



GUIDELINES - CALL FOR LETTER OF INTENT

Canadian National Barley Cluster 2023-28

Deadline: November 15th, 2021 (11:59 pm MST)

The Canadian Barley Research Coalition (CBRC) is a not-for-profit entity established in 2021 with a mandate to improve the profitability and competitiveness for Canadian barley through long-term research investments.

The current Canadian National Barley Cluster (2018-23) is a \$10 million-dollar federal funding initiative under the Federal-Provincial-Territorial agricultural policy framework (APF). The Cluster supports the majority of barley research in Canada and receives funding support from the following organizations: Agriculture and Agri-food Canada, Alberta Barley Commission, Brewing and Malting Barley Research Institute, the Canadian Field Crop Research Alliance (whose members include Grain Farmers of Ontario, Producteurs de grains du Québec, Atlantic Grains Council, and SeCan Association), Manitoba Crop Alliance, Saskatchewan Barley Development Commission, and Western Grains Research Foundation.

The CBRC is preparing for the next Barley Cluster which would cover the period of April 1st, 2023 to March 31st, 2028. The CBRC is requesting Letters of Intent from researchers interested in addressing the issues identified in Section A which ***support the APF research priorities while providing significant benefit to producers and the barley value chain.***

Application Forms and Information

Letters of Intent are to be prepared using the CBRC Letter of Intent template. In the interest of administrative efficiency, the CBRC reserves the right to share Letters of Intent with other appropriate funding organizations.

Timelines

October 1st, 2021 – Call for Letters of Intent open

November 15th, 2021 – Deadline for submission of Letters of Intent

February 2022 – Successful applicants will be asked to provide a Full Proposal

April 2022 – Deadline for submission of Full Proposals

May to July 2022 - Full Proposals peer reviewed prior to selection by funders. Please note revisions may be requested to Full Proposals after receipt of the peer review comments.

Late Summer 2022 – Final selection of Full Proposals and notifications sent to researchers

Fall 2022 - Submission of the Barley Cluster to AAFC

Section A: Barley Cluster Research Priorities

1. **Climate Change & Environment** to address:

- Gains in productivity per unit of input
- Climate change mitigation
- Reducing greenhouse gas emissions
- Increasing sequestration of soil carbon
- Maximizing habitat capacity and biodiversity on agricultural landscapes
- Enhanced agrosystem resiliency
- Improving soil and water management

2. **Economic Growth** to address:

- Improving the end-use quality attributes of barley to support end use markets
- Enhancing productivity through new products and production systems
- Enhancing domestic and export markets for barley
- Supporting consumer driven barley products
- Growing Canadian employment in the barley industry
- Identifying alternate end use markets for barley (cosmetics, nutraceuticals, etc.)

3. **Sector Resilience** to address:

- Continued attention to food safety for Canadians
- Supporting the mental health of Canadians through the reduction of business risk involved in farming and throughout the barley value chain

Section B: Impact Metrics

Applicants will be asked to quantify the impact of their project as it relates to Section A: Barley Cluster Research Priorities. Examples of metrics to consider are included below.

- Reduction of chemical inputs (% reduction)
- Quantify the number of acres impacted
- Varieties/germplasm with improved yield, lodging and disease resistance over the checks (# of improved varieties of feed and malt barley)
- New variety acceptance in 5 years (malt) and 3 years (feed) post registration (seeded area)
- Innovative technology to accelerate research gains (time/cost advantage)
- Crop management practice to increase profitability (# of new processes and estimated increase in profits)
- Increased awareness of barley as a food (development and commercialization of new barley food products)
- Extraction and development of high value co-products from barley (# of compounds identified and extracted)
- Other incremental improvement(s) to indicators of Climate Change and the Environment, Economic Growth or Sector Resilience gained during your project

Section C: Research Project Objectives Aligned with the Barley Cluster Research Priorities

Examples of high impact research objectives that are aligned with Section A: Barley Cluster Research Priorities are included below. If specific research is not listed, but does contribute to the Barley Cluster Research Priorities, please contact Gina Feist at gfeist@barleyresearch.ca or a funder listed in Section D: Current Barley Cluster Funding Partners to discuss your submission.

See the [National Barley Research Strategy](#) for additional information on the following research issues of high importance to the barley industry.

1. Climate Change & Environment

- Develop and improve best management practices (BMPs) for water stewardship, improved energy efficiency, and effective input use (seed, fertilizer, fungicides, insecticides, water, plant growth regulators, etc.) to maximize yield and minimize environmental impact.
* Research related to weeds that spans multiple commodities should be explored as part of a cross commodity project. Research specific to weed management in barley will be reviewed under the barley cluster.
- Investigate agronomic management strategies to mitigate barley biotic stresses (a list of barley pests and their economic impact is included in the [National Barley Research Strategy](#) pages 14-16).
- New techniques, tools, or practices, to monitor the incidence and severity of barley pests, to better understand the changes and/or the development of chemical resistance.
- Pest forecasting technology to improve the efficacy of chemical inputs; reducing the amount of product needed and the associated cost of application.
*Research directed to pest monitoring and surveillance should be integrated as part of a broader research project.
- Identify and stack key barley traits (yield, lodging resistance, abiotic and biotic stress resistance) with the goal of increasing barley production per unit of land and reducing chemical inputs (number of passes and quantity).
- Evaluate winter survival of barley germplasm to provide alternate production practices for barley under a changing climate.
- Improve the ability of barley to resist lodging, improve tolerance to low soil temperatures, and reduce the incidence of pre-harvest sprouting, with the aim to minimize the risk of volatile weather events.
- Development and/or validation of innovative technology to advance barley production and end use quality (i.e. genomics, data management, sensors, precision delivery of agrochemicals, robotics, artificial intelligence, barley microbiome, feed processing, etc.).
- Understand effective rotations to maximize yield and reduce the soil-seedbank for weeds, pathogen and insect loads, and disease.
- Investigate forage barley as part of a complex cropping system, including in mixtures, blends, intercrops, with livestock and cover crops, in order to identify optimal systems.

2. Economic Growth for Barley End Use Applications

Barley for Feed and Forage

*Research investments to target economic growth in this sector

- Establish health benefits of including barley in feed rations to improve the health and welfare of livestock (monogastric specific).
- Development of forage barley with increased biomass yields and standability, smooth awns, and a wider harvest window that will allow producers flexibility in harvest management.
- Understand the response of barley varieties to forage conservation methods (i.e., ensiling, green feed, pit vs round bale silage, etc.) to maintain the quality of barley during storage.
- Investigate agronomic, harvest, and ensiling practices to optimize feed and silage yield, nutritional quality, and animal health and performance.
- Understand barley feed grain response to different processing conditions to develop higher efficiency barley feed.
- Prediction models to rapidly and concisely determine the feed value of blended barley grain to effectively manage variable quality and plump.
- Technology to improve barley processing to increase the consistency of starch availability.
- Methods to characterize starch availability to support ration formulation strategies.

Barley for Malting, Brewing, and Distilling

*Research investments to target economic growth in this sector

- Enhance varietal end use quality for the craft brewing, adjunct brewing, and distilling market segments, including but not limited to:
 - increased fine extract as compared to current varieties;
 - balanced modification in new varieties;
 - thin, bright hulls that adhere tightly during harvesting, cleaning and malting;
 - low β -glucan content;
 - improved resistance to pre-harvest sprouting without prolonged dormancy;
 - varieties that require a shorter processing time in the malthouse;
 - improved flavour stability (i.e., Loxless or other technology); and
 - unique flavor profiles.
- Development of technology related to measuring the propensity for pre-harvest sprouting, germination viability prediction tests, measurement technique for fermentability and a further understanding of β -glucanase activity.

Barley for Food (requires food company collaboration)

*Research investments to target economic growth in this sector

- Improve the end use quality of food barley germplasm with higher protein and fiber, whiter kernels (food barley can also be colored) and good threshability.
- Development of nutrient dense barley food products with improved palatability and end user convenience.
- Innovative extraction and processing of healthy barley products from milling fractionations, including soluble and insoluble fibre (β -glucan and arabinoxylans), antioxidants such as phenolics and lignans, secondary metabolites, tocotrienols, protein, etc.

- Food processing technology to improve stability and efficacy of barley functional components.

Barley for Novel End Use Markets (requires end user collaboration)

***Research investments to target economic growth in this sector**

- Innovative extraction of high value plant products from pearling, wastewater from the malting process, and co-products from barley dried distiller grains with solubles (DDGS).
- Development of high value barley products as natural health products for the nutraceutical/ pharmaceutical industry.

3. Sector Resilience

***Research investments to improve sector resilience as it applies to market and societal pressures**

- Best management practices (BMPs) for malting barley harvestability and selectability without the use of pre-harvest desiccants.
- Development of malting barley with low/no glycosidic nitrile (GN) for the distilling and craft brewing markets.
- Storage, or other crop management practices, to reduce microbial and fungal contamination, specifically deoxynivalenol (DON), ochratoxin A and ergot.
- Technologies to inactivate, bind or mitigate the effects of mycotoxins.

Section D: Current Barley Cluster Funding Partners

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| <ul style="list-style-type: none"> • Alberta Barley Commission
Lauren Comin
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(403) 219-6252 | <ul style="list-style-type: none"> • Manitoba Crop Alliance
Lori-Ann Kaminski
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| <ul style="list-style-type: none"> • Atlantic Grains Council
Heather Russell
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(506) 380-9663 | <ul style="list-style-type: none"> • Producteurs de grains du Québec
Salah Zoghلامي
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(450) 679-0540 |
| <ul style="list-style-type: none"> • Brewing and Malting Barley Research Institute
Gina Feist
Gfeist@bmbri.ca or Gfeist@barleyresearch.ca
(306) 370-1787 | <ul style="list-style-type: none"> • Saskatchewan Barley Development Commission
Jillian McDonald
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(306) 370-7237 |
| <ul style="list-style-type: none"> • Grain Farmers of Ontario
Josh Cowan
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