

Program Profile

U of M Agroecology Program Fosters Undergraduate Research

In the 2016 report of its strategic research plan, the University of Manitoba's Faculty of Agricultural and Food Sciences identified its strengths, and its plans to ensure that research remained central to its priority: "Driving Discovery and Insight".

This plan was part of the effort to maintain innovative research and uphold a reputation that will promote intra- and inter-faculty collaborations, as well as external collaborations. The faculty recognizes the importance of the strategic research plan not only in the ever-changing Canadian agricultural and food industry, but also in the diminishing baseline of resources in the university.

Undergraduate programs in the Faculty of Agricultural and Food Sciences have always placed importance on undergraduate research, but its Agroecology program fosters undergraduate research in a remarkable way.

On March 23, 2018, this year's batch of Agroecology undergraduate thesis students presented their original research findings at the Ellis building, Department of Soil Sciences and Food Sciences, University of Manitoba. In its endeavor to highlight undergraduate research, research-related events, and researcher profiles, *PMUSER* interacted with the thesis course instructor and this year's undergraduate thesis students.

Dr. Brian Amiro, U of M Faculty of Agricultural and Food Sciences professor, has been the instructor of the thesis course for 12 years and he described the structure of the thesis program that makes it an invaluable experience for the students.

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PMUSER: What is unique about the Agroecology program?

Amiro: All the programs in the Faculty of Agricultural and Food Sciences are four-year degrees, but the Agroecology program is the only one with a thesis; other programs have projects or practicums.

In this program, we start getting students ready for their thesis project in their third year. We do that in a formal course (AGEC 3510) that's required for students in the program, and in that course, there's a literature review required.

In that time, we set them up with a mentor who will be working in their basic area of interest [...] where they develop their ideas. This prepares them for their fourth-year thesis [in the AGECE 4550 course]. When students at the university do a thesis, they are actually producing original work [...] it is what you call a very high learning outcome level. In our program, the ability to do this has been kept alive by very dedicated mentors.

In the fourth-year formal course [AGECE 4550], spanning the fall and winter terms, we help students produce that thesis research product. As part of the course we also have sessions, typically every two weeks, where we address other learning outcomes like ethics and professionalism, how to do a presentation, how to interpret an advertisement for a job, and how to go about applying for a job. It's more than just a thesis, it's really preparing that student for a future career.

PMUSER: What opportunities are there in the Agroecology program?

Amiro: We have a large range of possible projects depending on student interests and on what the mentors and the students actually discussed together. The students, depending on who your mentor is, may work in the fields, or in the laboratory, or in data mining. Over the years, the mix [of possible projects] has changed a bit.

We try to accommodate what students are doing with activities, for example if they have a summer job and can collect a dataset, that might be suitable for [their] thesis. Other students may work with the mentor's graduate students or technicians. The students may also build on the dataset that someone else collected and do some original work.

Undergraduate theses presented March 2018

Lindsey McKenty (Advisor: Dr. David Lobb, Soil Science): *Testing Soil Pre-treatment Handling Techniques for Total Phosphorus in Wetland Soils*

Carley Van Osh (Advisor: Dr. Brian Amiro, Soil Science): *Ecosystem Impacts of Autonomous Chicken Coops*

Samuel Steinmann (Advisor: Dr. Mario Tenuta, Soil Science): *Four Crops Grown in Manitoba and the Nitrogen Use Efficiency*

Zack Koscielney (Advisor: Dr. Emma McGeough, Animal Science): *Suitability of Seven Annual Crops for Stockpile Grazing on the Canadian Prairies*

Zijing Guo (Advisor: Dr. Rob Gulden, Plant Science): *Study of Competitiveness Between Reed Canary Grass and Purple Loosestrife in a Replacement Series*

— David Zirangey

Originally published at pmuserjournal.wordpress.com

