

Canola Council of Canada Research Programs

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Canola is one of Canada's notable research success stories. This success is a result of the Canola Council's commitment to research, both in basic plant breeding and product development areas. Close to 50% of the Council's funds are dedicated to this cause.

The Canola Council does not conduct any of its own research but rather allocates funding to support existing research groups.

Two programs which the Canola Council administers are the Canola Varietal Development Program and the Canola Utilization Assistance Program.

The Canola Varietal Development Program (CVDP) is a research program designed to develop superior varieties of canola for Canadian farmers and canola processors. The program has been funded jointly by the Canola Council and government since the early 1970's with research conducted at Agriculture Canada research stations and universities across Canada. The program includes breeding new varieties of canola with an emphasis on the following areas:

- variety characteristics related to seed yield, oil content, protein content, maturity, and pest and disease resistance;
- quality of oil (fatty acid composition, colour, and other nutritional and physical attributes);
- quality of meal (protein, glucosinolate, and crude fibre content);
- hybrid canola;
- biotechnology as an aid to "traditional" breeding; and
- canola quality mustard.

The Canola Utilization Assistance Program (CUAP) provides assistance for research on canola and its products. Its objective is to provide funding for research that will address the opportunities and constraints for canola products in the world marketplace.

Funding for the CUAP is provided through a grant from Agriculture Canada, Ottawa. All funds are administered by the Canola Council of Canada's Research and Technical Committee which is comprised of industry, university, federal government and Canola Council representatives,

and meets at least twice annually. A meeting in the spring sets research priorities. A second meeting, held in the fall, reviews project applications for assistance in the upcoming year and at this time it is decided which projects will be funded.

Assistance under the CUAP is open to universities, companies, industrial and private research institutes and similar entities which undertake projects consistent with the program's objectives. The majority of research must be undertaken by Canadian institutions, but a small percentage of funds is reserved for research outside Canada which would aid market development efforts.

From humble beginnings, successful research has genetically improved a plant variety now known as canola. There have been vast refinements and alterations to meet agronomic and technical research requirements.

Lowering erucic acid levels has benefited edible oil products; reducing glucosinolate content has improved palatability of canola meal for livestock and poultry. But it does not end there. Researchers have developed new processing methods which produce higher quality oil and a protein product from canola meal suitable for use as a supplement to protein-poor human diets.

Research has also shown promise to canola growers and crushers. Canola breeding efforts have emphasized agronomic and quality improvements. These include increased seed yield and oil content, improved oil quality and disease resistance, earlier maturity, and the development of integrated methods for the control of insects and diseases. Also, attention has been given to larger yellow seeded canola which has less hull. After extraction, the resulting meal will be higher in protein and lower in fibre.

Adding to the bright future of canola is biotechnology which identifies and incorporates specific plant genes into future varieties to address situations such as herbicide and insect resistance. Hybrid development is ever increasing with the belief that canola hybrids will significantly out-yield pureline varieties and offer the possibility for specific crosses adapted to regional growing areas.

Research efforts have also added to the market potential of canola through alterations to oil and meal chemistry to suit particular nutritional

and/or industrial markets. These technological adaptations will enable growers to realize more income per acre and to compete more effectively with other world sources of oil and protein.

Canada has been a market leader by developing, producing and marketing canola as a world oilseed. This achievement would have been impossible without the canola breeding research that has been conducted by dedicated Canadian scientists who had the support of the government and the canola industry.

I - CURRENT RESEARCH PRIORITIES

The Canola Council has developed a list of research priorities to meet the industry's current needs. Those priorities which will be addressed in the short-term (one to five years) are listed below:

A) Canola Utilization Research

1) Processing

- Efficient technologies for removing or reducing chlorophyll in canola.

- Innovative processing designed to improve the nutritional value of canola meal (eg. fibre reduction, protein level).

- Detection, characterization and elimination of waxes in canola oil.

- New processes to increase productivity, efficiency and quality of canola at all stages of extraction and refining.

- Improved analytical technologies including "on-line" techniques (eg. on-line phosphorus analysis).

- Efficient use of enzyme technology in canola processing.

- Elimination of crystallization problems in canola margarine and shortening.

2) Canola oil

Human Food Uses

- Research on the nutritional value of canola oil with particular reference to fatty acid composition.

- Use of canola oil in snack foods, confectionery products and other food uses with specific reference to sensory properties and stability.

- Research into the use of canola oil with oils indigenous to other countries in the manufacture of oil-based products.

Animal Rations

- Use of canola oil as a dust suppressant in feeds.

- Determination of available energy and synergistic effects of blending canola oil, tallow and acidulated fatty acids in animal rations.

Non-edible Uses

- Use of canola oil as dust suppressants, pesticide carriers, hydraulic fluids and cosmetics.

3) Canola meal

The major objectives of current canola meal research should include increasing the level and quality of protein, reducing fibre and producing a lighter coloured meal. General priorities include:

- Use of canola meal in the feeding of all classes of animals (livestock, poultry, fish and pets).

- Methods to further improve the feeding value of canola meal.

- Determination of the feeding value of canola meal blended with grain legumes.

4) Canola by-products

- By-product utilization (eg. industrial, chemical uses for soapstocks, gums and xanthophyll recovery, etc.).

II - CANOLA BREEDING RESEARCH

A list of specific priorities have been developed for the canola breeding programs in the industry. The short-term (one to five years) priorities are summarized below:

1) Yield

- Develop disease-resistant cultivars.

- Develop higher-yielding, earlier maturing varieties.

- Develop herbicide resistant cultivars with good yields.

- Develop hybrids with commercial merit.

- Develop a larger seed size.

2) Quality

- Develop canola cultivars with low chlorophyll levels.

- Develop cultivars with higher protein contents (without affecting oil content).

- Develop cultivars with higher oil contents (without affecting protein content).

- Develop yellow seed coat cultivars.

- Develop cultivars with very low levels of glucosinolates.

3) Regionalization

- Develop winter canola cultivars adapted for Eastern Canada and irrigation areas in Western Canada.

- Develop early maturing, lodging resistant, spring canola cultivars.