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Enhancing Canola through Genomics

Status	Past
Competition	II
Sector	Agriculture - Crops
Genome Centre	Genomics Prairie
Project Leader	Wilf Keller

Project Description

Agriculture feeds our nation. Agriculture and food processing is the third-largest industry in Canada, generating more than $100 billion for the Canadian economy every year. Among Canadian agricultural crops, canola is the most important source of vegetable oil and farmers in the Prairie Provinces grow at least ten million acres of canola every year.

The goal of our project was to use the methods of genomic science to study and improve seed development and composition in canola and related oil-seed crops. We also applied this knowledge to other important crops such as wheat, barley, beans and peas. Our work will lead to a deep understanding of many aspects of plant growth that are important for improvements that will make canola a more productive and adaptable crop.

We set up some of the basic genomic tools that will allow us and others worldwide to carry out genetic research on canola plants. We created over 250,000 genetic sign-posts, and identified over 40,000 canola genes. We established a sophisticated method called DNA micro-arraying that will enable us to study which canola genes are important in various growth phases and we produced a number of other important canola genomic tools. All of these will be made available to researchers on canola and other plants all over the world. Our work will lead to canola with better qualities such as increased oil content, improved oil and protein quality, frost and drought tolerance, disease and pest resistance, and enhanced yield. Similar improvements in other crop plants will follow.

Fast Facts

Highlighted outcome:	The creation of important genomic tools for the improvement of canola and other crop plants important to Canada
Number of research personnel employed by the project:	41
Number of peer reviewed publications published:	11 plus 1 book and 41 invited presentations
Number of patents in process or obtained:	3 plus 4 disclosures and 1 copyright
Resources generated:	Over 250,000 genetic markers (ESTs); 10,000-features DNA micro-array; gene-clone library; tissue-culture cell lines. All will be made available to the international research community.
Number of public outreach events held:	31, including public lectures, magazine articles, TV and radio interviews, website, newsletter, science fair
Co-Funders:	Agriculture and Agri-Food Canada, National Research Council of Canada