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Designing Oilseeds for Tomorrow's Markets

Status	Current
Competition	III
Sector	Agriculture
Genome Centre	Alberta
Project Leaders	Randall Weselake & Gopalan Selvaraj

Project Description

Canola is a Canadian invention. Along with closely related crops such as condiment mustard, this nutritionally superior oilseed accounts for \$2.5 billion of economic activity, and is found in 70% of all Canadian vegetable oil products, from salad oil to mayonnaise and margarine. But canola is something more: a crop low in saturated fats that is healthy for human and animal consumption, a source of meal for animal feed applications and can be used for a wide range of environmentally friendly industrial applications.

Dr. Randall J. Weselake, Canada Research Chair in Agricultural Lipid Biotechnology at the University of Alberta's Agricultural Genomics and Proteomics Centre, and Dr. Wilf Keller, Research Director at the National Research Council of Canada's Plant Biotechnology Institute (NRC-PBI) in Saskatoon, are project leaders of Designing Oilseeds for Tomorrow's Markets.

This research project aims to use genomic technologies in order to develop canola with desired seed coat characteristics and decreased levels of anti-nutritional factors. It is anticipated that the results of this research will enhance the overall usefulness of canola seed leading to improved meal for new food and feed applications, and increased seed oil content.

A major focus of the project involves a detailed assessment of the molecular events in the developing seed coat. In addition, the project will develop and implement strategies to decrease levels of undesirable compounds known to reduce the value of animal feed. Studies aimed at modifying seed coat characteristics and levels of anti-nutritional factors, however, will take other processes affecting overall seed quality into consideration. Therefore, the project will decipher the regulatory networks governing the partitioning of carbon between the seed coat and other seed components, including oil.

The project involves a team of researchers with combined expertise in biochemistry, molecular genetics, bioinformatics, plant breeding and biotechnology. The impact of this research is expected to be maximized through an international collaboration with Germany, creation of a bioinformatics platform and commercialization of prototype germplasm. An important component of the project is research into the social, ethical and economic implications of oilseed design.