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Plant UAV Phenomics - MSc or PhD student - Research Affiliate Program

Reference number: AGR23J-059095-000127

Selection process number: 23-AGR-RAP-24

Agriculture and Agri-Food Canada - Science and Technology Branch
Ottawa (Ontario)

The projected start date is September 1, 2023 with an end date of August 31, 2026 (or depending on the candidate's availability or needs). It is expected that the student will work 15 to 25 hours per week.

\$22.71 to \$34.59 per hour (Master: \$22.71 to \$28.57; Doctorate: \$26.72 to \$34.59 - Varies as per the level of education and experience.)

For further information on the organization, please visit [Agriculture and Agri-Food Canada](#)

For further information on the Research Affiliate Program (RAP), please visit: [Jobs.gc.ca](#)

Closing date: N/A

Who can apply: Persons residing in Canada, Canadian citizens and Permanent residents abroad.

To be considered for Research Affiliate Program (RAP) work opportunities, all candidates must meet the following eligibility criteria by the date of appointment:

- Be recognized as having full-time student status at an accredited Canadian post-secondary academic institution (this includes students with a disability deemed to have full-time status). Individuals pending approval of acceptance, or in the process of submitting applications are encouraged to apply as proof of enrollment will only be required prior to the start date.
- Be enrolled in an academic program that requires research as part of the curriculum.
- Be the minimum age to work in the province or territory where the job is located.

Important messages

We are committed to providing an inclusive and barrier-free work environment, starting with the hiring process. If you need to be accommodated during any phase of the evaluation process, please use the Contact information below to request specialized accommodation. All information received in relation to accommodation will be kept confidential.

Assessment accommodation

AAFC is committed to diversity and inclusion and is proud to be recognized as one of Canada's best diversity employers. We welcome all applicants and strongly encourage candidates to self-declare if they belong to an Employment Equity designated group (i.e. Aboriginal Peoples, Persons with Disabilities, Visible Minorities or Women).

Persons are entitled to participate in the appointment process in the official language of their choice. Applicants are asked to indicate their preferred official language in their application.

Communication for this process will be sent via email. It is the responsibility of the candidate to ensure accurate contact information is provided and updated as required. Candidates who apply to this selection process should include an email address that accepts email from unknown users (some email systems block these types of email).

Duties

The ideal candidate would have a demonstrated interest in plant biology and in developing their skills in research and data science. Due to the collaborative nature of the project the student would ideally be an organized team player who is able to work independently and as part of a small team.

The candidate will be responsible for providing both analytical and technical support for monitoring physiological traits in plants using manual and technology-based methods. Other tasks may include preparation and handling of microbial cultures involving proper aseptic technique; DNA/RNA extraction; and routine laboratory maintenance.

Work environment

The student will conduct their thesis work on applying UAV-based imaging to genetic improvement of spring wheat. The student will work primarily in the Brauer lab (cereal genetics & phenomics) at the Ottawa Research and Development Centre and collaborate closely with the spring wheat breeding team and computational scientists at the Global Institute for Food Security. Work will be carried out alone and in teams in both lab and field settings. Training in lab safety, experimental techniques and image-based analytical software (PlotVision) will be provided.

The successful candidate will be conducting research on using proximal imaging to predict yield potential of spring wheat in field-grown plants. We will focus on extracting traits from headrows (a single row of plants derived from a single head) using a combination of UAV and ground-based imaging (PlotCam, Morrison et al., 2021). In the spring wheat program in Ottawa, approximately 8000 single F5 headrows are planted and only 10% of these rows are harvested for subsequent testing for yield in larger plots. Given the high risk of loss of valuable genetic combinations, a data-driven approach would help to improve prediction of plant performance. To develop effective prediction strategies we will compare selection efficiency from manual versus phenomics-derived traits from 20 genotypes with known high and low-yield performance relative to 5 well-characterized check lines in both headrows and yield plots. Image data and manual measurements will be gathered weekly to estimate traits including early vigor, height, and biomass. We will evaluate the effect of plot size on image-based physiological trait estimates and grain yield prediction in the same site-year environment.

AAFC is committed to diversity and inclusion. We have several networks dedicated to ensuring that the department continues to grow as an inclusive, accessible, respectful and diverse workplace. All employees are encouraged and welcomed to join the networks and participate in their activities and events.

- The Gender and Sexual Diversity Inclusiveness Network
- The Indigenous Network Circle
- The Managers' Community
- The Persons with Disabilities Network
- The Student Panel of Representatives for Orientation, Unity and Training
- The Visible Minorities Network
- The Women in Science, Technology, Engineering and Mathematics Network
- The Young Professional's Network

Positions to be filled: 1

Information you must provide

Your résumé.

Contact information for 2 references.

A list of the courses you have taken as well as any courses that you are taking now, or that you will be taking this academic year

In order to be considered, your application must clearly explain how you meet the following (essential qualifications)

Education:

Currently enrolled or will be enrolled by the date of appointment in a Master's or PhD program in a recognized post-secondary academic institution with specialization in biology.

Note: Must be currently recognized as having full-time student status in the academic institution in which you are presently enrolled, pending approval of acceptance or in the process of submitting your application. Students should meet eligibility requirements to enroll at the University of Ottawa. Proof of enrollment will be required prior to start date and must be returning to full-time studies for your next academic term.

Degree equivalency

Experience:

Experience* in executing scientific experiments.

Experience* in data collection and analysis.

*In the context of student recruitment in the Federal Public Service, the experience can be acquired through the studies, work experience, or volunteer activities.

The following will be applied / assessed at a later date (essential for the job)

English essential

Information on language requirements

Knowledge:

Knowledge of theory and principles of statistical analysis.

Knowledge of theory and principles of plant physiology or biology.

Competencies:

Creativity and innovation

Problem Solving

Teamwork

Abilities:

Ability to use statistical software.

Ability to use basic molecular biology tools.

Ability to summarize and communicate scientific information in oral and written form.

The following may be applied / assessed at a later date (may be needed for the job)

Agriculture and Agri-food Canada recognizes that the diversity of its employee population contributes to its strength and integrity. We are committed to achieving employment equity and developing a highly capable workforce that is representative of Canadian Society. We encourage women (especially in non-traditional occupations), Indigenous peoples (Aboriginal peoples), persons with disabilities, and members of visible minority groups to apply and declare themselves as part of one or more of the Employment Equity groups as selection may be limited to candidates belonging to one or more of the groups.

Information on employment equity

Conditions of employment

Reliability Status security clearance - Each student hired through the Research Affiliate Program (RAP) must meet the security requirements of the position as a condition of employment, and therefore will be asked by the hiring organization to complete security-relevant documents.

With appropriate safety precautions in place:

Ability and willingness to work in laboratory and field environments for extended periods of time and under normal safety precautions.

Ability and willingness to work with chemicals and other hazardous materials.

Known allergies must be controlled through the use of personal protective equipment and/or medication and must not impinge upon duties to be performed.

Possession of a valid driver's license or personal mobility to the extent normally associated with the possession of a valid driver's license.

Other information

The Public Service of Canada is committed to building a skilled and diverse workforce that reflects the Canadians we serve. We promote employment equity and encourage you to indicate if you belong to one of the designated groups when you apply.

Information on employment equity

Applications submitted by email will not be accepted. You must apply on-line through

<https://www.canada.ca/en/services/jobs/opportunities/government.html>.

Persons with disabilities preventing them from applying on-line are asked to contact the email referenced below under "Contact Information".

Candidates will be required to pay for their own travel related to assessment and successful candidates will be responsible for

obtaining their own living accommodations.

Successful completion of both a RAP work assignment and your educational program may lead to a temporary or permanent federal public service position for which you meet the merit criteria and conditions of employment.

Preference

Preference will be given to Canadian citizens and permanent residents, with the exception of a job located in Nunavut, where Nunavut Inuit will be appointed first.

We thank all those who apply. Only those selected for further consideration will be contacted.

Contact information

RAP Team – Research Affiliate Program

aafc_rap-par.aac@agr.gc.ca

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