

Precision 4R Management: Improving Nitrogen Use Efficiency, Greenhouse Gas Emissions, and Production Economics of Canola

Graduate Student Position Available in the 4R Nutrient Stewardship NSERC Industrial Research Chair Program
Department of Soil Science, University of Manitoba, Canada
January 2024



We are currently seeking a candidate for training leading to an M.Sc. or Ph.D. degree in **Precision 4R Management**. Commercial fields are heterogeneous for soil properties in space and time. Consequently yield and N₂O emissions from nitrogen (N) fertilizer additions are also variable in fields. To address this spatial and temporal variability, Precision Agriculture was developed to improve nutrient use efficiency by matching N addition-induced yield response to landscape position and soil properties within a field.

The successful applicant will undertake graduate research to determine the extent to which N₂O emissions reductions and improved profitability of canola can be achieved by combining the Precision Agriculture practice of tailoring N rates with the 4R Management practice of using a nitrification inhibitor, which we call Precision 4R. The student will assist with experimental design, setup, sample collection, sample analysis and processing. They will also report results to farmers and industry through field tours and presentations. Ph.D. candidates will also be responsible for synthesizing results from data collected at two additional field sites in Saskatchewan.

Students must have excellent oral and written skills in English. If an M.Sc. student, a 4-year equivalent B.Sc. in agriculture or the natural sciences is required and course work and field experience in agriculture or soil science an asset. If a Ph.D. student, a research-intensive M.Sc. with at least one resulting publication in English in a peer-reviewed journal is required. If the research was in the field of agriculture, the paper must be from a reputable [agronomy, crop or soil science journal](#). Stipends of \$24,000/yr for two years to M.Sc. students and \$28,000/yr for four years to Ph.D. students are available. Training is funded by several government and industry sources supporting projects led by the 4R Industrial Research Chair Program.



Interested in this opportunity? Send a detailed CV, statement of relevant experience, availability, and list of three referees and their contact information to Dr. Mario Tenuta, Professor of Applied Soil Ecology, at mario.tenuta@umanitoba.ca. Please use the subject heading "**Precision 4R Management**".

The laboratory is committed to a training environment with gender equality, diversity, and encouragement of participation of Indigenous and Metis peoples and minorities. Learn more about the [4R Industrial Research Chair Program](#), the [University of Manitoba](#) and the [City of Winnipeg](#).