K-State Field Pea Variety Testing

Lucas Haag, Ph.D.
Assistant Professor / Northwest Area Agronomist
Northwest Research-Extension Center, Colby, Kansas

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Procedures

- No-Till into row-crop residue
- Seeded with Great Plains Drill on 10”
- Targeted drop of 365,000 live seed / acre
- Granular inoculant at 1.5x recommended rate
- Plots are 5’ x 40’
- 5 Replications
- Machine harvested

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Field Pea VPT Locations

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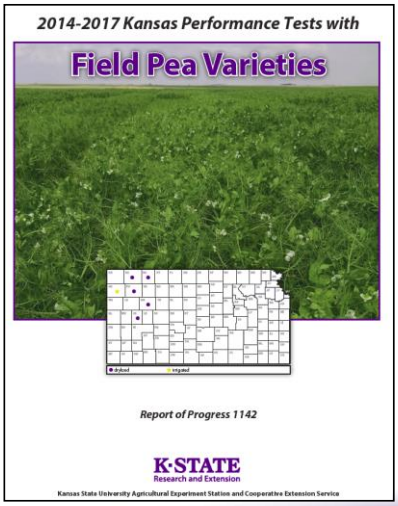
Trial Results and Field Pea Production Info

- www.northwest.ksu.edu/agronomy



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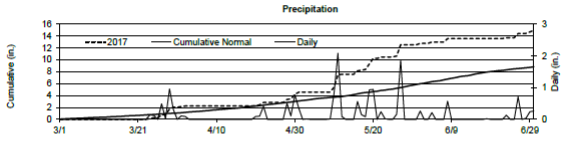
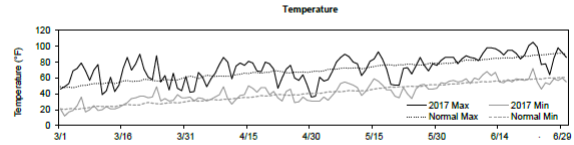
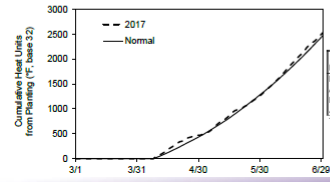
Thomas County Dryland Field Pea Performance Test, 2017

County:	Thomas County Dryland		
Location:	K-State NWREC, Colby		
Soil Type:	Keith Silt Loam, 0-1% Slope	**Previous Crop:**	Grain Sorghum
Seeding Rate:	365,000 PLS seed/a	**Herbicide**	
		Pre-Emerge:	4 oz. Spartan Charge + 32 oz. Glyphosate
		Post-Emerge:	None
Dates			
Planting:	4/10/2017		
Harvest:	7/12/2017		







Month	Avg temp 2017	Avg temp Normal	Precipitation 2017	Precipitation Normal	Heat units 2017	Heat units Normal
March	45.3	39.9	2.03	1.06	-	-
April	51.5	50.4	2.18	1.96	473	434
May	58.5	60.3	8.31	2.83	823	879
June	73.3	71.0	2.43	2.99	1240	1169
Total			14.95	8.84	2535	2481

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Thomas County Dryland Field Pea Performance Test, 2017

		Grain Yield, bu/a					2017					
Company	Variety	2017	2016	2015	2yr Avg	3yr Avg	Yield % of Test Avg	Moisture %	Test Weight lb / bu	Plant Height inches	Bloom Date DOY	Seeds / lb
Legume_Logic	MP1907	**42.1**	--	--	--	--	134	13.2	63.7	25.0	162.0	2420
Great_Northern_Ag	Spider	**39.0**	23.2	--	31.1	--	124	12.2	64.6	23.4	159.4	2529
CDC/Meridian_Seeds	CDC_Inca	**38.9**	--	--	--	--	123	13.8	63.6	24.4	161.2	2691
Great_Northern_Ag	Salamanca	**37.5**	28.7	--	33.1	--	119	12.5	64.2	24.2	160.0	2495
PulseUSA	DS_Admiral	35.4	31.4	30.5	33.4	32.4	112	11.8	63.8	23.2	159.0	2693
Meridian_Seeds	AAC_Carver	35.3	28.2	28.6	31.8	30.7	112	13.9	62.5	24.8	160.2	2547
Photosyntech	PSTSP28	35.1	--	--	--	--	111	12.2	62.6	25.2	159.4	2729
PulseUSA	Durwood	34.8	28.1	--	31.4	--	110	13.3	63.6	27.0	159.8	2540
Meridian_Seeds	Earlystar	34.8	28.6	32.0	31.7	31.8	110	12.3	63.4	24.4	158.4	2742
PulseUSA	Nette_2010	34.2	--	--	--	--	108	11.9	65.2	22.6	157.0	2800
CDC/Meridian_Seeds	CDC_Greenwater	33.5	--	--	--	--	106	13.7	63.2	23.2	162.0	2421
CDC/Meridian_Seeds	CDC_Amarillo	32.4	27.9	24.6	30.2	28.3	103	14.4	63.0	23.6	161.8	2472
Great_Northern_Ag	Bridger	31.5	29.4	--	30.5	--	100	12.4	64.4	23.6	158.0	2579
Meridian_Seeds	Jetset	30.3	35.0	--	32.7	--	96	12.6	63.9	23.0	158.0	2517
Photosyntech	PSTSP27	30.3	34.1	--	32.2	--	96	12.1	64.0	22.8	157.8	2490
Photosyntech	PSTSP29	30.2	--	--	--	--	96	13.5	62.3	23.4	160.4	2436
PulseUSA	SW_Midas	28.0	26.1	28.0	27.1	27.4	89	11.5	64.0	20.8	159.6	3091
Legume_Logic	Hyline	27.3	29.6	--	28.4	--	87	12.3	63.8	22.7	160.0	2510
CDC/Meridian_Seeds	CDC_Saffron	22.3	30.4	26.4	26.3	26.4	71	12.7	64.1	22.4	160.2	2609
	Average	31.5	29.5	24.7	30.5	28.6		12.9	63.7	23.2	159.7	2628
	LSD(0.05)	5.1	3.0	6.0	--	--		0.8	1.4	2.2	0.7	125

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Number of Entries and Average Yields of Top Entries

Location	2014		2015		2016		2017		
	Entries	Top Group Average Yield	Entries	Top Group Average Yield	Entries	Top Group Average Yield	Entries	Top Group Average Yield	Top Group Across Years
Rawlins	6	49.2	17	40.9	18	31.4	18	29.7	37.8
Thomas	6	28.2	18	30.6	22	33.8	20	39.3	33.0
Decatur	0	-	9	47.5	18	31.7	18	-	39.6
Gove	-	-	-	-	14	27.9	18	29.6	28.8
Scott	4	4.6	-	-	-	-	-	-	4.6
Sherman IRR	-	-	11	55.2	-	-	-	-	55.2

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Across Years Variety Summary

Table 1. Across-years yield averages for field pea varieties at four locations in northwest Kansas.

Company	Variety	Multi-year average, per county							
		Rawlins			*Thomas*			*Gove*	*Decatur*
		2 yr 2016-17	3 yr 2015-17	4 yr 2014-17	2 yr 2016-17	3 yr 2015-17	4 yr 2014-17	2 yr 2016-17	2 yr 2015-16
Great Northern Ag	Bridger	26.7	-	-	30.5	-	-	18.7	22
	Salmanca	29.6	-	-	33.1	-	-	20.2	24.8
	Spider	23.5	-	-	31.1	-	-	22.6	18.5
Legume Logic	Hyline	-	-	-	28.4	-	-	-	
Meridian Seeds	AAC Carver	32.2	33.1	-	31.8	30.7	-	-	21.7
	CDC Amarillo	25.9	28.6	-	30.2	28.3	-	-	26.3
	CDC Saffron	24.5	28.3	-	26.3	26.4	-	-	24.3
	Earlystar	31.1	31.2	34.3	31.7	31.8	30	-	23
	Jetset	29.1	-	-	32.7	-	-	-	25.3
Photosyntech	PSTSP27	-	-		32.2	-	-	18.4	27.1
PulseUSA	DS Admiral	26.1	28.9	32.9	33.4	32.4	31.5	19.2	23.3
	Durwood	28.4	-	-	31.4	-	-	21.9	25.9
	SW Midas	23.3	28.4	33.6	27.1	27.4	26.6	26.6	22.3

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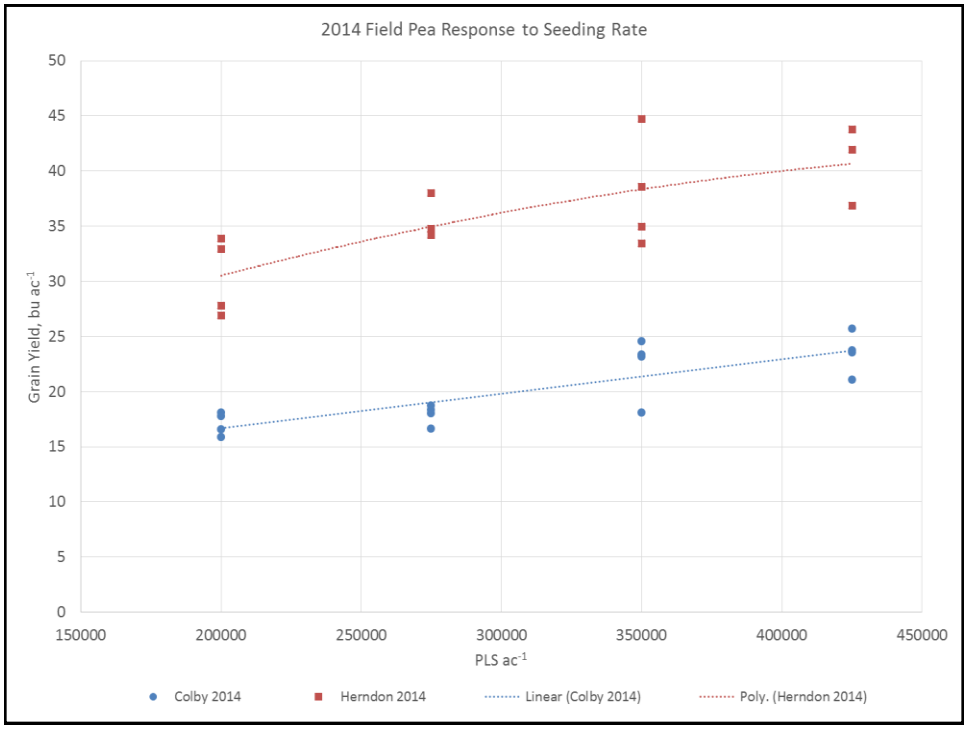
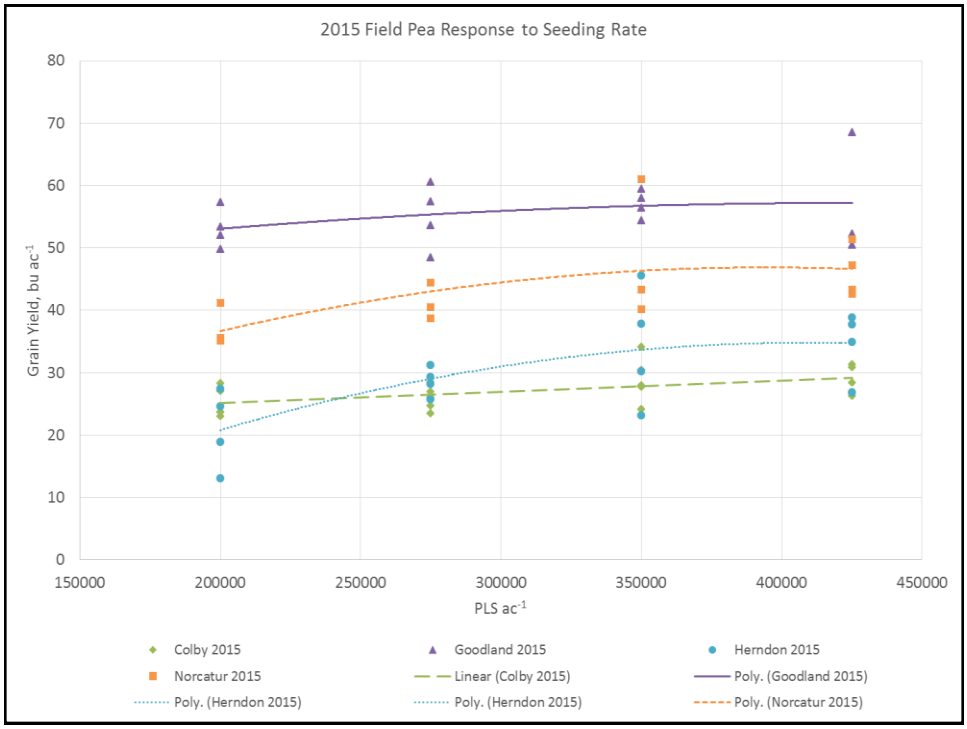
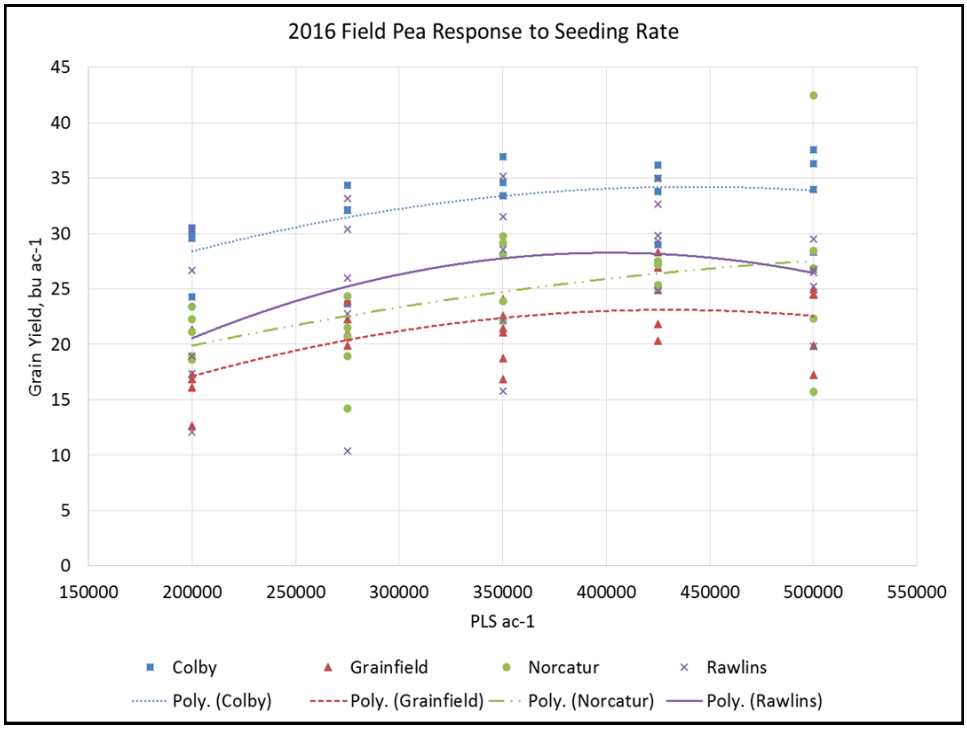
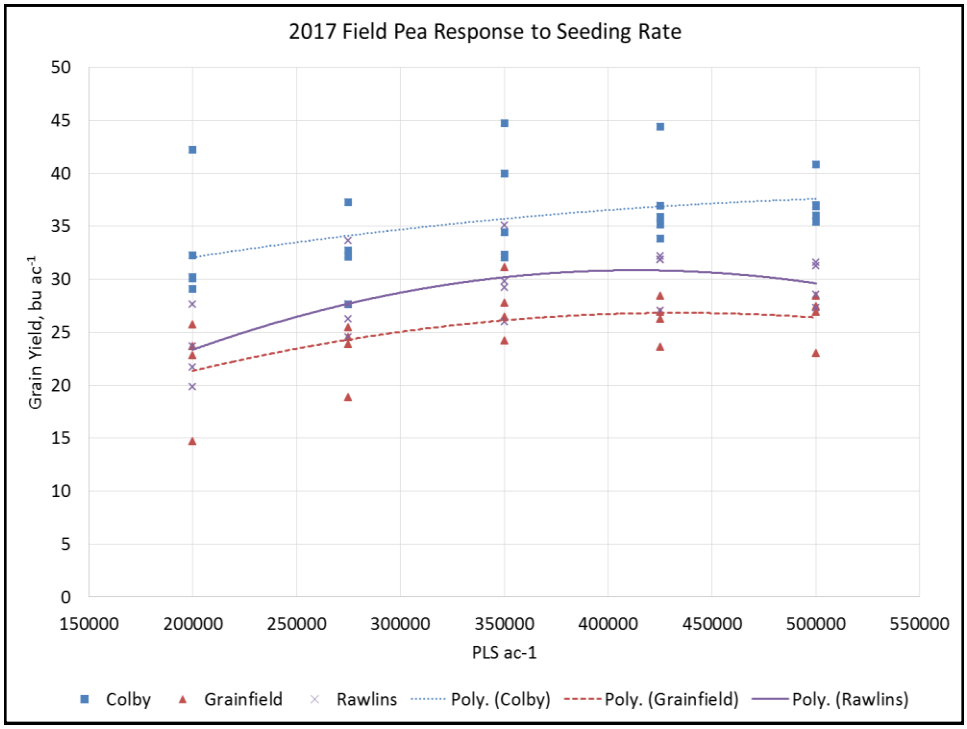
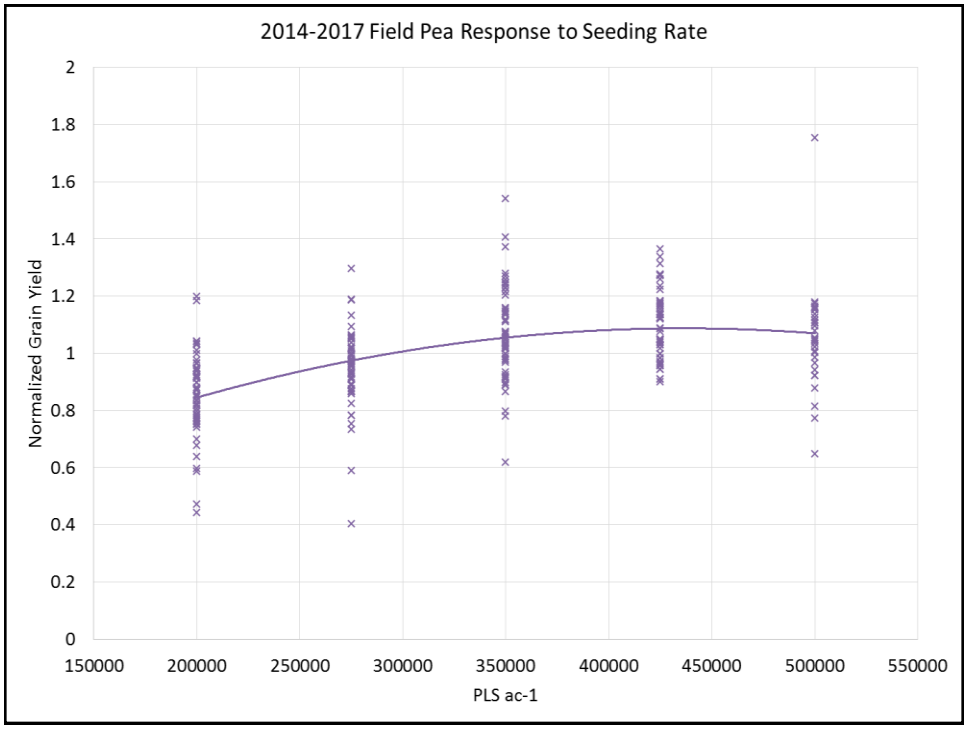

2014 Field Pea Response to Seeding Rate
Grain Yield, bu ac-1
PLS ac-1
Colby 2014
Herndon 2014
Linear (Colby 2014)
Poly. (Herndon 2014)


2015 Field Pea Response to Seeding Rate
Grain Yield, bu ac-1
PLS ac-1
Colby 2015
Goodland 2015
Herndon 2015
Norcatur 2015
Linear (Colby 2015)
Poly. (Goodland 2015)
Poly. (Herndon 2015)
Poly. (Herndon 2015)
Poly. (Norcatur 2015)


2016 Field Pea Response to Seeding Rate
Grain Yield, bu ac-1
PLS ac-1
0
5
10
15
20
25
30
35
40
45
150000
200000
250000
300000
350000
400000
450000
500000
550000
Colby
Grainfield
Norcatur
Rawlins
Poly. (Colby)
Poly. (Grainfield)
Poly. (Norcatur)
Poly. (Rawlins)


2017 Field Pea Response to Seeding Rate
Grain Yield, bu ac-1
PLS ac-1
0
5
10
15
20
25
30
35
40
45
50
150000
200000
250000
300000
350000
400000
450000
500000
550000
Colby
Grainfield
Rawlins
Poly. (Colby)
Poly. (Grainfield)
Poly. (Rawlins)



Seeding Rate Summary

- K-State data would suggest our optimal seeding rate is likely higher than the 350,000 PLS/acre that we initially recommended to producers
- Current KSU recommendation is 365,000 PLS/acre

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Seeding Rate Summary

Some of my thoughts on this from a crop physiologist perspective:

- Why might we need higher seeding rates than the Northern Plains?
  - As peas are moved south our conversion of yield components into actual grain yield is more limited
    - Fewer flowers converted into pods
    - Fewer seeds per pod
  - Therefore it possibly takes more plants/acre to maximize yield potential

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Ongoing / Future Work

- Continuing Seeding Rate Studies
- In-Furrow Placement of MAP
- Fungicide Seed Treatments
- Identification of differences in heat stress tolerance

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Fungicide Seed Treatments

- Seed Treatments
  - Untreated
  - Obvious (BASF)
  - VibranceMaxx (Syngenta)
  - Apron Maxx RTA (Syngenta)
- Seeded at 350,000 PLS
- Three locations

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2017 Yield Results

	Rawlins	Gove	Thomas	
		-- bu/ac --		
Untreated	28.4	19.9	26.2	b
Obvious	28.5	19.6	28.4	a
VibranceMaxx	31.0	19.0	29.4	a
Apron Maxx RTA	.	.	28.2	ab
	ANOVA			
P>F	0.5945	0.8694	0.049	
LSD	NS	NS	2.18	

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Fungicide Seed Treatments

- Significant yield response to seed treatment at one of three locations. Response was very modest.
- 2017 Seed treatment trials were seeded towards the end of the planting window
- To really push the stresses where seed treatments are likely to make a difference we need to be on the early end of the window
- Will continue to evaluate in 2018

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