Fabulous Faba Beans: the Fundamentals

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Why Choose Faba beans?

- Likes Moisture
- Tolerates Early Frost
- High Nitrogen Fixer (80 – 160 lb/ac)
- Level of Aphanomyces Resistance
- Standability
- Pods High

Photo Credit: S. Phelps
Field Selection

• For Seed Production:
  – Grow far apart from other varieties – outcrossing

• Herbicide History:
  – Residual herbicide effects are problematic
Residual Herbicides

Year (or season) after application that faba beans can be grown

5 + Tordon 22K, Grazon (Spot treatments or broken pasture)

4 + Ally Toss-N-Go (cropland), Escort (broken pasture)
   (persistence is extended when soil pH is 7.5 or greater)

2 Muster Toss-N-Go, Muster Gold II, Assert, Everest, Triton C
   Clopyralid (<123 gai/ac) (Lontrel, Curtail M, Prestige XC, Eclipse III, Flaxmax, Spectrum*)
   Banvel II/Oracle (high rates (>0.5L/ac)
   PrePass (fall application); high rates 2,4-D (fall)

1 Kerb, Avadex, Infinity, Simplicity, Accent, 2,4-D
   Atrazine (<0.9 L/ac) (Aatrex Liquid, Primextra Magnum)
   Fluroxypyr (<43 gai/ac) (Retain, Trophy, Barricade II, Altitude, Stellar, Pulsar, Tandem, Attain)
   Florasulam (<25 gai/ac) (Frontline, Topline, Spirtfire, Mpower, Battlefront)

Source: S. Phelps
Varieties

• Tannin Varieties:
  – Brown seed coat
  – Dark dot on stipules

• New Registered Varieties for 2016
  – Fabelle (533 tkw)
  – Vetigo (571 tkw)

• Varieties: Tabour, Fatima, SNSS-1
Varieties

• Non - Tannin Varieties:
  – Light seed coat
  – White flowers

• No new varieties registered for 2016

• Common: Snowdrop, Snowbird
Seeding

- First 2 weeks of May
  - Frost tolerant
  - Needs moisture

- Seed Deep = 2.5 to 3 inches

- Tannin varieties may not need seed treatment
Seeding Rates

- Recommended 45 plants/m² (60 lbs/bu)

<table>
<thead>
<tr>
<th>Variety</th>
<th>TKW (g)</th>
<th>kg/ha</th>
<th>bu/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>FB9-4</td>
<td>680 (805)</td>
<td>360</td>
<td>5.3 (6.3)</td>
</tr>
<tr>
<td>Snowbird</td>
<td>495</td>
<td>262</td>
<td>3.9</td>
</tr>
<tr>
<td>Snowdrop</td>
<td>335</td>
<td>177</td>
<td>2.6</td>
</tr>
</tbody>
</table>

- How to achieve target rates, with such big seeds?

- Different sized beans = different seeding rates?

Source: S.Phelps
Optimal Seeding Rates?

• Objective: can higher seeding rates achieve better yields in our short growing season?
  – Rate that is still logistically feasible? Economically?

• 20, 40, 60, 80, and 100 viable seeds/m²

• SNSS-1, Snowdrop, FB9-4
Optimal Seeding Rates: SNSS-1

Yield (kg/ha)

20 seeds/m²  40 seeds/m²  60 seeds/m²  80 seeds/m²  100 seeds/m²

Melfort

Saskatoon 1
Optimal Seeding Rates - Snowdrop

Yield (kg/ha) vs. Seeding Rate (seeds/m²)

- Indian Head
- Melfort
- Outlook
- Scott
- Swift
- Saskatoon

Preliminary Data
Optimal Seeding Rates – FB9-4

Yield (kg/ha)

20 seeds/m² 40 seeds/m² 60 seeds/m² 80 seeds/m² 100 seeds/m²

Preliminary Data

Saskatoon 1
Fertility

• A 50 bu/ac Crop:
  – 55 – 67 lb P/ac removed with 40 lb/ac in the seed
  – 47 – 57 lb K/ac removed in seed

• Fixes 85% of N needs = up to 250 lbs N / acre

• 44 lbs/ac actual P maximum safe rate

Source: Sherrilyn Phelps
Phosphorus Fertility for Establishment and Yield

- Objective: Effects of phosphorus rate and placement have on Faba bean establishment and yield

- 0, 25, 50 kg $\text{P}_2\text{O}_5$/ha

- Side-banded or Seed-placed

- Fungicide component
Phosphorus Fertility for Establishment and Yield

![Bar chart showing plants per square meter for different P2O5 applications and fungicide treatments.](chart.png)
Phosphorus Fertility for Establishment and Yield

- Statistically non-significant fungicide response
- Overall, highest yield gain at 50 kg/ha side banded, but statistically insignificant
Phosphorus Fertility for Establishment and Yield

- 50 kg P2O5/ha seed-placed negatively affected establishment

- 50 kg P2O5/ha side-banded increased yield but statistically insignificant

- Conclusion: Faba beans are sensitive to phosphorus placement, if applying high rates side-banding should be considered
Inoculant

- TagTeam and Nodulator both registered
- Recommended:
  - 4.7 lb/ac TagTeam
  - 1.2 kg Nodulator/ 982 kg seed
Inoculant Options for Faba beans

- Objective: the effects two inoculants, at different rates and in combination, have on Faba bean growth in different soil/climatic conditions.
  - Do different seed sizes/varieties need the same amount of inoculant?
  - Does one product work better than another? Are they better in combination or alone?

- Snowdrop and FB9-4

- Nodulator plus TagTeam at 0.5x, 1x, and 2x
Inoculant Options for Faba bean
Inoculant Options for Faba bean

Yield (bu/ac)

- Check
- Nodulator
- TagTeam 0.5x
- TagTeam 1x
- TagTeam 2x
- Nodulator + TagTeam 0.5x
- Nodulator + TagTeam 1x
- Nodulator + TagTeam 2x

Snowdrop
FB9-4
Inoculant Options for Faba bean

• Nodulator + TagTeam treatment had best response for greater ppms in both varieties.

• Highest yield for FB9-4 TagTeam 1x was best and Snowdrops was Nodulator + 2x TagTeam

• Preliminary Conclusion:
  – FB9-4 respond well and to single products
  – Snowdrops did not respond as well, need to see if results are significant. Need more data.
Herbicides

• Low emergence due to dry conditions made herbicide application in 2015 very important
  – Seedlings are not very competitive – canopy closure late

• Apply before the 6 whorl stage
  – Before is better to match weed stage
Typical Herbicide Regime
Full Package Herbicide Regime
Insects

• Lygus – Brown Dot on Seed
  – In areas of high canola production
  – Damage seed by sucking juices
  – Not economical to control if present

• Aphids – Dot on Underside of Leaf

• Cutworms – Severe Newly Growing Tissue
  – Faba beans will re grow
  – Lower podding
Fungicides

- Difficult to Stage
  - Start of Flowering = 1 flower at 1 raceme
  - Full Flower = 5 flowers at 1 raceme
  - End of Flower = first pod formed
Fungicides

• Primary Diseases: Chocolate Spot and Aschocyta

• Disease severity and incidence drastically increased in August?
  – Rain?

• Good in field response

• Not able to control in all cases because initial disease was so low
Fungicides

• Products registered for Faba bean use, but not specific diseases
  – Hope to registered for specific diseases soon

• What is the optimal timing?
  – Early flowering? Mid flowering?

• No economic thresholds set yet
Fungicide Products and Timing

• Four products:
  – Priaxor
  – Propulse
  – Vertisan
  – Bravo

• Two timings:
  – Early Flowering (10%)
  – Mid Flowering (50%)
Fungicide Products and Timing

• Disease development was slow to start

• No significant differences between treatments every two weeks

• Disease exploded after ratings ceased

• Products most likely unable to generate response due to low levels at spray timing
Problems...

• Pod Abortion
  – Above 27°C during flowering
  – Dry conditions
  – No pollinators

• Leaf Burning due to hot temperatures can mimic chocolate spot
Maturity

• Starts from bottom up
• Lower leaves drop off and pods turn black when mature
• Physiological mature when >90% plant has color change
• Desiccate with Reglone, use high water volumes
  – Can use glyphosate if not saving for seed
Harvesting

• Straight Cut at 6 to 8 Inches High

• Pods can Burst
  – Increases when using lifters
  – Wet conditions in fall causes seeds to grow larger than pod can contain

• Regrowth After Desiccation
Thank you!

- Sherrilyn Phelps and SaskPulse
- Gaylene Dagenais, Rikki Schick, and Jillian Anderson
- IHARF, ICDC, WARC, WCA, and U of S
- AAFC Melfort Research Farm Staff