



CALL FOR EXPRESSIONS OF INTEREST

In its first five years, BioFuelNet Canada (BFN) has mobilized 230 researchers and 127 industry partners to advance the technologies required to sustainably increase Canada's production of advanced biofuels and associated bioproducts, including the production, logistics and quality of agricultural residues and purpose-grown biomass crops on marginal lands across Canada.

BFN is now creating an industry-led, agricultural producer-centric, research and innovation cluster. The purpose of this new cluster is to engage Canada's agricultural producers, industry, universities, government and other R&D organizations to sustainably increase food and biomass production, in the context of a changing climate.

The United Nations Food and Agriculture Organization (FAO) estimates that food production will have to increase by about 70% by 2050 to accommodate the world's growing population and changing diets¹. This means that over the next 32 years or production periods, the agricultural sector is faced with the dual but related challenges of nearly doubling production to feed Canada's and the world's growing population, and adapting to and helping to stabilize climate change.

This call for Expressions of Interest (EOI) is focussed on advancing the emerging technologies that will help agricultural producers across Canada sustainably meet the needs of Canada's and the world's growing population, and provide the biomass (crop residues, purpose-grown on marginal lands, animal residues) needed by the bioenergy and bioproducts industries.

The purpose of the EOI is to mobilize the sector to propose a new cluster to the Agri-Science Cluster program in Fall 2017. This cluster will work to catalyze the next green revolution in agriculture and change the paradigm from "food versus fuel" to "food and fuel".

¹ http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf



The cluster name, mandate, vision and concept will be refined by the industry partners and researchers selected in this EOI. However, at this time, the **tentative** definitions we are working with are as follows:

Name of Agri-Science Cluster:

Sustainable Agricultural Production Innovation Alliance (SAPIA) cluster

Cluster Mandate:

Mobilize Canada's agricultural sector to greatly increase food production and the production of biomass for bioenergy and bioproducts, in the context of climate change, to benefit agricultural producers in all regions of Canada.

Cluster Vision:

By 2050, the Canadian agricultural sector will double its production of food and be a world leader in the production of competitive biomass for bioenergy and bioproducts. The agricultural sector will also adapt to climate change by extending into more northern regions and developing more resilient agricultural products and practices.

Cluster Concept:

SAPIA will perform late-stage R&D and pre-commercial field trials incorporating emerging technologies that strengthen agricultural producer profits through increased yields, biomass production, carbon credits and reduced input costs. This proposal will have agricultural producers as first customers, and *in-situ* data collectors, as partners in innovation. Agricultural producers are expected to benefit as follows:

- Additional revenues from increased agricultural production of food on prime agricultural land;
- Additional revenues by growing competitively-priced biomass on marginal lands;
- Additional revenues from sale of processed residues (pellets, bio-char or other standard biomass, biogas, cellulosic sugars, etc.);
- Additional revenues from carbon credits generated from carbon sequestration on farmlands (e.g. bio-char, permanent changes to farming practices, etc.);
- Additional revenues from carbon credits generated by reducing GHG from residues, use of fertilizers, manure, etc.;
- Lower input costs by using precision agriculture and information technologies to decrease the costs of fertilizers, pesticides, herbicides, seeds, etc.
- Expansion of agriculture to northern, remote and First Nations communities (e.g. northern greenhouses, use of purpose-grown biomass to fuel community energy systems, etc.);
- Improved logistics and quality of biomass supply



- Development of technology and markets for new biomass products, including export markets;
- Improved sustainability of agricultural production, reduction and/or use of below-grade crops;
- Reduction of wasted inputs and products during processing and handling;
- Adaptation of agricultural crops and practises to Canada's changing climate - extension of the growing season, farming more profitable crops, etc.

Planned activities may lead to major developments such as:

1. **Extending agricultural production to northern latitudes**, by using advanced greenhouse technologies such as biomass combined heat and power (CHP) to extend the growing season, CO₂ enrichment and biologicals to accelerate growth and improve stress resistance in plants being grown locally as biomass for the greenhouse operation.
2. **Increasing agricultural production and reducing input costs by developing biologicals** for Canadian applications on a range of important economic crops and biomass for bioenergy. The choice of biologicals must pass all government health and environmental assessment requirements.
3. **Increasing agricultural production and reducing input costs by accelerating the uptake of advanced information technologies**, including novel instrumentation, remote sensing, automation, precision farming, use of "big data", artificial intelligence, Internet of Things etc., to increase the profitability of food and biomass production for the agricultural sector.
4. Developing evidence-based agri-economic models, tools and policies to **enable the agricultural sector to benefit from the emerging carbon markets**.



Potential Government Funding Program:

The primary target for this call is to apply to the Agriculture and Agri-Food Canada (AAFC)'s program, named the Agri-Science Cluster Program, in the Fall of 2017. The AAFC call for this program has not yet been announced, but it is expected to open late September, 2017. It is also expected to have similar terms and conditions as the previous call (link below).

<http://www.agr.gc.ca/eng/programs-and-services/list-of-programs-and-services/agriinnovation-program/industry-led-research-and-development-stream/applicant-guide/?id=1460462850338>

From the Applicant Guide for the 2013 to 2018 Call, AAFC stated:

“The objective of the AgriInnovation Program is to accelerate the pace of innovation by supporting research and development activities in agri-innovation and facilitating the demonstration, commercialization and/or adoption of innovative products, technologies, processes, practices and/or services. The aim is to enhance economic growth, productivity, competitiveness, adaptability and sustainability of the Canadian agriculture, agri-food and agri-based products sector and to assist in capturing opportunities for the sector in domestic and international markets.”

The Agri-science cluster program *“aims to mobilize and coordinate a critical mass of scientific expertise in industry, academia and government. The Agri-science cluster would be national in scope, industry-led, and address components of the sector’s applied science plan under a single application.”*

The maximum total AAFC contribution funding for previous Agri-science clusters was \$20M over 5 years. The applicant must be a not-for-profit organization (e.g. BFN) and **AAFC typically contributes up to 70% of the total eligible costs**. For further details, please consult the Applicant Guide at the above-mentioned link.

Depending on the activities proposed by the applicants to this EOI, BFN may also decide, through mutual agreement, to include the activities in a proposal to other government funding programs such as the Networks of Centres of Excellence. Please see the following link for program details: http://www.nce-rce.gc.ca/Competitions-Competitions/Current-EnVigueur/NCECompetition-ConcoursRCE/CompetitionGuide-GuideConcours_eng.asp



Information and Data Sharing:

By submitting an EOI, the applicant is agreeing that BFN may collect, use and share the applicant's and its partners' information, for the purpose of evaluating the EOI project and, if the project is selected, including it in BFN's proposal to the above-mentioned AAFC funding program and, through mutual agreement, any other government funding program.

If the EOI project is selected for inclusion in BFN's proposal to AAFC, applicants must sign a consent form allowing AAFC and BFN to reproduce and distribute the whole or parts of their application for this purpose and for the efficient administration of the cluster (e.g. for communications, record-keeping, reporting, etc.).

A condition of participation is that applicants and their partners must agree to share the data collected in activities funded by this cluster.

Intellectual Property (IP) Policy:

The IP policy will depend on the funding program rules. For the above-mentioned AAFC program, their last Applicant Guide had the following salient feature (please read the full policy at the above-mentioned link):

"Title to the intellectual property developed by the recipient of contribution funding will vest in the recipient or in a third party, as may be negotiated by the recipient and the third party."

BFN makes no claim on the arising IP. BFN will work with its investment network, industry partners, university IP offices and other organizations to accelerate the commercialization of arising IP within Canada.



INVITATION TO POTENTIAL PARTICIPANTS:

Eligible Applicants for Activities:

This call is open to companies incorporated in Canada at the federal or provincial level, R&D organizations, universities, not-for-profit organizations, and individuals.

This call is focused on advancing technology solutions. As such, involvement from agricultural operators and technology providers/developers is critical at all stages, including the collection of *in-situ* data. Collaboration between multiple innovation partners is strongly encouraged. Collaboration between partners must be led by industry and offer a strong value proposition by demonstrating opportunities for technology validation, commercialization, and sharing of results. Applicants are also encouraged to include self-funded participants such as municipalities, government research labs and international partners.

Eligible Activities:

- Targeted applied science research and/or development activities that address sector priorities, increase market opportunities and foster innovation
- Research relating to product, practice, process and/or technology development
- Projects that pilot/test solutions and/or explore/adapt technologies
- Knowledge Transfer and the development of tailored approaches to bring science and technology from the bench to the field

Eligible Technologies:

The intent of this call is to accelerate the de-risking of transformative and/or disruptive technologies with a near-term or medium-term commercial potential (i.e. deployment in about 5 years). Projects must involve the development and testing of components, integrated prototypes, field pilot-scale prototypes, commercial-scale prototype demonstration, or first-of-kind technology deployment. Proposals are invited for technologies in the range of Technology Readiness Levels (TRL) 5 to 8, defined as follows:

- TRL 5 – Component and/or breadboard validation in relevant environment: Fidelity of breadboard technology increases significantly. The basic technological components are integrated with reasonably realistic supporting elements so they can be tested in a simulated environment.
- TRL 6 - System/subsystem model or prototype demonstration in a relevant environment: Representative model or prototype system, which is well beyond that of TRL 5, is tested in a relevant environment. Represents a major step up in a technology's demonstrated readiness.



- TRL 7 - System prototype demonstration in an operational environment: Prototype near or at planned operational system. Represents a major step up from TRL 6 by requiring demonstration of an actual system prototype in an operational environment.
- TRL 8 - Actual system completed and qualified through test and demonstration: Technology has been proven to work in its final form and under expected conditions. In almost all cases, this TRL represents the end of true system development.

Please note that all projects supported through this call must involve a technology de-risking component. BFN will not fund projects that only address commercial barriers to deployment.

Eligible Costs:

Please see the Applicant Guide at the above-mentioned AAFC link.

Expected Project Duration:

The proposed project start date shall not be before April 1, 2018 and not go beyond March 31, 2023.

Proposal Submission Details:

Format:

- Length: 5 pages (8.5" x 11"), including all text, graphics and tables. Any extra pages beyond 5 pages will be removed from the document and will not be considered by the evaluators.
- Font: Arial 11 point font with a minimum of 1.0 line spacing.
- Margins: No smaller than 2.54 cm (1").



Content:

The Applicant proposal must address the following list (taken from the AgrilInnovation Program – Industry-led Research and Development Stream Applicant Guide):

- 1.0 Activity Title
- 2.0 A one-page Executive Summary of the Project
- 3.0 A Detailed Work Plan for Activity, including Activity Description, Project team and partners, Deliverables, Milestones, Budget and Sources of Funds
- 4.0 Activity Expected Results/Benefits
 - a) Benefits to Agricultural Producers: Describe how this Project will benefit agricultural producers. Be clear on size and scope of the benefits to producers.
 - b) Benefits to other stakeholders: Describe how this Project will benefit other stakeholders (e.g., Processors).
 - c) Benefits to Canada: if applicable, describe any other benefits (e.g., employment, environment).
 - d) How the Project addresses the objectives of the AgrilInnovation Program, in particular, the extent to which the Project will accelerate the pace of innovation, leading to enhanced economic growth, productivity, competitiveness, adaptability and sustainability of the Canadian agriculture, agri-food and/or agri-based industries.
 - e) How the Applicant plans to manage and commercialize the IP arising from this program.
- 5.0 Contact information

Proposal Deadline:

Proposals must arrive to the BFN email below by Noon, Eastern Time, September 29, 2017.

Cristina.andoni@biofuelnet.ca

LEGAL NOTICE

By submitting a Proposal to this call, you confirm that you have read, understood and accepted the information contained herein and, that each of you, the applicant or “Proponent”, and any project partners, agree as follows:

- a) BFN may at any time suspend, terminate, cancel, withdraw, amend or alter all or any portion of this Expression of Interest (“EOI”).
- b) BFN reserves the unqualified right to accept or reject any or all Proposals for any reason. BFN is not required to accept the most highly-ranked Proposal nor is it required to accept any Proposal.
- c) The final decision with respect to the projects to be included in BFN’s cluster proposal rests solely with BFN’s Board of Directors (“Board of Directors”). The Board of Directors’ evaluation may be based on, but is not in any way limited to, the criteria set out in this EOI. The Board of Directors may consider any criteria determined by them to be relevant to BFN’s mandate, regardless of whether such additional criteria have been disclosed to the Proponent.
- d) Proposals that do not comply with the requirements described in this EOI may be rejected in whole or in part or not considered by BFN. BFN reserves the unqualified right to accept or reject a non-compliant Proposal.
- e) This call is not an offer and the submission of a Proposal does not create a contract or agreement of any kind between BFN and the Proponent.
- f) No conduct, act or omission of BFN, or of its directors, officers, consultants, project advisors, agents, servants and their respective successors and assigns (collectively the “BFN Parties”), other than a written notice to the Proponent in writing signed by an authorized person for BFN, will constitute an acceptance of a Proposal.
- g) Acceptance of a Proposal does not create any binding contract between BFN and the Proponent. BFN shall not be obligated in any matter whatsoever to any Proponent until a written contribution agreement (“Contribution Agreement”) between BFN and the Proponent has been duly executed.
- h) As between the parties, the EOI and all documents and materials you submit to BFN are the exclusive property of BFN immediately upon delivery. This refers to the materials themselves, but not to any technology or innovations disclosed or discussed in them. The Intellectual Property developed during the course of the project will be addressed through the Contribution Agreement and will normally be owned by the Proponent.



- i) Neither BFN nor any of the BFN Parties have any liability whatsoever to the Proponent or any project partners in connection with this EOI. The Proponent and any project partners agree not to make any claim against BFN or BFN Parties for any reason whatsoever. The Proponent and project partners acknowledge that they are undertaking the expenditures required to prepare and submit a Proposal entirely at his own risk, waives any right, and releases BFN and BFN Parties from any demands, liability, claim or recovery for costs, expenses, or damages incurred whatsoever relating to this EOI, whether such right or claim arises in contract, negligence or otherwise.
- j) BFN takes no responsibility for the accuracy of the information supplied during this EOI process by BFN or BFN Parties.