

 CWB  
The Canadian Wheat Board  
Centre for Grain Storage Research

# CANADIAN WHEAT BOARD CENTRE FOR GRAIN STORAGE RESEARCH >

**T**he Canadian Wheat Board Centre for Grain Storage Research at the University of Manitoba is a new 1,340 square metre, state-of-the-art facility, recently constructed and uniquely equipped with a total project cost of \$5 million.

It was commissioned in November 2005 for the purpose of doing research into all aspects of grain storing, drying, handling and quality monitoring under one roof. Funding for its construction was provided from a Canada Foundation for Innovation award, the Manitoba Research and Innovations Fund, Western Economic Diversification Canada, Manitoba Hydro, Agriculture and Agri-Food Canada, the Canadian Wheat Board and Canadian grain companies.

## Research Activities

For more than 40 years, an interdisciplinary group of researchers from the Department of Biosystems Engineering, University of Manitoba; and Agriculture and Agri-Food Canada, Cereal Research Centre; has been studying various aspects of grain storage. They were the first in the world to develop a collaborative research program that integrates the principles of engineering, biology, and chemistry to solve stored-grain ecosystem problems, and is the only such group in Canada.

Activities within the building consist of integrated research studies into grain storage and handling with an aim to preserve stored grain in Canada and around the world. Located on the Fort Garry Campus, this unique stored-grain ecosystem facility was designed to allow researchers to solve problems using a multidisciplinary approach. Engineers, entomologists, chemists, and mycologists work together to conduct innovative research related to grain storage and handling. Developing cost-effective methods to control and prevent fungal and insect infestations of stored grain will help enhance Canada's global reputation as a supplier of high-quality grain.

The results of the fundamental and applied research will be valuable to farmers, managers of grain storages, and federal regulatory agencies responsible for maintaining grain quality. The research will assist in strengthening Canadian markets for export grain, which is essential for the survival of the farming community on the prairies. The application of machine vision to determine the quality of grain has considerable potential to increase the global



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competitiveness of Canadian grain because it can make the quality of export grain more consistent and reliable. Devices to present samples to a camera for imaging and quality monitoring have potential domestic and international markets not only in the grain industry, but also in other industries which handle bulk granular materials. The use of machine vision in the grain handling facilities for automation and grain cleaner optimization and assistance in grain grading will reduce fatigue-inducing repetitive jobs which are done in dusty environments. This research will help grain workers in improving their life and health.

## Research Collaborations

Researchers in the facility collaborate extensively with other groups at the local, national, and international levels. The Stored Products Program at the Cereal Research Centre, Agriculture and Agri-Food Canada, in Winnipeg has the national responsibility for research on the biology and control of pests in stored cereals, oilseeds and their products. The overall objective of the research program at the Cereal Research Centre is the effective management of stored-food products and animal feeds, including prediction, prevention, protection, and control of storage problems. Presently there are several ongoing collaborative multidisciplinary studies. The group has developed an international reputation for high-quality grain storage research. The research cooperation among scientists in the Department of Biosystems Engineering and Cereal Research Centre is often cited as the model for grain storage research. The recent emergence of research teams, which involve both engineers and biologists in other areas of the world, are testimony to this fact.

Head offices of most grain-handling companies; many manufacturers of grain handling, storing and cleaning equipment; the Canadian Wheat Board, the Grain Research Laboratory of the Canadian Grain Commission, the Canadian International Grains Institute and the Canada Grains Council are in Winnipeg. The close proximity of these companies and organizations provides opportunities for collaborative research projects and has resulted in

partnerships with grain handling companies, bin manufacturers, dryer manufacturers, machine vision companies, and consulting companies.

## International Development

Research results are published and transferred worldwide, including to developing countries for use with their grain handling and storage infrastructure. Scientists from our group have developed collaborative research programs with several researchers of international repute in China, India, Israel, Poland, Scotland, and the United States and consulted worldwide on grain storage issues.

## Research Laboratories

Six research laboratories with a pilot-scale grain cleaning and handling structure enable scientists to take research to new levels, exploring issues such as insect management, mycotoxin research, grain drying and storage structural analyses. Using machine vision technology, researchers are able to develop automated procedures for grain handling and processing. With rising international standards for quality and chemical-residue-free grain, there is a significant need for this research facility to develop grain handling and storage solutions for Canadian producers.

## Graduate Training Opportunities

The working group has a strong track record of training undergraduate and post graduate students (M.Sc. and PhD), postdoctoral fellows, research associates and visiting researchers. Research trainees meet regularly on an individual basis with their supervisors and once a week in a team setting to provide them with exposure to research in all aspects of grain storage. Most of the graduated research trainees are working in jobs related to their training throughout Manitoba, Canada, and the world. In Canada, there is a need for people trained in multidisciplinary settings to manage the stored grain and to design systems for its handling and storage. This new facility provides them access to world-class infrastructure.



FOR FURTHER  
INFORMATION

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