

## CURRICULUM VITAE

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### ACADEMIC TRAINING

2001	Certificate	University of Manitoba	University Management
1987	Ph.D.	University of Saskatchewan	Agricultural Engineering
1982	M.Sc.	University of Manitoba	Agricultural Engineering
1980	B.Tech.	G.B. Pant University, India	Agricultural Engineering

### AWARDS AND RECOGNITIONS

2017	Sukup Global Food Security Award, American Society of Agricultural and Biological Engineers
2016	Doctor of Science (Honoris Causa), Tamil Nadu Agricultural University, Coimbatore, India
2016	Superior Paper Award, American Society of Agricultural and Biological Engineers
2016	Winegard Visiting Lecturer, University of Guelph, Guelph, ON
2015	The National Research Award for a Co-authored paper, The Research Council, Sultanate of Oman
2015	Honorary Life Membership, Association of Professional Engineers and Geoscientists of Manitoba
2015	Partners in Research Engineering Ambassador Award, Partners in Research, London, ON
2015	Best Paper Award, Indian Society of Agricultural Engineers
2014	Kishida International Award, American Society of Agricultural and Biological Engineers
2013	Inducted as Foreign Fellow of the National Academy of Sciences, India
2013	Education Leadership Award presented at the World Education Congress, Mumbai, India
2012	Best Paper Award, Indian Society of Agricultural Engineers
2012	Queen Elizabeth II Diamond Jubilee Medal
2012	Alumni Achievement Award, University of Saskatchewan
2011	Inducted as Fellow of the Indian Society of Agricultural Engineers
2011	Inducted as Foreign Fellow of the National Academy of Agricultural Sciences, India
2010	Inducted as Fellow of the Engineering Institute of Canada
2009	Inducted as Fellow of Engineers Canada
2009	Inducted as Fellow of the Royal Society of Canada
2008	Brockhouse Canada Prize for interdisciplinary research in science and engineering, Natural Sciences and Engineering Research Council of Canada
2008	Dr. John M. Bowman Memorial Winnipeg Rh Institute Foundation Award for excellence in research, the University of Manitoba
2008-17	Regular High Level Visiting Scientist for outstanding achievements in the field of Information

- Science and Technology, Beijing University of Posts and Telecommunications (BUPT)
- 2008 Engineers Canada Meritorious Service Award for Professional Service
- 2007 Inducted as Fellow of the Canadian Institute of Food Science and Technology
- 2007 Distinguished Agrologist Award, Manitoba Institute of Agrologists
- 2007 Inducted as Fellow of the Canadian Academy of Engineering for research in grain storage and service to the profession
- 2007 Canadian Society for Bioengineering (CSBE) Maple Leaf Award in recognition of distinguished leadership in agricultural and biological engineering through teaching, research and professional service (the highest award of the CSBE)
- 2007 Dr. Anand Prakash Award, Applied Zoologists Research Association (India)
- 2006 Inducted as Fellow of the Agricultural Institute of Canada for research in grain storage
- 2006 Harry Toop Memorial Science for Saskatchewan Lecture Award, University of Saskatchewan, Saskatoon, SK
- 2005 American Society of Agricultural and Biological Engineers Honorable Mention Paper Award in recognition of authorship of a contribution to agricultural engineering literature of exceptional merit as published by the Society
- 2005 Inducted as Fellow of the Canadian Society for Bioengineering in recognition of outstanding contributions to the Engineering profession, in all aspects including academic, research and international activities
- 2005 Inducted as Fellow of the American Society of Agricultural and Biological Engineers for outstanding accomplishments as a researcher, teacher, administrator, author, and contributor to technical societies
- 2005 Inspirational Professor of the Year Award presented by the University of Manitoba Students' Union and the University Teaching Services for significant influence and contribution to education
- 2004 Outstanding Service Award, Association of Professional Engineers and Geoscientists of Manitoba
- 2004 Excellence in Graduate Teaching Award presented by the Graduate Students Association of the University of Manitoba
- 2004 Information Technology Division of the American Society of Agricultural Engineers Select Paper Award in recognition of an outstanding 2004 Annual Meeting paper
- 2004 Canadian Institute of Food Science and Technology W.J. Eva Award for outstanding contributions to food science through research and science
- 2004 Distinguished Professor in recognition of outstanding distinction in research and in scholarship, and of a significant record in teaching
- 2003 Institute Award, the highest award given by the Canadian Institute of Food Science and Technology
- 2002 Tier I Canada Research Chair in Stored-Grain Ecosystems
- 2001 Agriculture and Agri-Food Canada Agcellence Award for contribution and success of the Canadian Storage CD-ROM
- 2001 Canadian Society for Agricultural Engineering John Clark Award for outstanding research in grain drying and storage and extraordinary contributions to the profession and society
- 2001 Sigma Xi, Senior Scientist Award for outstanding research contributions
- 2001 University of Manitoba Merit Award for Research, Scholarly Work and Other Creative Activities
- 2000 Inducted as Fellow of the Applied Zoologists Research Association (India)
- 2000 Best Feature Article Award for "Aseptic processing and packaging: promising packaging technique for food processing industries" published in Indian Food Industry in 1999
- 1999 University of Manitoba Merit Award for Research, Scholarly Work and Other Creative Activities
- 1999 Agricultural Engineer of the Year, North Central Region of the American Society of

- Agricultural Engineers
- 1999 Certificate of Teaching Excellence, University of Manitoba Teaching Service and University of Manitoba Student Union
- 1997 University of Manitoba Outreach Award for contributions to professional societies
- 1997 Superior Academic Performance Award, Faculty of Engineering, University of Manitoba
- 1996 Association of Professional Engineers of the Province of Manitoba Merit Award for outstanding scholarly achievements
- 1995 Canadian Society for Agricultural Engineering Young Agricultural Engineer of the Year Award for outstanding achievements in teaching, research, and contributions to the profession
- 1994 American Society of Agricultural Engineers Engineering Achievement Young Researcher Award for research contributions in grain storage
- 1993 University of Manitoba Merit Award for Research, Scholarly Work and Other Creative Activities
- 1992 Applied Zoologists Research Association (India) Young Scientist Award for research contribution on controlled atmosphere storage
- 1991 University of Manitoba Merit Award for Teaching, Research, and Service
- 1990 University of Manitoba Merit Award for Teaching
- 1988 University of Manitoba Merit Award for Teaching, Research, and Service
- 1987 Rh Award for Outstanding Contributions to Scholarship and Research in the Applied Sciences Category
- 1984 Travel Grant to attend Scholarly Conference from the Canadian Bureau for International Education, Ottawa
- 1983-85 University of Saskatchewan Graduate Scholarship
- 1983 Vice-Chancellor's Gold Medal upon Graduation at G.B. Pant University
- 1980-81 University of Manitoba Graduate Fellowship
- 1977-78 Indian Council of Agriculture Research Skill Contest Awards
- 1976-77 Best Co-leader 4-H Club
- 1975-79 G.B. Pant University Merit Scholarship
- 1975 Indian Council of Agriculture Research Skill Contest Awards
- 1974-79 Government of India National Merit Scholarship
- 1972-74 Grade XI and XII National Merit Scholarship
- 1967-72 Grade VI to Grade X Merit Scholarship

## CAREER

- 2011- Vice-President (Research and International) and Distinguished Professor, University of Manitoba, Winnipeg, Manitoba
- 2009-11 Vice-President (Research) and Distinguished Professor, University of Manitoba, Winnipeg, Manitoba
- 2009 Vice-President (Research), Distinguished Professor, and Canada Research Chair in Stored-Grain Ecosystems, University of Manitoba, Winnipeg, Manitoba
- 2009 Acting Vice-President (Research), Distinguished Professor, and Canada Research Chair in Stored-Grain Ecosystems, University of Manitoba, Winnipeg, Manitoba
- 2004-08 Associate Vice-President (Research), Distinguished Professor, and Canada Research Chair in Stored-Grain Ecosystems, University of Manitoba, Winnipeg, Manitoba
- 2004-05 Interim Director, Richardson Centre for Functional Foods and Nutraceuticals, University of Manitoba, Winnipeg, Manitoba
- 2003 Acting Vice-President (Research) and Canada Research Chair in Stored-Grain Ecosystems, University of Manitoba, Winnipeg, Manitoba
- 2002-04 Associate Vice-President (Research) and Canada Research Chair in Stored-Grain Ecosystems, University of Manitoba, Winnipeg, Manitoba

- 2001-02 Associate Vice-President (Research) and Professor, University of Manitoba, Winnipeg, Manitoba
- 1999-01 Professor and Associate Dean (Research), Faculty of Agricultural and Food Sciences, University of Manitoba, Winnipeg, Manitoba
- 1997-99 Professor and Head, Biosystems Engineering Department, University of Manitoba, Winnipeg, Manitoba
- 1995-97 Professor, Biosystems Engineering Department, University of Manitoba, Winnipeg, Manitoba
- 1993-95 Professor, Agricultural Engineering Department, University of Manitoba, Winnipeg, Manitoba
- 1989-93 Associate Professor, Agricultural Engineering Department, University of Manitoba, Winnipeg, Manitoba
- 1985-89 Assistant Professor, Agricultural Engineering Department, University of Manitoba, Winnipeg, Manitoba
- 1982 Pool Officer, Agricultural Engineering Department, G.B. Pant University, Pantnagar, India
- 1982-85 Graduate Research Associate, Agricultural Engineering Department, University of Saskatchewan, Saskatoon, Saskatchewan
- 1980-81 Graduate Research Assistant, Agricultural Engineering Department, University of Manitoba, Winnipeg, Manitoba
- 1980 Research Associate, Agricultural Engineering Department, G.B. Pant University, Pantnagar, India

## **MOST SIGNIFICANT RESEARCH CONTRIBUTIONS**

### **Mathematical Models of Stored Grain Ecosystems**

The interactions among biotic and abiotic factors make the mathematical modelling of stored-grain ecosystems a challenging problem. My research team is the first group in the world to develop three-dimensional mathematical models of heat, moisture and carbon dioxide (CO<sub>2</sub>) transfer in grain bulks.

**Value of the Contribution:** The mathematical models are used for better management of stored grain. For example, the modelling of heat and CO<sub>2</sub> transfer in stored grain has provided a basis for developing alternatives to the use of pesticides for the control of insects in grains and to improve the quality of grain for human consumption.

### **Measurement of Parameters for Mathematical Modelling**

To develop a comprehensive model of stored-grain ecosystems it is necessary to integrate the heat, moisture and gas transfer models with the biological models. There is a lack of experimental data on engineering parameters (e.g., thermal properties of grains, diffusion coefficient of gases through bulk grain, sorption of CO<sub>2</sub> by grain) and on insect movement under moisture, temperature and CO<sub>2</sub> gradients and population dynamics of insects under sub-optimal conditions. My research team has conducted several experimental studies to fill this gap and further studies are ongoing with funds from several sources such as NSERC Discovery Grant, Brockhouse Canada Prize and industry.

**Value of the Contribution:** The development of a comprehensive model of stored-grain ecosystems as a management tool.

### **Hyperspectral Imaging for Grain Quality Monitoring**

The potential of near-infrared (NIR) hyperspectral imaging to detect insect-damaged wheat kernels and fungal infection in wheat was investigated by my research team. Both linear discriminant analysis and quadratic discriminant analysis classifiers classified 85-100% healthy and insect-damaged wheat kernels. Healthy and fungal infected kernels were classified with close to 100% accuracy.

**Value of the Contribution:** With further studies, the NIR hyperspectral imaging has the potential for use in grain quality assessment by detecting insect infestation, insect damaged kernels and fungal-infected kernels.

### **Carbon Dioxide and Odour Sensors for Detection of Incipient Spoilage of Grains**

As grains spoil, carbon dioxide, heat and moisture are produced and off odours are released. Currently, temperatures are used for monitoring incipient spoilage of grain. Because of low thermal diffusivity of grains, temperature sensors must be within 0.5 m of the spoiling grain to detect incipient spoilage whereas carbon dioxide and odours can be detected at much farther locations (3 to 4 m) using sensors of high resolution which can be predicted by our mathematical models.

**Value of the Contribution:** The focus of my research has been to characterize volatiles produced by insects, fungi and spoiling grains and to develop sensors for detecting such volatiles and carbon dioxide (US Patent issued).

### **Machine Vision for Automation of Grain Handling**

As grain moves from on-farm storage to primary elevators (grain handling facilities) and finally to grain terminals for export, at several points along the grain handling system, grain must be identified and its contents quantified for decisions to automate grain handling. My research team has focussed on the implementation of machine vision technology by: (i) developing sample presentation devices which can partially separate bulk grain into individual kernels; (ii) developing algorithms to separate remaining touching kernels in acquired images; and (iii) developing and evaluating morphological, colour, texture and wavelet features for classification of grain (types and classes), defects of grain and dockage components. Our current sample presentation device can image 300 g samples of grain in 2 min.

**Value of the Contribution:** The developed system will form the basis for automation of many different aspects of grain handling such as grain identification during railcar unloading, as a controller for the grain cleaning equipment, and for monitoring grain composition during ship loading. My team has developed a robot to automatically open railcars, analyse samples and then continue with the unloading of the railcar or stop unloading if content is not correct to avoid the wrong material being unloaded.

### **Energy-efficient drying systems**

Drying of grains, oilseeds, and pulses is frequently a necessity on Canadian farms. One usual drying method is to force atmospheric air continuously through stored bulks in the upward vertical direction. My research team was the first to demonstrate experimentally that the resistance to airflow is about 50% to 60% of the resistance to airflow in vertical direction. The reasons for this difference were further explained using an ultra-high resolution X-ray computed tomography (CT) scanner by acquiring X-ray CT images from the grain bulks at a resolution of 120 to 250  $\mu\text{m}$ . The bulk samples of wheat, barley, flax seed, peas and mustard were scanned along horizontal and vertical directions. The images were analyzed for both two and three dimensions to understand the pore structure of the bulk grain.

**Value of the Contribution:** The information was used to design and evaluate a near-ambient air dryer (in collaboration with Ag Growth Industries) which forced air horizontally through grain, made grain drying more energy efficient, and resulted in more uniform grain drying compared to the current commercial systems which force air vertically. Based on my research such systems have been developed in China, Ukraine and USA.

### **Detection of Insects in Grain**

In the past, we have organized workshops to share our research results and to seek input on the industry's needs for future research and information. In all of these workshops, the detection of low levels of insect infestation in grain was identified as the top priority research need because detection of low levels of infestation is a slow process (results may take over 6 hours). In that period, grain may be filled in large bins and ships thus contaminating large quantities and increasing the cost of fumigation. My research team has investigated many techniques based on soft x-rays, thermal imaging, electronic nose, mechanical separation and microwaves for rapid detection of insects. A device was developed and evaluated (US Patent pending) for rapid detection of insects in grains using a household microwave.

**Value of the Contribution:** Early detection of insects would reduce the cost of chemical fumigation by treating the small quantity of infested grain rather than a large contaminated bin filled with grain. This

would also help in enforcing the Canada Grain Act that specifies a zero tolerance for stored-product insects in grain.

**RESEARCH GRANTS AND CONTRACTS HELD****Total \$29,540,919**

2018-23	\$195,000	Mathematical models of stored-grain ecosystems for management of stored grains (Natural Sciences and Engineering Research Council of Canada: Discovery Grant)
2015-16	\$1,981,065	Post-harvest grain handling for a safe and sustainable food supply (Canada Foundation for Innovation, Research Manitoba, and Agriculture and Agri-Food Canada) (Principal Investigator: J. Paliwal)
2015	\$36,140	Assessment of ozone for controlling insects in grain (Ozograin International Inc.: Contract)
2014-15	\$25,000	Assessment of materials for designing cables for monitoring temperature and humidity in stored grains (Natural Sciences and Engineering Research Council of Canada: Engage Grant)
2013-15	\$128,857	Feasibility of bag storage system for canola under prairie conditions (Agriculture and Agri-Food Canada and Canola Council of Canada Cluster program)
2013-18	\$140,000	Mathematical modelling of stored-grain ecosystems (Natural Sciences and Engineering Research Council of Canada: Discovery Grant)
2011-12	\$11,700	Storage of pinto beans (Canadian Grain Commission: Research Contract)
2010-12	\$159,000	Storage and handling characteristics of new varieties of high oil content canola (Agriculture and Agri-Food Canada and Canola Council of Canada Cluster program)
2010-13	\$238,500	Feasibility of bag storage system for canola under prairie conditions (Agriculture and Agri-Food Canada and Canola Council of Canada Cluster program)
2011-13	\$200,000	Development of technologies and capacity building for primary processing, drying and on-farm storage of pulses in India (Manitoba Ministry of Innovation, Energy and Mines and Indian Ministry of Food Processing Industries: Operating Grant)
2009-14	\$250,000	The 2008 Brockhouse Canada Prize for interdisciplinary research in science and engineering (Natural Sciences and Engineering Research Council of Canada)
2008-13	\$188,750	Mathematical modeling of stored-grain ecosystems (Natural Sciences and Engineering Research Council of Canada: Discovery Grant)
2007-09	\$3,200,000	Enhancement of biomedical imaging and biosensors (Western Economic Diversification: Infrastructure Grant) (Principal Investigator: J. LoVetri)
2007-08	\$11,000	Operating support to organize Manitoba Science, Engineering and Technology Day (Natural Sciences and Engineering Research Council of Canada: Prairie Office, Government of Manitoba, Manitoba Hydro, Association of Professional Engineers and Geoscientists of Manitoba)
2007-09	\$42,625	Do the current near-ambient grain drying guidelines prevent mycotoxin production? (Agri-Food Research & Development Initiative: Operating Grant)
2007-10	\$485,081	Design, fabrication and evaluation of an integrated CO <sub>2</sub> -odour sensor for grain quality monitoring (Natural Sciences and Engineering Research Council of Canada: Strategic Grant)
2007-09	\$42,625	Characterising conditions that produce mycotoxins in wheat (Canadian Wheat Board: Operating Grant)
2007-08	\$23,000	Development of horizontal airflow grain drying system (Ag Growth

		Industries: Operating Grant)
2007	\$10,000	Quality foods and novel bioproducts workshop (Natural Sciences and Engineering Research Council of Canada: Prairie Office)
2006-07	\$7,500	Operating support to organize Manitoba Science, Engineering and Technology Day (Natural Sciences and Engineering Research Council of Canada: Prairie Office, Government of Manitoba, Association of Professional Engineers and Geoscientists of Manitoba)
2006	\$2,500	Operating support to organize undergraduate poster competition (Natural Sciences and Engineering Research Council of Canada: Prairie Office)
2005-10	\$1,250,000	Operating support for the Richardson Centre for Functional Foods and Nutraceuticals (Agri-Food Research Development Initiative)
2005-07	\$10,000,000	Establishment of Bio-processing Facility (Western Economic Diversification, Manitoba Government, Agri-Food industry)
2005-08	\$318,500	Integration of near-infrared spectroscopy and machine vision for quality assessment of cereal grains (Natural Sciences and Engineering Research Council of Canada: Strategic Grant)
2004-08	\$400,000	Enhancement of grain storage research infrastructure (Canadian Wheat Board)
2003-08	\$175,000	A holistic approach to mathematical modelling of stored-grain ecosystems (Natural Sciences and Engineering Research Council of Canada: Discovery Grant)
2002-05	\$481,203	Bioprotection of fermented meats from E. Coli O157: H7 using Lactobacillus reuteri or allylisothiocyanate (Natural Sciences and Engineering Research Council of Canada: Strategic Grant; Holley R.A.: Principal Investigator)
2002-09	\$1,400,000	Canada Research Chair in Stored-Grain Ecosystems (Canada Research Chairs Secretariat)
2002-05	\$420,000	Support for the development of functional foods and nutraceuticals centre (Manitoba Rural Adaptation Council)
2001-02	\$7,000	Design, plan and support a conference on genomics (National Research Council)
2001-02	\$115,381	Oxygen transmission rate test system for films (Natural Sciences and Engineering Research Council of Canada: Equipment Grant; Jung H. Han: Principal Investigator)
2000-01	\$100,000	Infrastructure support for stored-grain ecosystem facility for research and design (Manitoba Hydro)
2000-01	\$10,000	Determination of engineering characteristics of sunflower and canola meal pellets (ADM Agri-Industries Ltd.)
2000-01	\$9,579	Purchase of a data/video projector for teaching, research and extension (Faculty of Agricultural and Food Sciences Endowment Fund)
2000-01	\$19,800	Development of a CFI proposal for establishing a precision farming systems centre (Western Economic Diversification)
1999-00	\$50,000	Establishment of a Research and Development Centre for Functional Foods and Nutraceuticals (Manitoba Rural Adaptation Council; Manitoba Agriculture and Food; Manitoba Industry, Trade, and Mines; Western Economic Diversification)
1999-00	\$35,000	Development of an expert system and mathematical models for stored-grain ecosystems (Agriculture and Agri-Food Canada)
1999-00	\$8,000	Distribution of fresh chilled meat (Faculty of Agricultural and Food Sciences & Office of Research Services, University of Manitoba)
1999-00	\$9,000	An integrated design experience in the Biosystems Engineering program (Program Development Fund, University of Manitoba)
1999-01	\$4,600,000	Stored-grain ecosystem facility for research and design (Canada Foundation

		for Innovation, Government of Manitoba, Western Economic Diversification, Manitoba Hydro, Agriculture and Agri-Food Canada, and the Grain Industry)
1999-03	\$134,400	Mathematical modelling of stored-grain ecosystems (Natural Sciences and Engineering Research Council of Canada: Research Grant)
1998-01	\$351,189	Machine vision for automation of operations at grain handling facilities
1998-99	\$14,000	Purchase and installation of a retail display cabinet, University of Manitoba
1998-99	\$4,315	Installation of a data/video projector in room 202 Agricultural Engineering Building, AFS Endowment Fund
1997-98	\$2,000	Development of research collaboration with Tamil Nadu Agricultural University, Coimbatore, India (President's Office, University of Manitoba)
1997-98	\$18,000	High voltage electric pulse pasteurization of liquid foods (University of Manitoba Research Development Fund, Faculty of Agricultural and Food Sciences)
1997-98	\$1,830	Funding to attend a short course on "Teaching Teachers to Teach Engineering (T4E)" (Faculty Development Initiative, University of Manitoba)
1997-98	\$18,166	Near-infrared transmittance accessory for measuring food quality (Natural Sciences and Engineering Research Council of Canada: Equipment Grant)
1996-99	\$196,650	Design, development and testing of a returnable container for distribution of fresh-chilled meat (Natural Sciences and Engineering Research Council of Canada: Strategic Project)
1996-97	\$50,173	Request for a temperature- and humidity-controlled chamber (Natural Sciences and Engineering Research Council of Canada: Equipment Grant)
1996-97	\$11,000	Request for developing an image processing facility (President's Research Grant, University of Manitoba)
1996-97	\$62,000	Request for developing an image processing facility (Natural Sciences and Engineering Research Council of Canada: Collaborative Research and Development Grant)
1995-99	\$128,740	Modified atmosphere storage of grains – a holistic approach (Natural Sciences and Engineering Research Council of Canada: Research Grant)
1995-97	\$128,400	Machine vision for classification of grains and associated foreign materials (Prince Rupert Grain Ltd., Agriculture Canada, and Natural Sciences and Engineering Research Council of Canada Research Partnership Grant)
1995-97	\$40,000	Agriculture and Agri-Food Canada Matching Investment Initiative with Manitoba Pool Elevators and Liquid Carbonic, Inc. for research on modified atmosphere storage of grains (N.D.G. White: Principal Investigator)
1995-97	\$40,000	Supplement for the NSERC postdoctoral fellowship for Dr. Trever Crowe (Prince Rupert Grain Ltd.)
1995-96	\$42,000	Funds for developing an image processing facility based on a line-scan camera (Prince Rupert Grain Ltd.)
1995-96	\$45,000	Optimization of control systems for near-ambient grain drying (Agriculture Canada grant for Efficient use of Energy in Sustainable Agriculture) (N.D.G. White: Principal Investigator)
1995-96	\$10,500	Development of a chilled-fresh meat distribution system (University of Manitoba Research Development Fund)
1995-96	\$2,500	Development of research cooperation between University of Manitoba and Tamil Nadu Agricultural University (President's Research Grant, University of Manitoba)
1995-96	\$1,100	Development of research cooperation between University of Manitoba and Paisley University, Scotland (British Council)
1994-97	\$150,000	Controlling insects in welded-steel farm-bins and off-farm facilities (Natural Sciences and Engineering Research Council of Canada: Strategic Grant)



1994-97	\$72,000	Determination of the storage and handling characteristics of hulless barley (SeCan, Agriculture Canada, and Natural Sciences and Engineering Research Council of Canada Research Partnership Grant)
1994-95	\$12,000	Aseptic processing of solid-liquid food systems (President's Research Grant, University of Manitoba)
1994-95	\$13,100	Foreign Researcher Award for Dr. Sreenarayanan (Natural Sciences and Engineering Council of Canada)
1994-95	\$76,522	Differential scanning calorimetry system (Natural Sciences and Engineering Research Council of Canada) (S. Cenkowski: Principal Investigator)
1993-95	\$37,250	Optimization of control systems for near-ambient grain drying (Manitoba Hydro, Winnipeg)
1993-94	\$4,484	Request for purchase of a microscope (University of Manitoba Research Grants Committee)
1993-94	\$5,634	ACU Development Fellowship for Dr. E.A. Smith (Association of Commonwealth Universities)
1993-95	\$65,000	Development of an expert system for stored grain management (Agriculture Canada grant for Efficient use of Energy in Sustainable Agriculture) (N.D.G. White, Principal Investigator)
1993-94	\$22,737	Purchase and installation of two hopper-bottom bins (Natural Sciences and Engineering Research Council of Canada)
1993-94	\$5,300	Partial support towards Postdoctoral Fellowship for Dr. N. Singh (University of Manitoba Postdoctoral Fellowship Committee)
1992-95	\$90,000	Digital image processing for classification for components of foreign material (Agriculture Canada and Natural Sciences and Engineering Research Council of Canada Research Partnership Program) (N.R. Bulley: Principal investigator)
1992-95	\$98,400	Modified atmospheres for storage of grains and oilseeds (Natural Sciences and Engineering Research Council of Canada)
1992-93	\$12,000	International symposium on stored grain ecosystems (Canadian Agri-Food Development Initiative, Agriculture Canada)
1992-93	\$10,000	Development of a sample presentation device for digital image processing (Prince Rupert Grain Ltd.) (N.R. Bulley: Principal investigator)
1992-93	\$1,100	Undergraduate student research assistant to work on Controlled atmosphere storage of wheat (Canada Manpower Challenge '92)
1992-93	\$11,250	Energy conservation in potato storages (Manitoba Hydro, Winnipeg)
1992-93	\$1,500	International symposium on stored grain ecosystems (Natural Sciences and Engineering Research Council of Canada)
1992-93	\$21,655	Multi-tasking computer workstation (Natural Sciences and Engineering Research Council of Canada) (W.E. Muir: Principal investigator)
1992-93	\$12,300	International Scientific Exchange Award for Dr. J. Weres (Natural Sciences and Engineering Research Council of Canada)
1991-95	\$61,972	Determining foreign material in wheat using image processing (Prince Rupert Grain Ltd.) (N.R. Bulley: Principal investigator)
1991-92	\$1,320	Undergraduate student research assistant to work on Controlled atmosphere storage of wheat (Canada Manpower Challenge '91)
1990-94	\$115,960	Energy conservation in potato storage (Energy, Mines and Resources Energy Program) (G. Mazza: Principal investigator)
1990-93	\$246,750	Control of rusty grain beetles in farm granaries using modified atmospheres (Natural Sciences and Engineering Research Council of Canada)
1990-92	\$12,000	Partial support towards Postdoctoral Fellowship for Dr. Antoni Ryniecki (University of Manitoba Postdoctoral Fellowship Committee)

1990-91	\$31,262	Purchase of a temperature and humidity controlled chamber (Natural Sciences and Engineering Research Council of Canada)
1990-91	\$864	Work on Controlled atmosphere storage of wheat (Canada Manpower Challenge '90)
1990-91	\$12,000	International Scientific Exchange Award for Dr. S. Pabis (Natural Sciences and Engineering Research Council of Canada)
1990-91	\$9,383	Purchase of data storage device for an image processing system (Research Development Fund, University of Manitoba)
1989-92	\$72,000	Modified atmospheres for control of pests in stored cereals (Natural Sciences and Engineering Research Council of Canada)
1989-90	\$5,800	Use of mineral oil as a dust suppressant (Amoco Oil Co., Chicago)
1989-90	\$28,890	Temperature data acquisition system (Natural Sciences and Engineering Research Council of Canada)
1988-89	\$931	Undergraduate student research assistant to work on Thin-layer Drying of Canola Project (Manitoba Careerstart '88)
1988-89	\$1,456	Undergraduate student research assistant to work on Controlled Atmosphere Storage of Wheat project (Canada Manpower Challenge '88)
1988-89	\$3,000	Purchase of a gas chromatograph (University of Manitoba Research Grants Committee)
1988-89	\$14,000	Development of a demonstration unit for the teaching of heat and moisture balances (University of Manitoba Academic Development Fund)
1987-88	\$1,500	Undergraduate student research assistant to work on Controlled Atmosphere Storage of Wheat project (Canada Manpower Challenge '87)
1987-88	\$2,500	Rh Award for Outstanding Contributions to Scholarship and Research in the Applied Sciences category
1987-88	\$990	Undergraduate student research assistant to work on Thin-Layer Drying of Canola project (Manitoba Careerstart '87)
1986-89	\$45,000	Controlled atmosphere storage of wheat (Natural Sciences and Engineering Research Council of Canada)
1986-88	\$20,000	Thin-layer drying and wetting characteristics of canola (Agriculture Canada)
1986-88	\$28,500	Engineering properties and spoilage susceptibility of canola meal (Canola Council of Canada)
1986-87	\$3,560	Development of a thin-layer drying and wetting facility in the Department of Agricultural Engineering (University of Manitoba Research Grants Committee)
1986-87	\$5,800	Pressure patterns in grain storage bins (University of Manitoba Academic Development Fund)
1986-87	\$2,500	Purchase of a vacuum grain unloader (University of Manitoba Research Grants Committee)

## SUMMARY OF PUBLICATIONS (Total: 930)

Papers currently in the review process for publication in refereed journals: **5**  
 Papers published in refereed journals (*includes accepted but not submitted papers*): **398**  
 Patents: **2**  
 Papers published (in full) in refereed conference proceedings: **16**  
 Invited presentations: **124**  
 Books and monographs: **10**  
 Chapters contributed to books: **51**  
 Papers in non-refereed journals: **21**  
 Papers published (in full) in non-refereed conference proceedings: **46**  
 Conference papers (in full), presented mainly at ASABE (ASAE) and CSBE (CSAE) meetings: **248**  
 Engineering reports: **9**

## PUBLICATIONS

*Authors or co-authors identified with an \* wrote these publications based on their work done under the supervision of Dr. Jayas as Research Students (B.Sc., M.Sc., Ph.D.), Postdoctoral Fellows, or Visiting Researchers.*

### Refereed Publications (submitted for publication)

Narendran, R.B., F. Jian, D.S. Jayas, P.G. Fields and N.D.G. White. 2018. Segregation of canola, kidney bean, and soybean in wheat bulks during bin loading (submitted in July 2018 for publication in *Powder Technology*).

Jian, F., D.S. Jayas and N.D.G. White. 2018. Segregation of Dockage, Fines, and Foreign Materials in Stored Grain Bins: Kinematics, Mechanisms, and Minimization – a Review ((submitted in July 2018 for publication in *Journal of Stored Products Research*).

Zhou, H., H. Miao, F. Jian, D.S. Jayas and H. Zhao. 2018. A generative adversarial networks based restoration classifier network for low definition images of stored-grain insects (submitted in April 2018 for publication in *Computers and Electronics in Agriculture*).

Jian, F., S. Yavari, R.B. Narendran and D.S. Jayas. 2018. Physical properties of hemp seeds: clean and containing dockages (submitted in March 2018 for publication in *Applied Engineering in Agriculture*).

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Jian, F., D. Divagar, J. Mhaiki, D.S. Jayas, P.G. Fields and N.D.G. White. 2018. Static and dynamic methods to determine adsorption isotherms of hemp seed (*Cannabis sativa* L.) with different percentages of dockage (accepted in June 2018 for publication in *Food Science & Nutrition*).

Senthilkumar\*, T., F. Jian, D.S. Jayas and R.B. Narendran. 2018. Physical properties of white and black beans (*Phaseolus vulgaris*) (accepted in May 2018 for publication in *Applied Engineering in Agriculture*).

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### Patents

- Neethirajan\*, S., M.S. Freund and D.S. Jayas. 2013. Poly (aniline boronic acid) polymers and methods of use. Patent No. US 8,454,819 B2.
- Jian\*, F., D.S. Jayas and P.G. Fields. 2014. Method to rapidly detect insects in granular materials. Provisional US Patent Oct 2014 USSN 62/055,752.

### Refereed Conference Proceedings

- Jian\*, F. and D.S. Jayas. 2016. Engineering considerations for creating uniform distribution of applied gas during controlled atmospheres and fumigation. Pp. 60-69. In: Navarro, S., Jayas, D.S., Alagusundaram, K., (eds.), Proceedings of 10th International Conference on Controlled Atmosphere and Fumigation in Stored Products (CAF2016), CAF Permanent Secretariat, Winnipeg, Canada.
- Jian\*, F., V. Chelladurai\*, P.G. Fields, D.S. Jayas and N.D.G. White. 2016. Mortality of stored-grain insects in stored wheat (*Triticum species*) fumigated with ozone. Pp. 75-79. In: Navarro, S., Jayas, D.S., Alagusundaram, K., (eds.), Proceedings of 10th International Conference on Controlled Atmosphere and Fumigation in Stored Products (CAF2016), CAF Permanent Secretariat, Winnipeg, Canada.
- Chelladurai\*, V., F. Jian\*, D.S. Jayas and N.D.G. White. 2016. Permeability of silo bag material for carbon dioxide and oxygen. Pp. 131-135. In: Navarro, S., Jayas, D.S., Alagusundaram, K., (eds.), Proceedings of 10th International Conference on Controlled Atmosphere and Fumigation in Stored Products (CAF2016), CAF Permanent Secretariat, Winnipeg, Canada.
- Jian\*, F., V. Chelladurai\*, D.S. Jayas. 2012. Insector<sup>®</sup> system to monitor insect activity and density during grain storage and fumigation. Pp. 396-402. In: Navarro, S., Banks, H.J., Jayas, D.S., Bell, C.H., Noyes, R.T., Ferizli, A.G., Emekci, M., Isikber, A.A., Alagusundaram, K. (eds.),

- Proceedings of the 9<sup>th</sup> International Conference on Controlled Atmosphere and Fumigation in Stored Products (CAF2012), Arber Professional Congress Services, Antalya, Turkey.
- Jayas, D.S. and Jian\*, F. 2012. Integrated commodity management. Pp. 705-714. In: Navarro, S., Banks, H.J., Jayas, D.S., Bell, C.H., Noyes, R.T., Ferizli, A.G., Emekci, M., Isikber, A.A., Alagusundaram, K. (eds.), Proceedings of the 9<sup>th</sup> International Conference on Controlled Atmosphere and Fumigation in Stored Products (CAF2012), Arber Professional Congress Services, Antalya, Turkey.
- Emadi, T.A., C. Shafai, D.J. Thomson, M.S. Freund, N.D.G. White, and D.S. Jayas. 2011. Polymer-based micromachined chemicapacitor gas sensor on a temperature controlled platform. Pp. 1024-1027 in the Proceedings of the IEEE Sensors Conference (DOI: 10.1109/ICSENS.2011.6127017), Limerick, Ireland, October 28-31.
- Jain\*, F., D.S. Jayas, P.G. Fields and A.Y. Abdelghany. 2010. Development and comparison of two models to predict survival rates of young larvae of *Stegobium paniceum* (L.) (Coleoptera: Anobiidae) under heat treated temperatures. Pp. 686-695. In: Carvalho, O.M, Fields, P.G., Adler, C.S., Arthur, F.H., Athanassiou, C.G., Campbell, J.F., Fleurat-Lessard, F., Flinn, P.W., Hodges, R.J., Isikber, A.A. Navarro, S., Noyes, R.T., Riudavets, J., Sinha, K.K., Thorpe, G.R., Timlick, B.H., Trematerra, P., White, N.D.G. (eds.), Proceedings of the 10th International Working Conference on Stored Product Protection, 27 June-2 July, Estoril, Portugal, Julius-Kuhn-Archiv, Berlin, Germany.
- Singh\*, C.B., D.S. Jayas, J. Paliwal and N.D.G. White. 2010. Near-infrared hyperspectral imaging for quality analysis of agricultural and food products. Proceedings of the SPIE conference, Paper No. 7676-2.
- Ghosh\*, P.K., D.S. Jayas, M.L.H. Gruwel and N.D.G. White. 2007. Influence of grain structural components on the drying of wheat: a magnetic resonance imaging study. Pp. 125-133. In: Magnetic Resonance in Food Science - from Molecules to Man, Farhat, I.A., P.S. Belton and G.A. Webb (eds.), RSC (Royal Society of Chemistry) Publishing, Cambridge, UK.
- Chacon, M., A. Manickavasagan\*, D. Flores-Tapia, G. Thomas and D.S. Jayas. 2007. Segmentation of wheat grains in thermal images based on pulse coupled neural networks. Paper No. 2735 (MP-P2.10). IEEE International Conference on Image Processing (ICIP 2007), San Antonio, TX.
- Karunakaran\*, C., D.S. Jayas and N.D.G. White. 2002. X-ray image analysis to detect infestation due to *Cryptolestes ferrugineus* in stored wheat. Pp. 902-907. In: Proceedings of the IEEE Canadian Conference on Electrical and Computer Engineering vol. 2.
- Visen\*, N.S., J. Paliwal\*, and D.S. Jayas. 2002. Algorithm development for grain kernel identification. Pp. 963-967. In: Proceedings of the IEEE Canadian Conference on Electrical and Computer Engineering vol. 2.
- Ryniecki\*, A., D.S. Jayas and W.E. Muir. 1992. Control-strategy for reducing overdrying in near-ambient drying of wheat. Pp. 63-64. In: Extended abstracts: International Symposium on Stored Grain Ecosystems, Jayas, D.S., N.D.G. White, W.E. Muir and R.N. Sinha (eds.), Department of Agricultural Engineering, University of Manitoba, Winnipeg.
- Shatadal\*, P., D.S. Jayas, J.L. Hehn\* and N.R. Bulley. 1992. Potential applications of machine vision in grain storage and management. Pp. 45-46. In: Extended abstracts: International Symposium on Stored Grain Ecosystems, Jayas, D.S., N.D.G. White, W.E. Muir and R.N. Sinha (eds.), Department of Agricultural Engineering, University of Manitoba, Winnipeg.
- Kukelko\*, D.A., D.S. Jayas, N.D.G. White and M.G. Britton. 1987. Physical properties of canola meal. Pp. A246-A247. In: Proceedings of the Eleventh Canadian Congress of Applied Mechanics Vol. I.
- Kameoka, T., D.S. Jayas, H. Morishima and S. Sokhansanj. 1986. Equilibrium moisture content of rice. Pp. 201-210. In: Food Engineering and Process Applications Vol. I Transport Phenomena, M. Le Maguer and P. Jelen (eds.), Elsevier Applied Science Publishers, New York, NY.



## Invited Presentations

- Jayas, D.S. 2018. Insect detection and identification in stored grain: past, present and future. Fifth Meeting of the Indian Grain Storage Working Group (IGSWG) on “Bulk Storage, Fumigation and Drying of Grains at Farmers Level”. Indian Council of Agricultural research, New Delhi, India. May 21.
- Jayas, D.S. 2017. Current trends and research needs in management of cereal grains, oilseeds and pulses. Paper No. 1701695. Annual Meeting of the American Society of Agricultural and Biological Engineers, Spokane, WA, July 16-19.
- Jayas, D.S. 2017. Thoughts for successful implementation of a bulk storage and handling system for grains. Fourth meeting of the Indian Grain Storage Working Group (IGSWG). Indian Council of Agricultural research, New Delhi, India. June 11-12.
- Jayas, D.S. 2017. What we know and what more we need to know about stored-grain ecosystems? International Seminar of Techniques Basic on Grain Storage and Transportation (ISTBGST), Jilin University, Changchun, China, May 20.
- Jayas, D.S. 2016. 3Ps critical to food security and implications of climate change. Presented at the World Food Day Commemoration, World Vision Canada, Mississauga, ON. October 12.
- Chelladurai\*, V. and D.S. Jayas. 2016. Feasibility of storing canola in silo bags (harvest bags). Third meeting of the Indian Grain Storage Working Group (IGSWG). Indian Council of Agricultural research, New Delhi, India. April 22-23.
- Jayas, D.S. 2016. Preserving grains for high quality processed products. Presented at the 15th International Cereal and Bread Congress, Istanbul, Turkey. April 18-21.
- Jayas, D.S. 2015. Preserving cereals, oilseeds and pulses (together referred to as grains. Second meeting of the Indian Grain Storage Working Group (IGSWG). Indian Council of Agricultural research, New Delhi, India. November 21.
- Jayas, D.S. 2015. Preserving grains for feeding the growing global population: a policy perspective. Presented at the 5<sup>th</sup> Global Economic Summit on the theme Enabling Food for All. World Trade Centre, Mumbai, India. November 20.
- Jayas, D.S. 2015. Grain storage research: current status and future needs. South China University of Technology, Guangzhou, China.
- Jayas, D.S. 2015. New concepts for preserving grains, oilseeds and pulses on small farms. Presented at the XII Agricultural Science Congress: Sustainable Livelihood Security for Smallholder Framers. National Dairy Research Institute, Karnal, India. February 3-6.
- Jayas, D.S. 2014. Understanding issues during forced air ventilation through bulk grains. Presented at the Beijing University of Posts and Telecommunications, Beijing, China. December 29-31.
- Jayas, D.S. 2014. Forced air ventilation through bulk grains for cooling and drying: an overview. Presented at the 6<sup>th</sup> Postharvest Conference (VI Conferência Brasileira de Pós-Colheita), Maringá, PR, Brazil. October 14-16.
- Jayas, D.S. 2014. Grain storage systems !a global perspective. Presented at the International Breakfast of the American Society of Agricultural and Biological Engineers, Montreal, PQ. July 12-16.
- Vadivambal, R. and D.S. Jayas. 2013. Current status of applications of bio-imaging in the agri-food industry. Presented at 8<sup>th</sup> CIGR Section VI International Technical Symposium, Guangzhou, China. November 03-07.
- Jayas, D.S. 2013. Role of sensors and bio-imaging for logistics in the agri-food industry. Presented at 2<sup>nd</sup> International Symposium on Grain Information Technology (ISITG), Beijing University of Post and Telecommunications, Beijing, China. October 23-24.
- Jayas, D.S. 2013. What is the future of “Agricultural Engineering” as a discipline within Canadian universities. An Education Forum entitled “Interdisciplinary Engineering for Agriculture and Biosystems” organized by the Can. Soc. Bio. Eng., Orillia, ON.

- Jayas, D.S., V. Chelladurai\*, F. Jian\* and N.D.G. White. 2013. Canola storage management. Presented at the Soils and Crops 2013. University of Saskatchewan, Saskatoon, SK, March 5-6.
- Jayas, D.S. 2013. Preserving ingredients for producing high quality food products. Keynote Presentation at the International Conference on Agricultural Engineering (ICAE), Sultan Qaboos University, Muscat, Sultanate of Oman, February 24-26.
- Jayas, D.S. 2013. Investments in storing grain properly is a necessity to food sustainability. Presented at the Indian Agricultural Research Institute, Pusa, New Delhi, India, January 15.
- Jian\*, F., D.S. Jayas, V. Chelladurai and N.D.G. White. 2013. Storage of high oil content canola. Presented at the Sask Canola Annual Producer Conference and Annual General Meeting (AGM), Saskatoon, SK, January 10
- Jayas, D.S. 2013. Faculty exchanges through joint research. Presented at the International Conference for Academic Institutions (ICAI-2013), Pandit Deendayal Petroleum University, Gandhinagar, Gujrat, India, January 9-10.
- Chelladurai\*, V. And D.S. Jayas. 2013. Harvest bags for grain storage: an overview and review of current research. Pp. 15-20. Paper No. IICPT/INCOFTECH/2013/LP-003. Presented at the 3<sup>rd</sup> International Conference on Food Technology (3<sup>rd</sup> INCOFTECH-2013), Indian Institute of Crop Processing Technology, Thanjavur, Tamil Nadu, India, January 4-5.
- Jayas, D.S. 2012. Integrated commodity management. Presented at the 9<sup>th</sup> International Conference on Controlled Atmosphere and Fumigation in Stored Products (CAF2012), Antalya, Turkey. October 15-19.
- Jayas, D.S. 2012. Research needs for preserving grains for food security and sustainability. Presented at the 14<sup>th</sup> ICC Cereal and Bread Congress and Forum on Fats & Oils, Beijing, China. August 6-9.
- Jayas, D.S. 2012. Preserving un-processed foods as inputs to quality foods. Presented at the 50<sup>th</sup> National Conference of the Canadian Institute of Food Science and Technology, Niagara Falls, ON. May 27-29.
- Jayas, D.S. 2012. Investments in storing grain properly is a necessity to food sustainability. Presented at the Engaging India: Human and Social Dimensions of Science and Technology. Shastri Indo-Canadian Institute. Calgary, AB. June 3-4.
- Jayas, D.S. 2012. Beyond summit. Presented at the Engaging India: Human and Social Dimensions of Science and Technology. Shastri Indo-Canadian Institute. Calgary, AB. June 3-4.
- Jayas, D.S. 2012. Grain storage for food security and safety: a review of research at the University of Manitoba, Canada. Keynote presentation (PDFE-2012-GST-01). Presented at the 46<sup>th</sup> Annual Convention of ISAE (Indian Society of Agricultural Engineers) and International Symposium on Grain Storage, Pantnagar, India, February 27-29.
- Jayas, D.S. 2012. Preserving grains for food security and sustainability. 1<sup>st</sup> ICC India Grains Conference. ICC (International Association for Cereal Science and Technology, Vienna, Austria), New Delhi, India, January 16-18.
- Jayas, D.S. 2011. Recent developments in postharvest technology - implications in global agribusiness. Global Agribusiness and Food Processing Summit, Bounteous Karnataka, Bangalore, India. December 1-2.
- Jayas, D.S. 2011. Managing stored grain as an ecosystem and future research needs. Presented at the International Symposium on Grain Information Technology (ISITG-2011), Beijing University of Post and Telecommunications, Beijing, China. October 10-11.
- Jayas, D.S. 2011. Storing grain for increased food security and safety. Presented at the National Academy of Agricultural Sciences (NAAS) Annual Foundation Day Conference, Delhi, India, June 4-5.
- Jayas, D.S. 2011. Panel Discussion: Building World Class Sectors - Technology & Innovation. Presented at the Manitoba Bold - The 2011 Business Summit. Winnipeg Chamber of Commerce, Winnipeg, MB, May 25.

- Jayas, D.S. 2011. Integrating Biological, Physical and Engineering Sciences to Benefit Society: Examples of the University of Manitoba Experience. Presented at the ISTP Canada - DBT India Workshop, University of Saskatchewan, Saskatoon, SK, February 13-14.
- Jayas, D.S. 2010. Current trends in grain storage research. Presented at the International Conference on Food Technology Edition II (INCOFTECH 2010), Indian Institute of Crop Processing Technology, Thanjavur, Tamil Nadu, India, October 30-31.
- Jayas, D.S. 2010. Overview of grain storage research at the University of Manitoba and current status of bag storage studies. Presented at the Leading Change and Innovation Conference, the Farm Leadership Council. Saskatoon, SK, October 26-27.
- Jayas, D.S. 2010. Silo bags: current status and potential uses. Presented at the 6<sup>th</sup> Canadian Barley Symposium. Saskatoon, SK, July 25-28.
- Jayas, D.S. 2010. The relationship between research and innovation. Presented at An Innovative Manitoba. Winnipeg, MB, January 25.
- Jayas, D.S. 2010. The in's and out's of grain bagging systems. Presented at Ag Days. Brandon, MB, January 20.
- Jayas, D.S. 2009. Collaborative work with India. Presentation at the India Agri-Business Forum, Manitoba, Agriculture, Food and Rural Initiatives (MAFRI), Winnipeg, MB, December 2.
- Jayas, D.S. 2009. Theoretical aspects of drying biological products. Plenary Presentation at the BioEnergy Engineering 2009, American Society of Agricultural and Biological Engineers, St. Joseph, MI, October 12-14.
- Jayas, D.S. 2009. Making every kernel count. Plenary Presentation at the International Conference on Food Technology (INCOFTECH2009), The Indian Institute of Crop Processing Technology (IICPT), Thanjavur, India, August 28-29.
- Neethirajan\*, S. and D.S. Jayas. 2009. Nanotechnology for the food and bioprocessing industries. Keynote Address, CIGR Section VI - 5<sup>th</sup> International Technical Symposium, International Commission of Agricultural and Biosystems Engineering (CIGR), Potsdam, Germany, August 31.
- Jayas, D.S. 2009. Trends in foods and food processing in Canada. Keynote Address presented at an International Conference on Enhancing India's Global Competitiveness in Food Trade, organized by IICPT, Delhi, India, May 25.
- Jayas, D.S. 2008. Materials research at the University of Manitoba. Presented at the International Conference on Recent Trends in Materials and Mechanical Engineering (ICMME 2008), Coimbatore, India, December 18.
- Jayas, D.S. and A. Manickavasagan\*. 2008. Applications of thermal imaging in food industry. Presented at the 6<sup>th</sup> International Food Convention (IFCON2008), Mysore, India, December 16.
- Jayas, D.S. 2008. Overview of grain storage research at the University of Manitoba. Presented at the Indian Institute of Crop Processing Technology (IICPT), Thanjavur, India, July 19.
- Jayas, D.S. 2008. Grain storage: do's and don'ts. Presented at the 41<sup>st</sup> International Grain Industry Program, Canadian International Grains Institute, Winnipeg, MB, May 29.
- Jayas, D.S. 2008. Overview of grain storage research. AACCC Meeting, Winnipeg, MB, February 5.
- Jayas, D.S. 2007. Research at the University of Manitoba. Indian Agricultural Research Institute, New Delhi, India, December 10.
- Neethirajan, S. and D.S. Jayas. 2007. Nanotechnology: Prospects and impacts in agriculture, food and biosystems. Agrisuccess Forum 2008. Farm Credit Canada, Conexus Arts Centre, Regina, SK, November 6.
- Neethirajan, S. and D.S. Jayas. 2007. Convergence - big potential: Nanotechnology for food, agriculture and biosystems industries. Winnipeg Business of Science Symposium 2007, Manitoba, MB, October 24.
- Jayas, D.S., C. Karunakaran\*, A. Manickavasagan\*, F. Jian\* and R. Vadivambal\*. 2007. Detection, movement and control of insects in stored grain - a summary of research at the University of Manitoba. A keynote address presented at AZRA Conference, Hyderabad, July 13-14.

- Jayas, D.S. and Q. Zhang. 2007. Development of collaborative grain storage research facility in China. Invited presentation at the International meeting of the American Society of Agricultural and Biological Engineers, Minneapolis, MN. June 17-20.
- Neethirajan, S. and D.S. Jayas. 2007. Nanotechnology for the agricultural, food and biosystems industry. Canadian Farm Business Management Council, Innovation Workshop and Annual General Meeting 2007, Ottawa, ON, May 29.
- Jayas, D.S. 2006. Food, fuel and pharming. Harry Toop Memorial Science for Saskatchewan Lecture, University of Saskatchewan, Saskatoon, SK, November 15.
- Jayas, D.S. 2006. Research at the University of Manitoba. Canadian Light Source, Saskatoon, SK, November 15.
- Jayas, D.S. 2006. Preserving grain to feed the increasing world population. University of Saskatchewan, Saskatoon, SK, November 16.
- Jayas, D.S. 2006. Functional foods, nutraceuticals and grain storage. University of Nebraska, Lincoln, NE, November 10.
- Jayas, D.S. 2006. Agriculture is much more than producing grains and raising hogs. Morden Community Development Corporation, Morden, MB, May 10.
- Jayas, D.S. and P.K. Ghosh\*. 2006. Preserving quality during grain drying and techniques for measuring grain quality. Invited Plenary Presentation. Pp. 969-981 in Proceedings of the 9<sup>th</sup> International Working Conference on Stored Product Protection. Campinas, Brazil: Brazilian Post-harvest Association.
- Jayas, D.S. 2006. Agriculture is much more than producing grains and raising hogs. Morden Community Development Corporation, Morden, MB, May 10.
- Jayas, D.S. 2006. Seed storage in Canada - Do's and Don'ts! Manitoba Institute of Agrologists, Winnipeg, MB, May 09.
- Jayas, D.S. and J.C. Keselman. 2006. Manitoba's agri-food research collaborations and strategic investments. Manitoba Rural Adaptation Council's Annual General Meeting - 10 years of advancing opportunity, Winnipeg, MB, March 20.
- Ghosh\*, P.K. and D.S. Jayas. 2005. Potential use of magnetic resonance imaging in grain drying analysis. Pp. 158-173. In: Proceedings of the 4<sup>th</sup> Asia Pacific Drying Conference (ADC 2005), A.B. Datta, K.M. Kundu and G.P. Sinha (eds.), Allied Publishers Pvt. Ltd., Kolkata, India.
- Jayas, D.S. 2005. Partnering opportunities in the biotech field with the University of Manitoba. 11<sup>th</sup> Technology Summit & Technology Platform. Confederation of Indian Industry, Delhi, India, September 21-22.
- Jayas, D.S. 2005. Indo-Canada biotechnology partnering opportunities. 11<sup>th</sup> Technology Summit & Technology Platform, Confederation of Indian Industry, Bangalore, India, September 19.
- Jayas, D.S. 2005. Stored Product Protection of Organic Food Grains and End Products - A National Workshop. Purdue University, West Lafayette, IN, August 24-25.
- Jayas, D.S. 2004. Role of process engineers in the growth of functional foods and nutraceuticals industry. Keynote address during the Emerging Technologies for Agricultural Engineering (ETAE) International Conference, Indian Institute of Technology, Kharagpur, India, December 14-17.
- Jayas, D.S. 2004. Use of machine vision and soft X-rays for grain quality monitoring. Keynote address at the International Conference on Trends in Industrial Measurements and Automation (TIMA-2004), Chennai, India, December 15-18.
- Jayas, D.S. 2004. Role of agriculture and rural communities in the bioproducts economy. Keynote address in the National Workshop on Prospects of Renewable Energy Sources for Rural Development. Dr. Mahalingam College of Engineering and Technology, Pollachi, Tamil Nadu, India, December 18.
- Jayas, D.S. 2004. Managing stored grain using ecosystem approach. Invited presentation to the faculty members and students at the Vidhan Chandra Agricultural University, Mohanpur, West Bengal, India, December 14.

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- Shatadal\*, P., D.S. Jayas and N.R. Bulley. 1994. Machine vision based classification of seeds. Paper No. 94-301, Can. Soc. Agric. Eng., Saskatoon, SK. 9 p.
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- Shunmugam\*, G., D.S. Jayas, N.D.G. White and W.E. Muir. 1994. Apparent diffusion coefficient of carbon dioxide through bulk wheat. Paper No. 94-6037, Am. Soc. Agric. Eng., St. Joseph, MI. 12 p.
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- Shatadal\*, P., D.S. Jayas, J.L. Hehn\* and N.R. Bulley. 1993. Classification and feature measurements on touching kernels of wheat and barley. Paper No. 93-3031, Am. Soc. Agric. Eng., St. Joseph, MI. 9 p.
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- Irvine\*, D.A., D.S. Jayas and G. Mazza. 1992. Resistance to airflow through clean and soiled potatoes. Paper No. 92-325, Can. Soc. Agric. Eng., Saskatoon, SK. 10 p.
- Jayas, D.S., K. Alagusundaram\*, G. Shunmugam\*, W.E. Muir and N.D.G. White. 1992. Simulation of temperatures in stored bulks of wheat using a three-dimensional finite element model. Paper No. 92-6527, Am. Soc. Agric. Eng., St. Joseph, MI. 21 p.
- Mann\*, D.D. and D.S. Jayas. 1992. Presentation of airflow resistance data of seed bulks. Paper No. 92-302, Can. Soc. Agric. Eng., Saskatoon, SK. 20 p.
- Shatadal\*, P., D.S. Jayas and N.R. Bulley. 1992. Separating contiguous wheat kernel image regions using mathematical morphology. Paper No. 92-3577, Am. Soc. Agric. Eng., St. Joseph, MI. 13 p.
- Alagusundaram\*, K., D.S. Jayas, W.E. Muir, N.D.G. White and R.N. Sinha. 1991. A finite element model of three-dimensional CO<sub>2</sub> diffusion in grain bins. Paper No. 91-6558, Am. Soc. Agric. Eng., St. Joseph, MI. 14 p.
- Alagusundaram\*, K., D.S. Jayas, N.D.G. White and O.H. Friesen. 1991. Airflow patterns through wheat, barley and canola in bins with partially perforated floors - an experimental investigation. Paper No. 91-6561, Am. Soc. Agric. Eng., St. Joseph, MI. 12 p.
- Jayas, D.S. and G. Mazza. 1991. Comparison of modified GAB equation with four other three-parameter equations for the description of sorption data of oats. Paper No. MNSK91-115, Am. Soc. Agric. Eng., St. Joseph, MI. 13 p.
- Ryniecki\*, A., W.E. Muir and D.S. Jayas. 1991. Optimization on control systems for near-ambient wheat drying under maritime and continental climates. Paper No. 91-6551, Am. Soc. Agric. Eng., St. Joseph, MI. 17 p.
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- Smith\*, E.A., D.S. Jayas, W.E. Muir, K. Alagusundaram\* and V.H. Kalbande. 1991. Simulation of grain drying in bins with partially perforated floors, Part II: Calculation of moisture content. Paper No. 91-6554, Am. Soc. Agric. Eng., St. Joseph, MI. 13 p.
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- Jayas, D.S., K. Alagusundaram\* and D.A. Irvine\*. 1990. Resistance to airflow through bulk flax seed as affected by the moisture content, direction of airflow and foreign material. Paper No. 90-404, Can. Soc. Agric. Eng., Saskatoon, SK. 12 p.
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- Jayas, D.S., G. Mazza and N.D.G. White. 1989. Equilibrium moisture content - equilibrium relative humidity relationship of flax seed. Paper No. 89-6603, Am. Soc. Agric. Eng., St. Joseph, MI. 16 p.
- Jayas, D.S., G.E. Laliberte and K. Alagusundaram\*. 1989. A finite element program for teaching axisymmetric field problems. Paper No. 89-7048, Am. Soc. Agric. Eng., St. Joseph, MI. 10 p.
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- Jayas, D.S., W.E. Muir and N.D.G. White. 1988. Modelling the diffusion of carbon dioxide in stored grain. Paper No. 88-6013, Am. Soc. Agric. Eng., St. Joseph, MI. 12 p.
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- Jayas, D.S. and S. Sokhansanj. 1987. Design data on resistance of airflow through canola (rapeseed). Paper No. NCR 87-102, Am. Soc. Agric. Eng., St. Joseph, MI. 5 p.
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- Jayas, D.S. and D. Griffin\*. 1987. Transient method for determination of thermal conductivity or film conductance of foods. Paper No. 87-506, Can. Soc. Agric. Eng., Saskatoon, SK. 7 p.
- Jayas, D.S., D.A. Kukulko\* and N.D.G. White. 1987. Equilibrium moisture-equilibrium relative humidity relationship for canola meal. Paper No. 87-6534, Am. Soc. Agric. Eng., St. Joseph, MI. 11 p.
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- Kukulko\*, D.A., D.S. Jayas, N.D.G. White and M.G. Britton. 1986. Physical properties of canola (rapeseed) meal. Paper No. NCR 86-602, Am. Soc. Agric. Eng., St. Joseph, MI. 9 p.
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- Singh (Jayas), D., W.E. Muir and R.N. Sinha. 1984. Transient method for diffusion coefficient of carbon dioxide through wheat bulks. Paper No. 84-201, Can. Soc. Agric. Eng., Saskatoon, SK. 17 p.
- Singh (Jayas), D. and S. Sokhansanj. 1984. Resistance to airflow of rapeseed (canola). Paper No. 84-3530, Am. Soc. Agric. Eng., St. Joseph, MI. 28 p.
- Singh (Jayas), D., S. Sokhansanj and D. Bergh. 1984. Effect of maturity and harvest method on drying rate of wheat. Paper No. 84-207, Can. Soc. Agric. Eng., Saskatoon, SK. 10 p.
- Sokhansanj, S., S.L. Sturton and D. Singh (Jayas). 1984. Comparative studies on thin layer drying equipment. Paper No. 84-3527, Am. Soc. Agric. Eng., St. Joseph, MI. 14 p.
- Singh (Jayas), D., S. Sokhansanj and B. Middleton. 1983. Drying characteristics of wheat, barley and canola at low temperatures. Paper No. NCR83-207, Am. Soc. Agric. Eng., St. Joseph, MI. 20 p.
- Sokhansanj, S., D. Singh (Jayas) and P. Gebhardt. 1983. Natural grain drying simulation/ animation on minicomputers. Paper No. 83-204, Can. Soc. Agric. Eng., Saskatoon, SK. 12 p.

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- Singh (Jayas), D., W.E. Muir and R.N. Sinha. 1981. Finite element modelling of carbon dioxide in stored wheat. Paper No. NCR 81-019, Am. Soc. Agric. Eng., St. Joseph, MI. 13 p.

## Reports

- Jayas, D.S., N.D.G. White, N. Udayakumar\*, V.R. Parker\* and V. Chelladurai\*. 2010. Mycotoxin development in stored durum wheat. Project 07-831. Final report submitted in December 2010 to the Agri-Food Research and Development Initiative, Morris, MB. 52 p.
- Alagusundaram\*, K., D.S. Jayas, N.D.G. White and W.E. Muir. 1990. Prediction of three-dimensional heat transfer in bulks of grain for optimal product management. Pp. 30-31. In: Research Update - 1990, D.E. Harder (ed.), Agriculture Canada Research Station, Winnipeg, MB.
- Jayas, D.S. and N.D.G. White. 1990. Engineering properties and spoilage susceptibility of canola meal. Pp. 342-352. In: 9th Project Report, Research on Canola Seed Oil and Meal, Canola Council of Canada, Winnipeg, MB. 21 p.
- White, N.D.G. and D.S. Jayas. 1990. Safe storage conditions for flaxseed and potential for insect infestations. Pp. 34-35. In: Research Update - 1990, D.E. Harder (ed.), Agriculture Canada Research Station, Winnipeg, MB.
- White, N.D.G. and D.S. Jayas. 1989. Carbon dioxide for control of stored grain insects. Pp. 4-5. In: Research Update - 1989, T.G. Atkinson (ed.), Agriculture Canada Research Station, Winnipeg, MB.
- White, N.D.G. and D.S. Jayas. 1988. Safe storage conditions and potential pest problems for canola meal. Pp. 55-57. In: Research Update - 1988, T.G. Atkinson (ed.), Agriculture Canada Research Station, Winnipeg, MB.
- Jayas, D.S. and N.D.G. White. 1987. Engineering properties and storage susceptibility of canola meal. Progress report submitted in September 1987 to the Canola Council of Canada, Winnipeg, MB. 5 p.
- Jayas, D.S. and N.D.G. White. 1986. Engineering properties and spoilage susceptibility of canola meal. Progress report submitted in September 1986 to the Canola Council of Canada, Winnipeg, MB. 5 p.
- Sturton, S.L., D. Singh (Jayas), S. Sokhansanj and F.W. Sosulski. 1984. Natural drying of canola. Progress report submitted in December 1984 to the Canola Council of Canada, Winnipeg, MB. 52 p.

## COURSES TAUGHT

- 25.486 Engineering Design (Supervision of projects)
- 34.040 Dairy Engineering
- 34.211 Transport Phenomena
- 34.319 Food Engineering Fundamentals I
- 34.327 Instrumentation and Measurement for Biosystems (formerly 34.321 Instrumentation and Measurement for Agriculture)
- 34.353 Engineering Fundamentals
- 34.354 Food Engineering Fundamentals
- 34.355 Biosystems Engineering Work Study I
- 34.424 Graduation Project
- 34.434 Animal Production Environment
- 34.440 Unit Operations II
- 34.455 Biosystems Engineering Work Study II

34.708	Seminar
34.718	Advanced Agricultural Engineering Seminar
BIOE7210	Numerical Modelling of Biosystems (50% of the lectures) (formerly 34.721 Numerical Modelling of Biosystems)
BIOE7240	Special Problems in Biosystems Engineering (formerly 34.724 Special Problems in Biosystems Engineering or 34.706 Special Problems in Agricultural Engineering)
BIOE7260	Research Methods for Biosystems Engineers (formerly 34.726 Research Methods for Biosystems Engineers or 34.717 Research Methods for Agricultural Engineers)
BIOE7280	Advanced Topics in Biosystems Engineering (formerly 34.728 Advanced Topics in Biosystems Engineering or 34.719 Advanced Topics in Agricultural Engineering)

### SUPERVISION OF POSTDOCTORAL FELLOWS

2016-18	Senthilkumar, T.	Postdoctoral Fellow
2016-18	Chelladurai, V.	Postdoctoral Fellow
2012-14	Vadivambal, R.	Postdoctoral Fellow
2009-11	Singh, C.B.	Postdoctoral Fellow
2009-10	Mishra, S.	Postdoctoral Fellow
2009-10	Neethirajan, S.	Postdoctoral Fellow
2009-10	Vadivambal, R.	Postdoctoral Fellow
2007-08	Ghosh, P.	Postdoctoral Fellow
2006-08	Choudhary, R.	Postdoctoral Fellow (co-supervised with Dr. Paliwal)
2006-07	Zhang, H.	Postdoctoral Fellow (co-supervised with Dr. Paliwal)
2005-06	Tahir, A.R.	Postdoctoral Fellow
2003-06	Jian, F.	Postdoctoral Fellow
2003-04	Karunakaran, C.	Postdoctoral Fellow
1996-98	Shashidhar, S.	Postdoctoral Fellow
1996-97	Xu, S.	Postdoctoral Fellow
1995-96	Crowe, Trever	Postdoctoral Fellow
1995-96	Cofie-Agblor, R.	Postdoctoral Fellow (co-supervised with Dr. W.E. Muir)
1994	Shatadal, P.	Postdoctoral Fellow
1994	Alagusundaram, K.	Postdoctoral Fellow
1990-92	Ryniecki, A.	Postdoctoral Fellow

### POSTGRADUATE THESES SUPERVISED

#### Doctoral Theses (26)

2016	Ph.D.	Chelladurai, V.	Feasibility of storing canola in silo bags (harvest bags)
2016	Ph.D.	Senthilkumar, T.	Detection of fungal infections of different durations in canola, wheat, and barley and different concentrations of ochratoxin A contamination in wheat and barley using near-infrared (NIR) hyperspectral imaging
2016	Ph.D.	Ravikanth, L.	Determination of physical contaminants in wheat using hyperspectral imaging
2014	Ph.D.	Moses, J.A.	Simulation and validation of three-dimensional airflow pressure patterns in grain beds (Indian Institute of Crop Processing Technology (IICPT), Thanjavur, India)
2014	Ph.D.	Sun, K.	Storage properties of high oil content bulk canola and their effects on canola storage

2013	Ph.D.	Amudhasurabi, A.	A study on dynamics of grain handling systems in Canada and India with specific reference to policy impacts (IICPT)
2012	PhD	Mohan, A.L.	Automation of unloading grain cars using "Grain-o-bot"
2011	Ph.D.	Mahesh, S.	Long wavelength near-infrared hyperspectral imaging for classification and quality assessment of bulk samples of wheat from different growing locations and crop years (co-supervised with Dr. J. Paliwal)
2009	Ph.D.	Neethirajan, S.	Development of a carbon dioxide (CO <sub>2</sub> ) sensor for agri-food industry (CIGR Armand Blanc Award, CSAE-SCGR Ph.D. thesis award, NSERC Innovation Challenge Award - Honourable Mention)
2009	Ph.D.	Singh, C.B.	Detection of insect and fungal damage and incidence of sprouting in stored wheat using near infrared hyper spectral and digital colour imaging (co-supervised with Dr. J. Paliwal)
2009	Ph.D.	Vadivambal, R.	Disinfestation of stored-grain insects using microwave energy
2007	Ph.D.	Ghosh, P.	Mathematical modeling of wheat drying with input from moisture movement studies using magnetic resonance imaging
2007	Ph.D.	Manickavasagan A.	Thermal imaging for potential use in cereals and oilseeds handling
2004	Ph.D.	Zhang, G.	Separation of touching grain kernels in an image by ellipse fitting and morphological transform algorithm
2003	Ph.D.	Jian, F.	Computer modelling of temperature and <i>Cryptolestes ferrugineus</i> (Coleoptera: Laemophloeidae) adult distribution in grain bins (Governor General Medal for outstanding achievement, CSAE-SCGR Ph.D. thesis award)
2002	Ph.D.	Visen, N.S.	Machine vision based grain handling system
2002	Ph.D.	Karunakaran, C.	Soft x-ray inspection of wheat kernels to detect infestation by stored-grain insects (University of Manitoba Distinguished Dissertation Award and CSAE-SCGR Ph.D. Thesis Award)
2002	Ph.D.	Paliwal, J.	Digital image analysis of grain samples for potential use in grain cleaning (CSAE-SCGR Ph.D. Thesis Award)
2002	Ph.D.	Hulasare, R.	Effect of suboptimal temperatures, low carbon dioxide concentrations, and relative humidities on intraspecific and interspecific interactions of <i>Cryptolestes ferrugineus</i> (Stephens) and <i>Tribolium castaneum</i> (Herbst)
2000	Ph.D.	Tewari, G.	Centralized packaging of retail meat cuts
1999	Ph.D.	Shunmugam, G.	Apparent diffusion coefficients of carbon dioxide through grain bulks
1998	Ph.D.	Mann, D.D.	Fumigation of stored grain with carbon dioxide (CSAE-SCGR Graduate Thesis Award)
1997	Ph.D.	Luo, X.Y.	Color image analysis for cereal grain classification
1997	Ph.D.	Majumdar, M.	Classification of cereal grains using machine vision
1994	Ph.D.	Shatadal, P.	Image analysis for software-separation and classification of touching grains
1993	Ph.D.	Alagusundaram, K.	Movement of CO <sub>2</sub> gas, introduced as solid formulation, through stored wheat bulks

**Masters Theses (54)**

2018	M.Sc.	Narendran, R.B.	Segregation of canola, kidney bean and soybean in wheat during bin loading (co-supervised with Dr. F. Jian)
2015	M.Sc.	Karuppiah, K.	Detection of fungal infection in pulses using near infrared (NIR) hyperspectral imaging
2014	M.Tech.	Arlene-Christina, G.D.	Studies on effect of extreme temperatures for controlling of <i>Cryptolestes ferrugineus</i> (Stephens) (Coleoptera: Laemophloeidae) life stages in wheat (IICPT)
2014	M.Tech.	Narendran, R.B.	Development of an experimental grain dryer to compare the effect of airflow direction on temperature and moisture distribution (IICPT)
2013	M.Tech.	Chidananda, K.P.	Respiration of pulses stored under different storage conditions (IICPT)
2013	M.Tech.	Divekar, M.T.	Effect of microwave pre-treatment on the microstructure and cooking quality of pulses using Fourier transform infrared (FTIR) microspectroscopy (IICPT)
2012	M.Tech.	Kaliramesh, S.	Determination of main constituents and detection of infestation by <i>Callosobruchus maculatus</i> in green gram using near-infrared hyperspectral imaging (IICPT)
2012	M.Tech.	Rani, P.R.	Safe storage guidelines for pinto beans (IICPT)
2012	M.Tech.	Purohit, P.	Microwave treatment of mung bean for reducing the cooking time and disinfecting the infestation by cowpea weevil (IICPT)
2011	M.Tech.	Ravikanth, L.	Measurement of thermal properties and physical dimensions of pulses (IICPT)
2011	M.Tech.	Sravanthi, B.	Developing safe storage guidelines for red lentils (IICPT)
2011	M.Tech.	Antony, T.A.M.	Thermal imaging technique for detection of infestation by <i>Callosobruchus maculatus</i> in green gram (IICPT)
2011	M.Sc.	Parker, V.R.	Potential of development of mycotoxins in stored durum wheat under near-ambient drying conditions in western Canada
2011	M.Sc.	Zhang, W.	Influence of growing location, sample presentation technique and amount of foreign material on features extracted from colour images of Canada western red spring wheat
2010	M.Sc.	Hossain, M.E.	Fabrication and optimization of a sensor array for incipient grain spoilage monitoring (co-supervised with Dr. M.S. Freund)
2010	M.Sc.	Senthilkumar, T.	Characterization of volatile organic compounds released by stored grain insects
2010	M.Sc.	Ramalingam, G.	Characterization of influence of moisture content on morphological features of single wheat kernels using machine vision system
2008	M.Sc.	Narvankar, D.S.	Assessment of soft X-rays for detection of fungal infection in stored wheat
2008	M.Sc.	Ramachandran, R.	Comparison of deterioration of rye samples stored at different storage regimes
2008	M.Sc.	Chelladurai, V.	Identification of fungal infection in wheat using thermal imaging technique

2008	M.Eng.	Balaji, S.	Design of a thermal disinfestation system for insects in bulk grains
2008	M.Sc.	Sun, K.	Protein fingerprinting technology for detecting stored-product insect fragments in wheat flour
2008	M.Sc.	Wang, F.	Synergistic effect of carbon monoxide mixed with carbon dioxide in air on mortality of stored-grain insects
2008	M.Sc.	Wu, J.	Feasibility of the application of the electronic nose technology to monitoring insect infestation in wheat (co-supervised with Dr. Q. Zhang)
2008	M.Sc.	Udayakumar, N.	Safe storage guidelines for durum wheat
2007	M.Sc.	Mahesh, S.	Determination of main constituents in wheat using near infrared hyperspectral imaging (co-supervised with Dr. J. Paliwal)
2006	M.Sc.	Palanichamy, A.	Comparing artificial neural network and statistical methods for estimating the survival of <i>Escherichia coli</i> O157:H7 in dry fermented sausage (co-supervised with Dr. R.A. Holley)
2006	M.Sc.	Gunasekran, S.	Safe storage guidelines for rye and canola
2005	M.Sc.	Balasubramanian A.	Sensitivity analysis of DNA fingerprinting technique for detecting insect fragments in wheat flour
2005	M.Sc.	Vadivambal, R.	Wheat disinfestation using microwave energy
2005	M.Sc.	Govindarajan, S.	Assessment of reflection and transmission techniques for determining dielectric properties of bulk wheat samples
2005	M.Sc.	Neethirajan, S.	X-ray CT image analysis to explain the airflow resistance difference in grain bulks
2005	M.Eng.	Fan, L.	Strategic planning for the Southeast grain distribution and handling system in China
2002	M.Sc.	Mohan, A.L.	Classification of bulk grains using their reflectance characteristics
2001	M.Sc.	Parde, S.	Movement of <i>Cryptolestes ferrugineus</i> (Coleoptera: cucujidae) in grain columns containing pockets of high moisture content wheat and carbon dioxide gradients
1999	M.Sc.	Habok, M.N.N.	Modification and testing of a nitrogen refrigerated, controlled atmosphere container for the distribution of fresh red meat
1999	M.Sc.	Jeyamkondan, S.	Design and evaluation of a portable, nitrogen-refrigerated, jacketed container for storage and distribution of chilled meat
1998	M.Sc.	Meszaros, S.	Determination of effective leakage area in model grain bins
1998	M.Sc.	Yu, Liping	Osmotic-air dehydration of cherries and blueberries
1997	M.Sc.	Bailey, C.G.	Design, fabrication, and testing of a returnable, insulated, nitrogen-refrigerated, controlled-atmosphere shipping container for distribution of fresh red meat (CSAE Graduate Thesis Award)
1997	M.Sc.	Eu, M.T.	Reflectance characteristics of bulk grains using a spectrophotometer
1997	M.Sc.	Hulasare, R.	Drying characteristics and moisture isotherms of hullless oats ( <i>Avena sativa</i> L.)



1997	M.Sc.	Irvine, D.A.	Control of temperature, relative humidity and carbon dioxide for reduced ventilation in commercial potato storages
1997	M.Sc.	Lukasiewicz, M.	Leakage of carbon dioxide from portions of wall of a typical bolted-metal bin
1997	M.Sc.	Nair, M.	Dockage identification in wheat using machine vision
1997	M.Sc.	Paliwal, J.	Effect of pneumatic conveyance of wheat on the mortality of stored-grain insects
1996	M.Sc.	Epp, D.A.	Evaluation of a multi-stage airflow control-algorithm for near-ambient drying of wheat in Manitoba
1996	M.Sc.	Tewari, G.	Determination of fluid-to-particle heat transfer coefficients in experimental aseptic processing systems
1995	M.Sc.	Mann, D.D.	Development of a grain storage system for Canadian farmers and grain storage managers (CSAE Graduate Thesis Award)
1994	M.Sc.	Peck, M.G.	Prediction of gas loss from bolted-metal bins caused by changing environmental conditions
1994	M.Sc.	Bundus, C.L.	Average convective-pore velocity of carbon dioxide gas through grain bulks
1989	M.Sc.	Alagusundaram, K.	Three dimensional finite element heat transfer model of temperature distribution in grain storage bins
1989	M.Sc.	Rameshbabu, M.	Design and fabrication of a controlled atmosphere unit for studies on the mortality of adult and eggs of rusty grain beetles
1989	M.Sc.	Shatadal, P.	Thin-layer rewetting rates of canola ( <i>Brassica campestris</i> L.)

### POSTGRADUATE STUDENTS CURRENTLY SUPERVISED

MSc Lavanya, G. Co-supervised with Dr. P.G. Fields

### POSTGRADUATE STUDENTS COMMITTEES

2013-15	M.Sc.	Changhee Choi	Economics of grain storage
2013	Ph.D.	External Examiner	Electronics Engineering, Sathyabama University, Chennai, India
2013	Ph.D.	External Examiner	Chemical and Biological Engineering, University of British Columbia
2011	Ph.D.	External Examiner	Indian Institute of Technology, Kharagpur, India
2010	Ph.D.	External Examiner	Indian Institute of Technology, Kharagpur, India
2008	Ph.D.	External Examiner	Food Science and Agricultural Chemistry, McGill University
2007-09	Ph.D.	Krhan, T.	Architecture
2006-08	M.Sc.	Li, H.Y.	Biosystems Engineering
2007	Ph.D.	External Examiner	Andhra University, Visakhapatnam, India
2006	Ph.D.	External Examiner	University of Saskatchewan
2004-08	M.Sc.	Graumann, G.	Food Science
2004	Ph.D.	External Examiner	Anna University, Chennai, India
2004-06	M.Sc.	Ho, C.	Food Science
2003-05	M.Sc.	Wang, W.	Biosystems Engineering
2004-05	M.Sc.	Upadhye, P.	Mechanical Engineering

2002-06	Ph.D.	Parthiban, M.	Food Science
2003	Ph.D.	External Examiner	Food Science and Agricultural Chemistry, McGill University
2002	Ph.D.	External Examiner	School of the Built Environment, Victoria University of Technology, Melbourne City, Australia
2001	Ph.D.	External Examiner	Agricultural and Biosystems Engineering, McGill University
2001	Ph.D.	External Examiner	Agricultural and Biosystems Engineering, McGill University
2001	Ph.D.	Bartley, J.	Mechanical and Industrial Engineering
2001	M.Sc.	Eduardo C.	Food Science
2000	M.Sc.	Wasney, M.	Food Science
2000	M.Sc.	Tang, P.	Biosystems Engineering
1999	Ph.D.	External Examiner	Agricultural and Biosystems Engineering, McGill University
1999	M.Sc.	Seshadri, M.	Biosystems Engineering
1999	M.Sc.	Karunakaran, C.	Biosystems Engineering
1997	Ph.D.	External Examiner	Zoology, Utkal University, Bhubaneswar, India
1997	M.Sc.	Schroth, E.	Biosystems Engineering
1997	M.Sc.	External Examiner	Agricultural and Biosystems Engineering, McGill University
1996	Ph.D.	External Examiner	Agricultural and Bioresource Engineering, University of Saskatchewan
1995	Ph.D.	External Examiner	Agricultural, Food and Nutritional Science, University of Alberta
1995	Ph.D.	Dick, K.J.	Civil and Geological Engineering (Chair, Oral Examination)
1994	M.Sc.	Pontikakis, N.	Mechanical Engineering
1994	Ph.D.	Sinicio, R.	Agricultural Engineering
1994	Ph.D.	External Examiner	Agricultural Engineering, McGill University
1994	Ph.D.	External Examiner	Agricultural Engineering, Indian Institute of Technology, Kharagpur, India
1994	Ph.D.	External Examiner	Agricultural Engineering, McGill University
1994	Ph.D.	External Examiner	Entomology, Loyola College, Madras University, India
1993	Ph.D.	Chaisin, C.	Mechanical Engineering
1993	Ph.D.	External Examiner	Food Engineering, University of Guelph
1992	M.Sc.	Blicq, D.	Food Science
1992	M.Sc.	Dougan, K.	Agricultural Engineering
1992	M.Sc.	Heise, R.	Food Science
1992	Ph.D.	External Examiner	Agricultural Engineering, University of Saskatchewan
1991	M.Sc.	Bielewicz, J.	Agricultural Engineering
1991	M.Sc.	Tishinski, T.	Food Science
1991	Ph.D.	External Examiner	Agricultural Engineering, McGill University
1990	M.Sc.	Davidson, J.	Civil Engineering
1988	M.Sc.	Ghadge, A.	Agricultural Engineering
1987	M.Sc.	Pokrant, D.G.	Agricultural Engineering
1987	M.Sc.	Paryniuk, M.	Food Science
1987	M.Sc.	External Examiner	Agricultural Engineering, McGill University
1986	M.Sc.	Austen, D.	Mechanical Engineering
1986	M.Sc.	Sanderson, D.B.	Agricultural Engineering

**UNDERGRADUATE THESES SUPERVISED (27)**

2005	B.Sc.	Parker, V.R.	Effect of dropping height on segregation of different sized particles in stored wheat bulk (Co-Supervised with Dr. F. Jian)
2004	B.Sc.	Ewanek, M.	Investigation of adult <i>Cryptolestes ferrugineus</i> distribution at one and sevens of age in a temperature gradient (Co-Supervised with Dr. F. Jian)
2003	B.Sc.	Poitras, B	Heat and mass transfer during frying of French fries (Co-Supervised with Dr. M. Scanlon)
2002	B.Sc.	Johal, A.	Physical properties of buckwheat
2001	B.Sc.	Melvin, S.M.	Design of a singulation device for presentation of grains to a soft X-ray machine
2001	B.Sc.	Place, J.A.	An investigation into popcorn tray formation
2000	B.Sc.	Gillis, K.	Soft X-ray detection of stress cracks in corn
2000	B.Sc.	Minkevich, J.	Rapid detection of rusty grain beetles in samples of stored cereals
1999	B.Sc.	Young, S.	Design parameters for forming popcorn trays
1997	B.Sc.	Waplak, S.	Design and testing of a popcorn tray forming equipment
1997	B.Sc.	Habok, M.N.N.	Comparison of sorption characteristics and insect infestation potential of one hullless and two hulled oat cultivars
1996	B.Sc.	Lamontagne, B.C.	Quantification of the effect of growing location on morphological features of wheat using machine vision
1996	B.Sc.	Lepper, S.	Engineering properties of A.C. Marie, A.C. Belmont, and Robert oats
1995	B.Sc.	McRae, C.	Design and testing of a grain sampling device at a railcar unloading facility
1995	B.Sc.	Samuda, M.J.	Determination of air leakage through bolted metal grain storages - a review
1995	B.Sc.	Spewak, R.	An automated seed singulation device for presenting grains to an image processing system
1994	B.Sc.	Epp, D.	Modification of a control algorithm for near-ambient drying of wheat
1994	B.Sc.	Strong, D.A.	Insect mortality during turning of wheat with a pneumatic conveyer and pencil auger
1993	B.Sc.	Murray, C.E.	An automated seed presentation device for use in machine vision identification of grain
1992	B.Sc.	Bergen, G.A.	Physical damage to peas and lentils due to free fall
1992	B.Sc.	Mann, D.D.	Analysis of the airflow resistance data of grains and seeds - a new approach
1989	B.Sc.	Irvine, D.	Effect of airflow direction on resistance to airflow through flaxseed
1988	B.Sc.	Janzen, T.J.	Design and construction of a small scale grain dryer
1988	B.Sc.	Tishinski, A.T.	Expert system for on farm grain drying
1987	B.Sc.	Girard, M.	Controlled atmosphere storage of wheat
1987	B.Sc.	Griffin, D.	Thermal conductivity of potato
1987	B.Sc.	Kukelko, D.A.	Equilibrium moisture content of canola meal

## SUPERVISION OF RESEARCH ASSOCIATES, SUMMER RESEARCH ASSISTANTS AND VISITING SCIENTISTS

2013	Chakraborty, S.K.	Visiting Scientist
2013	Teena, M.A.	Visiting Student
2013	Guillard, V.	Undergraduate Research Assistant
2013	Savalle, S.	Undergraduate Research Assistant
2013	McDonald, I.	Undergraduate Research Assistant
2012	Howe, N.	Undergraduate Research Assistant
2012	Kheiralipour, K.	Visiting Student
2011-12	Eigbire-Molen, V.	Undergraduate Research Assistant
2010-15	Jian, F.	Research Engineer
2010	Loganathan, M.	Visiting Scientist
2010-11	Rahman, G.M.A.	Research Associate (co-supervised with Dr. Freund)
2010-12	Habeck, J.E.	Undergraduate Research Assistant
2010-13	Gray, C.M.	Undergraduate Research Assistant
2009	Hemis, M.	Visiting Student
2009	Mani, A.	Undergraduate Research Assistant
2009	Deji, Olanike F.	The Association of Commonwealth Universities Fellow
2008-13	Chelladurai, V.	Research Engineer
2008	Dyrkacz, R.	Undergraduate Research Assistant
2008	Gray, B.	Research Assistant
2007-08	Parker, A.	Undergraduate Research Assistant
2007-08	Parker, V.R.	Engineer-in-Training (Part-time M.Sc. Student)
2007	Griffiths, K.A.	Undergraduate Research Assistant
2006	Sadistap, S.S.	Visiting Scientist
2006	Griffiths, K.A.	Undergraduate Research Assistant
2006	Mavi, P.	Undergraduate Research Assistant (co-supervised with Dr. Paliwal)
2006	Shields, C.	Undergraduate Research Assistant
2005	Parker, V.R.	Undergraduate Research Assistant
2005	Griffiths, K.A.	Undergraduate Research Assistant
2005	Mavi, P.	Undergraduate Research Assistant (co-supervised with Dr. Paliwal)
2004	Parker, V.R.	Undergraduate Research Assistant
2004	Leafloor, E.	Undergraduate Research Assistant
2004	Volkart, T.	Lab Assistant
2003	Zubriski, S.	Undergraduate Research Assistant
2002-04	Ewanek Mary-Anne	Undergraduate Research Assistant
2002	Smith, E.A.	Visiting Researcher
2000-01	Johal, A.	Undergraduate Research Assistant
2000	Visvanathan, R.	Visiting Researcher
2000	Pillai, M.A.	Visiting Researcher
2000	Place, J.	Undergraduate Research Assistant
2000	Stepnuk, L.	Undergraduate Research Assistant
1999-01	Wang, Li	Research Associate
1999-00	Seshadri, M.	Research Associate
1999-00	Suresh, S.	Visiting Researcher
1999	Smith, E.A.	Visiting Researcher
1999	Minkevich, M.	Undergraduate Research Assistant
1997	Habok, M.	Undergraduate Research Assistant

1997	Koutis, M.	Undergraduate Research Assistant
1997	Braun, J.	Undergraduate Research Assistant
1997	Waplak, S.	Undergraduate Research Assistant
1996	Habok, M.	Undergraduate Research Assistant
1996	Koutis, M.	Undergraduate Research Assistant
1996	Lund, K.	Undergraduate Research Assistant
1996	Szmon, M.P.	Undergraduate Research Assistant
1996	Waplak, S.	Undergraduate Research Assistant
1995-96	Domytrak, C.	Research Associate
1995	Habok, M.	Undergraduate Research Assistant
1995	Lamontagne, B.	Undergraduate Research Assistant
1995	Lepper, S.	Undergraduate Research Assistant
1995	Tandon, A.	Undergraduate Research Assistant
1995	Shideler, K.	Undergraduate Research Assistant
1995	Smith, E.A.	Visiting Scientist
1994-95	Sreenarayanan	Visiting Scientist
1994	Ramaswamy, H.	Visiting Scientist
1994	Lamontagne, B.	Undergraduate Research Assistant
1994	Lepper, S.	Undergraduate Research Assistant
1994	Samuda, M.	Undergraduate Research Assistant
1994	Spewak, R.	Undergraduate Research Assistant
1994	Tandon, A.	Undergraduate Research Assistant
1993	Cormier, D.	Undergraduate Research Assistant
1993	Epp, D.	Undergraduate Research Assistant
1993	Jindal, R.	Undergraduate Research Assistant
1993	Lamontagne, B.	Undergraduate Research Assistant
1993	Larmond, M.	Undergraduate Research Assistant
1993	Verma, A.	Undergraduate Research Assistant
1993	Smith, E.A.	Visiting Scientist
1992	Grosshans, R.	Undergraduate Research Assistant
1992	Larmond, M.	Undergraduate Research Assistant
1992	Muir, D.P.	Undergraduate Research Assistant
1992	Murray, C.E.	Undergraduate Research Assistant
1992	Verma, A.	Undergraduate Research Assistant
1992-93	Weres, J.	Visiting Scientist
1991	Larmond, M.	Undergraduate Research Assistant
1991	Mann, D.	Undergraduate Research Assistant
1990	Larmond, M.	Undergraduate Research Assistant
1990-93	Alagusundaram, K.	Research Associate (Part-time Ph.D. Student)
1990-93	Irvine, D.A.	Research Associate (Part-time M.Sc. Student)
1990-91	Pabis, S.	Visiting Scientist
1990-91	Smith, E.A.	Visiting Scientist (co-supervised with Dr. W.E. Muir)
1989	Chotard, F.	Undergraduate Research Assistant
1989	Irvine, D.A.	Undergraduate Research Assistant
1989	Muir, D.P.	Undergraduate Research Assistant
1989	Watson, M.	Undergraduate Research Assistant
1988	Chiu, M.	Undergraduate Research Assistant
1988	Irvine, D.A.	Undergraduate Research Assistant
1988	Muir, D.P.	Undergraduate Research Assistant
1988	Townsend, N.	Undergraduate Research Assistant
1987	Chiu, M.	Undergraduate Research Assistant

1986	Girard, M.	Undergraduate Research Assistant
1986	Kukelko, D.A.	Undergraduate Research Assistant

### CONTINUING EDUCATION

#### AS A PARTICIPANT

2017	Participant in a 1-day workshop on Board Governance, Organized by Canadian Society of Association Executives, Ottawa, ON.
2006	Participant in 1-wk course Understanding patents: an introductory course, sponsored by Intellectual Property Institute of Canada and McGill University, Montreal, PQ.
2005	Participated in 27.735 CEO Course, sponsored by I.H. Asper School of Business, University of Manitoba, Winnipeg, MB.
2001	Participant in a 6-h Workshop on Advances in Food/Bioprocessing, sponsored by University of Guelph, ON.
2001	Participant in a 125-h Senior University Administrators Course, sponsored by Centre for Higher Education Research and Development, Winnipeg, MB
1999	Participant in a 25-h course on University Committees and Decision Making, sponsored by Centre for Higher Education Research and Development, Winnipeg, MB
1999	Participant in a 6-h Workshop on Enhancing Influence for Administrators in a System of Collegial Decision Making, sponsored by University of Manitoba, Winnipeg, MB
1999	Participant in a 2-day Workshop on Policy Governance sponsored by Canadian Council of Professional Engineers, Ottawa, ON.
1999	Participant in a 2-h Workshop on Reasonable Accommodation, What Does It Mean?, sponsored by University of Manitoba, Winnipeg, MB
1998	Participant in an 8-h Workshop on Safety by Design sponsored by University of Toronto and Minerva Canada Inc., Toronto, ON.
1998	Participant in a 75-h University Management Course, sponsored by Centre for Higher Education Research and Development, Winnipeg, MB
1998	Participant in a 25-h course on Powerful Writing for University Administrators, sponsored by Centre for Higher Education Research and Development, Winnipeg, MB
1998	Participant in a 20-h Workshop on University Partnerships in Cooperation and Development and Result Based Management, sponsored by Association of Universities and Colleges of Canada, Winnipeg, MB
1998	Participant in a 6-h Workshop on Conflict Resolution, sponsored by University of Manitoba, Winnipeg, MB
1998	Participant in a 6-h Workshop on Leadership, sponsored by Toastmasters International, District 64, Winnipeg, MB
1998	Participant in a 2-h Workshop on Student Concerns/Complaints: University Protocol & Good Advice, sponsored by University of Manitoba, Winnipeg, MB
1997	Participant in a 1.5-h Workshop on Working with SEEQ (Student Evaluation of Educational Quality) Feedback, sponsored by Centre for Higher Education Research and Development, University of Manitoba, Winnipeg, MB
1997	Participant in a 2-h Seminar on Academic Administrator as Facilitator of Research Development, sponsored by Centre for Higher Education Research and Development, University of Manitoba, Winnipeg, MB
1997	Participant in a 2-h Workshop for Chairs of Search Committees, University of Manitoba, Winnipeg, MB
1997	Participant in a 4-h Seminar on Academic Administration, sponsored by Centre for Higher Education Research and Development, University of Manitoba, Winnipeg, MB
1997	Participant in a 4-h Workshop on Software Engineering and Accreditation Procedures, Sponsored by Canadian Engineering Accreditation Board, Kelowna, BC

- 1997 Participant in a 1-wk Workshop on "Teaching Teachers to Teach Engineering (T<sup>4</sup>E)", Sponsored by United States Military Academy, West Point, NY
- 1997 Participant in a 15-h Workshop on "A Short Introduction to C++ Programming", sponsored by the Faculty of Engineering, University of Manitoba, Winnipeg, MB
- 1996 Participant in 78.415 Food Microbiology I, sponsored by the Faculty of Agricultural and Food Sciences, University of Manitoba, Winnipeg, MB
- 1996 Participant in an 1-day Workshop on "The HACCP Habit: Practical Implementation Tips" sponsored by Canadian Institute of Food Science and Technology, Etobicoke, ON.
- 1996 Participant in an 8-h Workshop on "Outcomes-based Engineering Education" sponsored by American Society of Agricultural Engineers, St. Joseph, MI
- 1996 Participant in a 3-h Workshop on "PE Examination Explained" sponsored by American Society of Agricultural Engineers, St. Joseph, MI
- 1994 Participant in a 2-day Workshop on "Integration of Biology into Agricultural Engineering Curricula" sponsored by University of Florida, Gainesville, FL
- 1993 Participant in a 1-week course on "Techniques of Gas Chromatography" sponsored by Hewlett Packard, Canada.
- 1990 Participant in 116.730 Seminar in Post-Secondary Instruction, sponsored by the Faculty of Education, University of Manitoba, Winnipeg, MB
- 1989 Participant in a 15-hour workshop on "Lecturing and Explaining", sponsored by the Faculty of Education, University of Manitoba, Winnipeg, MB
- 1989 Participant in 116.530 Teaching and Learning in Post-Secondary Institutions, sponsored by the Faculty of Education, University of Manitoba, Winnipeg, MB
- 1988 Participant in a 4-hour workshop on "Commercializing technological innovations", sponsored by the Institute for Technological Development, University of Manitoba, Winnipeg, MB
- 1988 Participant in a 15-hour workshop on "Course construction", sponsored by the Faculty of Education, University of Manitoba, Winnipeg, MB
- 1988 Participant in a 2-week workshop on "Knowledge based systems", Hawthorne, NY, sponsored by the American Society of Engineering Education, Washington, DC
- 1987 Participant in a 24-hour workshop on WordPerfect, Winnipeg, Manitoba, sponsored by the Continuing Education Division, University of Manitoba, Winnipeg, MB.
- 1987 Participant in a 1-day workshop on Instruction Development, sponsored by the Academic Development Committee, University of Saskatchewan, Saskatoon, SK
- 1987 Participant in a 6-hour Workshop on New Techniques in HPLC/GC, sponsored by the Canadian Institute of Food Science and Technology, Manitoba Section, Portage la Prairie, MB
- 1987 Participant in a 15-hour workshop on MS DOS, Winnipeg, Manitoba, sponsored by the Continuing Education Division, University of Manitoba, Winnipeg, MB.
- 1987 Participant in a 36-hour non-credit course in Beginner's French, sponsored by the Continuing Education Division, University of Manitoba, Winnipeg, MB
- 1987 Participant in a 24-hour workshop on Engineering Problem Solving Using TK Solver and Lotus 1-2-3, Chicago, IL, sponsored by the American Society of Agricultural Engineers, St. Joseph, MI.
- 1986 Participant in a 12-hour Workshop on Time Management in an Academic Environment, Winnipeg, Manitoba, sponsored by the Faculty of Education, University of Manitoba
- 1986 Participant in a 30-hour Workshop on Communication Effectiveness, Winnipeg, Manitoba, sponsored by the Faculty of Education, University of Manitoba
- 1986 Participant in a 24-hour Workshop on Creating Expert Systems, Chicago, IL, sponsored by the American Society of Agricultural Engineers, St. Joseph, MI
- 1981 Participant in a 36-hour non-credit course on Introduction to College Teaching, sponsored by the Faculty of Graduate Studies, University of Manitoba, Winnipeg, MB

**AS A CONTRIBUTOR**

- 2018 Invited to present a 5-day Workshop “Bio-Imaging for Food Quality Monitoring and Process Automation” hosted by the Guru Nanak Dev University, Amritsar, India under the Government of India’s Global Initiative of Academic Networks (GIAN) program.
- 2005 Invited to present a 4-day workshop “Sino-Canada Symposium on Grain Storage Ecosystem” hosted by the Academy of State Administration of Grain, China
- 1999 Invited to present 4 three-hour long each workshops on “Bloom’s Taxonomy of Cognitive Domain, Developing Course Objectives, Proper Use of Technology in Classrooms, and Consulting in an Academic Environment” at the College of Agricultural Engineering, Tamil Nadu Agricultural University, Coimbatore, India.
- 1995 Session on Teaching in Labs in Teaching Assistant Workshop, sponsored by Centre for Higher Education Research and Development, University of Manitoba, Winnipeg, Manitoba
- 1989 Co-organizer and one of two lecturers in a 6-h course on "Introduction to Expert Systems using PC Easy" at the University of Manitoba, sponsored by the Continuing Education Division, University of Manitoba, Winnipeg, Manitoba

**UNIVERSITY PROFESSIONAL ACTIVITIES****University Level**

- 2017- Member, Central Unit Allocation Committee (CUAC)
- 2015 Member, Planning and Budget Committee
- 2014 Vice-Chair, Strategic Planning Committee
- 2013- Member, Campus Planning and Design Committee
- 2012-14 Member, Internal Campaign Planning Committee
- 2011-12 Member, Campus Planning Advisory Committee
- 2009-11 Member, Steering Committee, Resource Optimization and Service Enhancement (ROSE) Project
- 2009-11 Co-chair, Steering Committee, Optimizing Academic Resources (OARs) Project
- 2009-10 Chair, Search Committee, Watershed Systems Research Chair
- 2009- Chair, Senate Committee on University Research
- 2009- Designated Chair, The Paul H.T. Thorlakson Foundation Fund
- 2009- Vice-Chair, Provost Council
- 2009- Chair, Rh Institute Foundation Awards Selection Committees
- 2008- Member, Advisory Board, Structural Innovation and Monitoring Technologies Resource Centre (SIMTReC) formerly (Intelligent Sensing for Innovative Structures (ISIS) Canada Resource Centre)
- 2007-09 Member, Alternative Village Steering Committee
- 2006- Organizer, Manitoba Science, Engineering and Technology Day (held first time in 2007)
- 2006-09 Organizer, Undergraduate NSERC Research Poster Competition (held first time in 2006)
- 2006-10 Member, Distinguished Professor Nominating Committee
- 2006-07 Member, Presidential Advisory Committee to review Vice-President (Academic) and Provost
- 2004-06 Member, Advisory Committee to develop an academic IT plan
- 2003-04 Member, Selection Committee, Executive Director, Technology Transfer Office
- 2004-05 Member, Incubator Management Committee
- 2004-09 Member, CFI Advisory Committee
- 2003-09 Member, Senate Planning and Priorities Committee
- 2002-04 Member, UMFA and UofM Joint Committee on Patents and Copyrights
- 2002-04 Chair, Dr. Paul H.T. Thorlakson Foundation Fund Scientific Sub-Committee
- 2001-04 Member, Manitoba Nursing Research Institute, Advisory Committee
- 2001-04 Member, Health, Leisure and Human Performance Research Institute, Advisory Committee



- 2001-09 Member, Selection Committees of all recruitment Canada Research Chairs (CRCs)
- 2001-08 Member, Senior Administrative Council (SAC)
- 2001-08 Member, Deans/Directors Council (DDC)
- 2001-08 Member, Rh Institute Foundation Awards Selection Committees
- 2001-04 Ex-officio Member, Faculty Council of Graduate Studies
- 2001-04 Member, Senate Committee on the Libraries
- 2001-04 Member, Executive Committee, Centre on Aging
- 2001-04 Ex-officio Member, Faculty of Graduate Studies Awards Committee
- 2001-03 Member, Transport Institute Advisory Committee
- 2001-04 Chair, University Research Grants Program (URGP)
- 2001-04 Chair, UM/SSHRC Research Grants Program (RGP)
- 2001-04 Chair, UM/SSHRC Travel Grants Program (TGP)
- 2001-09 Chair, Senate Committee on Animal Care (SCAC)
- 2001-04 Chair, Senate Committee on the Ethics of Research Involving Human Subjects
- 2001-04 Chair, CFI Advisory Committee
- 2001-08 Member, Senate Committee on University Research
- 2001-04 Co-chair, Academic Record System Committee
- 2001-04 Member, Freedom of Information and Privacy Protection Act (FIPPA) and Personal Health Information Act (PHIA) Review Committee
- 2001-04 Member, Academic Development Fund Advisory Committee
- 2001-04 Member, Advisory Board for UILO's Corporate Affiliation Program
- 2001-04 Member, Commercialization Assessment Group (CAG)
- 2001-04 Member, UMR Board
- 2001-02 Coordinator, Flood Architecture Institute Committee
- 2000 Member, Advisory Committee for Selection of the Executive Director, Technology Commercialization and Research Services
- 1999-00 Member, UMFA and UofM Joint Committee on Patents and Copyrights
- 1999-03 Member, Research Development Fund Advisory Committee
- 1997-98 Member, Search Advisory Committee for the Vice-President (Research)
- 1993-94 Member, Research Development Fund Advisory Committee
- 1992 Member, Organizing Committee, Conference on Porous Media
- 1990 Member, Ad Hoc Committee for Graduate Teaching Programs
- 1986-90 Member, Faculty Council of Graduate Studies

### **Faculty Level (Engineering)**

- 2003-13 Member, Advisory Committee, NSERC IRC in Power Systems Simulation
- 1998-00 EASIAP Liaison Professor, MacDon Industries Ltd., Easy Industry Access Program
- 1998-00 EASIAP Liaison Professor, United Grain Growers Ltd., Easy Industry Access Program
- 1997-99 Member, Deans and Heads Committee
- 1997-99 Member, Academic Regulations and Curriculum Committee
- 1997-99 Member, Program Review Committee
- 1996-97 Member, Curriculum Renewal Committee
- 1996-97 Member, Ad-hoc Committee Continuing Education
- 1995-96 Member, Faculty Advance Planning Committee
- 1994-95 Member, Ad-hoc Committee on Faculty Council
- 1994-97 Member, Computer Use Committee
- 1991-98 EASIAP Liaison Professor, Vansco Electronics Ltd., Easy Industry Access Program
- 1989-94 Member, Academic Regulations and Curriculum Committee
- 1986-90 Member, Graduate Studies Committee
- 1985-89 Member, Library Committee

1988-89 Chairman  
 1985- Member, Faculty Council

### Faculty Level (Agricultural and Food Sciences)

2006 Member, Selection Committee for a Tenure-track academic position in Animal Science  
 2001 Ex-officio Member, Selection Committee for a Tenure-track academic position in Animal Science  
 2000-01 Ex-officio Member, Selection Committee for a Tenure-track academic position in Biosystems Engineering  
 2000-01 Chair, Computer Committee  
 2000 Chair, Strategic Planning Committee for Research  
 2000 Chair, Strategic Planning Committee for Co-op Program  
 1999-01 Chair, Research Committee  
 1999-00 Chair, Organizing Committee, Agri-Food Research Fair  
 1998-99 Member, President's Advisory Committee for Selection of Dean of the Faculty of Agricultural and Food Sciences  
 1998-99 Member, Research Committee  
 1997-01 Member, Faculty Executive Committee  
 1997-00 Member, Curriculum Committee  
 1996-99 Member, Tenure/Promotion Nucleus Committee  
 1996-97 Member, Student Recruitment and Outreach Committee  
 1994-97 Member, Computer Committee  
 1993-94 Member, Dean's Advisory Committee for Selection of Head of Food Science  
 1992-93 Member, Research Committee  
 1990 Facilitator, Strategic Planning  
 1990 Member, Dean's Advisory Committee for Selection of Head of Agricultural Engineering  
 1986-90 Member, Graduate Studies Committee  
 1986 Member, Dean's Advisory Committee for Selection of Head of Agricultural Engineering  
 1985- Member, Faculty Council  
 1985-91 Member, Computer Committee

### Department Level (Biosystems Engineering)

2004 Member, Selection Committee for an instructor position  
 2001-02 Member, Selection Committee for a Tenure-track academic position  
 1997-98 Chair, Selection Committee for a Tenure-track academic position  
 1996-97 Member, Selection Committee for a Tenure-track academic position  
 1995 Ad hoc Committee on Curriculum Development for 1+4 Program  
 1995- Member, Biosystems Engineering Department Council  
 1994-97 Chair, Standing Computer Committee  
 1993-94 Ad hoc Committee on Space Use  
 1989 Member, Selection Committee for a Tenure-track academic position  
 1989-93 Co-chair, Organizing Committee International Symposium on Stored Grain Ecosystems  
 1988-00 Member, Ph.D. Student Selection Committee  
 1988 Member, Selection Committee for a Tenure-track academic position  
 1987 Member, Selection Committee for a Tenure-track academic position  
 1987-93 Member, Standing Computer Committee  
 1985-95 Member, Agricultural Engineering Department Council

**PROVINCIAL AND NATIONAL PROFESSIONAL ACTIVITIES****Oceans Research in Canada Alliance (ORCA) Council**

2017- Member

**North Forge Technology Exchange**

2017- Member, Board

**National VPR Meeting**

2016- Chair, Working Group

**Compute Canada**

2015-16 Member, Working Group for a Sustainable Business Model

**Centre for Healthcare Innovation (CHI)**

2015- Member, Executive Council

**Research Institute for Oncology and Haematology (RIOH), a joint institute of the CancerCare Manitoba and the University of Manitoba**

2015- Member, Advisory Board

**National Collaborating Centre for Infectious Diseases (NCCID)**

2015- Member, Advisory Board

**University of Saskatchewan**

2015 Reviewer for graduate program in biological engineering, Faculty of Graduate Studies and Research

**Canadian Glycomics Network - a Network of Centres of Excellence**

2016- Chair, Commercialization Committee

2014- Member Board of Director

**Canadian Medical Hall of Fame**

2015 Member, Induction Committee

**Research Manitoba**

2015 Member, Research Improvement Through Harmonization in Manitoba (RITHiM) Steering Committee

2014- Board Member

2014- Vice-Chair

2014- Member, Executive Committee

2014- Chair, Nominating and Governance Committee

**U15 Research Committee**

2016- Vice-Chair

2012- Member

**Royal Society of Canada**

2012-13 Member, Applied Science and Engineering (ASE) Fellow Selection Committee

**CancerCare Manitoba Foundation**

2012- Member, Projects, Grants &amp; Awards Committee

**Canada-Israel FASD (Fetal Alcohol Spectrum Disorder) Consortium Steering Committee**

2010-13 Member

**Manitoba Centre for Health Policy (MCHP)**

2010- Member, Advisory Board

**Canadian Engineering Education Association (CEEA)**

2010 Founding Member

**Canadian Institute for Advanced Research (CIFAR)**

2010- Member, Research Council

**Agriculture and Agri-Food Canada**

2010-12 Member, Stakeholder Reference Group

**MabNet (an NSERC Strategic Network)**

2010-16 Member, Board of Directors

**TRIUMF (Canada's National Laboratory for Particle and Nuclear Physics)**

2009- Member, Board of Management

2016- Chair

2016-17 Chair, Board of Directors Advanced Applied Physics Solutions Inc. (AAPS);  
TRIUMF Innovations Inc.

2014-2016 Vice-Chair

2014-16 Chair, Innovations and Industrial Partnerships Committee

2013-14 Member, ARIEL Completion Taskforce

2011- Member, Audit Committee

2010- Member, Finance Committee

2011- Member, Executive Committee

2010-14 Member, Technology Transfer Committee

**ArcticNet – a Network of Centres of Excellence**

2009- Board Member

2012 Audit and Finance Committee

**WestGrid**

2009- Member, Member Council

**International Centre for Infectious Diseases (ICID)**

2009-15 Board Member

**Manitoba Health Research Council (MHRC)**

2009-14 Board Member

2012-14 Vice-chair

2012-14 Member, Executive Committee

2009-14 Member, Nominating and Governance Committee

2012-14 Chair

2009-11 Member, Research Infrastructure Committee

2001-04 Board Member

**McGill University**

2008 Reviewer for Ph.D. programs in seven units of the Faculty of Agricultural and Environmental Sciences

**Canada-Wide Science Fair (CWSF) 2009**

2007-09 Honorary Patron

**Agri-food Research and Development Initiative (ARDI)**

2007-09 Board Member

**Manitoba Advanced Manufacturing Research**

2006-07 Member, Steering Committee

**Cameco NSERC Prairie Chair for Women in Science and Engineering**

2005-10 Member, Advisory Board

**Green Crop Network (an NSERC Strategic Network)**

2005-10 Member, Advisory Board

**Consulting Engineers of Manitoba (CEM)**

2005-11 Judge, Annual Award Selection

**TRTech (formerly TR Labs) Board of Directors**

2004-16 Vice-chair (Chair, September 04-March 05)

2007- Member (representing all prairie member universities)

2005-06 Member, Review Committee

2001-04 Member (Alternate), TR Labs Board of Directors

**Composite Innovation Centre (CIC)**

2004- Member, Board of Directors

**University Advisory Group (UAG)**

2003-08 Member

**Manitoba Business of Science**

2002-04 Member, Steering Committee

**Manitoba Chamber of Commerce (MCC)**

2003-14 Board Member

**Manitoba Biotech Strategic Development Project**

2002 Member

**Manitoba Hydrogen Steering Committee**

2002-08 Member

**Manitoba Agri-food Research and Development Group**

2001-04 Member

**Canadian Agri-Food Research Council (CARC)**

2001-03 Member, Standing Committee on the Inventory of Canadian Agri-Food Research (SCICAR)

**Genome Prairie**

2008- Member, Board of Directors  
 2008- Member, Communications Committee  
 2000-02 Member, Board of Directors  
 2001-02 Member, Executive Committee  
 2001-02 Member, Audit Committee

**Canadian Grain Commission (CGC)**

2004 Member, Selection Committee, Director, Grain Research Laboratory  
 2000-04 Member, Automated Quality Testing (AQT) Technical Committee  
 2001-06 Member, Advisory Committee, Grain Research Laboratory  
 1999-00 Member, RIOT (Rapid Instrumental Objective Testing) Technical Committee

**Canought Biotechnology**

1999-00 Member, Project Evaluation Committee

**Western Grains Research Foundation (WGRF)**

1999-01 Member, Research Advisory Committee

**Canadian Association for Co-operative Education**

1998-00 Member

**Natural Sciences and Engineering Research Council of Canada (NSERC)**

2018- Vice-President and Chair of the NSERC Council  
 2015- NESRC Leader  
 2015-18 Member, Committee on Research Partnerships  
 2014- Member, Council  
 2014- Member, Executive Committee  
 2014 Member, 2020 Steering Committee  
 2012 Chair, Research Network Site Visit Committee, Western University  
 2010 Chair, Research Network Site Visit Committee, McMaster University  
 2009 Chair, Research Network Site Visit Committee, University of British Columbia  
 2008 Chair, Research Network Site Visit Committee, University of Guelph  
 2006-10 University Rep  
 2005-06 Member, Selection Committee, Manager Winnipeg Regional Office  
 2004 Chair, Research Network Site Visit Committee, McMaster University  
 2002-03 Member, Tri-agency Working Group on Conflict of Interest Schedule  
 2001-04 Member, Research Network Selection Committee  
 2003-04 Chair  
 1997-01 Member, Strategic Grant Selection Panel  
 1999-01 Chair

**Science Council Manitoba**

1996-97 Board Member

**Engineers Canada (EC), prior to 2006 Canadian Council of Professional Engineers (CCPE)**

2010-18 Member, Board of Directors  
 2017-18 Member, CEO Search Committee

	2017-18	Member, Governance Committee
	2016-17	Past-President
	2016-17	Chair, Nomination Committee
	2016-17	Chair, Governance Committee
	2016-17	Chair, Compensation Committee
	2015-16	President
	2014-15	President-Elect
	2014-17	Member, Executive Committee
	2015-16	Chair
	2015-17	Member, Governance Committee
	2014-17	Member, Compensation Committee
	2014-15	Chair, Ownership Linkage Taskforce
	2014-15	Chair, Indigenous People Sub-Committee
	2013-15	Member, Sustainable Membership Committee
	2013-14	Chair, International Engineering Graduate Committee
	2013-14	Member, Governance Committee
	2012-14	Chair, Joint Committee Assembly of First Nations / Engineers Canada
	2011-12	Member, Joint Committee Assembly of First Nations/Engineers Canada
	2011-13	Member, Executive Committee
	2011-12	Member, Women in Engineering Committee
	2010-13	Member, International Committee
	2010-11	Observer, Canadian Engineering Accreditation Board
	2010-11	Member, Indigenous People Outreach Task Force
2002-05		From Consideration to Integration (FC2I)
	2002-04	Member, Steering Committee,
	2003-04	Chair, Licensing Sub-Committee
	2004-05	Member Transition Committee
1993		Canadian Engineering Accreditation Board (CEAB) Visiting Team Member
1992-04		Member, Canadian Engineering Qualifications Board (CEQB)
	2002-04	Past-Chair
	2000-02	Chair
	1998-00	Vice-Chair
	2000-01	Chair, Software Engineering Experience Task Force
	1999-00	Member, Specialization Task Force
	1998-00	Chair, National Database Committee
	1998-00	Member, Task Force on Admission to the Practice of Engineering in Canada
	1998-99	Member, Organizing Committee, First National Forum on Continuing Education
	1996-99	Member, Common Examination Committee
	1995-00	Chair, Syllabus of Examinations Committee
	1993-95	Chair, Foreign Engineering Qualifications Committee

#### **Association of Professional Engineers and Geoscientists of the Province of Manitoba (APEGM)**

2015-	Honorary Life Member
2014-17	Member, Public Interest Review Committee (PIRC)
2008-17	Chair, Academic Review Committee (ARC)
2004-08	Member, APEGM Council
	2006-08 Past-President, APEGM
	2006-08 Chair, Nominating Committee
	2005-06 President, APEGM
	2004-05 President-elect, APEGM

1998-04 Member, Experience Review Committee (ERC)  
 1998-04 Vice-chair, Academic Review Committee (ARC)  
 1994-98 Member, Experience Review Board (ERB) (predecessor of ERC)  
 1994 Member, Four-year Work Experience Requirement Task Force  
 1992-94 Member, Ad-hoc Computer System Committee  
 1991-93 Member, Manual Review Sub-committee of the Board of Examiners  
 1989-98 Member, Board of Examiners (predecessor of ARC)  
     1995-98 Vice-Chairman  
 1987-94 Member, Publications Committee  
 1986-2015 Member

#### **Manitoba Institute of Agrologists (MIA)**

2009-15 Member, Provincial Council  
     2010-12 President  
     2012-17 Member, Governance Committee  
             2012-2014 Chair  
 1997- Member

#### **Agriculture Institute of Canada (AIC)**

1997- Member  
 2006-12 Member, Board of Directors  
     2011-12 President  
     2010-11 Chair, Nominating Committee  
     2007-08 Member, Nominations Committee  
     2007-08 Member, Owner Engagement Committee

#### **Agri-Food 2000 (AIC/CIFST/CSAE/Flax Council Conference)**

1997-00 Chair, Technical Program Committee

#### **Canadian Institute of Food Science and Technology (CIFST)**

2008-13 Member Fellows Selection Committee  
 2000-01 Past-President  
 2000-01 Chair, Awards Committee  
 1999-00 President  
 1998-99 President-Elect  
 1997-98 Vice-President  
 1995-97 President, Manitoba Section  
 1995-97 Member, National Council  
 1993-95 Program-chairman/President-elect, Manitoba Section  
 1990-91 Past-President, National Food Process Engineering Division  
 1989-90 President, National Food Process Engineering Division  
 1989-93 Membership Director, Manitoba Section  
 1988-89 President-elect, National Food Process Engineering Division  
 1987- Professional Member  
 1986-89 Local Director, Manitoba Section  
 1986-89 Director, Publications and Membership, National Food Process Engineering Division  
 1985-86 Associate Member

#### **Canadian Society for Bioengineering (CSBE), prior to 2004 Canadian Society for Agricultural Engineering (CSAE)**

2004-05 Chair, Nomination Committee



2004-05 Chair, By-laws Committee  
 2004-05 Chair, Advisory Council of Past-Presidents  
 2004-05 Past-president  
 2003-04 President  
 2002-03 President-elect  
 1997-98 Past-Chair, Awards Committee  
 1996-97 Chair, Awards Committee  
 1995-96 Vice Chairman, Awards Committee  
 1988-90 Regional Director (Manitoba)  
 1984- Member  
 1980-83 Student Member

**Graduate Students' Association, University of Saskatchewan**

1984-85 Vice-President (External)  
 1984-85 Representative on Library Advisory Committee

**INTERNATIONAL PROFESSIONAL ACTIVITIES**

**5<sup>th</sup> Euro Biosensors & Bioelectronics Conference**

2015-16 Member, Organizing Committee

**2nd International Conference on Bioprocess and Engineering (Bioprocess-2014)**

2013-14 Member, Organizing Committee

**International Conference on Agricultural Engineering (ICAE), Muscat, Sultanate of Oman**

2012-13 Member, International Scientific Committee

**International Cereal and Bread Congress (ICBC2012)**

2011-12 Member, Scientific Committee

**International Congress on Food Engineering and Technology (IFET 2012)**

2011-12 Member, International Scientific Committee

**Trends in Industrial Measurements and Automation (TIMA) 2011**

2010-11 Member, International Advisory Committee

**International Commission of Agricultural and Biosystems Engineering (CIGR)**

2013-14 Member, International Scientific Committee for the 8<sup>th</sup> CIGR International Technical Symposium

2009-11 Board Member, Section VI Postharvest Technology and Process Engineering

2008-09 Member, Scientific Committee, 4th CIGR Section, VI International Symposium on Food and Bioprocess Technology

**The 6th Asia-Pacific Drying Conference (ADC2009)**

2008-09 Member, International Advisory/Scientific Panel

**International Grain Quality and Technology Congress**

2008 Member, Organizing Committee

**Innovations in Food and Bio-Process Technology Conference**

2006 Member, International Advisory Panel

**Asian Drying Congress (ADC) 2005**

2004-05 Member, International Scientific Committee

**International Congress on Engineering and Food (ICEF 10)**

2004 Member, Honorary Committee

**TIMA 2004 (Trends in Industrial Measurement and Automation)**

2004 Member, Advisory Committee

**Global Institute of Flexible Systems Management**

2003-05 Member, International Advisory Committee for GLOGIFT (an International Conference)

**Oklahoma State University**

2001-03 Advisory Board Member, Stored Products Research and Education Center

**National Council of Examiners for Engineering and Surveying (NCEES, USA)**

1999-2003 Engineering Licensure Qualifications Task Force

**International Union of Food Science and Technology**

2000-01 Canadian Representative

**American Society of Agricultural and Biological Engineers (ASABE), prior to 2005 American Society for Agricultural Engineers (ASAE)**

2014-17 Member, M-156 Kishida International Award Selection Committee

2005-08 Member, E-08 Fellows Committee

2003-04 Member, Board of Trustees

2002-03 Member, Publication Council

2000-02 Member, Membership Development Council

2000-01 Chair, FPE Nominating Committee

2000-01 Chair, M-154 IAFIS-FPEI Food Engineering Award Committee

1999 Chair, North-Central Inter-Sectional Conference Committee

1999-00 Member, M-154 IAFIS-FPEI Food Engineering Award Committee

1998-99 FPE-06 Chair General Program Committee

1998-99 Member, E-10 International Meetings Committee

1997-01 FPE-01 Food and Process Engineering Institute Executive Committee

2000-01 Past-chair

1999-00 Chair

1998-99 Vice Chair

1997-98 Secretary

1997-01 FPE-02 Food and Process Engineering Institute Steering Committee

2000-01 Past-chair

1999-00 Chair

1998-99 Vice Chair

1997-98 Secretary

1997-00 Member, P-210 Academic Program Administrators

1999-00 Executive Committee Member

1996-00 Member, IET-312 Machine Vision Committee

1995-97 Member, P-502 Steering Committee (Publications)

1995-97 Member, IET-04 Publications Review

1994 Chairman, North-Central Inter-Sectional Conference Committee

1992-98 Member, P-511 Refereed Publications Committee

	1995-97	Chair
	1997-98	Past-Chair
1991-01		Member, IET-217 Finite Element & Numerical Analysis Committee
1990-99		Member, FPE-03 Standards Group
1989-93		Member, FPE-70 Technical Group
1989-94		Member, FPE-02 Steering Committee
1989-90		Vice-Chairman, Manitoba North Central Region
1989-91		Chairman, Awards Committee, North Central Region
1988-97		Member, FPE-041 Refereed Publications Committee
	1992-93	Past-Chairman
	1991-92	Chairman
	1990-91	Vice-Chairman
1988-97		Member, FPE-04 Publications Group
	1992-93	Past-Chairman
	1991-92	Chairman
	1990-91	Vice-Chairman
1988-92		Member, FPE-042 News Committee
1988-95		Member, IET-353 Instrumentation and Controls Committee
	1994-95	Past-Chairman
	1992-94	Chairman
	1991-92	Vice-Chairman
	1990-91	Secretary
1988-96		Member
1987-88		Member, Nominating Committee, North Central Region
1987-89		Member, FPE-06 General Program Committee
1987-93		Member, FPE-703 Food Process Committee
	1991-93	Past-Chairman
	1989-91	Chairman
	1987-89	Vice-Chair
1987-92		Member, FPE-701 Physical Properties of Agricultural Products Committee
1986-		Member, FPE-702 Grain and Feed Processing and Storage Committee
	1995-97	Past-Chairman
	1993-95	Chairman
	1991-93	Vice-Chairman
	1989-91	Program Chairman
1985-88		Reporter, Agricultural Engineering Computer Newsletter
1982-88		Associate Member
1980-81		Student Member

#### **Institute of Food Technologists (IFT)**

1987-88 Professional Member

#### **Controlled Atmosphere and Fumigation (CAF) Conference International Committee**

2010- Secretary and Treasurer

1994-10 Member (Canadian), Permanent Committee

#### **International Standards Organization (ISO)**

2005-06 Chair, Canadian Advisory Committee CAC on ISO/TC 23/SC 13 Powered Lawn and Garden Equipment

1988-11 Member, Subcommittee TC23/SC07 Equipment for harvesting and conservation

1988-11 Member, Subcommittee TC23/SC10 Equipment for transportation and handling

**Sigma Xi, The Scientific Research Society**

2004-	Life Member
1996-98	Past-President, Manitoba Chapter
1994-96	President, Manitoba Chapter
1992-94	President-elect and Program Chairman, Manitoba Chapter
1991-92	Awards Chair, Manitoba Chapter
1990-98	Member

**Asian Association for Agricultural Engineering (AAAE)**

1998-00	Vice-President, Energy, Environment and Emerging Technologies
1994-	Life Member
1991-94	Member

**Applied Zoologists Research Association (AZRA), India**

2005-	Vice-President
2004	Member, Advisory Committee, VII AZRA Conference
1992-	Life Member
1993-02	Vice-President
2000-	Fellow

**Indian Society of Agricultural Engineering (ISAE)**

1994-	Life Member
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**EDITORIAL CONTRIBUTIONS**

2011-	Associate Editor, Agricultural Research
2011-14	Editorial Board Member, European Journal of Food Research & Review (EJFRR)
2011-14	Associate Editor, The Food Science and Technology Letters
2010-13	Member, Editorial Board, Journal of Biosensors & Bioelectronics
2010-13	Member, Editorial Board, Journal of Bioengineering & Biomedical Science
2008-11	Member, Editorial Board, International Journal of Grain Drying and Stored-Grain Ecosystems
2007-	Member, Editorial Board, Food and Bioprocess Technology
1999-02	Member, Editorial Board, Journal Food Science and Technology (India)
1996-02	Member, Editorial Board, Agricultural Engineering Journal (International)
1995-	Member, Editorial Board, Journal of Stored Products Research
1994-95	Editor, Communique, a quarterly newsletter of national Food Process Engineering Division of the Canadian Institute of Food Science and Technology
1991-97	Associate Editor, Canadian Agricultural Engineering
1991-97	Associate Editor, Transactions of the ASAE (FPE and IET Divisions)
1991-97	Associate Editor, Applied Engineering in Agriculture (FPE and IET Divisions)
1989-91	Editor, CSAE Newsletter
1987-99	Editor-at-large Agricultural and Food Engineering, Marcel Dekker Inc.
1986-89	Editor, Communique, a quarterly newsletter of national Food Process Engineering Division of the Can. Inst. of Food Sci. and Tech.

**COMMUNITY SERVICE**

2018-	President, India Canada Culture and Heritage Association Inc. (ICCHA)
2010-12	Vice-Chair, Advisory Council, India Canada Culture and Heritage Association Inc. (ICCHA)
2008-10	Chair, Advisory Council, India Canada Culture and Heritage Association Inc. (ICCHA)
2005-16	President, Indo-Canada Chamber of Commerce Winnipeg Council

- 2004-08 Member, Board of Director, India Canada Culture and Heritage Association Inc. (ICCHA)  
2004-05 Chair, Education Committee, and Board Member, Manitoba-India Chamber of Commerce  
1999-00 Joint-Secretary, India Association of Manitoba Inc.  
1998 Ambassador India Pavilion, Folklorama  
1998 Coach Soccer, Dakota Seahawks  
1996 Mentor, Cooperative Education Program, General Wolfe School  
1995 Member Editorial Board, Hindu Darshan, Hindu Society of Manitoba  
1995 Coach Soccer, Dakota Royals  
1995 Mentor, Cooperative Education Program, General Wolfe School  
1995 Chairman, Nominating Committee, Hindu Society of Manitoba  
1994-95 Member, Fund Raising Committee, Ecole Highbury School  
1994 Coach Soccer, Dakota Knights  
1993 Assistant Coach Soccer, Dakota Lazars  
1993 Judge, Manitoba Schools' Science Symposium  
1993-94 Past-President, Hindu Society of Manitoba  
1993-94 Member, Nominating Committee, Hindu Society of Manitoba  
1992-93 President, Hindu Society of Manitoba  
1991-92 Chairman, Diwali Function Organizing Committee, Hindu Society of Manitoba  
1991-92 Vice-President, Hindu Society of Manitoba  
1990-91 Chairman, Education Committee, St. Germain Immersion School Parents Committee  
1990-91 Parents Advisory Committee on Life Skills Curriculum, St. Vital School Division  
1990-91 Member, Long Range Planning Committee, Hindu Society of Manitoba  
1989-90 Principal, Hindi School (The school is attended by about 25 students)  
1988-89 Chairman, Education Committee, St. Germain Immersion School Parents Committee  
1988-89 Organized a class "French for Parents" which was attended by 31 St. Vital residents