



## Pulse Agronomy Priorities

### Overview

The Saskatchewan Pulse Growers (SPG) Agronomy Program is designed to focus effort on initiatives that result in increased yield and production of pulses in Saskatchewan through increased awareness and development of best management practices, finding solutions to production constraints, and improving adoption of new technology arising from original research or expert knowledge. To address constraints and find solutions we first need to know what the issues are. A meeting was held on November 3, 2015 where invited agronomists and producers prioritized agronomic constraints and research needs for peas, lentils, chickpeas, faba beans, and soybeans.

### Summary of Results:

Participants identified many opportunities for addressing constraints in pulse production and the key areas overall were:

- 1) *Disease Management* – identification, management, and monitoring for root rot and foliar diseases
- 2) Providing more information and addressing issues related to *rotations*
- 3) Conducting *systems research* focusing on “whole farm” management strategies for pest management and fertility management
- 4) *Weed Management* – more options for controlling and preventing development of herbicide resistant weeds, integrated management strategies involving agronomics
- 5) *Nutrient Management* – nutrient requirements and management for pulses, need for 4Rs for pulses

For individual crops the specific priorities were:

### Peas

1. *Disease Management* – *Aphanomyces* and root rot, foliar diseases (*Mycosphaerella*/*Ascochyta* Blight /Downy Mildew), development of disease incidence maps and forecasting
2. *Weed Management* – controlling and preventing the development of herbicide resistant weeds: narrow leaved hawksbeard control, white cockle control
3. *Nutrient Management* – optimizing or increasing nodulation and nitrogen fixation, nutrient requirements
4. *Rotations* – economics
5. *Harvest Management* – color retention, lodging, minimizing harvest losses, desiccant use and pre-harvest timing, shorter maturity
6. *Seeding Management* – seed damage and equipment limitations, emergence and plant stands
7. *Insect Management* - aphids

### Lentils

1. *Systems Research* - to determine the impact of lentil production on the whole farm operation and on management practices



2. *Disease Management*- root rot, foliar diseases (Botrytis, Sclerotinia), impact of vertical tillage, positive and negative effects of fungicides on plant health, more resistant varieties, fungicide timing and number of applications needed
3. *Weed Management* –herbicide tolerance options, options for controlling and preventing development of herbicide resistant kochia, wild mustard, and cleavers, reducing flash from herbicide application, impact of higher seeding rates (for weed control) on disease pressure
4. *Nutrient Management* - 4Rs (right time, right place, right rate, right product) for fertility recommendations
5. *Rotations* – optimum rotation for lentils, impact on durum/lentil rotation, cereal vs canola stubble preference
6. *Harvest Management* – color retention, desiccant and harvest management tools for dry down, impact of swathing on grade, shattering tolerance, stronger stems and more compact structure
7. *Insect Management* – aphid thresholds and control options/timing
8. *Seeding Management* – row spacing, seed damage during seeding, seeding between stubble rows, equipment comparisons
9. *Other* - close yield potential gap between Clearfield® (CL) and non-CL varieties, breed for quality characteristics

#### **Chickpeas**

1. *Rotations* – incorporate or expand production area into different soil types/zones, impacts on re-cropping decisions, effect of chickpeas in rotation on *Aphanomyces*
2. *Weed Management* –management strategies such as incorporating residual herbicide products and the impact of fall vs spring application options, other management strategies for enhanced weed control
3. *Disease Management* – fungicide applications and timing, fungicide effect on maturity, improved disease resistance in varieties, management strategies to reduce incidence of disease
4. *Nutrient Management* – nitrogen management effects on maturity, efficacy of micronutrients, nutrient requirements
5. *Harvest Management* – strategies to enhance maturity, optimal use of desiccants and other pre-harvest product options, management practises to increase seed size

#### **Faba Beans**

1. *Disease Identification and Management* - foliar diseases (chocolate spot, Ascochyta, Alternaria), improve resistance to diseases in varieties, timing and options for disease control
2. *Seeding Recommendations* – equipment recommendations for large seeded varieties, seeding rate, plant population, seeding depth, impact of field proximity on outcrossing between tannin and low tannin varieties, impact of rolling
3. *Weed Management* – weed control strategies and options
4. *Nutrient Management* – fertility recommendations, nutrient uptake and removal, inoculant specificity, timing and placement of fertilizer, impact of soil salinity
5. *Harvest Management* – inducing maturity, variety suitability by region, desiccant & pre-harvest options for dry down
6. *Insect Management* – aphids, lygus bugs
7. *Impact of Pollinators on Yields*
8. *Rotation* – impact of plow-down vs grain harvest on future crops in rotation with faba bean



## Soybean

1. *Regional Suitability of Varieties* – best soil type, photosensitivity, maturity ratings and what measurement is most suitable for Saskatchewan (CHU vs CM vs DTM), variety testing across a wide range of locations/conditions within Saskatchewan
2. *Rotation* – impact of soybean on overall crop rotation, soil biology impact of growing soybeans on soybean stubble, economics of soybean in rotation
3. *Seeding* – land preparation (till vs no-till), straw management and stubble height, economics of increased seeding rates, optimum seeding dates
4. *Nutrient Management* – 4Rs (right time, right place, right rate, right product), inoculant recommendations, iron chlorosis risk factors, impact of too much nitrogen on nodulation
5. *Weed Management* – control of Roundup Ready™ canola, integrated pest management strategies, herbicide tolerance options
6. *Harvest Management* – most efficient practises (plant architecture, varietal differences, row spacing, plant density), minimizing harvest losses due to low pod height, plant architecture effect on harvestability, shorter maturity
7. *Insect Management* – wireworms
8. *Disease Management* – effectiveness or need for fungicides with soybeans, risk of soybean cyst nematode

As root rots were identified as the number one priority from the November 2015 meeting and a 2016 root rot survey across western Canada identified high incidence of *Fusarium* species, and *Aphanomyces euteiches* in pea and lentil the recommendations for priorities in this area are listed below:

- Impacts of rotations on root rot
- Impact of different pulses in rotation
- Management practices that can impact survival of soil borne pathogens or increase susceptibility to root rots and the impact on stresses to the plant
- Prevalence of the pathogens across soils in Saskatchewan and which soil factors (excess moisture, drought, geography, organic matter content, etc.) influence survivability
- Impact of soil organisms and soil health on root rot pathogens
- Variety susceptibility - is there a difference in susceptibility between different pulse crops?

**PLEASE NOTE:** This list of priorities relates to gaps in information and some of the work may already have been completed or is under current investigation. Please use this list as a guide for potential projects but recognize that applications will go through existing application review processes.

Another source of priorities for soybean can be found on the Canadian Field Crop Research Alliance website ([www.fieldcropresearch.ca](http://www.fieldcropresearch.ca)) under 2017 Call for Letters of Intent. Or click here [CFCRA priorities](#).

If you have questions related to the priorities list above please contact Sherrilyn Phelps, SPG Agronomy Manager at [sphelps@saskpulse.com](mailto:sphelps@saskpulse.com) or 306-480-9767.