Fabulous Faba Beans: the Fundamentals

Jessica Pratchler, AAg.

NARF Field Research Agronomist

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/m^2 (60 lbs/bu)

	TKW (g)	kg/ha	bu/acre
•FB9-4	680 (805)	360	**5.3** (6.3)
•Snowbird	495	262	**3.9**
•Snowdrop	335	177	**2.6**

Source: S.Phelps

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

- Different sized beans = different seeding rates?

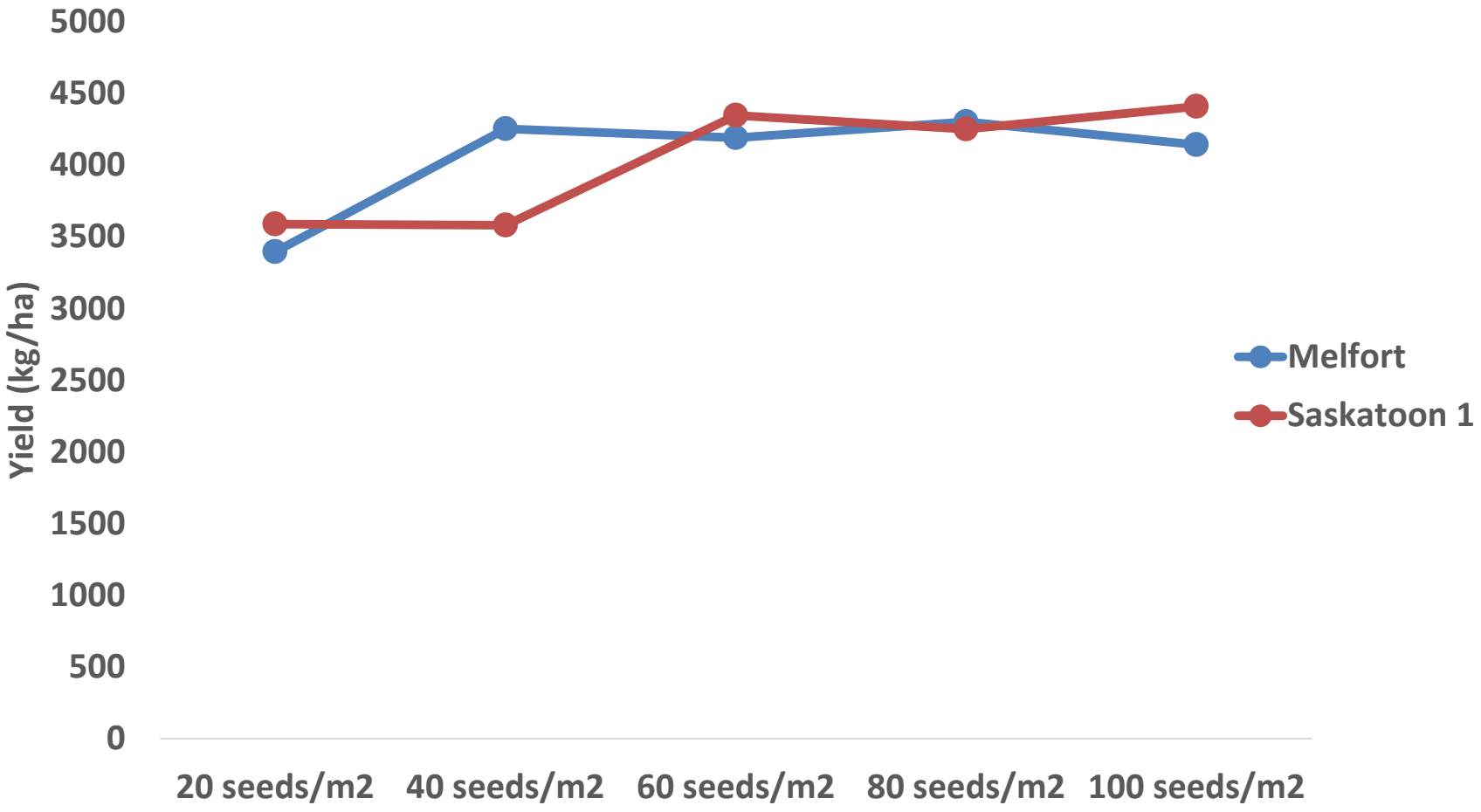
Optimal Seeding Rates?

- 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/m^2

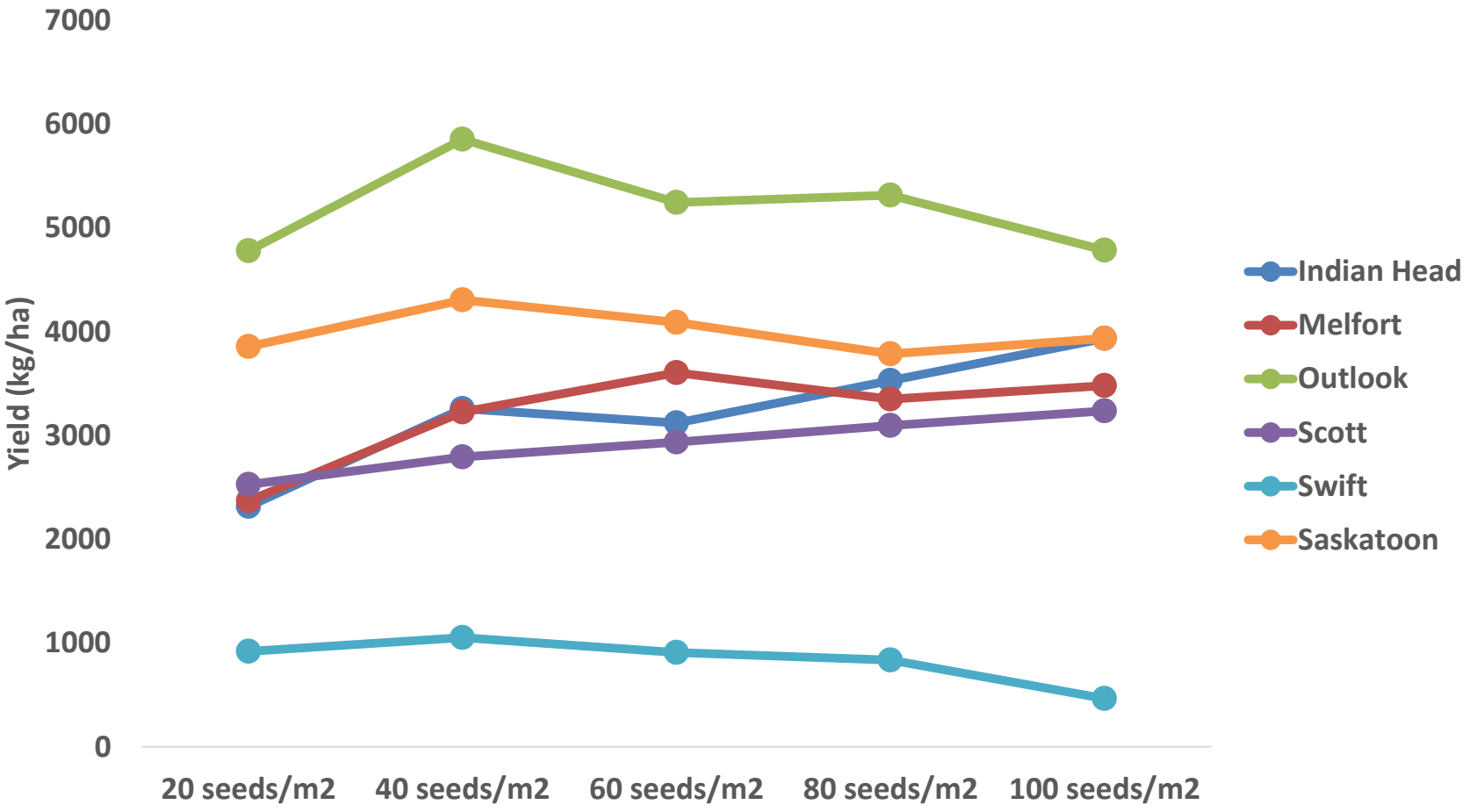
- SNSS-1, Snowdrop, FB9-4

Optimal Seeding Rates: SNSS-1



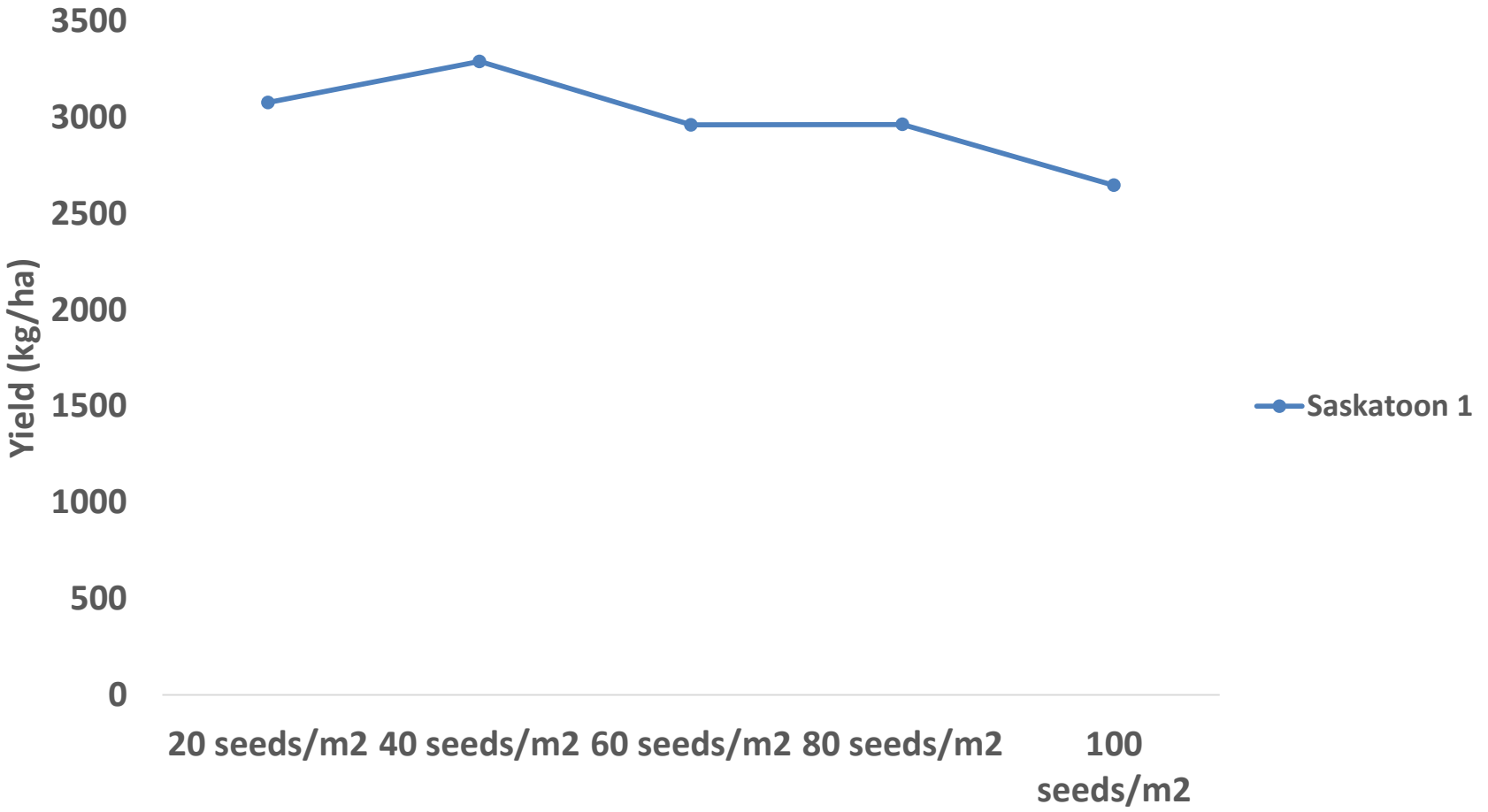
Preliminary Data

Optimal Seeding Rates - Snowdrop



Preliminary Data

Optimal Seeding Rates – FB9-4



Preliminary Data

Fertility

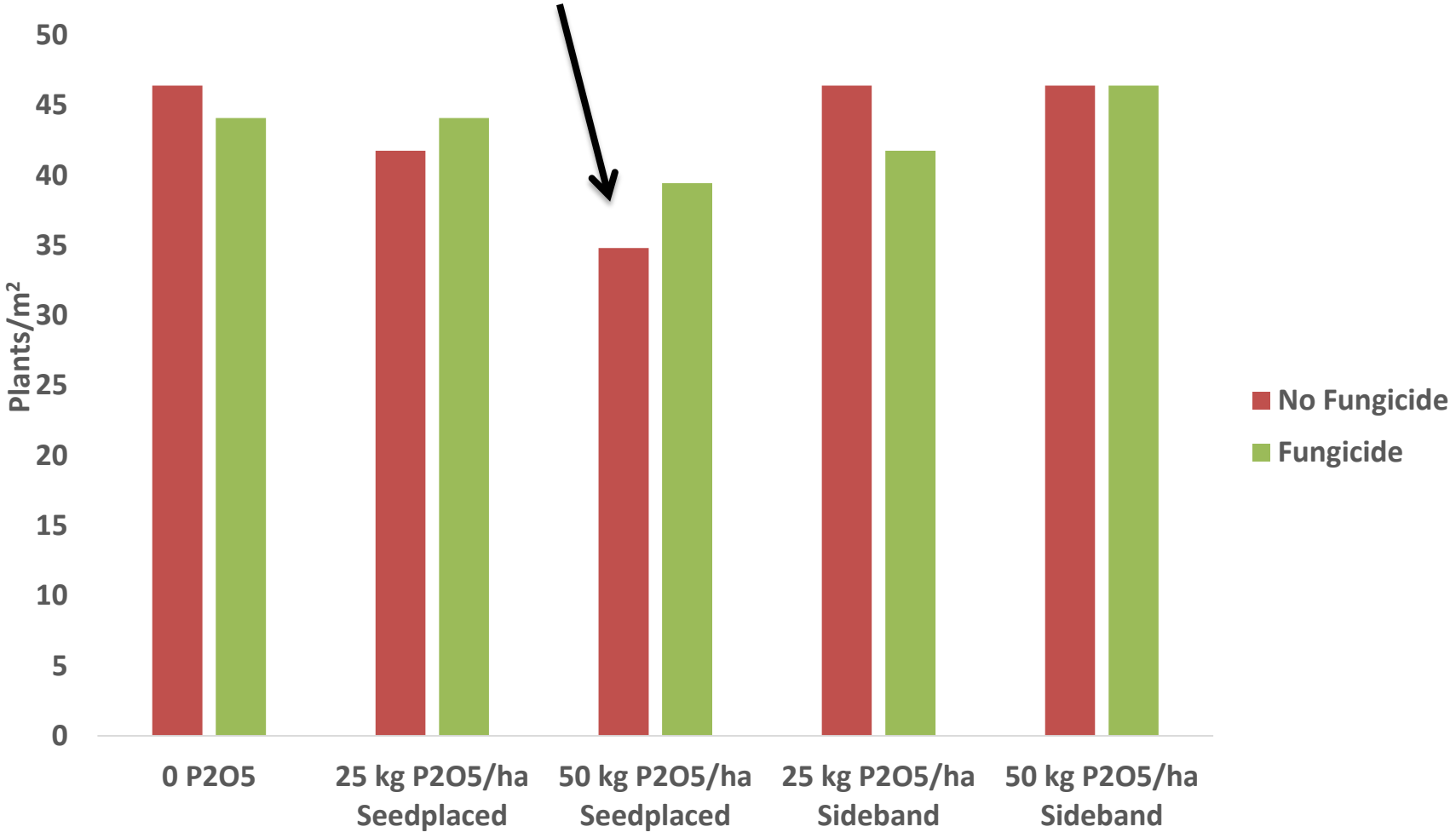
- A 50 bu/ac Crop:
  - 55 – 67 lb P/ac removed with 40 lb/ac in the seed
  - 47 – 57 lb K/ac removed in seed
- Fixes 85% of N needs = up to 250 lbs N / acre
- 44 lbs/ac actual P maximum safe rate

Source: Sherrilyn Phelps

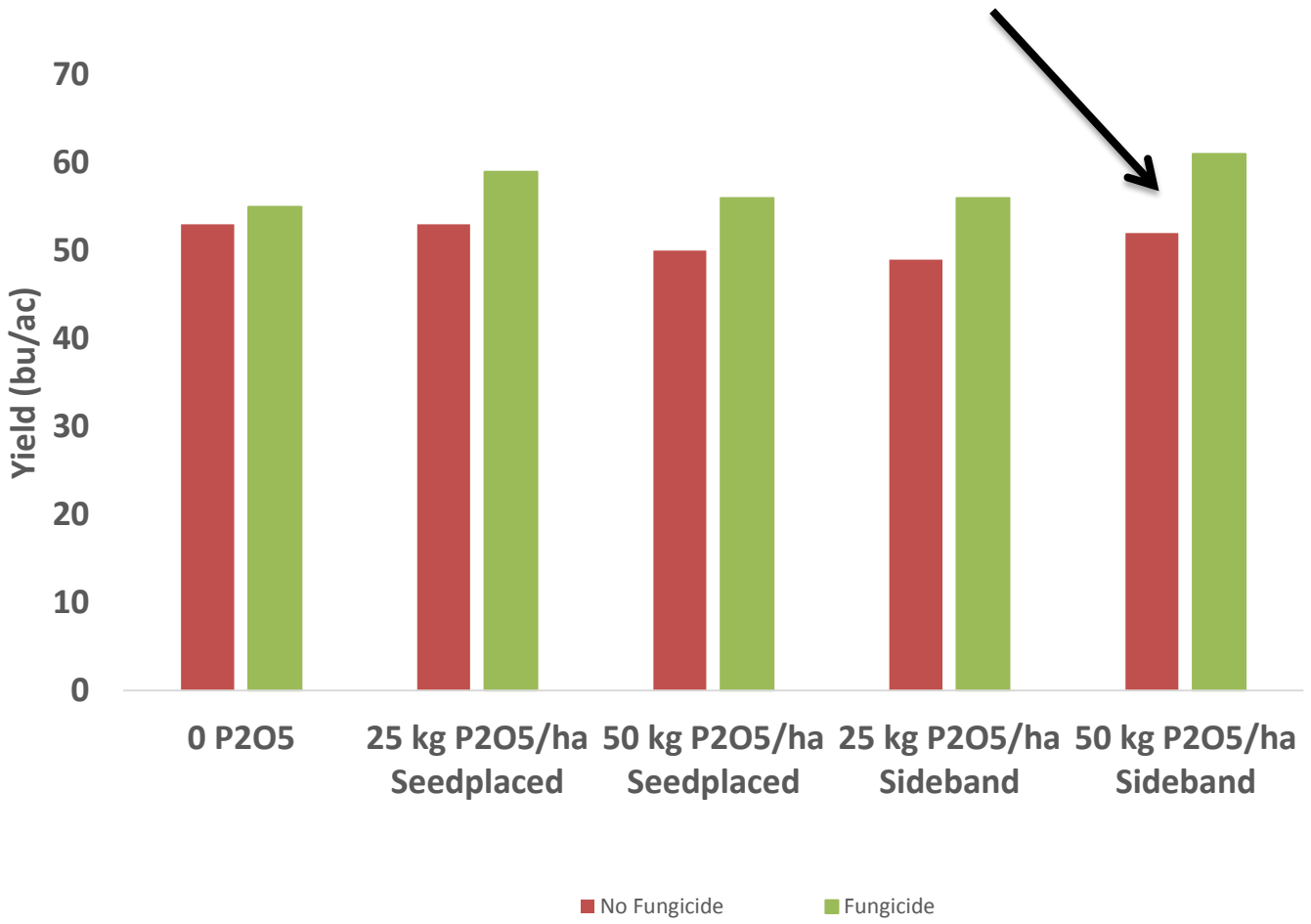
Phosphorus Fertility for Establishment and Yield

- Objective: Effects of phosphorus rate and placement have on Faba bean establishment and yield
- 0, 25, 50 kg P_2O_5/ha
- Side-banded or Seed-placed
- Fungicide component

Phosphorus Fertility for Establishment and Yield



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 P_2O_5/ha seed-placed negatively effected establishment
- 50 kg P_2O_5/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

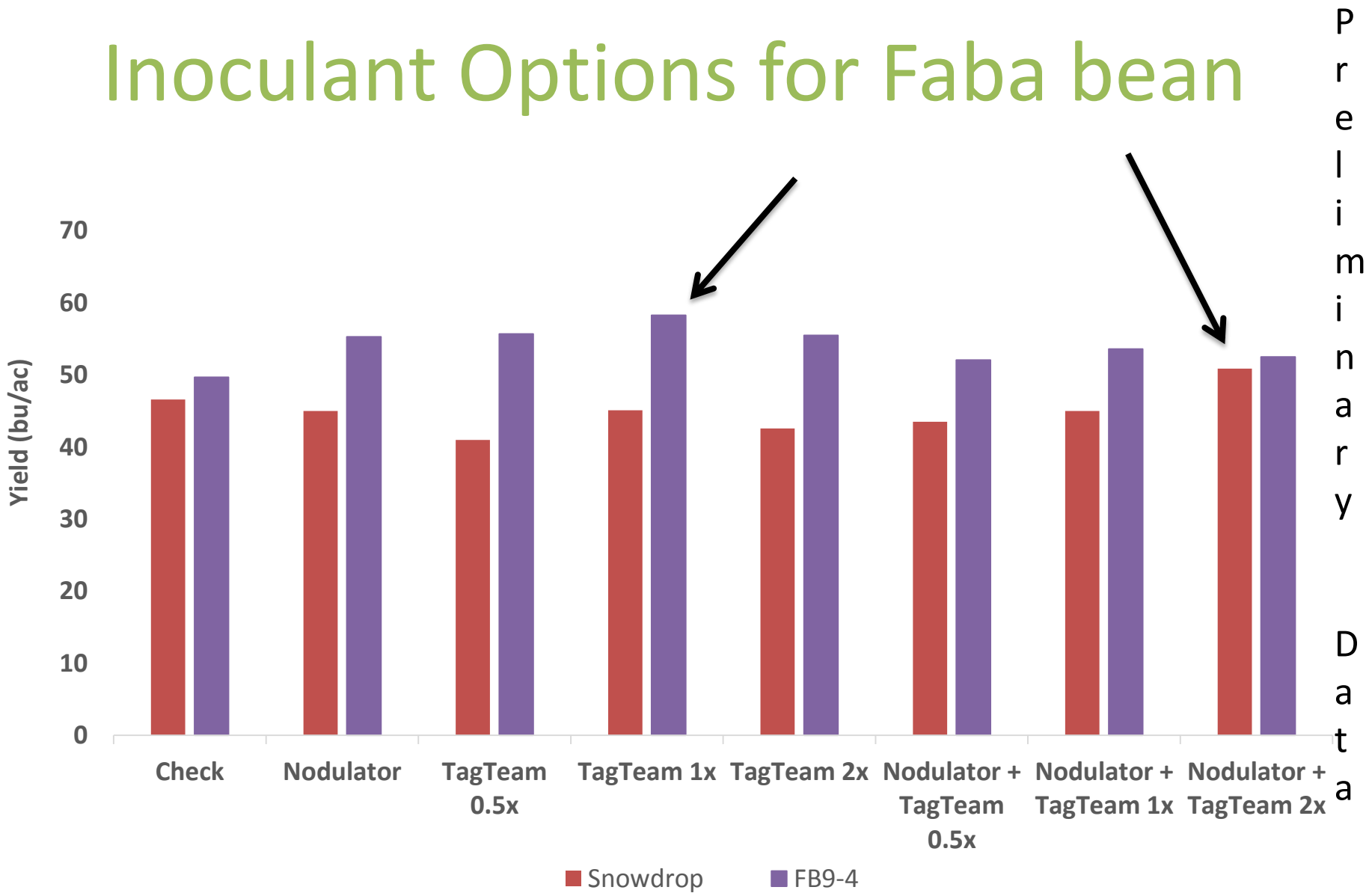
- Objective: the effects two inoculants, at different rates and in combination, have on Faba bean growth in different soil/climatic conditions.
  - Do different seed sizes/varieties need the same amount of inoculant?
  - Does one product work better than another? Are they better in combination or alone?

- Snowdrop and FB9-4

- Nodulator plus TagTeam at 0.5x, 1x, and 2x

Inoculant Options for Faba bean

Inoculant Options for Faba bean



Preliminary Data

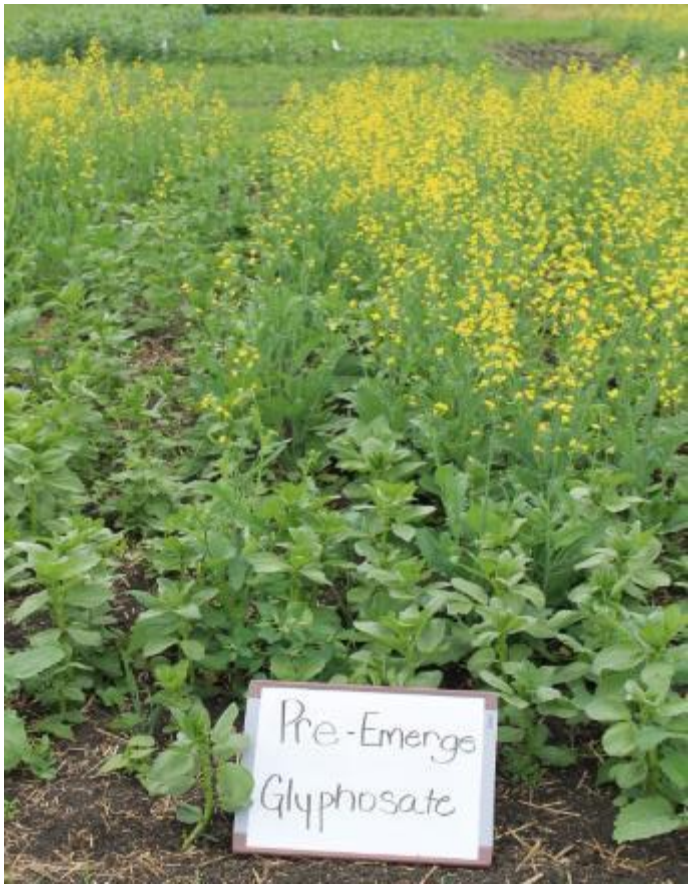
Inoculant Options for Faba bean

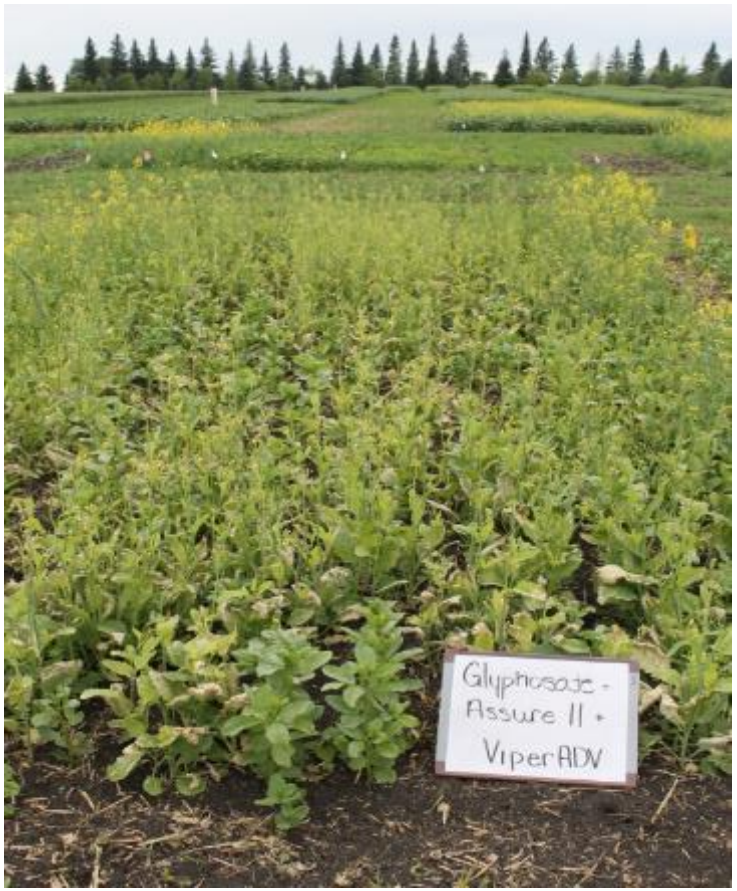
- Nodulator + TagTeam treatment had best response for greater ppms in both varieties.
- Highest yield for FB9-4 TagTeam 1x was best and Snowdrops was Nodulator + 2x TagTeam
- Preliminary Conclusion:
  - FB9-4 respond well and to single products
  - Snowdrops did not respond as well, need to see if results are significant. Need more data.

Herbicides

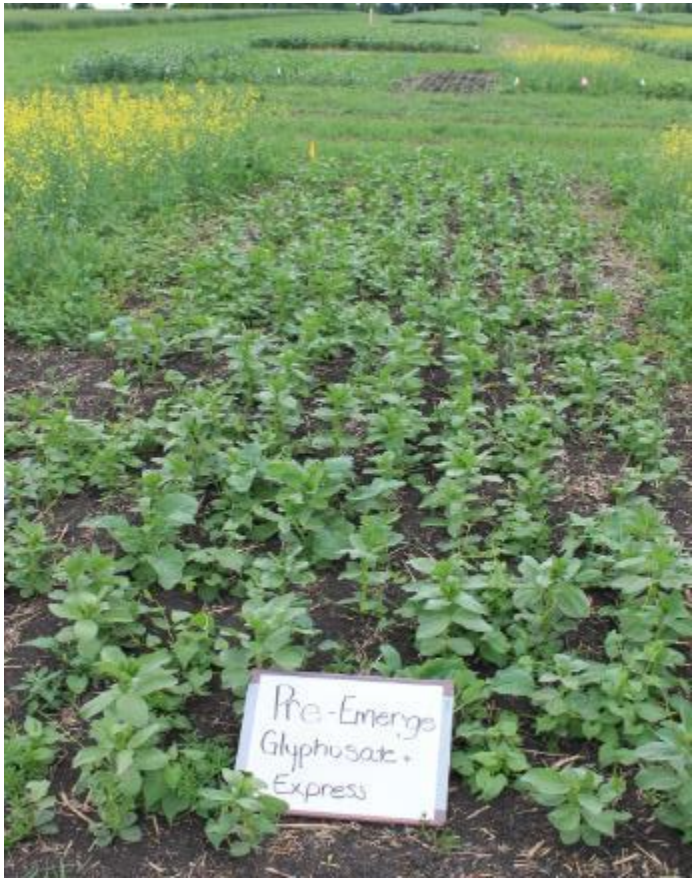
- Low emergence due to dry conditions made herbicide application in 2015 very important
  - Seedlings are not very competitive – canopy closure late
- Apply before the 6 whorl stage
  - Before is better to match weed stage

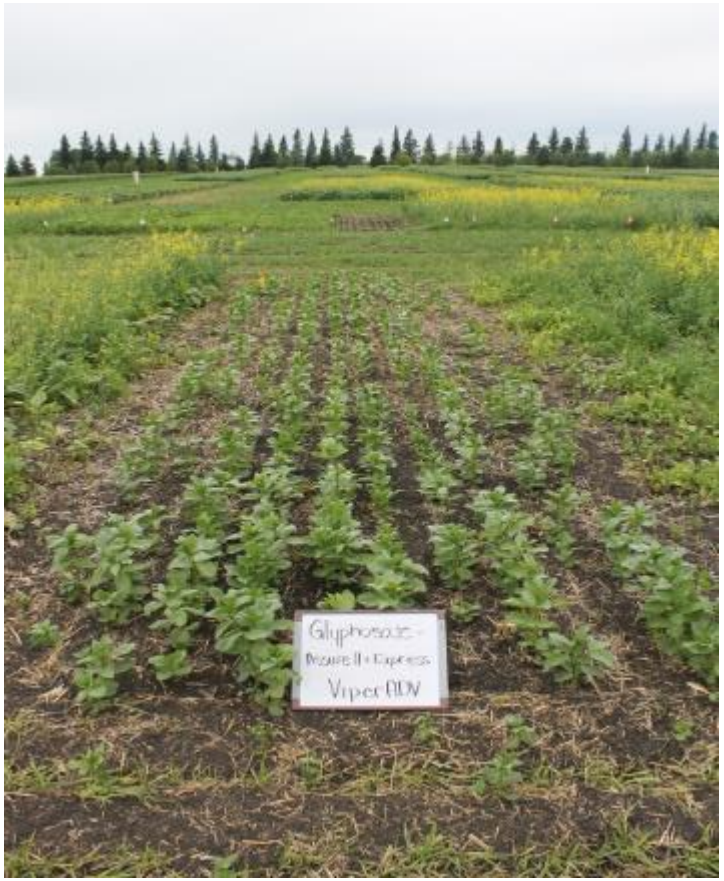
Typical Herbicide Regime





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%)

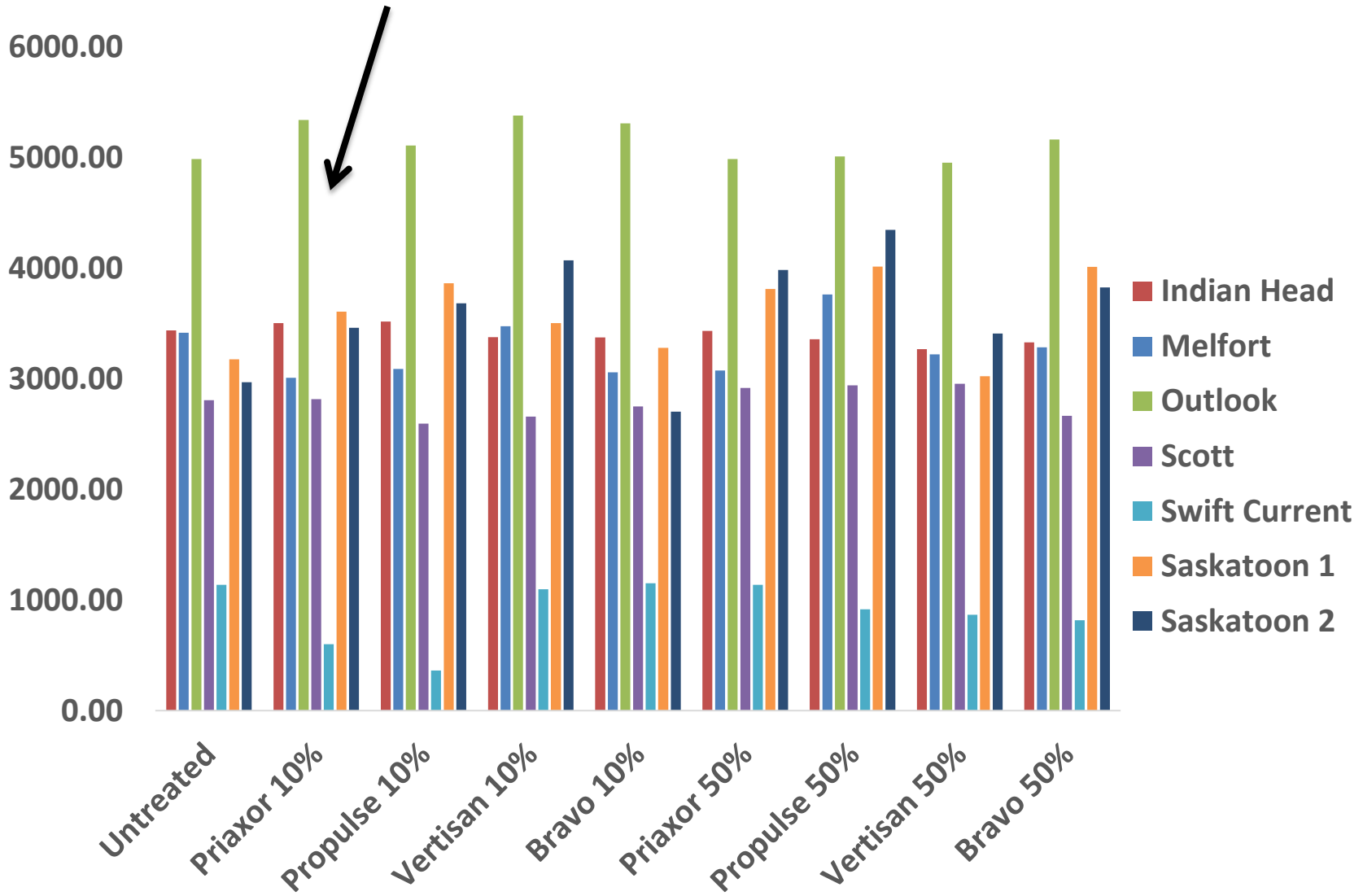
SASKATCHEWAN pulse Growers

UNIVERSITY OF SASKATCHEWAN

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

Fungicide Products and Timing



Preliminary Data

Problems…

- Pod Abortion
  - Above 27°c during flowering
  - Dry conditions
  - No pollinators
- Leaf Burning due to hot temperatures can mimic chocolate spot

Photo credit: S. Phelps

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