

Determining Profitable Soybean Planting Systems in Kansas

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Things Change

- Several Things have changed to bring into question some of our bias:
 - Increased no-till acres result in less crusting – higher emergence rates
 - We used to plant soybeans with a wheat drill, now we plant wheat with soybean drills – drills are better
 - Seed used to be relatively inexpensive – technology has increased seed prices significantly (100% compared with saved seed of a decade ago)



Objectives

- To evaluate commercially available soybean drills for their impact on plant establishment, yield, and profitability in Kansas.
 - Seed placement and emergence capabilities of drill openers compared with row crop planters.
 - Determine the soybean yield response to plant population (not seeding rate).

Study One - Methods

- Emergence performance of drill type openers compared with row crop planters
 - John Deere row crop planter
 - John Deere single disc opener (air seeder)
 - Great Plains double disc opener (drill)
 - Crust Buster double disc opener (drill)
 - Sunflower double disc opener (drill)
- Field near Detroit, KS (Dickinson Co.)

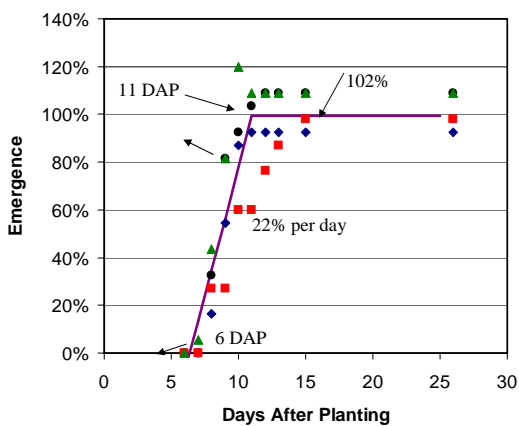
Study One - Methods

- Drills were calibrated by weighing seed collected from every drill run.
- Target seeding rate was 150,000 seed/acre
- Within each seeder treatment, sections of row were staked prior to emergence (4 x 8' or 2 x 4')
 - Plant emergence was counted daily until emergence was complete
 - Final stand counts were taken at 23 and 50 DAP



Soybean Planting

- Emergence data fit to a linear plateau
 - Allows for the calculation of
 - First day of emergence
 - Last day of emergence
 - Rate of emergence

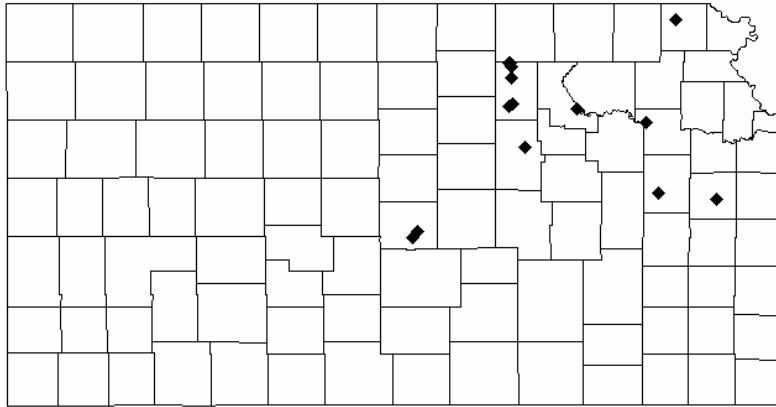


Results				
Planting System	Initial Emergence	Emergence Rate	Final Emergence	Emergence
	DAP	%/day	DAP	%
JD Drill	4.5	16.0	10.6	60
Great Plains	4.8	13.5	12.1	49
Sunflower	4.9	13.2	12.2	49
Crust Buster	4.7	13.9	11.8	49
JD Planter	4.5	19.8	9.4	48
LSD _(0.05)		2.1	1.1	7
Yields were not significantly different among planting systems				

Study Two - Methods

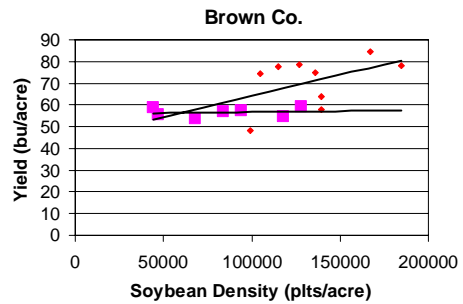
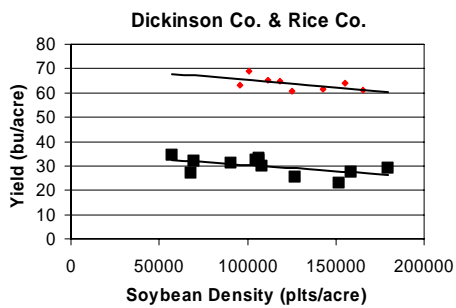
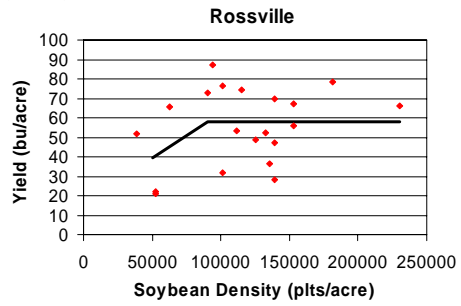
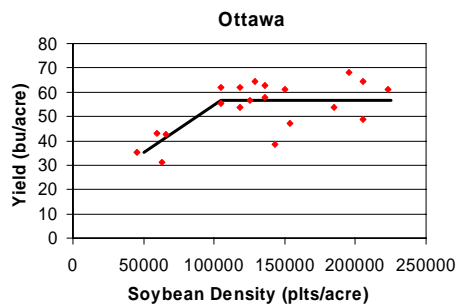
- Evaluate yield response to plant density in narrow row – drilled systems.
 - Had four seeding rates to establish four plant density treatments
 - Seeding rates typically were 60, 100, 140, and 180,000 seed/acre
 - Stand counts taken to establish final plant densities
 - Worked with farm cooperators on a large plot scale for this

Density Plot Locations - 2005

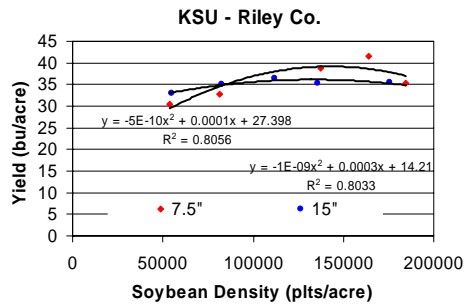
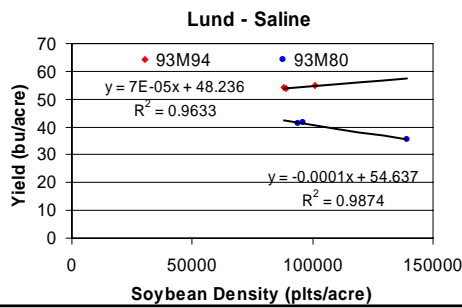
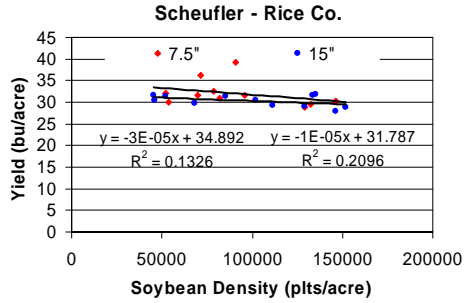
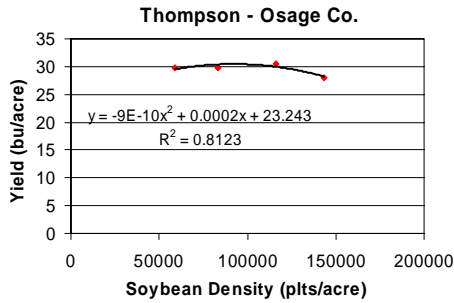


Kansas Agricultural Research Association Members

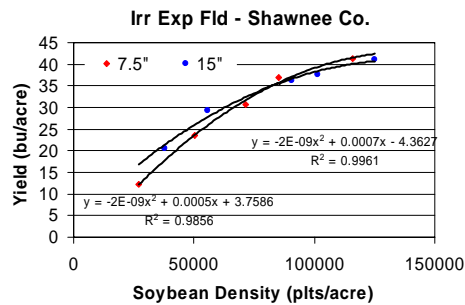
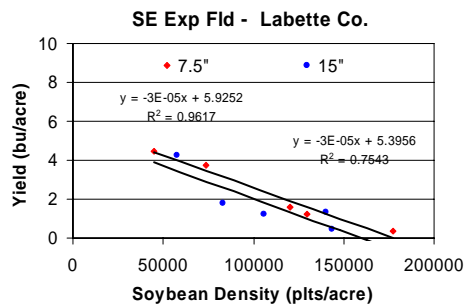
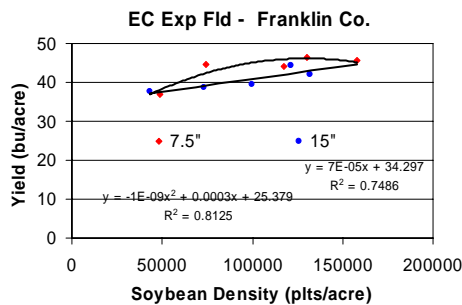
Results



2006 Results



2006 Results



Environment vs. Optimum Pop?

