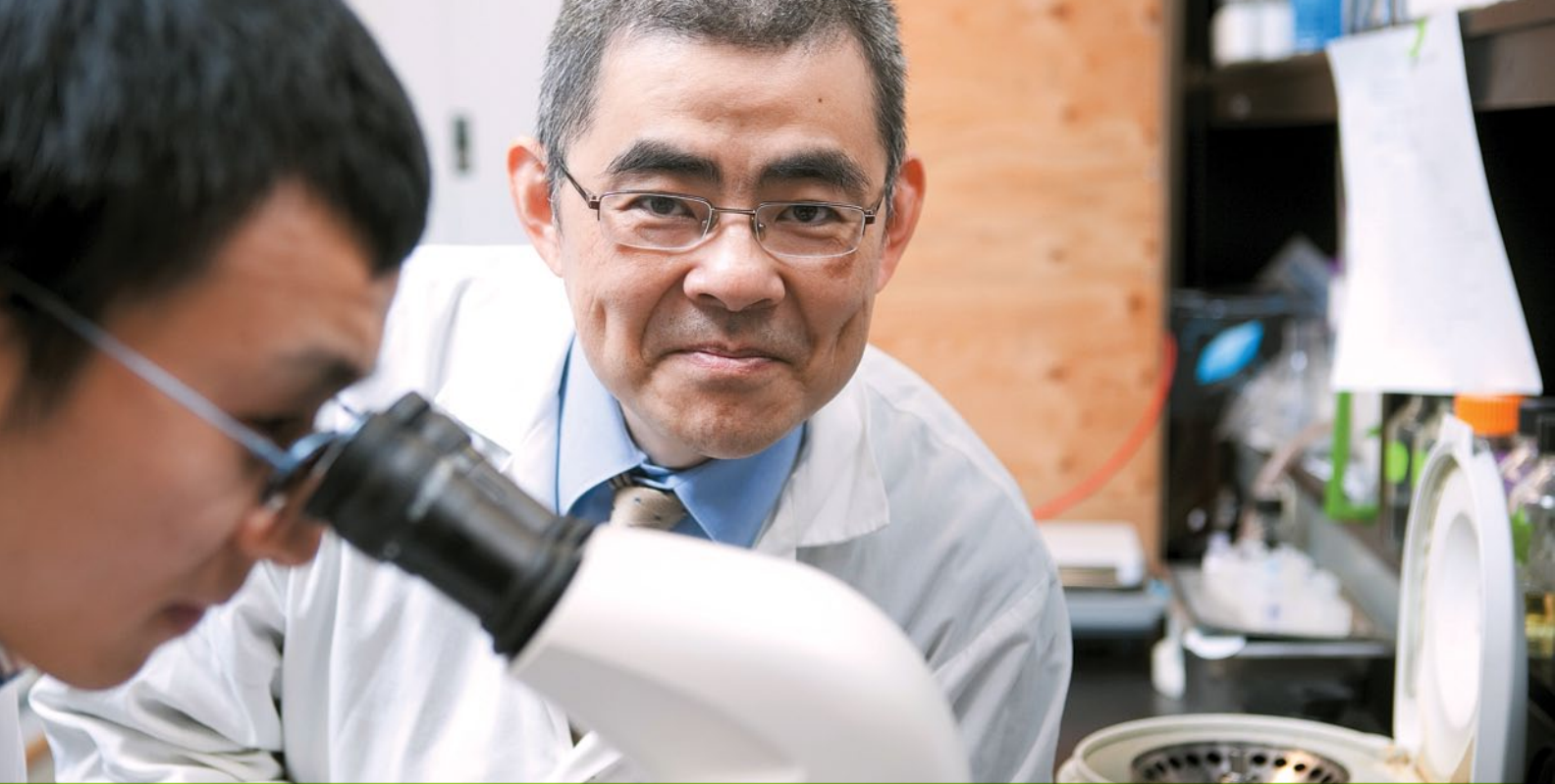
Frank Walter Sosulski passed away on March 5th, 2010 at the age of 80. He was born in Weyburn, SK on Dec. 2nd, 1929, where he attended public and high school. He obtained a Bachelor of Science degree in Agriculture from the University of Saskatchewan and Masters and Doctorate degrees from Washington State University. Frank joined the Department of Crop Science in 1958. While he was originally hired as a geneticist, Frank spent most of his career teaching and performing research in the area of crop quality.

His research and teaching interests encompassed the development of crop varieties, grain chemistry, processing technology, utilization and nutritive value of cereals, legumes, oilseeds, spices, specialty and forage crops. Probably his greatest contribution to the university and international agriculture was his involvement in the training of post-graduate students, post-doctoral fellows and visiting scientists. Frank was named a Fellow of the American Association of Cereal Chemists and a Fellow of the Agricultural Institute of Canada. He was a recipient of the Bronze Medal of the Polish Academy of Sciences, which is rewarded to recognize outstanding international scientists of Polish descent. He was a visiting professor in agricultural universities in Warsaw, Poland; Beijing, China; Mogadishu, Somalia, Mexico City and Hermosillo, Mexico. After completing 37 years of service to the U of S, Dr. Sosulski retired as Professor Emeritus in 1995.

After his retirement Frank established the Frank Sosulski Graduate Prize which recognizes the top academic BSA graduate from a major within the Department of Plant Sciences. Following is death, his wife Krystyna established the Frank Sosulski Memorial Travel Award to support graduate student conference participation.



Edward Alexander Maginnes passed away on May 20th, 2010 at the age of 77. He was born in Ottawa, Ontario. Ed attended MacDonald College in Ste-Anne-de-Bellevue where he received his BSc in 1956. He then returned to Ottawa, to work at the Experimental Farm and help establish his family's tree nursery. From 1957-1964 Ed attended Cornell University where he received his MSc and PhD. In that year he also accepted a position in the Department of Horticulture Science at the University of Saskatchewan where he performed teaching, extension and research until 2000. Areas of particular interest to Ed were turf grass growth and maintenance, and greenhouse management, particularly hydroponic production. In the 1970s he led a pioneering project on the use of waste heat from a local gas-line compressor for tomato production. Ed was also well known as the local "plant doctor" and was always available in his office in the horticulture header house to diagnose sick and dying plants. As a result Ed was instrumental in establishing Gardenline to serve that purpose. Ed was an honorary member of the Saskatchewan Turf Grass Association and the North American Lily Society. In his retirement Ed was instrumental in the development and construction of an Abbeyfield House (a home for independent seniors) in Saskatoon and was active on behalf of that organization.



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