FABA BEAN AGRONOMY

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March 9th, 2016 – WARC

SASKATCHEWAN pulse Growers

TOPICS TO COVER

- Acres
- Agronomy
- 2015 Experience
- Economics

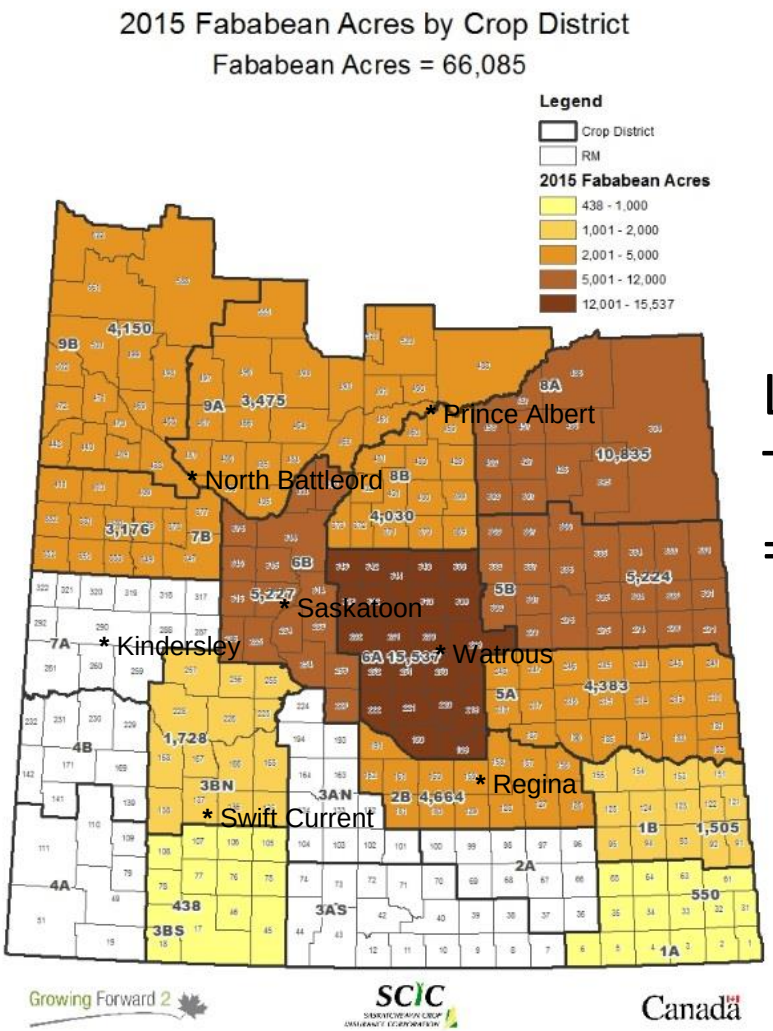
Source: S. Phelps, SPG 2015

INTEREST IN FABA BEANS

Acreage in Western Canada – Crop Insurance Acreage

Year	AB	SK	MB	Total
2014	80,000	20,000		100,000
2015	110,000	61,792	9,040	>180,000
2016	???	???	???	???

Crop Insurane – only 70-85% of acres grown



Likes moisture &
Tolerates wet feet
= wetter regions

AGRONOMY OF FABA BEAN

Source: S. Phelps, SPG 2015

CROP MATURITY

Crop	Maturity (days)
Canola	88-100
SWS wheat	105
CPS wheat	101-103
HRS wheat	98-103
Barley	91
Oat	96
Peas	86-94
Flax	101
Canary Seed	104 – 106
Mustard	92-98

Crop	Maturity (days)
Fababean	**105-109**
Hemp	80-120
Corn	120
Soybean	119-124
Sunflower	108-119
Quinoa	90?-125 Colorado
Camelina	90

TYPES

Tannin (4 to 9%)

(brown seed coat &

black dot)

Low Tannin (Zero) (<1%)

(white flower & cream seed coat)

Variety	Type*	Breeding Program/Distributors	Seed size	DTM
Snowdrop	Low Tannin	University of Saskatchewan / SPG	335	104
Snowbird	Low Tannin	Limagrain Nederland Bob Park – Lacombe, AB	495	104
Imposa	Low Tannin	Limagrain Nederland Cyre Seed Farms	695	107
Tabasco	Low Tannin	NPZ Lemke / DL seeds	530	106
Taboar	Tannin	Globe Seeds - Netherland Terrramax	480	107
CDC Fatima	Tannin	University of Saskatchewan Legumex Walker	520	105
Malik (FB 9-4)	Tannin	University of Saskatchewan Saskcan Pulse Trading/AGT	680	104
CDC SSNS-1	Tannin	University of Saskatchewan Meier Brothers	335-350	105
Florent	Tannin	NPZ Lemke / DL Seeds	660	107
Fabelle	Tannin	NPZ Lemke / DL Seeds	533	105
Vertigo	Tannin	NPZ Lemke / DL Seeds	571	106

Varieties of Grain Crops: Saskatchewan

SEEDING RATES

- Target 45 plants/m^2 (4-5/ft^2)
- 60 lbs/bushel
- Know your seed size!

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

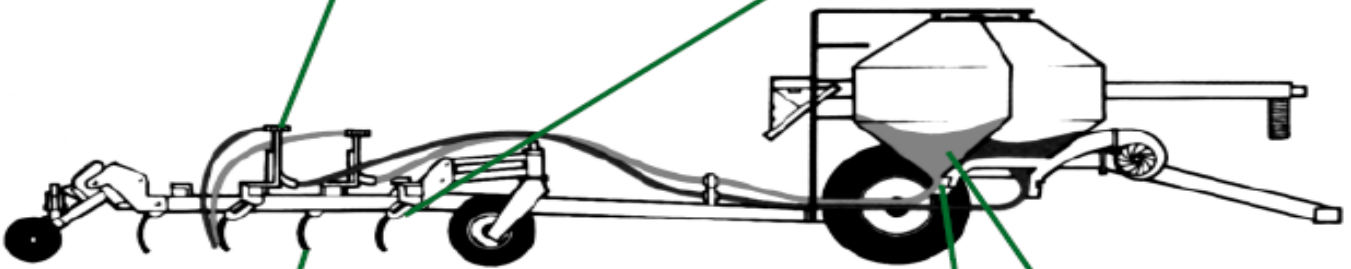
SEEDING

- **2-3 inches deep**
- **Cross pollinate** - Keep types/varieties separate by at least 100m (Dr. Vandenberg suggests 500m) or will have a lot of outcrossing
- **Seed treatments** – low tannin varieties higher risk (Apron products/ Stress Shield)

Distributer heads
Seeds can be damaged as they hit the distributor head.

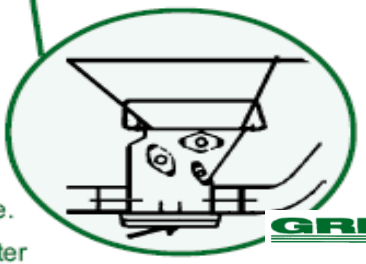
Blockages occur at outlet holes.

Tubes
Hoses block on bends.



Seed box
Check for bridging, especially following transport.

Seeding boot
Blockages occur, especially if boot narrows or changes in shape from circular to oblong.



Metering device
Check roller type for seed clearance and possible seed damage.

Check device can meter correct seeding rate.

GRDC

NSW Agriculture

Go slow!!! Check often!!!

Source: S. F

POTENTIAL FOR HUGE BIOMASS

Source: Olson, M.A. 2014

July 5, 2013

July 20, 2013

FERTILITY

Compiled by the CFI Canadian Fertilizer Institute / Institut canadien des engrais

Oilseeds Pulse Crops*		N	P_2O_5	K_2O	S
		lbs/acre			
Peas	uptake	138 - 168	38 - 46	123 - 150	11 - 14
50 bu/A *(3360 kg/ha)*	removal	105 - 129	31 - 38	32 - 39	6 - 7
Lentils	uptake	82 - 101	22 - 27	69 - 84	8 - 10
30 bu/A *(2016 kg/ha)*	removal	55 - 67	17 - 20	29 - 36	4 - 5
Fababeans	uptake	257 - 314	89 - 108	229 - 280	12 - 15
50 bu/A *(3808 kg/ha)*	removal	154 - 188	55 - 67	47 - 57	6 - 8

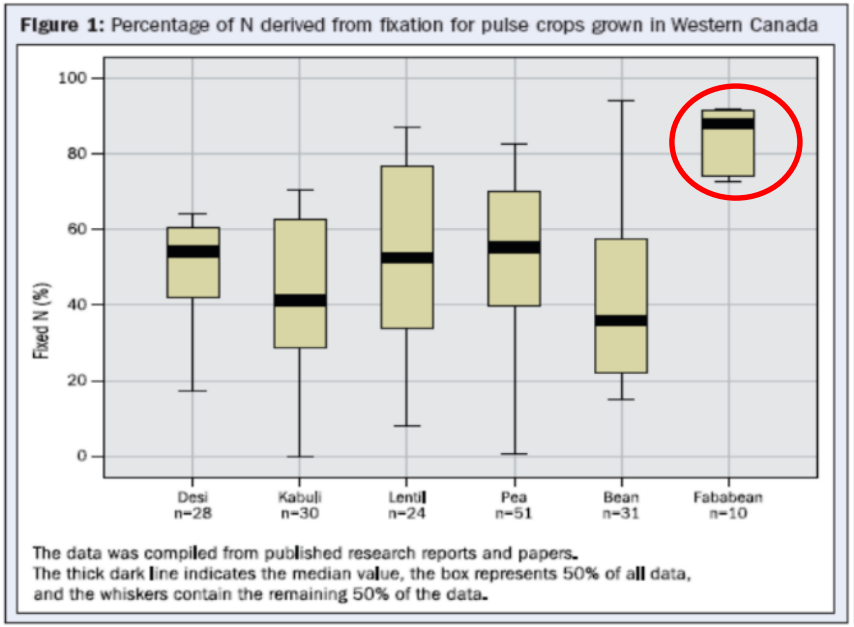
- Faba much higher uptake of P than peas

  (1.1 to 1.3 lbs P per bushel; peas at 0.7)

- Safe rate seed placed P is 40 lb/acre actual (P+K)

NITROGEN FIXATION

(Dr. Fran Walley, U of S)



Faba - highest N-fixing legume grain crop

N fixed in Western Canada (dryland)

	lbs N / acre (average)
Alfalfa	**100 – 250 (175)**
Pea	50 – 150 (100)
Lentil	30 – 120 (75)
Faba Bean	**80 – 160 (120)**

Source: Dr. J. Schoenau, U of Saskatchewan

INOCULANT PRODUCTS

Rhizobium leguminosarum:

pea, lentil, faba, chickling vetch

Faba bean specific products:

BASF(formerly BeckerUnderwood) - Nodulator® peat

Monsanto Bio-AG (formerly Novozymes) - Tag Team granular

NO INOCULANT VS SEED APPLIED

Faba bean inoculant trial – G. Hnatowich, ICDC
Indian Head site July 21 2015

RESIDUAL HERBICIDES

2nd season after application of the following (ie. 22 months recropping)

Muster (Toss-N-Go / 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)

Fall Applied (ie. 18 months recropping)

PrePass (fall application)

2,4-D (high rates applied in fall)

Best Guess as little work on recropping to faba beans!!

WEED CONTROL (REGISTERED PRODUCTS)

Pre-emergence products:

Glyphosate

Glyphosate + Express (Tribenuron)

Edge

Trifluralin / Trifluralin + Sencor (metribuzin)

In crop:

Basagran & Basagran Forte

Odyssey

Poast Ultra (grassy weed control)

Assure II (quizalofop) (grassy weed control)

PEST MANAGEMENT

Grow it…they will come……

Source: Olson, M.A. 2014

LYGUS

- Higher risk areas in SK are where high canola or alfalfa acres (NE and Meadow Lake)
- Max 1% damage for No. 1 grade
- Hard to control as insect moves back in after insecticide application

Source: S. Phelps, SPG 2014

Source: Olson, M.A. 2014

OTHER INSECTS

Blister Beetles

Pea Leaf Weevil

Grasshoppers

Leafhoppers (AY)

Aphids

Source Sask. Agric.

DISEASE

Chocolate Spot – botrytis

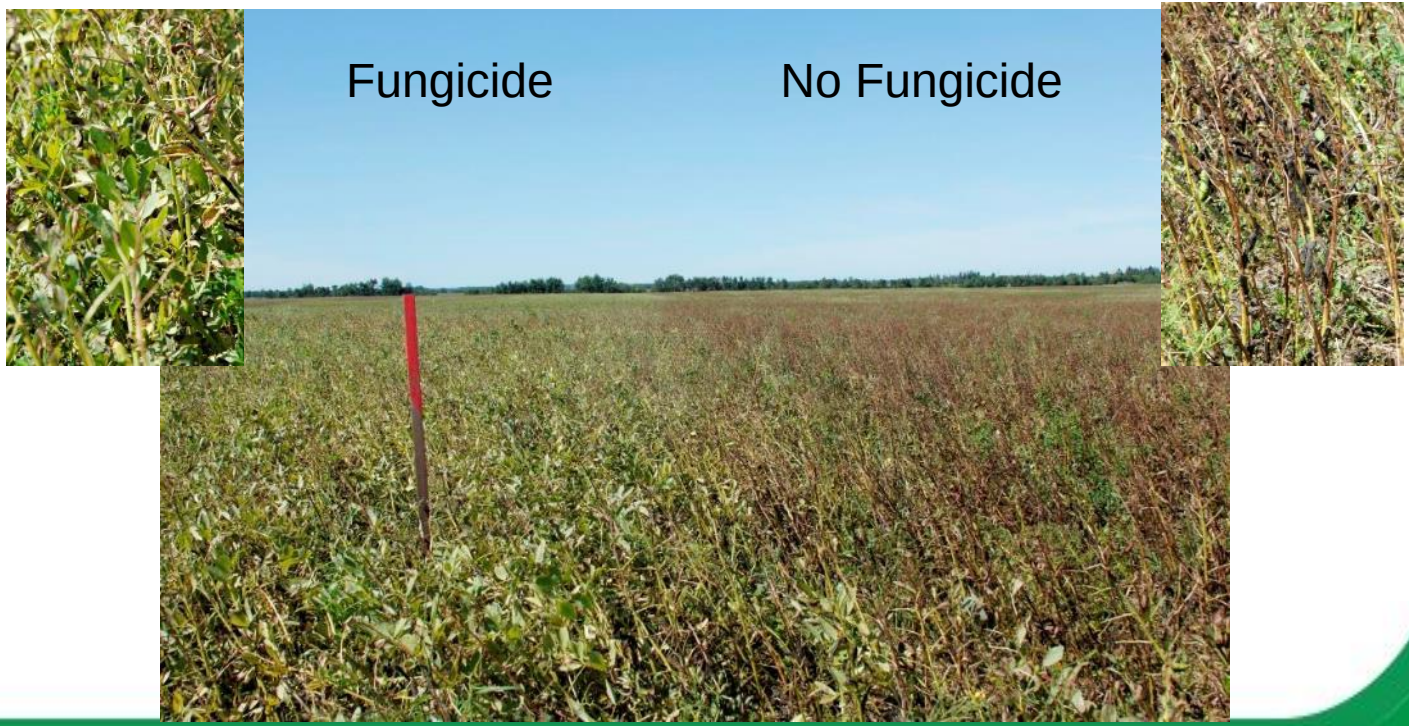
Ascochyta

Alternaria

Sclerotinia

Source: S. Phelps, SPG 2015

DISEASE



Photos: K. Stonehouse, SMA (North of Tisdale)

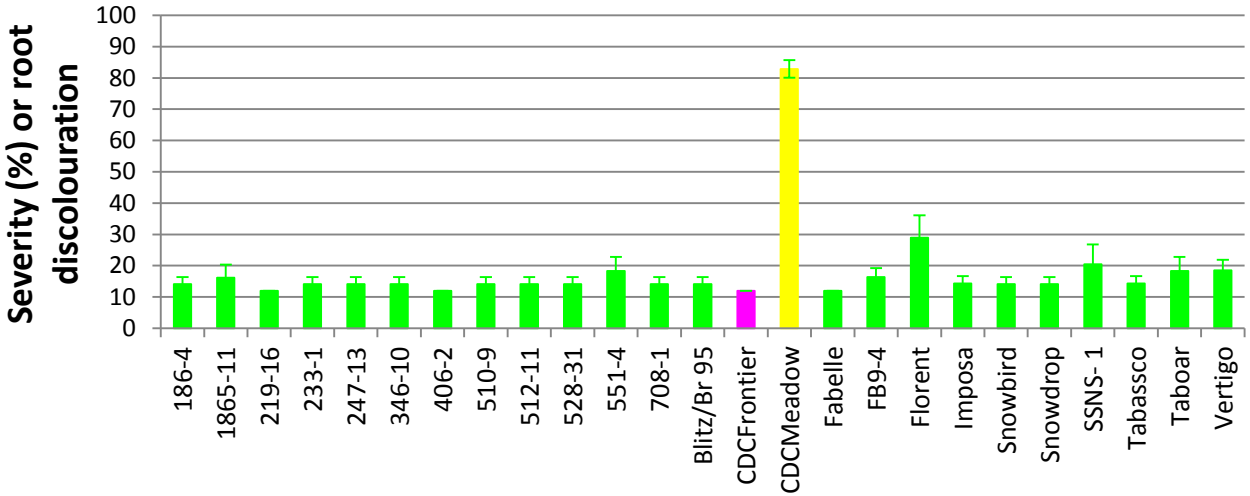
LEAF BURNING = NOT CHOC SPOT

Source: S. Phelps, SPG 2015

Source: S. Phelps, SPG 2015

APHANOMYCES ROOT ROT

- **Faba beans** varieties have more tolerance than **pea / lentil** but similar to chickpea



FLOWERING

Start flowering 8-10 node stage = 12” high

Flowers located approx. 8”

BBCH Staging guide suggests:

Start of flowering – 1 flower open on 1 raceme per plant

Full flower - flowers open at 5 racemes/plant

End of flower - first pods visible

FLOWERING STAGES:
START FULL END

ONLY ABOUT ¼ OF FLOWERS PRODUCE PODS!

Source: S. Phelps, SPG 2015

Flowers/pods abort:

- >27 degrees C
- Hot & dry during podding
- Lack of pollinators (bees)
- presence of disease

3-4 SEEDS PER POD AVERAGE

Source: S. Phelps, SPG 2015

HARVEST MANAGEMENT

- physiologically mature when 90% of plants have color change

Pre-harvest weed control: glyphosate

Dessicant: Reglone/diquat products

STANDABILITY IS GOOD

Faba beans

Peas

Photo: S. Phelps, SPG from Medstead, September 2015

COMBINING

- straight cut approximately 6-8”off the ground
  - shorter stubble allow easier seeding(no plugging between shanks) the next spring.
- 16% moisture is dry
- combine at 18-20% and aerate
- Don’t use lifters (pop pods)

HARVEST YIELDS

- Target yield in AB is 50 - 60 bu/acre
- AB 10 year average is 39 bu/acre
- SK 10 year average is 35, 2014 averaged 38 bu/acre (source SCIC), 2015 still waiting….
- outyields peas under good moisture, less than peas under drier conditions

2015 EXPERIENCE – DRY SPRING

Hill tops

Low area

Source: S. Phelps, SPG 2015

FROST & CUTWORMS - REGROWTH FROM SEED

Source: S. Phelps, SPG 2015

END OF JULY

Saskatoon (U of S)

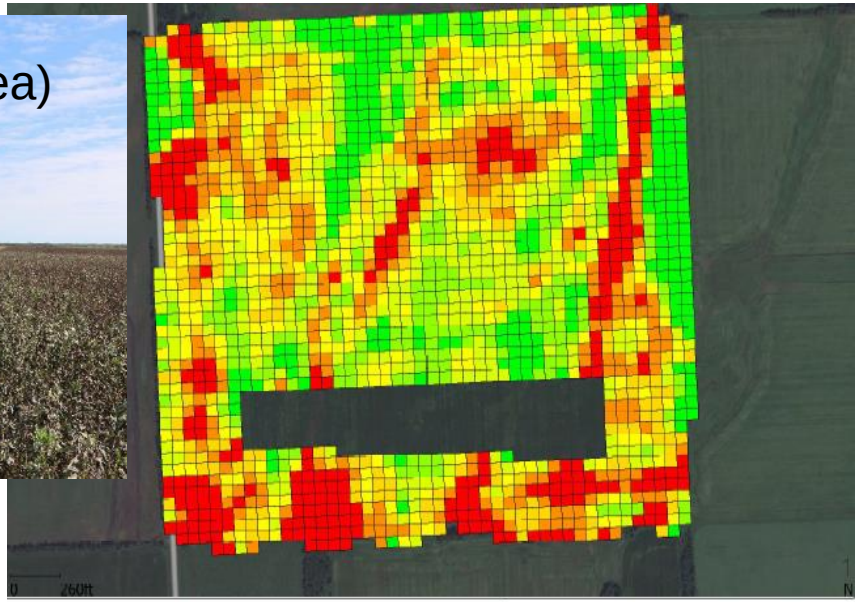
Source: S. Phelps, SPG 2015

Melfort (Randy Cay) – 50 bu/acre

OUTLOOK JULY 30 (ICDC VARIETY TRIALS)

Source: S. Phelps, SPG 2015

Medstead (Terrel Hill)



Source: S. Phelps, SPG 2015

Cavalier Agrow iFARM Intelligent Farming

Operation Summary

Grower : Terrel Hill
Field : GERALDS
Year : 2015
Operation : Grain Harvest
Crop / Product : FABABEANS
Area : 137.06 ac
Avg. Moisture : 10.68 %
Average Estimated Volume (Dry) : 52.01 bu/ac

Estimated Volume (Dry) (bu/ac)

64.30 - 102.96	(22.36 ac)
58.50 - 64.30	(22.44 ac)
54.23 - 58.50	(22.36 ac)
50.44 - 54.23	(22.44 ac)
46.53 - 50.44	(22.36 ac)
41.87 - 46.53	(22.44 ac)
7.64 - 41.87	(22.36 ac)

Source: S. Phelps, SPG 2015

COMPARED TO PEAS IN 2015 (BU/ACRE)

Location	Faba Bean	Pea
Meadow Lake	45	50 (+5)
Goodsoil	30	40 (+10)
Wilkie	29	25 (-4)
Nakomis/Simpson	30	(+7-8)
Welwyn	54	50 (+4)
North Battleford	20	25 (+5)
Medstead	35 to 65	58

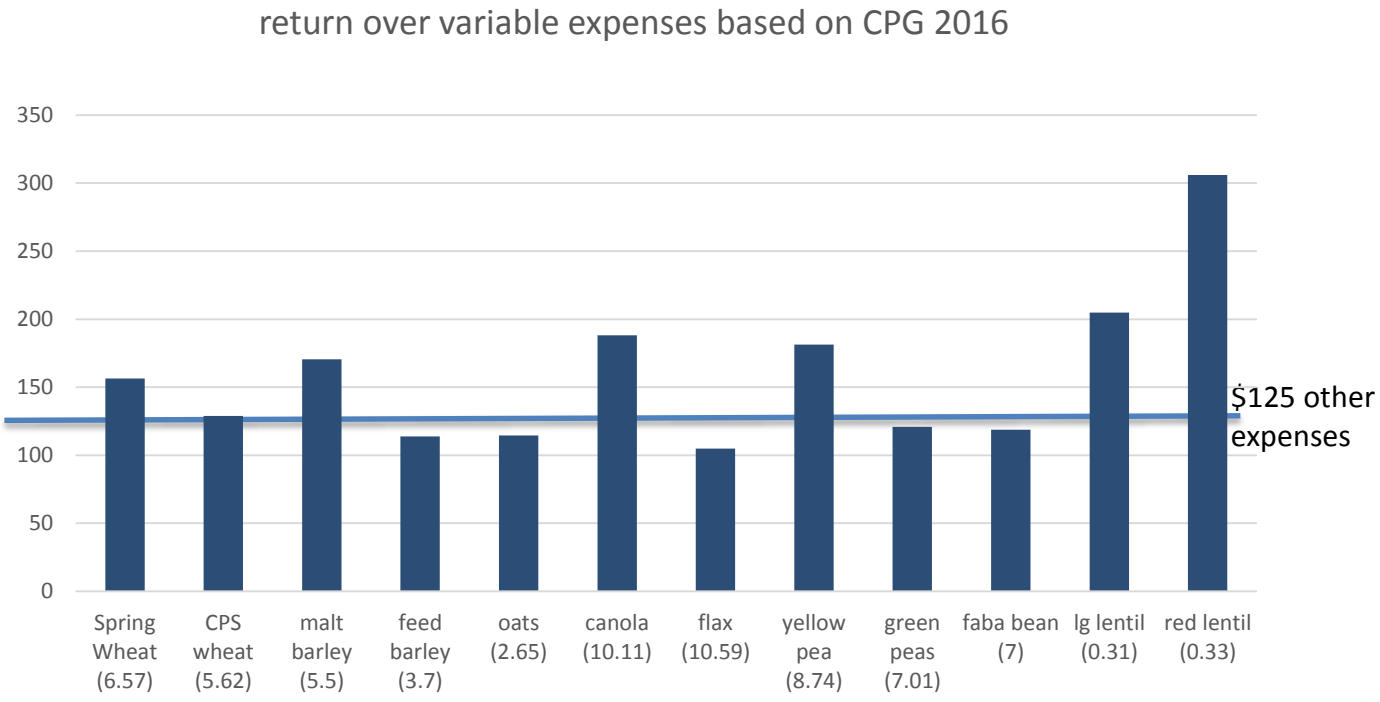
In dry years expect peas to outyield faba bean, in wet years faba beans should outyield peas!

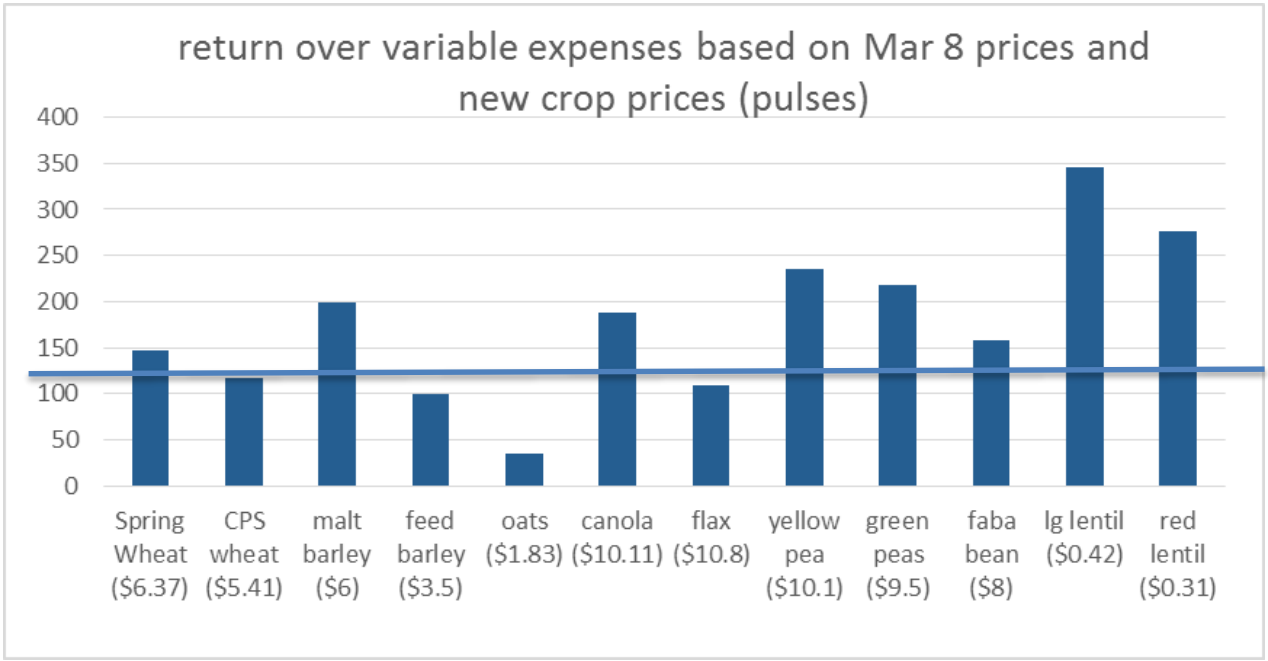
POD ISSUES

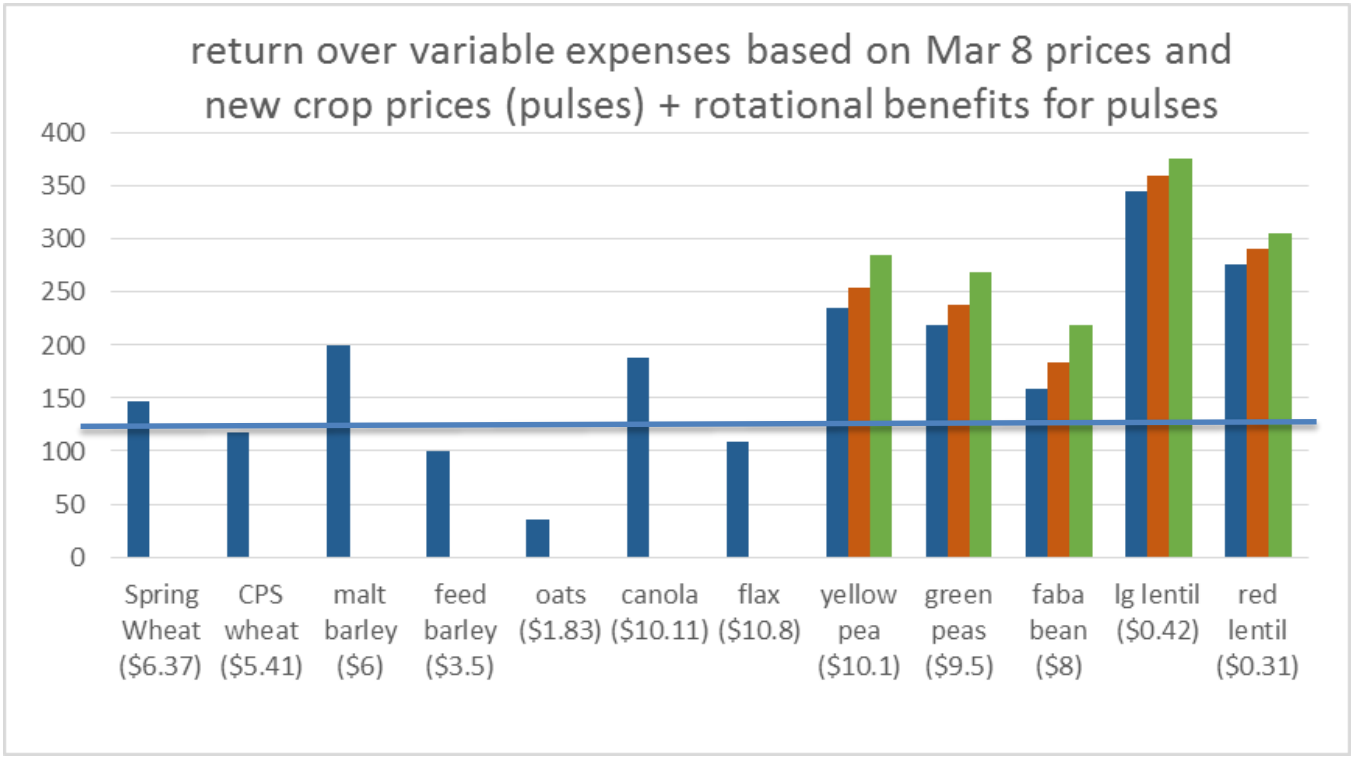
Source: S. Phelps, SPG 2015

ECONOMICS

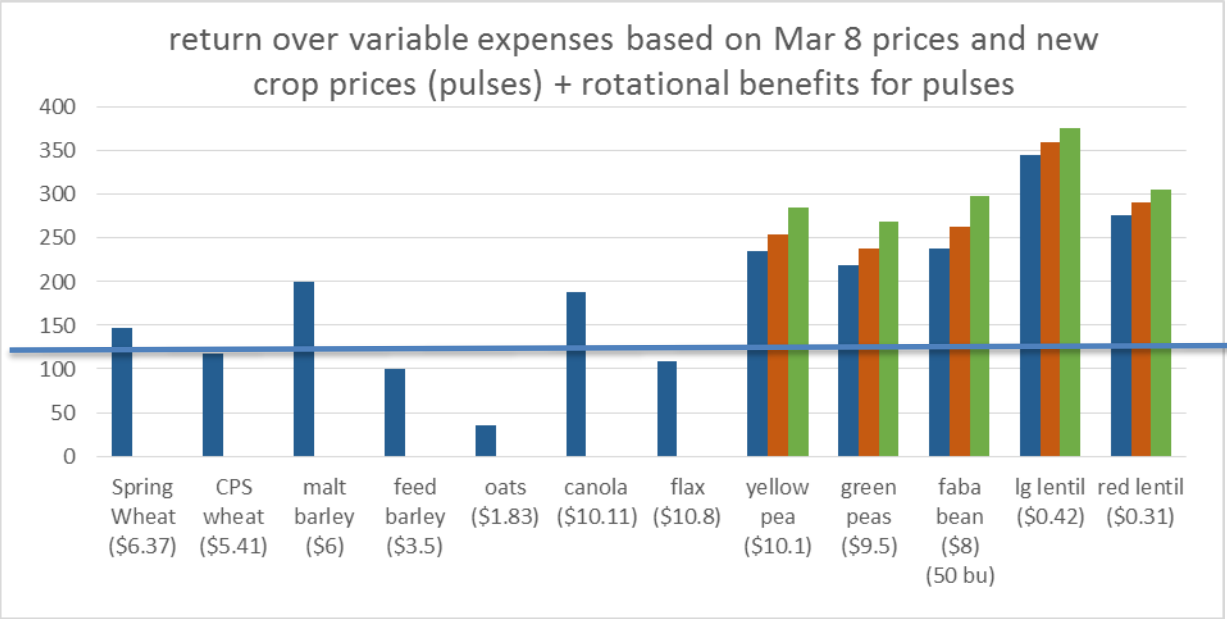
- Using Crop Planning Guide 2015 for Black Soil Zone
- Faba bean expenses – similar to pea (seed cost and P fertilizer up, no rolling, less fungicides, easier harvest)
- Pea yields – 39.2, Faba bean – 40 bu/acre
- Faba bean prices - $6 to $14 (used $7 for CPG, $8 for new crop)


return over variable expenses based on CPG 2016
350
300
250
200
150
100
50
0
$125 other expenses
Spring Wheat (6.57)
CPS wheat (5.62)
malt barley (5.5)
feed barley (3.7)
oats (2.65)
canola (10.11)
flax (10.59)
yellow pea (8.74)
green peas (7.01)
faba bean (7)
lg lentil (0.31)
red lentil (0.33)


return over variable expenses based on Mar 8 prices and new crop prices (pulses)
400
350
300
250
200
150
100
50
0
Spring Wheat ($6.37)
CPS wheat ($5.41)
malt barley ($6)
feed barley ($3.5)
oats ($1.83)
canola ($10.11)
flax ($10.8)
yellow pea ($10.1)
green peas ($9.5)
faba bean ($8)
lg lentil ($0.42)
red lentil ($0.31)



Rotational benefit - $20 to $50/acre for peas



Need to get to 50 bu/acre faba beans @ $8/bushel = PEAS

THANK YOU!!!

Source: S. Phelps, SPG 2015

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