INNOVATION FOR GROWTH

Trends and Successes Redefining Agriculture

Final Program and
Abstracts of Presentations and Posters

November 5 to 8, 2006

Fairmont Winnipeg, Winnipeg, Manitoba

Agricultural Institute of Canada
aic
Informed. Credible. Current.

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The Agricultural
Institute of Canada

Photo Courtesy of Highmark Renewables, Dawn of a New Era in Agriculture.

ONE OF THE KEY MESSAGES coming from the AIC's 2005 Forum Identifying Strategies to Support Sustainable Agriculture in Canada was the need to maintain a balance between improving conventional approaches to agricultural practices, while building capacity for innovation that will lead to new market opportunities for the sector.

Innovation has long been considered the best way to adapt to changing markets and moving targets, and is considered to be the key that will lead to future sustainable economic growth within the agriculture and agri-food sector globally. In Canada, many of the successful achievements in on-farm innovation have been overshadowed by the reports of dismal farm incomes and challenges associated with international trade and food safety issues.

The Agricultural Institute of Canada is hosting the conference *Innovation for Growth – Trends and Successes Redefining Agriculture* to provide a forum to showcase and celebrate the achievements in agricultural innovation within the traditional farming sector, and in non-traditional applications. It is expected that this conference will stimulate discussion and debate on how to strengthen the support and encouragement towards innovation that will lead to the long-term sustainability of our agri-food sector and rural community revitalization.

The integration of science, innovation, and information exchange are key to developing and implementing strategies that will advance sustainable agriculture. The conference will include presentations of case studies, market and consumer trends, new market opportunities, and advances in science and innovation.

The expected outcomes of this conference include:
- showcasing successful agri-food innovations,
- increasing awareness of the future of farming, market and consumer trends and opportunities, and
- exploring the potential for improved agri-food income by harnessing innovation, demographics and addressing consumer demands.

CONFERENCE CO-CHAIRS

Sandy Todd, PAg, President, Agricultural Institute of Canada

Dale Kelly, PAg, Vice President, Agricultural Institute of Canada

PROGRAM COMMITTEE

Sandy Todd, PAg, President, Agricultural Institute of Canada

Dale Kelly, PAg, Vice President, Agricultural Institute of Canada

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Jean Sullivan, Communications Coordinator, Agricultural Institute of Canada

Andrew Hammermeister, PAg, Research Associate, Organic Agriculture Centre of Canada, Nova Scotia Agricultural College

Ute Holweger, Regional Ag-Land and Agroforestry Manager, Agriculture and Agri-Food Canada

Elizabeth Roberts, Acting Chief, Agricultural Policy Framework Standards Secretariat, Environment Canada

Michael Slivitzky, Model Forest Coordinator, Natural Resources Canada, Canadian Forest Service

Leah Soroka, Farmer

Michael Trevan, PAg, Professor and Dean, Faculty of Agricultural and Food Sciences, University of Manitoba

Ed Tyrchniewicz, PAg, FAIC, Adjunct Professor, University of Manitoba

Rene C. Van Acker, University of Guelph, Department of Plant Agriculture

CONFERENCE ADMINISTRATOR

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AIC International Partners Award Recipient

Dr. Kwame Oppong-Anane

Dr. Kwame Oppong-Anane obtained his BSc, MSc and PhD degrees in 1971, 1975 and 1991 respectively. He started his career as a Livestock Officer with the Ministry of Food and Agriculture in Ghana in 1971. He trained and encouraged resource poor farmers to take up livestock rearing for poverty alleviation and income generation.

As the National Director of the UNDP funded Sheep and Goat Project, Dr. Oppong-Anane implemented a programme from 1978 to 1981 to breed and supply improved breeding rams and bucks for upgrading rural flocks countrywide and encouraged integrating sheep farming with plantation cropping. As Director of Animal Production he implemented strategies to improve the quality and quantity of feed available in communal grazing lands to herds of peasant farmers with resultant improvement in animal productivity.

As GSAP president from 1999-2003 and the Ghanaian Coordinator of the CSAS-GSAP Partnership Project since its inception Dr. Opong-Anane has worked assiduously to empower GSAP to influence government policies in livestock and related industries to the extent that the government now consults the Society on major policy issues. His holistic approach to agricultural development has resulted in a significant reduction in bush fires, empowered women and increased income of women as well as improved the health of households by reducing the incidence of snakebites and fatalities, sensitization and prevention of HIV/AIDS, malaria and common communicable diseases in the communities.

Dr. Oppong-Anane is a board member of two NGOs and has been a resource person on a number of donor funded projects. He has provided valuable services to local universities as a lecturer, supervisor and examiner of graduate students. He has given 12 invited lectures in Africa, Europe, North America and Australia and has authored or co-authored over 70 scientific papers. Dr. Oppong-Anane is now a CEO of an agricultural consultancy firm.

Dr. Oppong-Anane was nominated by the Canadian Society of Animal Science.

AIC Fellowship Award Recipient

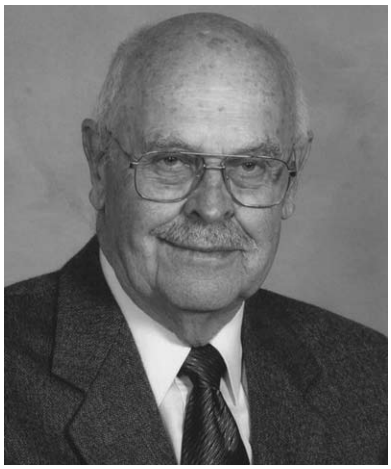
Digvir S. Jayas, PEng, PAg

The Agricultural Institute of Canada (AIC) is pleased to present a Fellowship in AIC to Dr. Digvir S. Jayas, Distingusihed Professor, Canada Research Chair in Stored-Grain Ecosystems and Associate Vice-President (Research), University of Manitoba, Winnipeg, Manitoba.

Digvir S. Jayas is a world-renowned leader in the field of grain storage research. His work provides both a theoretical and a practical basis upon which to improve the quality of farm and commercial grain storage systems. His research results, published as 215 refereed papers and over 353 other technical papers, have become the basis upon which grain storage recommendations are made throughout Canada, the north central United States and around the world. As a co-author of one book, co-editor of two other books, and co-developer of a Grain Storage CD, he has synthesized the published research and has significantly advanced the understanding of stored-grain ecosystems.

Dr. Jayas has helped to ensure the success of the agricultural engineering field through his teaching, training, and mentoring of undergraduate and graduate students alike. In particular, seven of his former graduate students now hold academic appointments of their own and now have the opportunity to continue to shape and inspire young minds. Beyond his research and teaching commitments, Dr. Jayas is an active contributor to both the technical societies to which he belongs, and his profession.

Dr. Jayas was nominated by the Manitoba Institute of Agrologists.



AIC Fellowship Recipient

Edward (Ted) Poyser, PAg

Ted Poyser, "Steward of the Land", has had a life long passion for soil and water conservation, but always in the context of enhancing the sustainability of rural communities. He continues to advocate for rural communities and sustaining the agricultural landscapes upon which they depend. His impact has been huge – on agricultural practices, agricultural policies and institutions, as well as on agricultural people. In his own self-effacing way, he encouraged, cajoled and, ultimately, coached people down the road of sustainable development in the agricultural landscape. Ted has special skills in quiet diplomacy. His constant good humour allows him to gently plant ideas that people accept. In his career he has successfully worked with Federal and Provincial governments of every political stripe. One of his greatest gifts to Manitoba is that there are now several generations of Ted's colleagues who now emulate his style of management and philosophy.

Throughout his career Ted has believed that farmers have the best idea of how to manage the soil and water, and that if appropriate programs and incentives are put in place the "right things will happen". This insistence that programs and practices had to be farmer-friendly and partnership focused culminated in Ted being inducted into the Manitoba Agricultural Hall of Fame in 2005.

Mr. Poyser was nominated by five individual members of the AIC.

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Innovative On-Farm Production II

Innovation in Science and Technology I

Innovation in Science and Technology II

Innovation in Resource Management I

Innovation in Resource Management II

SUNDAY NOVEMBER 5

3:00 pm
AIC Annual General Meeting

4:00 pm to 6:00 pm
AIC Members' Reception

MONDAY NOVEMBER 6

Morning

OPENING PLENARY

Session Chair: Sandy Todd, PAg, Past President, Agricultural Institute of Canada and Conference Co-Chair

8:30 am
Welcome and Opening Remarks
Conference Co-Chairs: Sandy Todd, PAg, Past President and Dale Kelly, PAg, President, Agricultural Institute of Canada

8:45 am
Welcome
Honourable Rosann Wowchuk, Minister of Agriculture, Food and Rural Initiatives

9:00 am
Klinck Lecture:
The Emerging Agricultural World
Hon. Carole L. Brookins, Former US Executive Director to the World Bank Group

9:45 am
Question Period

10:00 am
Networking Break

10:30 am
Enhancing Canada's Agri-Innovation System
Jack (John) Bamford, Director, Science, Policy and Planning, Science Bureau, Research Branch, Agriculture and Agri-Food Canada

11:00 am
Options and Opportunities – Investing Wisely Today to Ensure a Sustainable Future
Ellen Goddard, Cooperative Chair and Chair, Department of Rural Economy, University of Alberta

11:30 am
Human Capital
Michael Trevan, PAg, Professor and Dean, Faculty of Agricultural and Food Sciences, University of Manitoba

12:00 pm
Question Period

12:15 pm
Luncheon

MONDAY NOVEMBER 6

Afternoon

FOCUS ON SUCCESS

Session Chair: Dale Kelly, PAg, President, Agricultural Institute of Canada and Conference Co-Chair

1:30 pm

Ethanol: Why Saskatchewan, Why Now

Lionel LaBelle, President, Saskatchewan Ethanol Development Council Inc.

2:00 pm

Redefining Agriculture: Sustaining Agriculture Through Innovation and Diversification

Al Scholz, PAg, CAC, Executive Director, Saskatchewan Agrivision Corporation Inc.

2:30 pm

Question Period

3:00 pm

Networking Break

3:30 pm

Focus on Success

Carol Husband, Husband's Foods
Keith Rueve, Pound-Maker AgVentures
Leopold Bourgeois, La Fleur de Pommier

4:30 pm

Question Period

POSTER SESSION

5:00 pm

Benefits of Agrofrestry in Canada

Gary Bank, Agroforestry Specialist, Agriculture and Agri-Food Canada, Prairie Farm Rehabilitation Administration

The Use of Property Tax Credits to Conserve Natural Capital

Cynthia Edwards, Ducks Unlimited Canada

The Value of Natural Capital in Settled Areas of Canada

Shane Gabor and Stacey Hay, Ducks Unlimited Canada

Developing New Markets for Wheat and Barley

Mike Grenier and Andrea Hilderman, The Canadian Wheat Board

National Environmental Farm Planning Initiative and the National Farm Stewardship Program

Jamie Hewitt, Agriculture and Agri-Food Canada

Co-Constructing Agricultural Landscapes: What Resident Photographs Reveal About Conflict and Conflict Resolution

Sonia Salyzyn, University of Guelph

5:30 pm

A Taste of Manitoba Reception

TUESDAY NOVEMBER 7

Morning Concurrent Session A

COMMUNITY AND SOCIAL CONSIDERATIONS

Session Chair: Dale Kelly, PAg, President, Agricultural Institute of Canada

8:30 am

Food Consumers 'Outside the Box'

Michael Heasman, Editor and Publisher of Food for Good

8:50 am

Recapturing Wealth on the Canadian Prairies: Lessons Learned About Rural Adaptation in Manitoba, 1999-2006

Laura Rance, Associate Editor, Farmers' Independent Weekly Newspaper

9:10 am

The Small Farms Challenge: Turtle Mountain Development Corporation Agriculture Committee, Boissevain MB

Cathey Day, Rural Leadership Specialist, Manitoba Agriculture, Food and Rural Initiatives

9:30 am

Questions and Panel Discussion

10:00 am

Networking Break

TRENDS REDEFINING AGRICULTURE

Session Chair: Kim Shukla, PAg, CAC, Principal, Prairie Global Management

10:30 am

A Canadian Consumer Perspective

Shane Morris, Agriculture and Agri-Food Canada

10:50 am

Taking Canadian Agriculture to the World

Wendy J. Miller, The Studios of Wendy J. Inc.

11:10 am

Is Organic Redefining Agriculture?

Andrew M. Hammermeister, PAg, Organic Agriculture Centre of Canada, Nova Scotia Agricultural College

11:30 am

Questions and Panel Discussion

12:00 pm

Honours and Awards Luncheon

AIC is pleased to recognize outstanding members and partners at our Honours and Awards Luncheon. This year we will present two AIC Fellowship Awards, and the AIC International Partners Award. The AIC Fellowship is granted for professional distinction. Recipients are entitled to use the initials FAIC after their name. Recipients must be nominated by their peers and be members in good standing of AIC. The International Partners Award recognizes the importance of AIC international partners in supporting developing nations and is presented to international partners who make outstanding contributions to the development of agriculture in the developing world. Recipients are nominated by their peers and need not be AIC members.

TUESDAY NOVEMBER 7

Morning Concurrent Session B

POLICY AND PROGRAMS REDEFINING AGRICULTURE I

Session Chair: Sandy Todd, PAg, Past President, Agricultural Institute of Canada

8:30 am

Equivalent Agri-Environmental Farm Planning: An Innovative Tool for Implementing Sustainable Agricultural Practices on a Landscape Scale

Doug Chekay, Agriculture and Agri-Food Canada, Prairie Farm Rehabilitation Administration

8:50 am

Results of a Survey of International Literature and Policy Debates on National Agricultural Innovation Systems: Implications for Canadian R&D

Helen Hambly Odame, University of Guelph, School of Environmental Design and Rural Development

9:10 am

A Canadian Farm Bill: Innovation and a Strategic Growth Pillar

Shannon Watt, Canadian Federation of Agriculture

9:30 am

Questions and Panel Discussion

10:00 am

Networking Break

POLICY AND PROGRAMS REDEFINING AGRICULTURE II

Session Chair: Glenn Dickson, PAg, Board Member, Agricultural Institute of Canada

10:30 am

Land Use Allocation Model: A Tool for Linking Science to Policy

Soulemayne Touré, Soil, Water Air and Production System, Agriculture and Agri-Food Canada

10:50 am

Is Looking Into a Mirror of Any Value?

Robert B. Church, Board Member, Canadian Agri-Food Policy Institute

11:10 am

What's New at the Pesticide Risk Reduction Program: Development and Promotion of Best Management Practices

Marilyn Dykstra, Agriculture and Agri-Food Canada, Pest Management Centre

11:30 am

Questions and Panel Discussion

12:00 pm

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TUESDAY NOVEMBER 7

Afternoon Concurrent Session A

INNOVATIONS IN MARKETING AND TRADE I

Session Chair: Susan Simpson, PAg, Board Member, Agricultural Institute of Canada

1:30 pm
Farm Viability: The Next Step
Allen Matthews, Center for Sustainable Agriculture, University of Vermont

1:50 pm
Canola Commodity Challenge Marketing Simulation Helps Canola Growers Discover Profitable Marketing Opportunities
Bruce Dalgarno, Manitoba Canola Growers Association

2:10 pm
The Power of a Loaf of Bread
Linda Pizzey, Pizzey's Milling

2:30 pm
Questions and Panel Discussion

3:00 pm
Networking Break

INNOVATIONS IN MARKETING AND TRADE II

Session Chair: Michael Slivitzky, Model Forest Coordinator, Natural Resources Canada, Canadian Forest Service

3:30 pm
Opportunities and Innovations in Connection with Changing Domestic and International Consumer Demand
Hubert Paulmer, PAg, Ontario Institute of Agrologists

3:50 pm
A Canadian Agricultural Income Stabilization (CAIS) Study on Wetland Loss in the Prairie Pothole Region
James R. Unterschultz, University of Alberta, Department of Rural Economy

4:10 pm
Learning From Others
Martin Gooch, George Morris Centre

4:30 pm
Innovation and Growth with Organic Agriculture
Andrew M. Hammermeister, PAg, Organic Agriculture Centre of Canada, Nova Scotia Agricultural College

4:50 pm
Questions and Panel Discussion

5:30 pm
Adjourn

7:00 pm
Meet the Innovators
Facilitated Roundtable Workshop

TUESDAY NOVEMBER 7

Afternoon Concurrent Session B

INNOVATIVE ON-FARM PRODUCTION I

Session Chair: Andrew Hammermeister, PAg, Research Associate, Organic Agriculture Centre, Nova Scotia Agricultural College

1:30 pm
Reconsidering Integrated Crop-Livestock Systems
Martin Entz, University of Manitoba

1:50 pm
Productivity and Environmental Sustainability of Grassland Pastures Receiving Hog Manure
Kim Ominski, University of Manitoba, Department of Animal Science

2:10 pm
Gaining Ground: Making the Successful Transition to Organic Farming
Janine Gibson, Canadian Organic Growers (COG)

2:30 pm
Questions and Panel Discussion

3:00 pm
Networking Break

INNOVATIVE ON-FARM PRODUCTION II

Session Chair: Leah Soroka, Farmer

3:30 pm
An Overview of the Economics of Forest Plantations on Agricultural Land in Canada
Denys Yemshanov, Research Scientist, Landscape Analysis and Applications, Natural Resources Canada, Canadian Forest Service

3:50 pm
Cornboard: The Use of Agricultural Residue in Producing an Environmentally Friendly Fibreboard
Philip Schmidt, Cranberry Hollow Woodcrafts

4:10 pm
Future Energy Demand and its Potential Role in Reshaping Agriculture
Scott Stothers, PAg, Strategic Policy Directorate, Manitoba Agriculture Food and Rural Initiatives

4:50 pm
Questions and Panel Discussion

5:30 pm
Adjourn

7:00 pm
Meet the Innovators
Facilitated Roundtable Workshop

WEDNESDAY NOVEMBER 8

Morning Concurrent Session A

INNOVATION IN SCIENCE AND TECHNOLOGY I

Session Chair: Ron Pidskalny, PAg, Board Member, Agricultural Institute of Canada

8:30 am
Integrated Soil Fertility Management; Lessons from Africa
Roberta Gentile, University of California - Davis, Department of Plant Sciences

8:50 am
Enhanced Efficiency Fertilizers – Experiencing Step Change in Crop Nutrient Technology
Craig Rickard, Agrium Inc.

9:10 am
Assessment of New Technologies Case Study of Water Management Systems in Hog Operations
Beth Sparling, George Morris Centre

9:30 am
Questions and Panel Discussion

10:00 am
Networking Break

INNOVATION IN SCIENCE AND TECHNOLOGY II

Session Chair: Derrick Jamieson, PAg, President, Agricultural Institute of Canada Foundation

10:30 am
Environmental and Economic Assessment of Five BMPs in the Steppler – South Tobacco WEBs Project
Jim Yarotski, Agriculture and Agri-Food Canada, Prairie Farm Rehabilitation Administration

10:50 am
Nanotechnology - An Emerging Technology for the Agriculture and Food Industry
Suresh Neethirajan, University of Manitoba, Canadian Wheat Board Centre for Grain Storage Research, Biosystems Engineering

11:10 am
Nutrient Management and Changing Farm Practices in Southern Ontario Watersheds
Glen Filson, University of Guelph, School of Environmental Design and Rural Development

11:30 am
Questions and Panel Discussion

12:00 pm
Conference Adjourns

1:00 pm to 5:00 pm
Optional Tours

WEDNESDAY NOVEMBER 8

Morning Concurrent Session B

INNOVATION IN RESOURCE MANAGEMENT I

Session Chair: Ute Holweger, Ag-Land and Agroforestry Manager, Prairies East Region, Agriculture and Agri-Food Canada

8:30 am
ALUS: The Farmers' Conservation Program
Ian Wishart, Farmer and Vice President of Keystone Agricultural Producers

8:50 am
Cost Effective Program Targeting Within Agricultural Watersheds for the Provision of Ecological Goods and Services
T. Shane Gabor, Ducks Unlimited Canada

9:10 am
National Farm Stewardship Program and Ducks Unlimited Canada Wetland Restoration Initiative
Curtis Snell, Agriculture and Agri-Food Canada, Prairie Farm Rehabilitation Administration

9:30 am
Questions and Panel Discussion

10:00 am
Networking Break

INNOVATION IN RESOURCE MANAGEMENT II

Session Chair: Elizabeth Roberts, Acting Chief, Agricultural Policy Framework Standards Secretariat, Environment Canada

10:30 am
A Decision Support Process for the Development of Habitat-Based Biodiversity Standards for Agriculture in Canada
Cathy Nielsen, Habitat Conservation Division, Canadian Wildlife Service

10:50 am
The Use of Property Tax Credits to Conserve Natural Capital
Cynthia Edwards, Ducks Unlimited Canada

11:10 am
An Economic Evaluation of Beneficial Management Practices for Crop Nutrients in Canadian Agriculture
Cher Brethour, George Morris Centre

11:30 am
Questions and Panel Discussion

12:00 pm
Conference Adjourns

1:00 pm to 5:00 pm
Optional Tours

Hon. Carole L. Brookins,
Former US Executive Director
to the World Bank Group

The Emerging Agricultural World

Ms. Brookins will be sharing her views about the emerging agri-food world, which is changing market structures and supply chains, driven by new technologies, new products and new consumers.

Global issues like energy security and climate change are changing the paradigm of traditional supply/demand analysis.

Global players like China, India and Brazil are changing the traditional playing field of trade and investment flows.

Global flow of technologies and innovation are changing production and markets, as new consumers and new competitors produce both challenges and opportunities in meeting demand growth.

■ *The Honorable Carole L. Brookins is an international consultant. She is a Member of the Board of Directors of the Chicago Climate Exchange and of Zogby Worldwide, LLC, a member of the Rabobank North American Advisory Board, a Senior Advisor to the Center for Strategic and International Studies (CSIS), a member of the Council on Competitiveness' Global Advisory Committee, the World Agricultural Forum's Advisory Board, the Council on Foreign Relations and The Bretton Woods Committee.*

In 2006, she co-founded Public Capital Advisors LLC, an advisory firm directed toward providing financial advice to national and municipal governments in emerging markets for infrastructure finance. She served from 2001 to 2005 as the United States Executive Director to The World Bank Group in Washington, DC. She represented the U.S. government as the largest shareholder on the Board of Executive Directors. Appointed by President George Bush, she was confirmed by the U.S. Senate in the summer of 2001. The World Bank is an official development Bank owned by 184 countries which provided $20 billion in loans and grants in 2004. The Bank also provides policy advice, technical assistance and knowledge sharing services to low and middle income countries with the mission to improve the investment climate, reduce poverty and raise the living standards of people in the developing world. .

She was Chairman and Chief Executive Officer of World Perspectives, Incorporated (WPI), from 1980 to 2001. WPI is a Washington-based strategic advisory providing information, analysis and consulting services to international commodity, financial and government clients. She has been called upon by clients around the world for her work as a policy and trade strategist and is widely recognized for her expertise on the global political economy and its effect on agricultural and food markets.

Ms. Brookins was a member of the U.S. State Department Advisory Committee on International Economic Policy (ACIEP) and served as chairman of the Committee's Sanctions Working Group. President George Bush appointed her to membership on the President's Export Council in December of 1990. In December 1984, Ms. Brookins was named Chairman of the Department of State's private sector Advisory Committee on Food, Hunger and Agriculture in Developing Countries, mandated by President Reagan.

She was a member of the U.S. National Committee for Pacific Economic Cooperation (PECC) from 1988 and chaired the 23-member economy group's Food and Agriculture Forum. Ms. Brookins developed and served as Co-Chair of the APEC-PECC joint project on Regional Integration for Sustainable Economies (RISE). RISE is a multi-sectoral initiative to accelerate the development of secondary cities and strengthen rural linkages to markets in APEC economies. She was also a member of the Pacific Basin Economic Council (PBEC) and its Food Committee.

Ms. Brookins was on the Board of Directors of Terra Industries Inc., a leading producer of nitrogen and methanol, as well as on the boards of the international development trust Winrock International, U.S. PECC, the International Food and Agribusiness Management Association (IAMA) and The Atlantic Council. She also served as a member of the North American Advisory Board of Rabobank International and the International Advisory Committee of CoBank, the World Agricultural Forum Advisory Board and the Advisory Council to Save the Children. She was honored in 2003 as Woman of the Year by the Organization of Women in International Trade (OWIT); and, in 2002 as the University of Oklahoma College of Arts & Sciences Distinguished Alumna.

Jack (John) Bamford,
Director, Science Policy and Planning,
Science Bureau, Research Branch,
Agriculture and Agri-Food Canada
930 Carling Avenue,
Ottawa ON K1A 0C5

Enhancing Canada's Agri-Innovation System

This presentation briefly compares Canada's innovation performance with competitors and then provides an overview of the innovation process. It provides some discussion of key factors influencing innovation and concludes with some proposals regarding the need for new innovation coordination and communication mechanisms.

■ *Born in Saskatchewan, Jack Bamford grew up in various communities across Saskatchewan and Alberta. He obtained his Bachelor's Degree in Agriculture specializing in Animal Science in 1972 and a Masters Degree in Agricultural Economics in 1981, both from the University of Saskatchewan. Jack has worked in agricultural extension and market development for the agriculture departments in Alberta and Saskatchewan and in market research for the Potash Corporation of Saskatchewan, and returned to federal service in 1985 as an economist with the Agriculture and Agri-Food Canada (AAFC) regional office in Regina. In 1988 he joined the Policy Branch of AAFC in Ottawa and has beed the Director of Science Policy and Planning with Research Branch since 2004. Jack was quite involved in the development of the Agricultural Policy Framework and most recently with the development of the AAFC Agriculture Science & Innovation Strategy released in May 2006. His current focus is on agri-innovation and the role that science and research play in innovation.*

Ellen Goddard,
Cooperative Chair and Chair,
Department of Rural Economy,
University of Alberta
547 General Service Building
Edmonton AB T6G 2H1

Options and Opportunities – Investing Wisely Today to Ensure a Sustainable Future

Research and innovation are primary drivers of economic growth. A key component of any country's research capacity is its universities. University's contribute to innovation through basic research, through applied research and related commercialization and through education of highly trained professionals to contribute to academic, industry and government science capacity. In Canada traditional models of public support of agricultural research may not realize the full potential that is possible. New models of collaboration with government, and industry, both domestic and international, are essential for future economic growth. Examples of new collaborative models, with a particular focus on the University of Alberta, will be provided showing the link between research, education and sustainable, economic growth in the agri-food sector.

■ *Ellen Goddard is Chair of the Department of Rural Economy in the Faculty of Agriculture, Forestry and Home Economics, University of Alberta (2002-present). She also holds an appointment as Cooperative Chair in Agricultural Marketing and Business, University of Alberta. She came to Alberta from a position as National Australia Bank Professor of Agribusiness and Associate Dean, Coursework at the Institute of Land and Food Resources, the University of Melbourne. Prior to that Australian appointment, Ellen Goddard worked in the Department of Agricultural Economics at the University of Guelph.*

Over the past 20 years Professor Goddard's research has been focused on economic modeling of domestic and international commodity sectors for policy analysis purposes. Professor Goddard has worked very closely with agricultural industry groups on modeling the effectiveness of promotion and setting marketing and promotion policy. Current research includes various aspects of management of cooperatives and food market concentration issues. She also currently leads a national policy research network for Agriculture and Agri-food Canada in Consumer and Market Demand for Food and a major socio-economic research program examining the impact of BSE on Canada.

Michael Trevan, PAg,
Professor and Dean,
Faculty of Agricultural and
Food Sciences,
University of Manitoba
Winnipeg MB R3T 2N2

Human Capital

Innovation is considered to be the key to sustainable economic growth within the agriculture and agri-food sector. But in the context of "Innovation for Growth" the economic impact of education, that is the development of human capital, plays a far more significant role in sustainable economic development than new inventions, technologies or processes. Across Canada 2.4% of the population live on farms, which produce 2.3% of GDP. But less than 47% of farm household income comes from the farming. Of the 5 million rural population, only 6.5% (324k) actually work on the farm. Aiming innovation at the farming community may make farming more profitable, but it will make little difference to the rural economy. This paper examines these issues, how they are approached in other countries, and how education, and what type of education, could be used appropriately to develop the human capital that will lead to the strengthening of "the support and encouragement towards on-farm innovation that will lead to the long-term sustainability of our agri-food sector and rural community revitalization".

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[1] Source Statistics Canada – figures 2001 - 2004

■ *Michael Trevan is the Dean of the Faculty of Agricultural and Food Sciences and Professor Department of Food Science, University of Manitoba (from July 2004). He holds a PhD in Science from the University of London (1973) and is a Fellow of the Institute of Biology, Fellow of the Royal Society of Medicine, Member of the Manitoba Institute of Agrologists, the Agriculture Institute of Canada and the Council of Canadian Faculties of Agriculture and Veterinary Medicine. He has 34 years working as an academic teaching and researching in universities in biochemistry related to health, nutrition, food biotechnology and plant disease. Michael has 15 years senior management and leadership in UK and Canadian universities, including university wide responsibility for IPR and contract issues, development and funding of research and consultancy, and commercialization. In addition he has experience as a non-Executive Director of a new start-up food company that produces a novel fermented organic meat substitute based on quinoa grain, and as a member of the Board of Smartpark at the University of Manitoba. He worked for a year prior to commencing his present position for the London Development Agency in the UK gaining experience of contribution of universities to economic development.*

Lionel LaBelle,
President, Saskatchewan Ethanol Development Council Inc.
502 - 45th Street West,
Saskatoon SK S7L 6H2

Ethanol: Why Saskatchewan, Why Now

The emerging biofuels industry has the potential to make a paradigm shift in how we collectively view agriculture in Western Canada and specifically in Saskatchewan.

For generations the commodity based grains and oil seeds industry has used Western Canada as a wealth of natural resources to the collective benefit to those that owned and controlled the distribution and the value added food processing industry. Because of a geographical twist of fate and a specific national strategy, Western Canadian farmer/producers were perennially at the will of governments and industry to determine their fate.

Now because of the emerging biofuels industry the potential to make a dramatic change in terms of farm income and rural economic development, has become a reality. Specific benefits such as biofuels based crops, freight rate abatement, crop risk management reduction and ultimately opportunities in farmer/producer ownership all have the potential to affect real and meaningful change.

The presentation will focus on these specific economic opportunities from a Saskatchewan perspective as well as zeroing in on four specific "Myth Busters" that tend to follow this emerging industry.

■ *Born and raised in Saskatchewan, Lionel LaBelle in the mid 1970s embarked on a 25-year entrepreneurial career that included positions as Managing Partner, President and Chairman of the Board with a broad cross-section of private and publicly held corporations that focused on agri-business, construction and the manufacturing industry.*

In 2001 after a short hiatus from industry, Mr. LaBelle was introduced to a number of community sponsored rural development initiatives in need of guidance. As a private consultant, his involvement in rural "value-added" initiatives rekindled a deep desire to affect change in this province.

As Chair of the 2002 "Saskatchewan Agrivision Corporation's" (SAC) Task Force on Ethanol, LaBelle's efforts gave rise to his concern over the provincial community's lack of knowledge about the issues, the industry and the potential wealth generator that ethanol can be.

In November of 2004 LaBelle accepted the position of President of the Saskatchewan Ethanol Development Council Inc. (SEDC) whose mission statement is:

> *To promote and coordinate the efforts of all member stakeholders in the development of a strong, vibrant, profitable and sustainable ethanol industry in Saskatchewan.*

Since its inception SEDC has played a significant role both from a provincial and national perspective in terms of developing a Canadian renewable fuels industry.

Gary Bank,
Agroforestry Specialist,
Agriculture and Agri-Food Canada,
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Benefits of Agroforestry in Canada

In Canada, the role of agroforestry is linked to the need to lessen environmental impacts of modern agriculture while balancing productivity and economics. For agroforestry to be successful it must offer options that are compatible with production agriculture and involve minimal tradeoffs to producers. The bottom line for agroforestry is to be able to locally apply practices that generate predictable and positive interactions and optimize them for the benefit of the farmer and society as a whole.

Agroforestry practices such as windbreaks and riparian buffers are commonly used forms of agroforestry in Canada. Other agroforestry systems such as alley cropping, silvopasture systems and forest farming are less common in large parts of Canada but likely offer similar benefits.

Adoption of well understood agroforesty practices is promoted through increased producer awareness and use of incentives. In addition to an ongoing Prairie Shelterbelt Program, the federal/provincial agreements, under the Environment Chapter of the Agricultural Policy Framework (APF), promote producer awareness of various agroforestry BMPs and also provide financial incentives to support implementation. More predictable benefits are used to promote agroforestry systems including increased crop yields, reduced erosion and carbon sequestration. Areas of research currently receiving attention include evaluation of the role of agroforestry in supporting biodiversity and its subsequent impact on ecological functions such as pollination. The effectiveness of forest buffer strips in sediment and nutrient filtration is also being studied.

■ *Gary Bank is the current Chairman of the Woodlot Extension Program. He was one of a group of people who helped to start the program six years ago. Prior to the formation of the Woodlot Extension Program he worked with the Woodlot Association and was also involved with the formation of the association.*

Gary lives in Calgary and works for Agriculture and Agri-Food Canada's Prairie Farm Rehabilitation Administration as an agroforestry specialist. He is part of PFRA's agroforestry research unit. The unit is part of the Agroforestry Division that provides shelterbelt trees and shrubs to farmers in western Canada.

He likes to spend his spare time skiing, hiking or canoeing. He also said he just like trees and wood. As a result he has quite a collection of wood that he has packed across much of western Canada. Sometime he finds time to convert that collection into a woodworking project.

Cynthia Edwards,
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The Use of Property Tax Credits to Conserve Natural Capital

Natural lands are the ecological cornerstone of our natural capital endowment and produce a range of non-market ecosystem benefits upon which our society depends. However privately-held natural lands in the Canadian prairies continue to be lost, in part because landowners bear the costs of retaining them without receiving corresponding returns from the marketplace.

The benefits of private natural land retention and stewardship far outweigh the costs, and effective instruments are needed to correct the market failure. A range of economic instruments could be used; however, they remain largely untested and their relative value and cost efficiency is not well understood. Municipal tax credits are one means for broader society to assume some of the financial responsibility for natural capital stewardship and reward private landowners who retain natural land. Municipal tax credit systems are a logical foundation upon which to build and advance integrated incentives to maintain and enhance the provision of ecological goods and services from Canadian prairie ecosystems.

Results from the Saskatchewan Tax Credit Pilot Project will be presented that suggest municipal tax credits are well received by landowners, can have a positive effect on landowner attitudes toward conservation, and can be an efficient vehicle for society to assume a more equitable portion of the financial responsibility for natural capital retention. Monitoring and compliance emerged as crucial program elements and will be reviewed to provide direction to governments and others considering this approach. Tax credits provide an efficient mechanism for delivery of conservation incentives that can be readily understood by landowners, and integrated with other programs, including conservation easements, market incentives such as carbon offsets, and watershed protection initiatives.

■ *Cynthia Kallio Edwards is the National Manager of Industry and Government Relations for Ducks Unlimited Canada. Cynthia received her MSc (1999) and BSc (1997) from the University of Saskatchewan (Agricultural Economics). She has an interest in the conservation of Canada's natural capital and the viability of rural Canada, which she is able to pursue in her work with Ducks Unlimited Canada. Cynthia was raised on a grain farm near Dinsmore, Saskatchewan and now resides with her husband and daughter on the Edwards family mixed grain and cattle operation near Nokomis, Saskatchewan.*

Shane Gabor and
Stacey Hay,
Ducks Unlimited Canada

Box 1160,
Oak Hammock Marsh MB R0C 2Z0

The Value of Natural Capital in Settled Areas of Canada

Natural capital consists of natural resources, environmental and ecosystem resources, and land. These resources yield ecological goods and services that are essential to the sustained health of our environment and economy. Protection and enhancement of natural capital will improve water quality, mitigate flooding, decrease net greenhouse gas emissions, improve air quality, provide habitat, sustain food production and produce many more benefits to society.

Destruction and degradation of natural capital occurs continually across Canada. Yet, we may not recognize the full value of these losses. The estimated net value of conserving or restoring natural areas is about $195/ha/yr in the Grand River Watershed of Ontario, about $65/ha/yr in the Upper Assiniboine River Basin in eastern Saskatchewan and western Manitoba, and about $126/ha/yr in the Mill River Watershed in PEI. Ignoring the value of natural capital when making decisions about land use will likely result in the degradation and destruction of natural capital and lead to outcomes that are very costly to society.

Governments have the following important roles to play:

- Provide essential data on the physical quantities and attributes of natural capital and their changes over time;
- Coordinate and fund efforts to measure and value natural capital;
- Ensure that the value of natural capital is compared to market values of Crown land before releasing Crown land for housing, commercial or industrial uses; and
- Design policies that provide incentives for landowners to conserve their land when the value of the natural capital from that land equals or exceeds its value in other uses.

Information for the poster is taken from “The Value of Natural Capital in Settled Areas of Canada” authored by Dr. Nancy Olewiler, a professor of economics at Simon Fraser University.

■ *Stacey Hay is a Conservation Programs Specialist with Ducks Unlimited Canada’s national conservation group. She has a background in wildlife and conservation biology and has been involved with a wide variety of projects at Ducks Unlimited Canada. Stacey holds a BSc in Zoology and a Masters of Natural Resources Management, both from the University of Manitoba. Her master’s thesis research involved a call-response survey for marsh birds in southern Manitoba and an assessment of their habitat use.*

Mike Grenier and
Andrea Hilderman,
The Canadian Wheat Board
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Developing New Markets for Wheat and Barley

The Canadian Wheat Board (CWB) Identity Preserved Contract Program (IPCP) is designed to develop domestic and international markets for new varieties of western Canadian wheat, durum and barley. Farmers receive incentives for production contracts that allow the CWB to test- market new varieties among customers. The program provides a supply of new, high-quality varieties to customers, so that milling and end-use performance can be tested, leading to increased market potential. IPCPs also allow the CWB to supply customers with specific qualities of more commercial varieties.

Ongoing market development and technical projects for CWB IPCP programs such as Canada Western Red Winter Select (CWRW Select) and Canada Western Amber Durum (CWAD) will be reviewed. Trends in adoption and production of wheat and malting barley varieties will also be provided.

■ *Mike Grenier is an Agronomist for the Canadian Wheat Board's (CWB) Product Development and Marketing Support department. In his role he communicates with farmers on farm management practices and the impact their methods have on end-use quality. Prior to joining the CWB in 2001, he worked for Dupont Canada Inc. for 12 years conducting field research across western Canada. Mike has a Master of Science degree in Soil Science and a Bachelor of Science degree in Agriculture from the University of Manitoba.*

Jamie Hewitt,
Agriculture and Agri-Food Canada
303 Main Street,
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National Environmental Farm Planning Initiative and the National Farm Stewardship Program

The National Environmental Farm Planning Initiative and the National Farm Stewardship Program (NFSP) form an innovative approach to delivering national agri-environmental programming in Canada. This approach addresses national objectives, while maintaining regional flexibility to address priority issues in soil, water, air and biodiversity. The national programs build on the success and lessons learned from past environmental farm plan programs and are available to all producers across Canada.

Delivery agents in each province/territory deliver the Environmental Farm Plan (EFP) Program and the NFSP. The EFP process is a confidential, voluntary process that provides producers with the knowledge and tools to assess the environmental risks and benefits on their own farm operations and develop action plans to mitigate the risks. A producer with a reviewed EFP can then access the technical and financial assistance to adopt the beneficial management practices (BMPs) provided through the National Farm Stewardship Program.

Through the National EFP Initiative and the NFSP, over 42,900 producers have participated in developing their EFPs and over $19.4 million in federal incentive funding has been provided to producers for supporting BMP adoption (as of March 31, 2006). Producer interest in these programs remains high, with demand and participation increasing across Canada. The poster outlines the progress to date and examines some of the regional trends across Canada.

■ *Jamie Hewitt graduated from the University of Manitoba with a BSc in Environmental Sciences and started his career at Agriculture and Agri-Food Canada, Prairie Farm Rehabilitation Administration (PFRA) as a Soil and Water Technician out of the Beausejour office in 1998. He moved to the Dauphin PFRA office as an Assistant Land Resource Conservationist in 1999 and led the development of many agricultural land use decision support projects, and supported the delivery of PFRA's core soil and water conservation programs. For the last three years he has been working on the development and implementation of the National Environmental Farm Plan Initiative and National Farm Stewardship Program and is now based out of PFRA's office in Winnipeg*

Sonia Salyzyn,
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Co-constructing Agricultural Landscapes: What Resident Photographs Reveal About Conflict and Conflict Resolution

Sustainability of city-regions is no abstract matter; in the coming years we face tough decisions about the future patterns of development and their effect on agriculture, where we stand on protecting nature in farm landscapes, promoting economically growing agriculture, and advocating for equality. Conflicts around these goals are not merely conceptual, rather they go to the core of contemporary battles in city-regions. “And though sustainability aspires to offer an alluring, holistic way of evading these conflicts, they cannot be shaken off so easily.”

This study is about how belonging to and identifying with a place rests in our lived experience with infrastructure and this is often the issue behind the issues, or the implicit motives or causes that lie behind explicit and specific conflicts of sustainability.

Research purpose:

- Strengthening the potential for design in multi-use agricultural landscapes of the city-region, which leads to long-term sustainability of the Canadian agri-food system and community vitality;
- Reinforcing rural character infrastructure documentation of Canadian communities with residents’ perspectives; and
- Explore the potential for conflict resolution through design in the city-region, specifically in the context of complex interweaving of land-uses and landscape elements.

I interview residents in location to test the two hypotheses:

1) There are significant farm landscape value compatibilities among farmers and non-farmers;
2) The stronger non-farmers’ place identification of a farm landscape, the more compatible will be non-farmers’ and farmers’ valorization of that farm landscape.

By exploring the content of resident employed photographs, I identify factors or modes of associations enacting place identification. Q-sort and qualitative content analysis are used to tease out compatibility among farmers and non-farmers. Implications for rural character and residential design are noted.

Michael Heasman,
Editor and Publisher of Food For Good
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Food Consumers 'Outside the Box'

The traditional industrial food system is facing new marketing, strategic and innovation challenges posed by the growing number of consumers and civil society demanding greater accountability, transparency and healthiness from food and beverage companies. A key concern is about the community and social responsibility of food business, not least in terms of the sustainability of food systems and the apparent rift between the local and the global. Examples are given of how food companies are placing new strategic emphasis on social responsibility with respect to environmental, community, supply chain and labour issues. It is argued that a new 'moralization' of food business is occurring with far reaching implications for the future of food.

■ *Michael Heasman received his PhD at the Food Policy Research Unit, University of Bradford, UK and is a researcher, writer, and communicator on food policy — from business strategy to public policy specializing in food and health, social responsibility and corporate activity. He publishes Food for Good, the first international business newsletter that tracks ethical and socially responsible food business positioning and marketing, food industry CSR activities, and the trends and issues that impact these. He is co-author of three books: Food Wars: The Global Battle for Mouths, Minds and Markets (with Professor Tim Lang, 2004) that investigates global food policy from the perspective of both human and environmental health; The Functional Foods Revolution: Healthy People, Healthy Profits? (2001) and Consumption in the Age of Affluence: the World of Food (1996). He has been editor of three food business newsletters: New Nutrition Business, Financial Times Food Business, and Innova.*

Laura Rance,
Associate Editor,
Farmers' Independent Weekly Newspaper

Gary Martens and
Rene Van Acker,
University of Manitoba,
Department of Plant Science

Scott Stothers,
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Recapturing Wealth on the Canadian Prairies: Lessons Learned About Rural Adaptation in Manitoba, 1999-2006

The Canadian Prairies have been home to generations of inhabitants, providing each with a livelihood as well as fulfilment and freedom. However, in the face of heightened risk due to climate change, tightening margins, increasingly intense competition in the global marketplace, concentration and consolidation today's generation of farmers and rural residents must rapidly adjust in order to sustain a rewarding life on the Prairies.

The Agriculture Renewal Alliance (ARA), an ad hoc collective of people from a number of key Manitoba organizations associated with agriculture and rural Manitoba ran a series of innovative conferences and idea sharing events between 1999 and 2006. These events were all hosted under the theme of "Recapturing Wealth" with wealth being taken in the broadest sense to include economic, social and environmental values. Nearly 800 rural people participated in these events over 6 years. The ARA brought in provocative local, national and international speakers and then encouraged discussion among participants. Participants provided insight into their plight and fundamental guidance and recommendations for innovative adaptation, development and progress.

The outcomes of the ARA rural Manitoba conferences provide unique, innovative and practical grass roots wisdom for rural development and adaptation to change. For example, the participants vision statement at the end of the first conference was that "Farmers drive an agricultural renewal which supports communities, works in close relationship with consumers and sustains a healthy environment." In a remarkably succinct vision statement, participants included all three foundational elements of sustainable development (community, economy and environment). In the second conference participants advised that "under the new context of limited institutional supports….. the independence of those who live and work on the Canadian prairies must be balanced with cooperation." They followed this in the third conference by stating that "the primary requirements for successful rural development are rural community focused leadership and a sense of community among individuals." And in the fourth conference they recognized that "rural development is a people issue and the value and success of rural communities is built upon youth, education, enterprise and health." The results from these conferences offer innovative and valuable lessons for rural Canadians adapting to change.

■ *Laura Rance is an award-winning journalist who has 25 years experience writing about farm, food and rural issues. She is one of seven founding partners and the associate editor of Farmers[1] Independent Weekly, a Manitoba newspaper that began operations in June 2002. Laura also writes a weekly business column for the Winnipeg Free Press and The Brandon Sun. Laura is presenting on behalf of the AgriCulture Renewal Alliance, an ad hoc coalition she helped create in 2000. The group received funding through the Manitoba Rural Adaptation Council to host a series of conferences exploring adaptation alternatives in Manitoba.*

Cathey Day,
Manitoba Agriculture,
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The Small Farms Challenge: Turtle Mountain Community Development Corporation Agriculture Committee, Boissevain MB

In January 2004, the Agriculture Committee of the Turtle Mountain Community Development Corporation – TMCDC (Boissevain, Manitoba) released a book entitled *Successful Small Farms*. The TMCDC is a non-profit corporation whose original mandate was to develop local population growth and to promote the establishment of new business and industry in the Town of Boissevain and surrounding area. The attraction and creation of meaningful business and employment opportunities can diversify the local economy to improve the quality of life for all people in the area." Since the original inception of the TMCDC, the vision has expanded.

The Agriculture Committee developed an action plan to carry out its main goal of "repopulating our rural community," which includes:

1. encouraging the re-population of our rural areas through smaller scale farming models;
2. promoting farming opportunities, approaches, supports and skills among young people;
3. encouraging sustainable farming practices that protect and enhance diversity;
4. promoting cooperative production, processing and marketing within our communities.

In an effort to encourage the repopulation of rural communities, the Agriculture Committee identified the Small Farms Project as a means of collecting information from a variety of farm operators. The impact of this initial project on rural Manitoba communities was to encourage evaluation of quality of life, access to products and services, community infrastructure, community spirit, and the viability and sustainability of these communities.

The Committee continues to explore issues of regenerating rural populations and small farm viability and decided that a business proposal competition would be a creative idea. Over the next year, the Committee will accept submissions from Small Farms Challenge participants addressing the topics of land, people, energy, business and marketing.

The main goal of this exercise is one of community building in rural areas – within rural communities – among farmers generally, and between farmers and urban residents. This is a missing element within the globalized model of agriculture.

The Committee intends to work with students of all ages and young urbanites; urban folks that grew up on farms; people living and working in the area who can offer novel ideas; larger farmers who want to downsize gracefully; entrepreneurs and retired people.

The Committee hopes that the Small Farms Challenge will encourage and foster a sense of control and a means of achieving new opportunities for rural people and farmers.

The Small Farms Challenge was launched at the 2nd Annual Farm Focus 2006 hosted by the Boissevain and District Chamber of Commerce in February 2006.

For more information, visit www.boissevain.ca and follow the links to the Small Farms Challenge.

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*The Small Farms Challenge has been selected for the Innovation Conference in Ottawa, June 8

■ *Cathey Day has worked with Manitoba Agriculture, Food and Rural Initiatives since 1990 and as a Rural Leadership Specialist has had the opportunity to work with the Agriculture Committee of the Turtle Mountain Community Development Corporation. Since the launch of the Small Farms Challenge at Farm Focus in February 2006, Cathey has had several conversations with the participants who are interested in repopulation of our rural areas through smaller scale farming models. Cathey and her partner took a Holistic Management course in 1998 with ten other couples in the Turtle Mountain area of southwestern Manitoba. Since that time, meetings with this group has allowed the exploration of new ideas and the affirmation of old ideas. Several changes have occurred throughout the farms and lives of the participants of the group. As a farm partner and mother of three sons, Cathey enjoys the challenge of balancing work, family and life in general!*

Shane Morris and Diane Wetherall,
Agriculture and Agri-Food Canada
174 Stone Road West,
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A Canadian Consumer Perspective

While grounded in the findings of Agriculture and Agri-Food Canada's new public opinion research report "Consumer Perceptions of Food Safety and Quality – Wave 2", the presentation will incorporate information from related research and data to the current and future consumer climate in Canada as it relates to our food system. The report addresses top-of-mind considerations when making food purchases in general and when buying food for the home or dining out. Perceptions of food quality and the level of confidence in the safety of food produced in Canada are also measured. Comparisons are made with food produced in other countries and responses to quality and safety initiatives are gathered. Consumers are asked about their knowledge of food production, quality and safety initiatives, current information sources, and their need for additional information. These results will then be placed in the context of the economic, social and demographic drivers expected to influence the food and beverage choices made by Canadians over the next 15 years. The influences of aging, immigration and changing family structure will begin to show up in food consumption patterns, while consumer interests in food for health, convenience, nutrition and variety will add further impact to these trends. The presentation will conclude with a summary of the key consumer trends and what opportunities there are for those involved in our domestic food system.

■ *Shane Morris is a Senior Consumer Analyst with the Agriculture and Agrifood Canada. In this role he analyzes and reports on consumer and market demand trends and commercial issues that drive policy and program development and strategic business decisions in order to impact the future prosperity of the Canadian agri-food value chain. Shane has a BSc (Hons) from the National University of Ireland and has carried out graduate research at the University of Limerick. He has published internationally recognized and award winning papers regarding public perceptions of GM food and their regulations in the EU and Canada. Shane has held prior positions at AAFC in addition to positions at the Canadian Food Inspection Agency and at the University of Guelph (Food Safety Network). In his spare time, Mr. Morris holds a seat on the board of BioLink: Canada-Ireland, a not-for-profit organization developing life science partnerships between Ireland and Canada.*

Wendy J. Miller,
The Studios of Wendy J. Inc.
9 Einarson Avenue,
Winnipeg MB R3G 0L2

Taking Canadian Agriculture to the World

The purpose of this presentation is to identify trends, innovations, demands and marketing opportunities, as well as implications for Canadian agriculture in the international arena.

We will explore demographics and identify how farming communities can promote their value and importance to stimulate sustainability. The progressive aspects of agriculture will be identified, as well as the preferences of youth in selecting and confirming their role in agriculture, at home and abroad. Resiliency and the value of local and national consumer and farm operation connections will be discussed. The opportunities for broader perspective through agricultural associations and their initiatives, as well as government programs, will be incorporated to highlight their mandate and importance nationally as well as around the world.

Consumer demand will be discussed to identify international differences (cultural and social) as well as current and emerging trends in selected parts of the world. Innovations and opportunities will be identified in connection with these constantly changing demands to provide insight into next steps for Canadian agriculture.

To further explore consumer demand, North American trends will be discussed and cultural diversity will be highlighted as it pertains to specific market segments. Examples of successful steps taken by domestic and international companies to advance their marketing and/or innovate their management to address these demands will be presented. Opportunities for growth will also be highlighted as part of confirming trends and redefining Canadian agriculture from a marketing perspective.

■ *Wendy J. Miller is President and Creative Director of The Studios of Wendy J., Inc. During her career Wendy has provided marketing and strategic planning, as well as advertising, and promotional services to companies in most industry sectors. Her most extensive experience, and her passion is agriculture and agri-food.*

Wendy's portfolio is full of award-winning advertising, marketing, and public relations projects that have been effectively implemented, successfully distributed, and widely accepted in the international marketplace. Her claim to fame is the development, launch and brand management of the world-renowned canola symbol.

Wendy J., as she is known in the industry, opened her company in 1999. Strategic marketing and advertising is the focus, and its services include strategic planning, advertising, corporate communications, graphic design, as well as event and project management.

Andrew M. Hammermeister, PAg,
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Is Organic Redefining Agriculture?

The organic trend is capturing the hearts and minds of consumers and producers. The agri-food business and retail community is responding to this trend quickly and sales are often limited by availability. What is driving this movement toward organic? Here we will discuss the growth of organic, profile the organic producer and consumer, and discuss the question 'Is organic redefining agriculture?'.

■ *Dr. Andrew Hammermeister, Organic Agriculture Centre of Canada (OACC), Nova Scotia Agricultural College, Truro NS.*

Andy Hammermeister comes from a mixed cattle and grain farm in southeastern Saskatchewan. He has a Degree in Soil Science from the University of Saskatchewan, and an MSc in Land Reclamation and PhD in Applied Ecology, both from the University of Alberta.

Andy started working with the OACC at the Nova Scotia Agricultural College in the spring of 2002. In addition to his research, Andy is managing the organic transition of local research land, supervises graduate students and liaises with researchers across Canada. Hi research includes studying the nutrient supplying potential of organic amendments, crop rotations, variety trials organic agronomy and green manures.

Doug Chekay,
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Equivalent Agri-Environmental Farm Planning: An Innovative Tool for Implementing Sustainable Agricultural Practices on a Landscape Scale

The Equivalent Agri-Environmental Farm Planning (EAEP) process is an innovative planning tool offered to agricultural producer groups through the National Environmental Farm Planning Initiative. It helps groups assess environmental risks and benefits from agricultural operations and develop action plans to mitigate risks and enhance benefits. Upon completion of the EAEP process, participating producers are eligible to apply to the National Farm Stewardship Program (NFSP) to implement selected BMPs.

As with the individual Environmental Farm Plan (EFP) process, EAEP uses a systematic and comprehensive approach to identify and assess actual and potential environmental risks and benefits from agricultural operations and develop an action plan to reduce or mitigate those risks. EAEP is complementary to the individual EFP process but is undertaken by a group of producers on a broader landscape, multi-farm basis. This strategic, targeted and coordinated approach of having a group address one priority issue is expected to create greater cumulative impact on air, water, soil and biodiversity than individually based actions. EAEP is applicable to a group of producers in a defined geographical area, such as a watershed, or those who share a common environmental issue in a specific commodity or agricultural sector.

The provinces of Québec, Saskatchewan and Manitoba are presently offering EAEP and Alberta is developing a proposal for delivery of EAEP for AAFC's consideration.

The presentation will describe the EAEP concept, discuss merits of the process and draw on examples from the jurisdictions delivering EAEP.

■ *Doug Chekay is presently with Agriculture and Agri-Food Canada's (AAFC) Prairie Farm Rehabilitation Administration (PRFA) on an Interchange Canada arrangement, serving as Acting Manager for the Stewardship Coordination Division. He was formerly with Ducks Unlimited Canada as Director of Public Policy and DUC's Provincial Manager for Saskatchewan. Doug has a Bachelor of Science and Masters of Natural Resources Management from the University of Manitoba.*

Helen Hambly Odame and
Laxmi Prasad Pant,
University of Guelph,
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Results of a Survey of International Literature and Policy Debates on National Agricultural Innovation Systems: Implications for Canadian R&D

Major shifts have occurred in agricultural science and technology for development worldwide in an effort to address issues, such as food safety, food security and changing patterns of public investment in agricultural R&D. The issues cross disciplinary, sectoral and institutional boundaries. This paper traces the conceptual shifts from the linear transfer of technology (ToT) to nonlinear systems approaches that move institutionally from public sector singularism to institutional pluralism, as well as pragmatically, from individual adoption of technology to interactive learning and innovation.

Thinking on systems of agricultural innovation evolves from two scholarly traditions. One group of theorists, who have worked on national systems of innovation (NIS) in manufacturing for the last two decades, posit that their work would be equally applicable to agriculture since agriculture fundamentally operates as a firm with business principles. Other theorists from agricultural R&D policy converted to NIS because of their attraction to the new institutional role for public-private sector partnerships presented by the framework.

National Systems of Agricultural Innovation (NAIS) are described as systems of inter-sectoral linkages beyond R&D that produce, disseminate and use agricultural knowledge, information, and other resources pertaining to a particular economic activity. Although certain elements of NAIS, such as public-private partnership, are not new to Canada, the application of NIS theory in agriculture continues to evolve with potential implications for Canadian R&D.

Based on a survey of relevant literature and debates in roundtables such as the International Assessment on Agricultural Science and Technology for Development (IAASTD), this paper argues that there is scope for examining the Canadian rural, agricultural and agri-food sector using the lens of NAIS and specifically, its consideration of partnerships with public, for-profit private, non-profit private and informal sectors beyond what is commonly associated with supply chain management and ToT models of knowledge management. Opportunities lie in problem-based R&D agenda and appreciation of the co-evolution of innovation and institutional change.

■ *Helen Hambly is an Associate Professor in the Capacity Development and Extension program of the School of Environmental Design and Rural Development at the University of Guelph. She has more than 13 years of experience in international research and development programs in Africa, North Africa and Latin America. She came to the University of Guelph in 2003 after eight years with the former CGIAR research center, the International Service for National Agricultural Research (ISNAR), based in The Hague. Helen leads a research project called Linking Agricultural Research and Rural Radio in Africa supported by the OPEC Fund for International Development, the Commonwealth of Learning and CIDA. She is also the Coordinator of the Snowden Program for Communication and Development. Helen holds a PhD from York University. She has also worked with the International Development Research Centre (IDRC) and the non-governmental sector in Canada and Kenya.*

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S. Gameda,
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Soil, Water Air and Production System,
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B. Junkins,
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Policy Analysis

Land Use Allocation Model: A Tool for Linking Science to Policy

Economic and policy models mainly function at a macro-scale to provide analysis of agricultural production. Conversely, biophysical models assess the potential impact of Land Use Change (LUC) due to agricultural management practices in a given landscape, i.e. at micro or meso scales. Hence, rigorous methodologies are needed to scale down policy outputs to the local level so that they can be assigned to specific areas in the landscape, as well as to scale up local impacts to the policy level. This involves studying of drivers that cause LUC and integrating economic/policy models with biophysical models at an appropriate scale.

In order to help meet this need, Agriculture and Agri-Food Canada (AAFC) is using a multidisciplinary approach to develop a Land Use Allocation Model (LUAM) that integrates the Canadian Regional Agricultural Model (CRAM), a policy model, to Agri-Environmental Indicators (AEI). The integration of advances in science and policy is a key to developing strategies that will support future sustainability of agriculture. This paper presents research being done to develop the LUAM model using agricultural areas in Southern Ontario. The area is comprised of four Census Agricultural Regions (CAR) and two data-rich pilot sites. The data used by the model are derived from agricultural census, remotely-sensed images, Soil Landscapes of Canada (SLC) database, topographic maps, and output from the CRAM model. These data are stored, processed, displayed, and analyzed using a Geographic Information System (GIS). The results will help to describe LUC and identify what attributes of landscape or production systems make them more apt to change. Hence, issues such as developing relationships between drivers and LUC and assigning outputs from policy models to specific locations within the landscape can be addressed.

■ *Dr. Souleymane Touré has been employed as a Research Scientist at Agriculture and Agri-food Canada since January 2005. Before moving to Canada, he was a Research Associate at the University of Liège, Belgium.*

Dr. Touré obtained a Master of Sciences in Remote Sensing and Geographic Information Systems in 2002 from the University of Louvain-La-Neuve and a PhD in Environmental Management and Sciences in 2004 from the University of Liège in Belgium.

During his professional career, Dr. Touré has been involved in several agricultural and environmental research projects in Africa, Europe and North America. He worked as a Consultant in the System Network on Food Security in Sahelian Region, a FAO Project completed in 1999-2000. As a Research Associate, he led different programmes for agri-environmental indicator studies which involved research teams from Belgium, Luxemburg and the UK. Dr. Touré was also involved in an international programme for studying climate change in Ivory Coast (2000-04). He is currently developing the Land Use Allocation Model for linking policy models to biophysical models in the framework of the National Agri-environmental Health Analysis and Reporting Programme at Agriculture and Agri-Food Canada..

Robert B. Church,
Board Member, Canadian Agri-Food Policy Institute

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Is Looking Into a Mirror of Any Value?

The Government of Canada created the Canadian Agri-Food Policy Institute (CAPI) two years ago as an independent policy "think tank" to provide input on agri-food policy. CAPI's mandate is to create a vision to guide change in investment decision-making in rural Canada. The overall strategy of CAPI is to provide independent advice on "Guiding Change in the Agri-Food Sector – A Vision".

At the government's request the first project, involving Canada wide consultation, was the "Farm Income Project". A second project "Food for a Healthy Population and a Healthy Agri-Food Sector" is in the final planning stages. A third project "Economics and Impact of Renewable Bio-Energy and Bio-Fuels" is under review.

Times have changed! In this era when mass information is available to all, from producer to consumer, timely decisions are essential. We cannot rest with the past. Nor try to predict future intended or unintended consequences by looking in the rear view mirror.

■ *Dr. Bob Church is Professor Emeritus of Medical Biochemistry, University of Calgary. He previously held positions as Associate Dean (Medical Research) and Founding Professor and Head of the Department of Medical Biochemistry at the University of Calgary. Dr. Church owns Lochend Luing Ranches in Airdrie. He has been a director of various companies including Ciba-Geigy, Neurosphere Ltd., Vencap Equities Alberta Ltd., and is Chairman of the Canadian Science and Technology Growth Fund, and an AVAC Board member. He was a founding member of the Natural Sciences and Engineering Research Council, Canadian Institute of Advanced Research and is a former member of the Medical Research Council of Canada and the Alberta Research Council.*

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What's New at the Pesticide Risk Reduction Program: Development and Promotion of Best Management Practices

The Pesticide Risk Reduction Program was initiated in 2003 as part of the Agricultural Policy Framework. The program, run jointly by Agriculture and Agri-Food Canada and the Pest Management Regulatory Agency, establishes a framework by which growers and grower groups can develop strategies to reduce the risks of pesticide use on their crops. For a particular commodity, a risk reduction strategy begins with the development of a crop profile. The crop profile is a comprehensive document that describes the pests associated with the crop and the best management practices used to control them. The document also identifies gaps and barriers that limit the ability of growers to control pests and compete in the global marketplace. Using this document as a reference, growers identify priority pest management issues and then, with the help of other stakeholders (extension specialists, researchers and other industry partners), discuss and prioritize potential solutions. Working groups are created to concentrate efforts on particular problems, with specialists being invited to participate. Growers are expected to set goals and to provide input on the practicality of solutions put forward by working groups. Funding is provided for research, demonstration and education projects and regulatory support for reduced risk pesticides is made available. As the strategy is implemented, assessments are done to track the adoption of best management practices. The expected outcomes of a risk reduction strategy include a measurable reduction in risk and enhanced sustainability and competitiveness for Canadian growers. Examples of commodity groups that have successfully implemented risk reduction strategies will be presented.

■ *Marilyn Dykstra has worked as a Project Coordinator with the Pesticide Risk Reduction Program, Pest Management Centre, AAFC since 2003. Her main responsibilities are working with growers and crop specialists in the collection of pest management data and the development of crop profiles. Marilyn has over twenty years experience in the field of plant pest diagnostics and pest management, having worked with both the University of Guelph and Alberta Agriculture.*

Allen Matthews,
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Farm Viability: The Next Step

Business planning and related technical assistance services are increasingly important to farmers as they look at sustainable innovations. Farm Viability Enhancement involves on-farm consultations with farm management specialists working in partnership with the farm family.

Dairy farms transitioning to organic production, alternatives to production of commodities like wholesale apples or fluid milk are increasingly important to Vermont 's agricultural future. Allen Matthews helps individual farmers identify new possibilities for their farm. Working with a team of advisors from Extension and the larger agricultural community as part of the state's Farm Viability Enhancement program, farmers identify goals, implement plans, and collect the data necessary to assess what they need to do to successfully diversify their businesses.

132 farms representing over 46,300 acres of Vermont farm land have participated in developing ideas for innovations in their farm management, production and financial practices. Special consideration is given to applicants who may be experiencing financial pressures, but who have ideas about possible business or production changes that might lead to improved profitability. The business planning process provides a comprehensive assessment of how proposed changes would affect the business overall.

The presentation will examine the innovations, differences in approaches that are being developed and emphasize challenges as well as strengths for each approach.

The combined economic and community benefits experienced to date, along with statistical projections on future impacts will be discussed.

■ *Allen Matthews is Research Coordinator for the University of Vermont's Center for Sustainable Agriculture and active with their Farming Enterprises and Farm Viability initiatives.*

A generational farmer, Matthews farmed specialty vegetables, small grains, and hay, along with managing 5 greenhouses, and concentrated on developing direct sales through farmers markets, independent grocers, chefs/ restaurants and farm stands. His past research and work with the family's farm have been highlighted nationally, most recently in The NEW American Farmer. Previously he worked with Pennsylvania's Association for Sustainable Agriculture, where he implemented the Community/Farm Alliance for Regional Markets, which established alternative market alliances and successfully linked agriculture with economic development. With a Master's in Organizational Development, he has extensive experience in directing non-profits organizations.

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Canola Commodity Challenge Marketing Simulation Helps Canola Growers Discover Profitable Marketing Opportunities

In response to grower member interest in canola marketing tools that would enable growers to achieve consistently higher returns from canola, the Manitoba Canola Growers Association (MCGA) established the 'Canola Commodity Challenge' – an interactive online marketing simulation created to provide canola growers a chance to enhance their marketing skills in a 'real-life, real-time' yet low risk environment. The Challenge provides growers the ability to trade a predetermined canola inventory in a set period of time by choosing among a number of marketing contracts created to mimic real-world services from Challenge sponsor, Cargill AgHorizons.

Prior to trading, participants complete a Cost of Production Calendar based on their own farming operation. The simulation is supported by live futures prices from the Winnipeg Commodity Exchange, and by cash and basis quotes provided by Cargill AgHorizons.

The Challenge was piloted in Manitoba and in 2005 with the support of the Saskatchewan Canola Development Corporation, Western Producer and Cargill AgHorizons, expanded across the Prairies. In the November 2005 to April 28, 2006 Challenge, 668 growers participated. Participants were able to achieve average prices of as much as $28.37 per tonne over the cash price by using one of the marketing tools. Further expansion across the Prairies, outreach to educational facilities and extension to other crops are currently being explored.

■ *Bruce Dalgarno, and his wife Carol, and have operated a grain farm in the Newdale, Manitoba area since 1975. In 1998, they were honoured to receive the Red River Exhibition's Farm Family of the Year award.*

Bruce has been a Director for the Manitoba Canola Growers Association (MCGA) for 14 years. During that time he was President of MCGA for five years, President of the Canadian Canola Growers Association for two years and Chairman of the Canola Council of Canada for two years. In addition, he is very involved on MCGA's board and serves as the Marketing Chairman and is responsible for developing the Canola Marketing Challenge. He also serves on the MCGA Bylaw, KAP and Annual General Meeting and Ag Days Committees. He found the Integrated Pest Management Program for Canola and Pesticide Harmonization committees to be very interesting and rewarding.

Linda Pizzey,
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The Power of a Loaf of Bread

An invigorating story of how the Pizzey family took a few loaves of bread baked in their farm kitchen and transformed them into a thriving international ingredient company that employs 50 people at Angusville, MB; five people in Gurnee, Il, USA; and provides flaxseed ingredients to food manufacturers all over the world.

■ *Linda Pizzey is the President of Pizzey's Milling, North America's pre-eminent supplier of premium quality specialty flaxseed ingredients, located in Angusville, MB.*

Linda was married to her husband Glenn in 1974 and moved with him to a farm south of Angusville. She assisted him with the farm while raising four children. In the 1980s, Glenn became involved with flaxseed marketing groups and the couple was intrigued to discover that flaxseed carries many health benefits. In 1990, Linda began baking flax bread in her farm kitchen and selling the bread at local farmer's markets. As demand for her delicious bread grew, she and Glenn built a small commercial bakery in the farmhouse and began distributing the bread throughout western Manitoba.

Two moves later, Linda and Glenn decided that they should focus on milling flaxseed for other bakeries. After multiple expansions and a lot of elbow grease, they have transformed the company into the largest supplier of high quality, food grade flaxseed in North America. They currently employ over 50 people and now have a sales office and warehouse in the Chicago area, as well as a sales office in Santa Rosa California.

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Opportunities and Innovations in Connection with Changing Domestic and International Consumer Demand

The structure of the global food industry is continually changing and evolving as food suppliers, manufacturers and retailers adjust to meet the needs of consumers, which includes demand for wider variety of higher quality and processed products. Global sales of high value food products have been growing and global markets have become more competitive. As incomes have risen in many countries during the past two decades, consumers have begun purchasing more high value food items. Food suppliers have to meet consumer demand and preferences at a local level, even as the industry becomes global. Global food retail sales exceed $2.4 trillion annually.

The paper looks at the crucial ingredients of agriculture in Canada that can be leveraged to make the country, the leader in the world's agriculture trade. It analyzes various segments of the agriculture industry in Canada to explore the scope and opportunities.

Consumers are the primary driving force in the global food market. The paper examines factors underlying shifts in the global food consumption pattern and the composition of world trade and assesses how Canada can tap into the opportunities that are opening up. It studies the size and the changing shape of domestic and global markets brought about due to income growth, lifestyle changes, urbanization, demographics and changing family structures. It also investigates the opportunities specific to the influence of immigration, health, ethnic cuisines and organic food.

The paper evaluates growth trends in developed markets of Canada, USA, Europe and Japan vis-à-vis new opportunities and growth trends in the emerging markets of Asia, Latin America and probably Africa due to the growing affluence in certain segments of the population.

Prospects for "growth products" are likely to increase exponentially as domestic and international consumers look for different food and process attributes. The paper suggests strategies to maximize Canada's potential in technological innovations in processing, packaging, biotechnology and genomics to gain access into new markets / develop niche markets with innovative products and possible price premiums.

The paper concludes by looking at how taking advantage of the changing consumer demand would enable sustainable future growth opportunities and higher income to the agri-food sector in Canada.

■ *Hubert Paulmer is a PAg and currently works as a Project Manager at Ontario Institute of Agrologists. He has a Masters degree in Agriculture and a MBA from India and a Post-graduate Diploma in International Planning and Development from the University of Guelph. He has extensive and successful experience in business development, strategy planning and managing businesses in agri-food, commodities and international trade sectors across South and Middle-east Asia, Europe and West, Central and South Africa. He is a member of Canadian Evaluation Society and sits on the Board of Guelph International Resource Centre. He is also an Evaluation and Institutional Assessment consultant.*

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A Canadian Agricultural Income Stabilization (CAIS) Study on Wetland Loss in the Prairie Pothole Region

Canadian government farm safety net programs are designed to reduce risk or improve the private returns to farming. Adverse weather, international supply and demand, and government policies affect farm incomes. Income support programs, such as the Canadian Agricultural Income Stabilization (CAIS) program have been introduced to provide private farm benefits. However, these programs may also influence farm behaviour leading to unintended effects on the environment. Agricultural policy development should include an assessment of the environmental consequences of income support programs.

The Prairie Pothole Region (PPR) is a critical habitat area for North American waterfowl and other wildlife. However, there is also pressure on these habitat areas from agricultural drainage activities. The impact of CAIS on the degree of drainage and resulting loss of wetland area is unknown. A farm level case study model incorporating wetland drainage decisions was used to evaluate the future incremental impact of the CAIS type programs on wetland surface drainage and waterfowl habitat.

The rural municipality (RM) of Emerald in the east-central Saskatchewan PPR was modeled. Case study simulation results for an "average" Emerald grain farm indicated that drainage of wetlands provides significant private on-farm benefits. Over a 20-year time horizon the incremental simulated impact of CAIS on the average grain farm was to increase the wetland area drained from 22.8 hectares (ha) to 23.9 ha (i.e., a 5 per cent increase). If the potential for drainage is examined at a regional level, the wetland loss becomes more significant. This study provides an assessment of the impact of Canadian farm income support programs on prairie wildlife habitat and raises issues in cross-compliance between farm support programs and environmental outcomes.

■ *Dr. James Unterschultz is an Associate Professor in Agribusiness Finance and Marketing in the Department of Rural Economy, University of Alberta. His teaching and research interests include topics in agribusiness finance, commodity, risk models and supply chains. Current research is exploring the applicability of risk models to evaluate investment decisions and whole firm risk. Dr. Unterschultz holds a PhD in finance from the University of Alberta School of Business. Prior to continuing his academic studies in 1990, he spent ten years in agricultural extension.*

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Learning From Others

Innovation encompasses more than developing new products or production techniques. The development of new processes and business models often achieves outcomes that are financially greater and, have longer lasting benefits, than focusing solely on products and production. Value Chain Management (VCM) is a business model that says for a company to optimize its competitive advantages, marketing and production activities should be viewed as a collaborative or interdependent process that takes place amongst the members of a value chain in relation to a shared objective and the end market.

International evidence suggests that producers can benefit significantly from applying VCM principles to their business. Based on a successful Australian initiative that provided producers with practical information on applying VCM principles to their business situation, an interactive DVD is currently under construction.

The DVD will present the VCM model within a theoretical framework of easily digestible principles. The application of these same principles to a commercial situation that benefited producers are then illustrated through videotaped case studies of successful producers and agri-food businesses operating in Australia, New Zealand, UK, United States and Canada; thereby illustrating their practical application.

The overall project has four objectives:
- Present the VCM business model in a format that producers can easily digest;
- Enhance producers' management capabilities in the area of influencing and benefiting from the development of value chains;
- Provide international examples of how innovative producers and agri-food businesses have succeeded from applying VCM principles to their businesses;
- Provide an avenue for producers to benefit from applying VCM principles to their individual business situation.

With a target completion date of October 2006, the DVD is aimed at demystifying the concept of value chains and assist producers enhance their management capabilities, increase their long term competitiveness, and lessen their exposure to business risk.

■ *Martin Gooch is Research Associate – Value Chains at the George Morris Centre, a national agri-product think tank and consultancy based in Guelph, Ontario. Martin's career spans the agri-food industries of Britain, Canada, New Zealand and Australia. He has experience of assisting a diverse range of agri-food companies to develop value chains and marketing initiatives; some of which have won national and international awards of excellence.*

Martin possesses qualifications in farm management; an undergraduate degree in International Business; and a Masters degree from the University of Queensland.

Prior to joining the George Morris Centre, Martin was responsible for developing and leading Ontario's Value Chain Initiative, which was supported through funding provided by Agriculture and Agri-Food Canada (AAFC).

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Innovation and Growth with Organic Agriculture

There is little question that organic agriculture is growing rapidly in Canada and around the world. This growth has been stimulated by increasing consumer demand for organic products. But where is the innovation in organic? Is it a return to old ways of farming or is it something new? As innovation is defined as "a change made in the established way of doing things (Gage Canadian Dictionary)", one could certainly argue that organic is innovative. Organic production practices stem from a growing understanding of our agro-ecosystem, how it functions and what impacts we have on it. Organic agriculture in principle approaches farming in a balanced manner, by understanding the cycles of nutrients and pests in the environment and managing in sustainable and preventative ways. The soil plant interface is viewed as a living system and livestock are managed to sustain health in concert with maintaining production. Organic agriculture also utilizes many science-based 'technologies' to support sustainable production including inoculants, fertility amendments and pest management practices. All of these practices can be used in conventional agriculture, to reduce inputs and promote sustainability. So what sets organic apart? Organic has established a controlled and soon to be regulated production system that has been verified by independent inspectors. This production system and its associated innovative marketing is capturing the hearts, minds and pocket books of a rapidly growing number of consumers. In the minds of consumers, the organic production and marketing system has added value to the food they eat. This presentation will explore this fascinating period of growth and innovation in organic agriculture and agri-food including examples from the Canadian organic sector.

■ *Dr. Andrew Hammermeister, Organic Agriculture Centre of Canada (OACC), Nova Scotia Agricultural College, Truro NS.*

Andy Hammermeister comes from a mixed cattle and grain farm in southeastern Saskatchewan. He has a Degree in Soil Science from the University of Saskatchewan, and an MSc in Land Reclamation and PhD in Applied Ecology, both from the University of Alberta.

Andy started working with the OACC at the Nova Scotia Agricultural College in the spring of 2002. In addition to his research, Andy is managing the organic transition of local research land, supervises graduate students and liaises with researchers across Canada. Hi research includes studying the nutrient supplying potential of organic amendments, crop rotations, variety trials organic agronomy and green manures.

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Reconsidering Integrated Crop-Livestock Systems

Although integrated crop-livestock systems have been in use globally for millennia, farmers in industrialized countries have tended toward increased specialization. There is new interest in reintegrating crops and livestock because of concerns about degraded natural resources, profitability and stability of farm income, and long-term sustainability, but also because of increasing regulation of concentrated animal feeding operations. Integrated crop–livestock systems facilitate broader and more innovative crop species utilization, including perennial and leguminous forages, which can be grown in selected areas of the landscape to achieve multiple benefits. Integration of crops and livestock can occur within the farm or among farms. Both scales of integration rely on farmers' knowledge, motivation, and resources. On-farm integration results in greater biological and fossil-fuel energy efficiency than between farm integration, while between farm integration results in greater labour efficiency. Despite the numerous benefits from on-farm or area-wide integration of crops and livestock, the inherent complexity of these systems constrains their adoption. The combination of system complexity and the potential for public benefit justifies new national research initiatives to overcome these constraints, moving agriculture toward greater profitability and sustainability.

■ *Martin Entz started his work on forages in 1989, when he was hired by the University of Manitoba as a cropping systems agronomist. For the first ten years, Martin and his graduate students revisited the role of perennial forages in integrated crop-livestock systems. His research group published 20 scientific papers that highlighted the positive contribution of forages in modern cropping systems. In 1992, Martin started the Glenlea rotation study, where integrated crop-livestock systems are investigated under both conventional and organic production. Grad student projects at Glenlea have ranged from measuring biodiversity to measuring energy use efficiency in the various systems. Martin has a PhD from the University of Saskatchewan and a BSc and MSc from the University of Manitoba.*

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Productivity and Environmental Sustainability of Grassland Pastures Receiving Hog Manure

Expansion in the hog sector in Western Canada has created opportunities for the beef and dairy cattle industries to improve forage productivity through the application of hog manure as a source of plant nutrients. However, the advantages and disadvantages of this practice in terms of environmental sustainability require exploration. Objectives of the project were to examine the animal and forage productivity, as well as environmental sustainability in terms of methane/nitrous oxide emissions from soil; soil nutrient levels; and potential persistence/transmission of bacteria from the manure to cattle/soil to groundwater in a grassland pasture system.

The addition of hog manure had a significant effect on forage yield with manured pastures supporting 3.1 times more animals over the grazing season as indicated by carrying capacity (grazing days per hectare) than unmanured pastures. As well, manured pastures yielded a 3.3-fold greater liveweight gain per hectare. Forage quality also improved with manure application, as indicated by increased crude protein concentrations in manured forages compared to unmanured forages.

Soil nutrient profiles in soil to four feet did not show a clear effect of manure addition or forage management. Detailed sampling and analysis of plant available nitrogen and phosphorus clearly showed an increase in phosphorus in the near soil surface (0-5 cm) of manure treated soil. Surface soil nutrient concentrations dramatically increased for high animal traffic areas.

■ *Kim Ominski is an associate professor in the Department of Animal Science at the University of Manitoba where she teaches courses in beef production systems. Since joining the Department in 2001, Kim has assembled a multidisciplinary, systems-based program exploring the productivity and environmental sustainability of beef cattle production. Her research has focused on enteric methane emissions from cattle in forage-based production systems. Prior to joining the University, Kim worked as a Regional Livestock Specialist with Manitoba Agriculture, Food and Rural Initiatives.*

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Gaining Ground: Making the Successful Transition to Organic Farming

Canadian Organic Growers continues our tradition of providing Canadian farmers with practical organic production support, with the recently launched publication *Gaining Ground: Making the Successful Transition to Organic Farming*. As one of the interviewers for the book and the National President of COG, I welcome opportunities to speak on the observations gleaned from conducting over 1300 organic inspections for 12 different international organic certification agencies. In doing this work I have toured over 800 organic farms across Canada and have seen many farm families make the successful switch from a higher cost, higher input production method.

Organic agriculture is vibrant with more resource materials available daily and farm tours being organized across the country so that farmers can see the results in their areas for themselves. Farmers also need to know what is happening on the national organic agricultural front. Soon to go to the Canadian Gazette is the National Organic Regulation and its corresponding standard. All farmers will be interested to know the basics of organic farming and what this new regulation and standard will mean for the future of organic agricultural production in Canada. All countries that have put such a regulation in place have observed a significant increase in consumer demand for organic food, once they have the confidence of government oversight.

And with an estimated 90% of organic food currently consumed in Canada being imported, there is a wonderful opportunity here for Canadian farm families to reduce that outrageous statistic! Canada could easily be self supporting in terms of organic food production, and it appears through research that many Canadians will not mind paying the organic premium if it means they can trust organic management principles are being followed with integrity. The market for organic production is continuing to grow as is the demand for locally grown food products.

The stories of the family farm transition successes in *Gaining Ground* will inspire farm families to examine their management options and carefully consider in which direction they wish to shape their farm's future!

■ *Janine Gibson draws from her experiences conducting over 1500 organic inspections since 1993 (and training inspectors internationally since 1995), to assist in managing the transition to organic production and regulation. As an author, educator and working inspector in crops, livestock and processing operations, Janine has represented Canadian organic agriculture at the OECD/USDA workshops in Washington, as the national president of Canadian Organic Growers and as an active member of the Editorial Working Group on the Canadian Organic Standard. With a background in Psychology and English from the University of Winnipeg and Human Ecology from the University of Manitoba, Janine communicates clearly about the rewards and challenges of managing organic production systems. She lives on an off grid, solar and wind powered mixed farm in southeastern Manitoba near Steinbach.*

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An Overview of the Economics of Forest Plantations on Agricultural Land in Canada

Economic and environmental pressures such as interests in improving air quality and reducing greenhouse gas emissions, has given the idea of forest plantations new life in Canada. Here we report on several analyses to assess the potential of plantation activities on agricultural lands. Our analyses assess things like wood values, bioenergy, carbon as an added revenue source and even using plantations as receptors for municipal sludge. Importantly in the analyses, we have included land rents as an opportunity cost for changing land-use from agriculture to forestry and also spatially varying biological growth rates. These analyses provide a more robust spatial "snapshot" of economic opportunities for rural Canada from plantations than has been previously possible.l

■ *Denys Yemshanov is a Research Scientist at the Canadian Forest Service – Great Lakes Forestry Centre, (Sault Ste. Marie, Ontario). He has a PhD in Ecology from the State University of Dniepropetrovsk, Ukraine.*

The focus of Dr.Yemshanov's research has been the development and application of spatial bio-economic cost-benefit models. Particular applications include assessments of timber and carbon trade-offs in afforestation, bioenergy assessments and alien species risk assessments. He has worked for the Ontario Forest Research Institute, Ontario Ministry of Natural Resources, the University of Guelph (Department of Agricultural Economics and Business) and at the Institute of Economic Forecasting, National Academy of Sciences, Ukraine.

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Cornboard: The Use of Agricultural Residue in Producing Environmentally Friendly Fibreboard

As the rate of deforestation increases, a new fibre is needed to replace wood. Agricultural residue can fulfil this void. In this study, specifically corn residue was examined to determine whether it can be used to produce environmentally friendly fibreboard. Replicating the procedure of wood based particleboard, this corn based particleboard can be produced. The fibreboard is unique when compared to production board in that it relied on a natural binding agent, rather than a formaldehyde based resin. Preliminary studies were done between the corn based product, Cornboard, and commercially available particleboard. The results demonstrated that corn has the promise to replace wood fibres. The product developed has the following advantages over production particleboards:

1. Renewable Resource: Cornboard utilizes the waste product from growing corn; a resource that is renewable annually.
2. No Toxic Emissions: Composed of all natural products, Cornboard does not share the health concerns that exist from the resin binders in particleboard and therefore is environmentally friendly to work with.
3. Moisture Resistant: Cornboard was demonstrated to be able to provide better moisture resistance in its natural form. Even greater water resistance was achieved with the addition of aluminium sulphate.
4. Flame Retardant Properties: Every sample tested failed to ignite when exposed to open flame for one hour.
5. MOD: Samples demonstrate comparable deflection results, achieving this with a less dense board.
6. Weight: Cornboard is lighter than traditional wood based particleboard, and therefore easier to ship and handle.
7. Machineability: Corn residue fibreboard can be readily machined with standard woodworking equipment.

■ *Raised in the heart of Ontario's corn country, for many years Philip Schmidt has been aware of the vast quantity of agricultural residue left in the fields following harvest. Wishing to harness this material he developed a unique product comparable to production particleboard. He has improved and refined his product through hours of research and testing.*

Recently Philip presented his product and research at the Canada-wide Science Fair in Chicoutimi QC. As a result of his work, Philip received on of four 2006 Manning Young Canadian Achievement Awards presented at the Annual Awards Banquet in Calgary, September 2006.

Philip is currently in his final year of secondary school and wishes to further his education with studies in engineering.

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Future Energy Demand and its Potential Role in Reshaping Agriculture

The upward trend of energy costs in recent times has now caught the attention of society with its potential for a lasting impact on our current standard of living unless different actions, behaviors, and alternative energy options are fully developed.

Many conferences, articles, and papers have been available primarily focusing on the very real energy impacts on transportation infrastructure, urban housing issues, and the overall economy. A full discussion on energy use in agriculture and possible alternatives from a biological production systems framework needs to be engaged with the emerging reality of $70 barrel oil and higher.

There is universal agreement that fossil fuels are a finite resource with 37% of the worlds current energy derived from oil. The debate on Peak Oil, when oil demand exceeds supply, is now renewed again given the rapid spike in oil prices. One forecast has this already occurring at US Thanksgiving in 2005, while the United States Geological Survey has another projection for 2004. Known facts support the idea that Peak Oil will occur within the current generation.

Agriculture is now taking the full impact of these energy developments in many ways. Preliminary systems studies have suggested that for every 1 calorie eaten by the consumer, 7 to 20 calories of fossil fuel is used to make that event happen. These calculations include, in general, the total of the energy units provided by input costs such as fertilizer and farm machinery, processing and packaging, and the average distance to market (on average 2500 kilometers for common food in North America).

Agriculture in the new age of energy is a critical issue. Innovation in bio-energy production and low energy input farming systems is necessary to ensure that agriculture is able to adapt to and benefit from this new age. In this context, the issues of food versus fuel production, food security and food sovereignty, biological versus chemical nitrogen fixation and tillage versus no-tillage need to be debated.

■ *Scott Stothers completed both his BSc (1979) and MSc (1984) in Agricultural Economics at the University of Manitoba. He is currently Manager, Strategic Planning, Manitoba Food and Rural Initiatives, Strategic Planning Directorate (SPD). One of the SPD organizational roles is to view agriculture and rural communities from a very long-range perspective in identifying challenges and opportunity. As a result, SPD planning activities cover a wide range of subject areas that include climate change, water, GMO technology, but of recent importance, the long term energy supply and its impact on agriculture in the production of food and bioenergy.*

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Integrated Soil Fertility Management: Lessons from Africa

Concerns about sustainability and high environmental costs of agro-ecosystems in developed and developing countries are pertinent. The Integrated Soil Fertility Management paradigm, promoted in Africa, recognizes the benefits of combined use of organic and mineral inputs, and is a holistic approach to soil fertility that addresses the biological, physical, chemical, social, economic and political factors determining the sustainability of agriculture. However, to fully benefit from this approach, the mechanistic linkage between soil structural dynamics and resource use efficiency needs to be better understood. Our research focuses on the relationships between plant growth, nitrogen use efficiency, carbon cycling, and aggregate turnover across a gradient of:

1) inputs (i.e., only organic, to combined organic and mineral, to only mineral resource inputs),
2) textures (i.e., clayey to sandy), and climate (i.e., dry savanna to humid savanna to humid forest).

We hypothesized that the rate of soil aggregate turnover controls nitrogen synchrony and carbon stabilization in these agroecosystems, and plays a fundamental role in inducing the "added benefits" associated with the combined use of organic and mineral inputs. Preliminary results support our hypothesis of improved plant growth and reduced nitrogen and carbon losses with combined inputs compared to sole applications of either resource. The application of this relationship across soil types and different quality organic inputs is discussed.

■ *Roberta Gentile is a native of Winnipeg and obtained her BSc Agriculture and MSc Plant Science from the University of Manitoba. Currently she is completing her PhD at the University of California - Davis. Her research focuses on the ecological processes controlling carbon and nitrogen cycling at the soil-plant interface in agroecosystems. Interested in learning about sustainable agriculture practices through exposure to international cropping systems, she has previously worked in South America and is presently conducting her field research in Kenya.*

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Enhanced Efficiency Fertilizers – Experiencing Step Change in Crop Nutrient Technology

The fertilizer industry has always provided supporting services to increase the value its products can deliver. These services came in the form of agronomic expertise and focused almost exclusively on how growers could derive the greatest agronomic efficiency from fertilizer. Better matching nutrient availability with crop requirements has resulted in a well-developed set of Best Management Practices (BMP) growers utilize. Agronomic efficiency gains came in the form of how the product was used. The future will include efficiency gains from the product itself, and products themselves could equate to a best management practice.

The drivers toward the development of enhanced efficiency fertilizers come from several sources. Historically, marketing fertilizer has always been based upon a straight agronomic value proposition. While still the predominant factor into the foreseeable future, the dynamics of the value proposition have changed and will continue to change going forward. Enhanced efficiency fertilizers will be propelled by the value proposition and also their ability to meet many of societal goals and the corresponding policies that emerge whether they are social and/or environmentally driven.

■ *Craig Rickard joined Agrium's Corporate Relations group in 2004 as Government Relations and Regulations. Prior to joining Agrium, he worked as a consultant for Issues Ink and as a Senior Policy Advisor to two successive Federal Ministers of Agriculture in Ottawa. He also worked as a Commercial Agriculture Account Manager at TD Bank and a farmer. Craig has broad experience throughout the agriculture industry and understands the interaction of government policy and regulation on all aspects of the industry. He graduated from the University of Guelph with a Commerce Degree in Agriculture.*

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Assessing New Technologies: Case Study of Water Management Systems in Hog Operations

The rate of technological change for producers is increasing and producers are often faced with decisions of whether to adopt new technologies. This presentation examines methods of assessing new technologies and identifying opportunities and barriers to adoption. The focus will be on strategies that producers can use to understand the financial implications of new technologies, particularly on net farm income and cash flow.

The methods discussed in the first part of the presentation will be illustrated by applying the methods to a case study involving a new technology for water management in hog operations. Recently, a commercial hog farm in southern Alberta adopted ball-bite nipple drinker technology which promised reduced water consumption, greenhouse gases, and operating costs. After an initial assessment of the technology and its implications for farm profitability, the operation adopted the technology. Over the course of a one year trial, the new technology led to a reduction in water usage of 35%. The benefits of reduced water wastage included decreased manure handling costs and electricity costs for pumping water.

In a grower operation with 500 pigs per cycle the new technology demonstrated an excellent return on investment, with a payback period of approximately 3.5 months and an increase in annual net income of $1,584 on a $463 investment. The results can easily be extrapolated for grower and finishing operations of different size.

This presentation will also consider potential barriers to adoption of new technologies and the ways in which industry and government can alleviate producer concerns surrounding adoption.

■ *Beth Sparling is a Research Associate at the George Morris Centre, an independent agri-food think-tank located in Guelph, Ontario. Beth specializes in the area of environmental economics. Beth has returned to the Centre after completing a Master of Arts in Economics degree at the University of British Columbia. She also holds a Bachelor of Commerce degree from the University of Guelph. Recent research work includes an assessment of the economic impact of environmental regulations for hog producers and an economic evaluation of beneficial management practices in agriculture.*

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Environmental and Economic Assessment of Five BMPs in the Steppler – South Tobacco Creek WEBs Project

The Steppler sub-watershed, approximately 210 ha, located within the South Tobacco Creek Watershed, in southern Manitoba, is one of seven WEBs project sites located across the Canada. WEBs, is an acronym for "Watershed Evaluation of Beneficial Management Practises". Five beneficial management practices are being assessed on the Steppler Farm; zero tillage versus conventional tillage, holding pond to capture runoff from a cattle containment area, conversion of cropped land to forage, development or enhancement of riparian area along water courses and use of small reservoirs to reduce downstream nutrient runoff. Runoff, soils/snow/surface materials, meteorological and agronomic information, along with water samples is being collected at the edge-of-field and sub-watershed levels. This information will be used to assess the economic and an environmental performance of the selected BMPs. The South Tobacco Creek has been the location of numerous studies over the last 10 years, which will provide background data to the WEBs project. The Deerwood Soil and Water Association (a local conservation group comprised of local producers) support the WEBs proposal and their technician is providing field support. Numerous Federal and Provincial government agencies (PFRA/AAFC, Environment Canada, Manitoba Agriculture and Manitoba Environment) and NGOs (University of Manitoba and Ducks Unlimited) will provide technical support and guidance to the WEBs proposal.

Very preliminary information available from the results being obtained indicates that dissolved phosphorous (P) levels in the runoff are high and these higher levels of P can be traced back to the high levels of dissolved P found in the surface material (plant trash) and top soil level. From the literature it appears that surface material can be source of dissolved P, if the trash materials under goes a freeze thaw cycle. If future findings prove that this is correct, the challenge will be to find conservation practices which, will reduce the dissolved P levels. Nutrient levels in the water were also very high below the cattle containment area but these levels decreased very quickly with dilution, moving downstream.

The *E. coli* testing has yielded the expected results; high levels of *E. coli* in the runoff immediately downstream of the cattle containment area and dilution of the concentration moving downstream. Of interest will be how effective the holding pond and associated irrigation works will be in reducing or eliminating the *E. coli* found in the water.

■ *Jim Yarotski graduated from the University of Manitoba as a Hydrologic Engineer. He has worked for Agriculture and Agri-Food Canada's Prairie Farm Rehabilitation Administration for the past 26 years, and most recently he has been the project lead for the Manitoba Watershed Evaluation of BMPs (WEBs) Project.*

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Nanotechnology – An Emerging Technology for the Agriculture and Food Industry

Nanotechnology enables the manipulation of matter at the atomic level, and offers potential possibilities across the fields of agriculture, and materials in manufacturing, food processing and quality control. Nanotechnology is attractive to global food production because it promises the possibility of answers to the key challenges. Nanotech smart treatment delivery systems could be used to detect early signs of disease in crops based on detection of changes in metabolism and respiration. Nanotechnology ensures the traceability of food from the field to the factory and then to the supermarket. Improvement of the efficacy of functional foods and creation of intelligent food packaging mechanisms are possible only by nanotechnology. Research in nanotechnology has extremely high potential to benefit society through applications in agriculture and food systems. This review aims to provide information and analysis about the development, use, commercialization and impact of nanotechnology in the agriculture and food industry.

■ *Suresh Neethirajan is a PhD student in the Biosystems Engineering Department, University of Manitoba. His areas of interest include nanotechnology and image processing for agriculture and food industry. He has worked as a junior research fellow and as an instructor at the Tamil Nadu Agricultural University, India.*

His PhD thesis research involves developing nanotechnology and microelectronics based sensors for grain quality monitoring in grain bins. He has developed algorithms for processing soft X-ray, X-ray CT and transmitted light images of food grains to solve various problems in grain industry.

Suresh received his Bachelors degree from Tamil Nadu Agricultural University, India and his MSc degree from the University of Manitoba, Canada. He has received a Canadian Wheat Board Graduate Fellowship and a meritorious award at Tamil Nadu Agricultural University, India. He is a member of the American Society for Agricultural and Biological Engineering and the Canadian Society for Bioengineering. He is also a registered Engineer-in-Training at the Association of Professional Engineers and Geoscientists of the Province of Manitoba. He has published articles in various reputed scientific journals. He is currently serving as a member of the Senate and Senate Executive Committee of the University of Manitoba.

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Nutrient Management and Changing Farm Practices in Southern Ontario Watersheds

This study analyzed 317 Ausable Bayfield, Grand River and Lake Simcoe farmers' questionnaires obtained from a stratified random sample of these watersheds 'best' and 'worst' quality subwatersheds. The study indicated that farmers resisted regulations like the Nutrient Management Plan (NMP), but thought that the government should support them financially when they adopt environmental programs and practices. The voluntary Environmental Farm Plan (EFP) was at least partially implemented by 77% of the farmer sample. As well, farm size, gross farm sales, implementation of an EFP and an NMP, being a full time farmer and a large livestock producer were significantly related to the best management practice (BMP) adoption rate (ARI). Sub-watershed quality, proximity to cities, and/or Conservation Authorities, age and education did not affect the adoption rate significantly. Regression models for adoption rate and gross sales helped identify the variables that predicted the dependant variables {ARI and Gross Farm Sales (GFS)}. Area farmed was the only variable which was significant in the ARI model. The GFS model where GFS = *f* (education, gender, age, off farm income, watersheds, total land farmed, Adoption Rate Index), had a much better fit (R2=70.8%) than the ARI model and had more significant variables. Farm size had a significant influence on both adoption rates and gross sales. An increase in the adoption rate by one unit would increase the odds of high sales by 180.8 times. Thus, farmers with good management practices (higher adoption rates) and large farm sizes are likely to have better sales. These watersheds have many small operation farmers and this explains why the overall adoption rate is low at 0.27. Environmental programs have to find better ways to influence small farm operation farmers to adopt BMPs as financial and technical adoption incentives are perceived to be inadequate.

■ *Glen C. Filson, PhD (Toronto) is Professor of Environmental Design and Rural Development at the University of Guelph and Vice-President of the Universitty of Guelph Faculty Association. His published research deals mainly with southern Ontario landowners' perceived quality of life and their environmental management systems. For instance, in 2004 he edited and co-authored the UBC Press book* Intensive Agriculture and Sustainability: a Farming Systems Analysis. *As well, Glen is conducting a SSHRC funded comparative analysis of agricultural extension systems in Ontario, Crimea (Ukraine) and Yaroslavl Oblast (Russia). Additionally, working with Director G. Otis and the Vietnamese Beekeeping Development Research Centre, Glen is Coordinator of the AUCC/CIDA project, Beekeeping and Rural Extension in Vietnam.*

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ALUS: The Farmers' Conservation Program

The Alternative Land Use Services (ALUS) program is a leader in the emerging discussion on ecological goods and services, how farmers can take leadership in environmental stewardship, and in determining the best ways to provide positive results for farmers, rural communities, and Canadians at large.

ALUS is an incentive-based conservation program and is currently in its first year as a pilot project in Manitoba. It pays farmers in the Rural Municipality of Blanshard to maintain and enhance their wetlands, riparian areas, natural areas, and fragile lands. This is the first project of its kind in Canada, though other provinces are working on similar ALUS projects.

The evaluation of the three-year pilot project will focus on the socio-economic impacts on the participants and the community, and data collection is currently in progress. The project will have exciting first-year data to share, along with some practical and policy "lessons learned."

The ALUS pilot in Manitoba is directed by a unique partnership comprised of three levels of government, a farm organization, a conservation organization, a conservation district, and other stakeholders.

■ *Ian Wishart and his wife Leslie manage a 126-year old mixed farm near Portage la Prairie, Manitoba. Their 2,500 acres are seeded to forages, potatoes, and specialty crops, and they also run a 200 head cow/calf operation.*

Since 2004, Ian has served as Keystone Agricultural Producers' Vice President, and previously served as a district executive member. He's also the secretary-treasurer of his local Delta Agricultural Conservation Co-op, and has spent ten years on the board of Manitoba Crop Insurance Corporation, and is a past president of the Association of Irrigators in Manitoba. He is also past president of the Manitoba Forage Council, and served on the board of the Manitoba Rural Adaptation Council.

Ian is the founding father of Alternate Land Use Services (ALUS), a conservation program proposal that empowers farmers to take on a new role as landscape managers. He has been instrumental in launching the first ALUS pilot project in Manitoba, and continues to be part of the charge to develop pilot projects across Canada, with the goal of a national ALUS program that recognizes the environmental services that farmers provide to all Canadians.

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Cost Effective Program Targeting Within Agricultural Watersheds for the Provision of Ecological Goods and Services

Healthy watersheds and natural areas provide goods and services to society such as groundwater recharge, flood and erosion control, carbon sequestration, bio-diversity, air and water purification, and wildlife habitat. These are more commonly being referred to as ecological goods and services (EGS). One way to ensure the maintenance of these EGS is through the effective delivery of Beneficial Management Practices (BMPs) on a watershed scale.

This presentation will demonstrate that to be effective, BMPs must be targeted and delivered on a watershed basis. A watershed serves as a discrete portion of the landscape on which BMPs and resultant EGS can be targeted, managed and measured. Agriculture and Agri-Food Canada (AAFC) has an extensive list of BMPs designed to promote sustainable agricultural practices. An AAFC research program designed to evaluate the economic and environmental effects of BMPs on a watershed scale (the WEBs program) will be discussed.

In 2005, under the Agricultural Policy Framework (APF), wetlands were accepted as a BMP under Category 21: Enhancing Wildlife Habitat and Biodiversity, and wetland restoration planning was accepted under Category 28: Biodiversity Enhancement Planning. Ducks Unlimited Canada has conducted research on the economic and environmental benefits of wetland restoration and retention and cost effective targeting for addressing environmental issues. Interim results on this research will be discussed.

Results from BMP programs have important policy implications for targeting program in agricultural watersheds and determining appropriate incentives to landowners that provide ecological goods and services. A targeting framework also serves as a policy analysis tool for conservation organizations and governments to better design and implement similar programs designed to maintain or increase the provision of EGS.

■ *Shane Gabor is a Research Biologist for Ducks Unlimited Canada's Freshwater Initiative. He holds a BSc – Wildlife Biology from the University of Montana, and an MSc – Wetland Ecology from McGill University. Shane currently manages programs designed to identify and address policy and information needs related to the ecological goods and services, and works extensively with government and non-government groups. He is currently working on a research program in partnership with Agriculture Canada to develop economic and environmental information on the benefits of Beneficial Management Practices for water quality.*

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National Farm Stewardship Program and Ducks Unlimited Canada Wetland Restoration Initiative

Wetlands are a critical component of a healthy functioning rural and urban landscape. Canada is home to nearly 25 per cent of all the wetlands on Earth with about 14 per cent of Canada's total area being covered in wetlands. While that may seem like a lot, the fact is that through industrial, rural, and urban development, more wetlands continue to disappear every day. As much as 70 per cent of Canada's original wetlands have been lost in settled areas of the country.

Wetlands are a critical part of Canada's natural capital and provide many ecological goods and services, including the provision of habitat for many wildlife species, filtering water reducing the impact of flooding and recharging groundwater, and preventing soil erosion by forming buffers that separate land-use activities from water bodies.

As part of Canada's Agricultural Policy Framework and National Environmental Farm Planning Initiative, the National Farm Stewardship Program (NFSP) provides technical and financial assistance to support adoption of beneficial management practices (BMPs) by agricultural producers and land managers. Through consultations with DUC and various provinces, the NFSP has included a one time payment for the restoration of wetlands as an eligible activity. These payments will be issued to individual agricultural producers who restore previously drained wetlands. Producers may be eligible to receive technical assistance and funding for activities such as earthwork, equipment rental, and consulting fees to ensure the wetland is restored as close as possible to the original size, depth, and ecological function.

In a targeted innovative approach to learn more about what drives wetland restoration, DUC will offer additional financial incentives over and above the NFSP to landowners in select priority waterfowl areas. By comparing the uptake in the targeted areas against the uptake in areas without increased incentives, AAFC and DUC can learn more about what the real barriers to wetland restoration are and use that information to inform and design future agri-environmental programs and policies.

This presentation will speak to the importance of wetlands to agriculture as well as to Canada's urban communities. It will also highlight the innovative NFSP/DUC partnership program that is being delivered in many regions across Canada with the intent of increasing the adoption rate of wetland restoration BMP projects by the agricultural community.

■ *Curtis Snell was born and raised on a mixed farm in Watrous SK. He farmed for a number of years in the 1980s and then decided to pursue a career in the environmental/agriculture sector. He graduated with a Civil Engineering and Water Resources Technology Diploma from Lethbridge Community College in 1990, and in 2004 obtained a Bachelor of Environmental Technology degree from the University of Cape Breton. Curtis Snell has worked with producers as well as government and non-government organizations on soil and water conservation projects and programs across Canada for more than 16 years. Curtis is currently a BMP Analyst with the National Farm Stewardship Program working out of the Regina PFRA Office.*

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A Decision Support Process for the Development of Habitat–Based Biodiversity Standards for Agriculture in Canada

The goal of the Environment Chapter, under the Agricultural Policy Framework is to decrease risk and increase benefits of agriculture to air, water, biodiversity and soil (environmental themes). Environment Canada (EC) has signed a Memorandum of Understanding (MOU) with Agriculture and Agri-Food Canada (AAFC) to develop Agri-environmental standards within a four year time period. The National Agri-environmental Standards Initiative (NAESI) is the EC program to set environmental performance standards, for agriculture, that address each of the environmental themes.

The ultimate goal under the biodiversity theme is to conserve biodiversity that is critical to maintaining and restoring ecosystem function and integrity at multiple scales. Biodiversity includes all living organisms and the ecosystems that sustain them. As such, biodiversity can not be represented by a single measurable element. Biodiversity can be represented by a suite of elements that includes coarse and fine scale dimensions and addresses the conservation of common elements, as well as rare elements.

Effects on habitat quantity and quality have been identified as the major impact of agriculture on biodiversity. The NAESI approach for biodiversity standards development is to ensure adequate representation of ecosystems typical for the region in combination with a multi-species surrogate approach, which identifies a set of species whose spatial, compositional and functional requirements encompass those of all other species in the region. Under the NAESI Biodiversity Standards project we have developed a decision support process that integrates landscape analysis with population assessment of a suite of surrogate species to assess the biodiversity consequences of landcover/landuse patterns. This innovative decision support process will support the development of habitat-based standards for biodiversity that are sensitive to regional conditions.

■ *Cathy Nielsen graduated from University of New Brunswick with a BScF in 1981. She worked in forestry in New Zealand then became the owner/operator of a landscaping business in Alice Springs, Australia. She returned to Canada in 1983 and joined the Science and Technology Transfer Unit, Ontario Ministry of Natural Resources as the Biodiversity Specialist. She has experience in leading science teams in applied research and the development of guidelines and decision support tools. In 2004 she joined the Landscape Science and Technology section within Environment Canada, in Ottawa. She currently coordinates the development of voluntary biodiversity agri-environmental standards. Cathy also operates a Christmas tree farm and hobby scale maple syrup operation on property she owns in eastern Ontario.*

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The Use of Property Tax Credits to Conserve Natural Capital

Natural lands are the ecological cornerstone of our natural capital endowment and produce a range of non-market ecosystem benefits that our society depends on. However privately-held natural lands in the Canadian prairies continue to be lost, in part because landowners bear the costs of retaining them without receiving corresponding returns from the marketplace.

The benefits of private natural land retention and stewardship far outweigh the costs, and effective instruments are needed to correct the market failure. A range of economic instruments could be used; however, they remain largely untested and their relative value and cost efficiency is not well understood. Municipal tax credits are one means for broader society to assume some of the financial responsibility for natural capital stewardship and reward private landowners who retain natural land. Municipal tax credit systems are a logical foundation upon which to build and advance integrated incentives to maintain and enhance the provision of ecological goods and services from Canadian prairie ecosystems.

Results from the Saskatchewan Tax Credit Pilot Project will be presented that suggest municipal tax credits are well received by landowners, can have a positive effect on landowner attitudes toward conservation, and can be an efficient vehicle for society to assume a more equitable portion of the financial responsibility for natural capital retention. Monitoring and compliance emerged as crucial program elements and will be reviewed to provide direction to governments and others considering this approach. Tax credits provide an efficient mechanism for delivery of conservation incentives that can be readily understood by landowners, and integrated with other programs, including conservation easements, market incentives such as carbon offsets, and watershed protection initiatives.

■ *Cynthia Kallio Edwards is the National Manager of Industry and Government Relations for Ducks Unlimited Canada. Cynthia received her MSc (1999) and BSc (1997) from the University of Saskatchewan (Agricultural Economics). She has an interest in the conservation of Canada's natural capital and the viability of rural Canada, which she is able to pursue in her work with Ducks Unlimited Canada. Cynthia was raised on a grain farm near Dinsmore, Saskatchewan and now resides with her husband and daughter on the Edwards family mixed grain and cattle operation near Nokomis, Saskatchewan.*

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An Economic Evaluation of Beneficial Management Practices for Crop Nutrients in Canadian Agriculture

Producers realize that there is usually some cost involved in adopting beneficial management practices (BMPs), whether the BMPs take up valuable time or cost money for services. In many cases however, there are also offsetting economic benefits. Producers need to have a good understanding of the costs and benefits of BMPs to decide whether to adopt. Evaluation of BMPs through a benefit-cost analysis is also important to ensure that nutrients are utilized in a manner that is both environmentally and economically sustainable.

This presentation will illustrate the economic benefit that would be required to engage producers to participate in beneficial management practices. It is based on research completed for the Crop Nutrients Council where representative farm models were developed for various provinces across Canada. A survey of 1,000 crop producers was conducted by Ipsos-Reid to collect the required information for the models. Typical crop rotations were devised for the representative models to estimate farm profitability before and after participation of the beneficial management practices. The BMPs evaluated in this analysis included buffer strips, soil testing, nutrient management plans, manure management plans, no till and minimum tillage and variable rate fertilization.

Barriers to adoption for BMPs include understanding the economics at the farm level. The results presented in this analysis will help producers make informed decisions regarding the adoption of beneficial management practices. Implications for government policy and financial assistance will also be discussed.

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[1] The provinces included in this analysis were: Alberta, Saskatchewan, Manitoba, Ontario, Quebec and PEI.

■ *Cher Brethour is a Senior Research Associate for the George Morris Centre, a Canada-wide, not-for-profit organization in Guelph, Ontario. As an independent think-tank, the Centre provides industry decision-makers with critical information and analysis on issues affecting the Canadian agri-food sector.*

Cher's primary research area at the George Morris Centre is how the environment impacts agricultural production and how it affects producer management decisions and competitiveness. She holds Bachelor's and Master's degrees from the University of Guelph in Environmental Science and Agricultural Economics and Business (emphasis in Environmental Economics). Cher is a certified Project Management Professional (PMP®).

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