



Research Results Summary

ADVANCING CANADIAN FIELD CROPS THROUGH BREEDING FOR PRODUCTION EFFICIENCY, PEST RESISTANCE, AND CONSUMER QUALITY (2010-2013)

At a glance...

- Canadian breeding program for soybean and corn
- Eastern Canadian breeding program for wheat, barley, and oat
- \$5.7 million research investment over three years
- Led by the Canadian Field Crop Research Alliance (CFCRA) in collaboration with Agriculture and Agri-Food Canada (AAFC)

The “Advancing Canadian Field Crops through Breeding for Production Efficiency, Pest Resistance, and Consumer Quality” project was a three year industry and AAFC collaboration under the Developing Innovative Agri-Products (DIAP) initiative of the Growing Canadian Agri-Innovations Program under Growing Forward 1 (GF1). The project was completed in March 2013 and engaged both AAFC scientists and scientists working in Canadian universities and other public research centers.

The overarching goal of this public research program was to provide Canada's soybean, corn, wheat, barley, and oat producers with continued access to enhanced genetics for high-yielding, disease and insect pest resistant varieties while also addressing the needs of the market for value-added traits that deliver higher levels of nutrition and improved processing attributes. Promising varieties developed through this research program are being commercialized in Canada.

Innovation Highlights:

- SOYBEAN: 29 licensed varieties (9 food grade and 20 dual-purpose food grade/oilseed varieties) with improved characteristics including high yield, soybean cyst nematode (SCN) resistance, and value-added qualities (natto- and tofu-specific soybeans)
- CORN: 5 licensed inbreds have been released and requested by the seed corn industry and two have improved resistance to *Gibberella* ear rot and eyespot
- WINTER WHEAT: 3 licensed soft red winter wheat varieties with improvements in disease resistance, processing attributes, and yield
- SPRING WHEAT: 2 licensed varieties with improved yield, processing quality, and disease resistance

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- BARLEY: 13 lines supported for registration and available for license with improved feed quality, resistance to *Fusarium*, and yield
- OAT: 5 licensed varieties with improved yield, quality, and disease resistance
- Improved breeding tools and techniques for the target crops, especially in the area of early-maturity in soybeans, moisture and disease resistance in corn, and *Fusarium* resistance in wheat

Next steps...

To build on the success of this DIAP project, the CFCRA is now investing in two 5-year Cluster projects under the Growing Forward 2 AgriInnovation Program (2013-2018). These projects will continue to provide Canada's soybean, corn, wheat, oat, and barley producers with access to enhanced genetics for high-yielding, disease-resistant varieties while also addressing the needs of the market for value-added traits that deliver higher levels of nutrition and improved processing attributes.

The \$10.3 million "Canadian Field Crop Genetics Improvement Cluster" led by the CFCRA in collaboration with AAFC will target genetic improvement in Canada-wide soybean and grain corn, and eastern Canadian oat and barley specialized for the climate and target markets of Ontario, Quebec, and Atlantic Canada.

The \$25.2 million "National Wheat Improvement Program" led by the Western Grains Research Foundation (WGRF) in collaboration with the CFCRA, Alberta Wheat Commission (AWC), and AAFC will target genetic improvement in Canada-wide winter and spring wheat.

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