

October 2, 2013

MPGA's Request for Pulse Research Proposals

Manitoba Pulse Growers Association (MPGA) welcomes the submission of pulse research proposals. If you are seeking funding for projects in **2014**, please submit your proposals to MPGA's office by **Friday, November 8, 2013**.

Every project will be carefully reviewed by the board of directors and be given serious consideration; however, projects that fit into the following categories will be more favorably received:

- (a) Address the issues as outlined in our list of priorities on pages 3, 4, 5, 6 and 7
- (b) Demonstrate collaboration –MPGA looks highly on synergistic opportunities within the research community (provincial, interprovincial, international, and interdisciplinary)
- (c) Qualify for matching industry or government funding or includes multiple funding sources
- (d) Clearly demonstrate a benefit to pulse producers (describe the potential impact on the pulse crop value chain)
- (e) Provide production information to first time pulse or soybean producers (i.e. agronomic considerations for non-traditional soybean growing areas)

An eligible research project is one that has the potential to assist growers in their production (for example, reduce input or production costs, protect or increase crop yields, increase ease of production) or increase market opportunities and crop value (for example, improve the quality of Manitoba pulses for specific markets, new cost-competitive uses for Manitoba pulses).

Please note that projects that are specifically for end-use, must include a marketing plan in order to be considered for funding.

Multiple year projects are acceptable. Please note that annual reports are required and subsequent funding will be based on successful completion of milestones. A final report is required once the project is complete. Please be advised that a NEW reporting template will be provided upon project approval.

PLEASE USE THE TEMPLATE PROVIDED TO COMPLETE THE REQUEST FOR PROPOSAL AND SUBMIT ELECTRONICALLY (PREFERRED), BY FAX OR MAIL. Research priorities and proposal guidelines are outlined on pages 3, 4, 5, 6 and 7. A further description of the required information for each section of the Request for Proposals Document is found on page 8.

Please send proposals to:

Sandy Robinson, Business Manager : sandy@manitobapulse.ca

Manitoba Pulse Growers Association
Box 1760
Carman, Manitoba R0G 0J0

Fax: (204) 745-6213

AN EMAIL CONFIRMING RECEIPT OF PROPOSALS WILL BE SENT WHEN THEY HAVE BEEN RECEIVED. IF YOU DO NOT RECEIVE AN EMAIL CONFIRMATION PLEASE CONTACT OUR OFFICE (204) 745-6488.

MPGA will be finalizing their funding decisions in December 2013 and researchers will be notified in January 2014.

MPGA looks forward to receiving your research proposals. If you have any questions, please call the office at (204) 745-6488 or e-mail kristen@manitobapulse.ca

Best regards,



Kristen Podolsky
Production Specialist, MPGA

MPGA's Research Priorities

Please note these are areas MPGA is most interested in funding, but all quality proposals will be given serious consideration by the selection committees.

1. **SOYBEANS:** Soybean acres have been steadily increasing in Manitoba over the past few years. The following priorities are identified to ensure producers have access to high yielding, disease resistant, quality-oriented varieties that are specifically adapted to Manitoba's growing conditions, and the best management tools to ensure long term productivity and profitability.

(A) **Agronomy***

1. Phosphorus fertility research investigating the 4 R's of nutrient management; right placement, timing, rate and source.
 - a. Also investigating the effect of background soil P levels: do soybeans differ in their response to fertilizer P if soil test P is low, medium or high?
 - b. What about compost as a source of phosphorous?
2. Management practices (products or practices) to manage:
 - a. Iron chlorosis
 - i. This may include fall seeded cover crops or ortho ortho Fe chelating products applied at planting
 - b. Bacterial blight
 - c. Volunteer RR weeds (canola, corn, etc.) in RR soybeans
3. Nodulation and nitrogen fertilizer interactions
 - a. How does background soil nitrogen levels affect nodulation?
If nodulation failure occurs, is broadcast nitrogen application beneficial? What is the best rate, source and timing?
4. Identification of seedling and late season soil borne diseases, including Phytophthora, Fusarium, Rhizoctonia and Pythium, and management options
5. Harvest Management including but not limited to
 - a. Header types rigid cutterbar vs. flex cutterbar, draper vs auger.)
 - b. Reel type (i.e. air reel), position and speed
 - c. Effect of harvest timing (from ideal time onward)
6. Field management prior to and after soybean production
 - a. Residue management and tillage effects in the year prior to soybean production: effects on soil temperature, moisture, erosion, yield etc.
 - b. Post harvest residue management: does soybean straw warrant intensive tillage practices in the RR Valley? Effects on soil temperature, moisture, nutrient dynamics, erosion etc.
7. Soil benefits 2 and 3 years after growing soybeans

8. Crop rotation (back to back soybeans – what are the disadvantages, do you need fertilizer in the 2nd year; what is best crop to plant before and after soybeans)
9. Inoculants (rates on virgin fields vs. fields that have had soybeans on them before)
10. Seed treatments and methods of application
11. Minimizing pre-harvest pod shattering (especially on early maturing varieties)
12. Pesticide control (diseases and insects)

(B) **Field scale trials*** – MPGA has a growing interest in funding soybean field scale trials in Manitoba, looking at:

1. Fungicides for management of foliar diseases, Sclerotinia and other benefits (is it economical?)
2. Evaluation of micronutrient foliar sprays
3. Land rolling (especially timing – when is too late, what stages work)
4. Fertility (starter fertilizer, timing, placement, rates, benefits, is it feasible)
5. Seeding rates (row spacing vs. solid seeded, upright vs. bushy plant architecture and its effect on plant stands and lodging)
6. Seeding dates and soil temperature (in all growing regions, including the non-traditional areas)

* Please be aware that research priorities listed under “field scale” and “agronomy” are not necessarily restricted to one category or the other.

(C) **Variety Development and Evaluation / Breeding objectives –**

1. Evaluation of varietal susceptibility/tolerance to white mould under irrigated field conditions that facilitate Sclerotinia disease development

Rationale: Anecdotal observations in Manitoba suggest that current varieties differ in their susceptibility to White mould disease. Additionally, research in North Dakota has identified varietal differences that are consistent across row spacings.

2. Development of tolerance and resistance to the following, primarily in low heat unit varieties:
 - a. Lodging
 - b. Root rots
 - c. White mould (sclerotinia)
 - d. Soybean cyst nematode
 - e. Soybean aphids
 - f. Salinity
 - g. Asian soybean rust
 - h. Downey mildew
 - i. Edamame soybeans

(D) **Utilization, Value-Added**

1. Novel food product or other uses of Manitoba-grown soybeans

- a. *Since 95% of our soybean acres are GM, can GM soybeans be used in food applications?*
 2. Quality analysis (focus on oilseed varieties)
 - a. GM vs. non-GMO quality characteristics
 - b. Yellow hilum glyphosate-tolerant soybeans
 3. Preferred food and feed grade qualities and characteristics
 4. Geographical advantages to Manitoba-grown soybeans
2. **EDIBLE BEANS:** The following priorities revolve around developing disease resistant varieties and identifying innovative management practices and their effects on production under Manitoba's growing conditions.
- (A) **Agronomy***
1. Fertilizer recommendations (macro and micro nutrients, including zinc, copper, iron)
 - a. In particular nitrogen (rate, source, timing, placement)
 2. Evaluation of multiple management techniques for edible bean production
 - a. This could include looking simultaneously at seeding rate, fertilizer rates and placement, foliar fungicide use, row spacing, tillage system, previous crop, use of cover crop, foliar nutrients etc.
 3. Variety development for:
 - a. Frost and water tolerance in spring
 - b. Slow-darkening pinto
 - c. Minimizing seed coat cracking in kidneys
 4. Techniques for drying at harvest time
 5. Pod Seal timing and effectiveness
 6. Harvest systems that prevent seed cracking and other degrading factors
 7. Investigation of strip tillage and other novel tillage equipment

(B) **Field scale trials*** – MPGA has a growing interest in funding edible bean field scale trials in Manitoba, looking at:

1. Evaluation of row spacings for pinto beans, in particular 22" vs 30" vs. <15"
2. Treated seed vs. non-treated seed (any yield differences)
3. Harvest management (undercutting vs. flex header)
4. White mould control options (timing, split application)
5. Split application of fungicide and/or herbicide (is it economical)

* Please be aware that research priorities listed under "field scale" and "agronomy" are not necessarily restricted to one category or the other.

(C) **Disease and Insect Control**

1. White mould (sclerotinia)
2. Anthracnose

3. Root rots
4. Bacterial blight
5. Western bean cutworm
6. Aphids

(D) Utilization, Value-Added

1. Alternative uses for edible beans; new end-use products
 - a. Use of bean flour in the following food applications: gluten-free products or mixes (cookies, crackers, muffins, pizza crusts), healthy, functional flour blends (to optimize protein efficiency), extruded products (snack foods, breakfast cereals, pasta), baked good (crackers/chips, tortillas/pita breads, muffins, cookies)
 2. Quality analysis and processing techniques
 - b. Investigating the factors influencing cooking quality of whole pulses (e.g. hard-to-cook phenomena, etc.)
 3. Digestibility of bean flour and determining the impact of pre-treatments (i.e. germination, heating, fermentation, etc)
 4. Improving the protein quality (amino acid composition) of beans
 5. New domestic markets
3. **PEAS, FABA BEANS:** The following priorities revolve around developing disease resistant varieties and identifying innovative management practices and their effects on production under Manitoba's growing conditions.

(A) Agronomy

1. Evaluation of the winter pea performance in Manitoba conditions

Rationale: Winter pea survivability in North Dakota and Southern Alberta is looking promising and offers a new opportunity for expansion of pulse acres in Manitoba.
2. Management practices to control root rot and foliar diseases
3. Disease management of ascochyta blight: crop rotation, resistance and fungicides (products, timing)
4. Weed control
5. Inoculants
6. Variety development for
 - a. Disease resistance
 - b. Standability
 - c. Winter peas
 - d. Water tolerance, especially in spring

(B) Disease and Insect Control

1. Ascochyta blight

2. Root rot
3. Chocolate spot

(C) Utilization, Value-Added

1. Quality analysis
 - a. Addressing pea flavour issues
 - b. Comparison of functional properties of pulse ingredients to competitive ingredients (e.g. soy, whey, wheat, oat bran etc.)
 2. Determining the protein quality (PDCAAS and DIAAS) of pea protein ingredients (concentrates and isolates)
 3. Improving protein quality (amino acid composition) of peas
 4. Pea hull processing (e.g. particle size reduction) and utilization
 5. Fractionation, processing
 - a. Optimization of dry or wet separation technology to enhance functionality of pulse fractions (e.g. protein, starch, fibre extracts)
 - b. Pea starch modifications to improve functionality for food applications
 - c. Digestibility of pea flour and pea protein concentrates, isolates and impact of pre-treatments (i.e. germination, heating, fermentation, etc)
 6. Protein and energy assessment for livestock rations
 - a. Safety studies with pea fractions (fibre, starch, protein) in human and animal species of interest for feed and pet food applications that can be used for GRAS substantiation
 7. Aquaculture and other value-added opportunities
 - a. Investigating bioindustrial applications for pea starch
4. **OTHER:** Proposals studying the health and medical benefits of consuming pulses, which outline the specific benefits that would enhance the functional food or nutraceutical use of pulses, are encouraged.
1. Impact of specific components in beans/peas on cholesterol-lowering (e.g. soluble fibre vs. resistant starch)
 2. Impact of food products with pulse flour and fraction ingredients on short term glycemic control (glucose and insulin AUC) including impact of flour processing (flour specifications and particle size) on glycemic response of food products.
 3. Impact of beans vs. peas on satiety (subjective appetite and actual food intake)
 4. Impact of beans on cardiovascular disease (impact on cholesterol levels)

MPGA's Research Proposal Guidelines

Project Title: State the research project's title, indicating that it is a proposal.

Principal and Collaborating Researchers: Provide contact information including address, e-mail and telephone number of all researchers involved with the project.

Duration of Project: Start date and anticipated date of completion. (Please indicate month and year)

Brief Project Description: Provide a summary (max. 500 words) that can be easily understood by a non-researcher or pulse grower. This description may be used when informing our members about new projects being funded, and may be featured on our website, www.manitobapulse.ca, or in our magazine, *Pulse Beat*. Consider this description an opportunity to outline the importance of your research to pulse producers in Manitoba.

Background and/or Literature Review: Explain the rationale for the project and how it corresponds to the needs of Manitoba pulse producers. Briefly outline background information leading to the development of the proposal. (Max 1000 words)

Research Objectives: Provide a brief explanation of the objectives of your proposed research project.

Experimental Activities and Methods: Provide an outline of the experimental methods to be used.

Benefits and Impact on Pulse Growers: Describe how the results of your research will benefit and provide value to pulse producers in Manitoba. If possible, quantify the impact in economic terms.

Marketing Plan: (projects featuring products that are targeted for end-use only) Provide an outline of your marketing strategy describing how you will segment your target market, how you will position your products compared to your competition, what your pricing strategy will be, and how you will effectively reach and influence your customers.

Milestones: List all major milestones and the month/year of anticipated completion.

Budget: Indicate all funding sources and their allocation (labour, supplies, equipment, etc.). Please clearly state if your proposal is a one, two or three year project, and how much funding is required each year from MPGA. If possible, indicate whether or not your project can proceed on a smaller scale if given reduced funding.

Communication Plan: Indicate how the progress and results of your research, including *management recommendations* to pulse producers, will be communicated to the public, specifically pulse producers. If approved, we may ask you to submit articles outlining project results and subsequent recommendations, for our *Pulse Beat* magazine, for our website (www.manitobapulse.ca) or to participate in other extension related activities.