

Launching the Next 5 Years of Research

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NEW RESEARCH FOR 2023–2028

The 2022 research year was at the crossroads of project finalization from the previous five-year funding period and the onset and planning of the next five years. Plans were in place by year end to initiate new projects in 2023 using leveraged MPSG funds, seeking to solve production challenges and uncover opportunities for pulse and soybean growers.

By the end of 2022, MPSG’s research and production committee approved, and the organization committed \$2.2 million of leveraged funds (government funding pending) to 21 new projects (Table 1). These projects are a culmination of collaborative efforts through the new federal Sustainable Canadian Agricultural Partnership (sCAP) AgriScience Program, including the Canadian Field Crops Research Alliance

(CFCRA)/Soybean Cluster, Pulse Cluster, Integrated Crop Agronomy Cluster, Genome Prairie and the upcoming Canada-Manitoba sCAP program. They are also a product of close collaboration with sister organizations across Canada and within Manitoba. In addition, MPSG developed unique partnerships with local innovators to ensure MPSG’s research priorities and member needs would be served for 2023 and onward.

Table 1. New, three- to five-year research projects set to begin in 2023–on (21 projects in total).

Project Title	Principal Investigator(s)	Institution or Company
Reducing the economic impact of pests		
Comparing field pea foliar fungicides.	Baljeet Singh	Assiniboine Community College
Understanding dry bean root rot and soybean cyst nematode management.	Owen Wally	AAFC-Harrow
Protecting Manitoba’s soybean industry from soybean cyst nematode.	Mario Tenuta	University of Manitoba (U of M)
Accelerating solutions to root rot of peas and lentils.	Syama Chatterton	AAFC-Lethbridge
Decoding the life cycles of Fusarium species across multiple host crops.	Syama Chatterton	AAFC-Lethbridge
Prairie Weed Monitoring Network (PWMN): surveillance, risk assessment and forecasting.	Charles Geddes	AAFC-Lethbridge
Examining farming without glyphosate compared to other weed control strategies.	Robert Nurse and Breanne Tidemann	AAFC-Harrow; AAFC-Lacombe
Enhancing yield and marketable quality		
Optimizing crop rotations that include both soybeans and peas in western Manitoba (project extended).	Ramona Mohr	AAFC-Brandon
Prolonged nitrogen fixation (PNF) during periodic moisture stress to enhance yield and protein accumulation in soybeans.	Yvonne Lawley and Malcolm Morrison	U of M; AAFC-Ottawa
Breeding of short-season, drought tolerant soybeans.	Elroy Cober	AAFC-Ottawa
Breeding of pinto, navy and black beans in Manitoba for improved yield, disease resistance and seed quality.	Anfu Hou	AAFC-Morden
Breeding of peas to increase nitrogen (N) fixation, root health, protein concentration, quality and functionality and resilience to heat, drought and disease.	Tom Warkentin	University of Saskatchewan
Breeding of peas to improve yield, maturity, standability and seed size.	Dengjin Bing	AAFC-Lacombe
Genomic improvement of faba beans.	Nicholas Larkan	AAFC-Saskatoon
Developing bio-inoculants for dry beans using a genomics-driven approach to promote N fixation.	Ivan Oresnik and George diCenzo	U of M; Queens University
Characterizing the protein and amino acid composition of Manitoba-grown soybeans to support commercial value-added applications.	James House	U of M
Measuring nitrogen fixation in modern dry bean varieties and comparing N management strategies for dry beans in Manitoba.	Kristen MacMillan	U of M/AIR
Investigating the effects of pea crop rotation length on Aphanomyces root rot and the impacts of preceding crop, residue management and phosphorus management on pea production.	Kristen MacMillan	U of M/AIR



Table 1 Cont'd. New, three- to five-year research projects set to begin in 2023-on (21 projects in total).

Project Title	Principal Investigator(s)	Institution or Company
Enhancing yield and marketable quality		
Mitigating risks associated with iron deficiency chlorosis, land rolling and weed control timing in soybeans.	Kristen MacMillan	U of M/AIR
Local screening of commercial soybean varieties and breeding populations for yield potential, nitrogen fixation and tolerance to abiotic stress.	Kevin Baron	N49 Genetics Inc.
Improving soil health		
Building resilient soils with cover crops on-farm in Manitoba.	Afua Mante	U of M
Soil and water management using tile drainage in an undulating landscape in western Manitoba.	David Whetter and Bruce Shewfelt	Agri-Earth Consulting Ltd.; PBS Water Engineering Ltd.

AGRONOMIST-IN-RESIDENCE (AIR) PROGRAM



The AIR research program led by Kristen MacMillan is a unique collaboration between MSPG and the University of Manitoba and has just been renewed for another five years. This program focuses on improving pulse and soybean profitability by bridging the gap between academic research and practical agronomic recommendations. This requires the Agronomist-in-Residence to perform both small-plot and on-farm research.

In 2022, the sixth year of the program, 14 trials were conducted addressing eight different applied research topics:

- Soybean response to iron deficiency chlorosis
- Herbicide timing in soybeans
- Long-term crop rotations for peas

- Pea response to preceding crop, residue management and P fertility
- Evaluating new dry bean inoculants
- Intercropping with soybeans and peas
- Relay cropping soybeans with winter cereals

Two new projects in 2022 included soybean herbicide timing and an assessment of the growth and development of dry beans and yellow peas in Manitoba, utilizing data that was previously collected from existing trials.

Looking to 2023 and beyond, seven individual projects under the umbrellas of three main studies will be starting as part of the next phase of this program. These include: 1) further investigation into dry bean nitrogen (N) management and inoculation, in which biological N fixation will be quantified and N recommendations will be further refined, 2) a continuation of the pea rotation and agronomy study mentioned above to capture additional site-years for accuracy and quantification of

Aphanomyces root rot, and 3) a three-tiered soybean study investigating the intricacies of iron deficiency chlorosis, delayed weed control and land rolling at various development stages to mitigate the risks associated with each of these issues.

Watch for Kristen's next annual report booklet of results – available at manitobapulse.ca and on Kristen's U of M home page – and follow @kpmacmillanUM on Twitter to stay in touch with this research. ■

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