No-Till vs Strip-Till vs Strip-Till + Fertilizer on Soybeans

Study ID: 709047201702
County: Dawson
Soil Type: Cozad silt loam 0-1% slope; Rusco silt loam 0-1% slope
Planting Date: 5/14/17
Harvest Date: 10/13/17
Population: 130,000
Row Spacing (in): 30
Variety: Pioneer 27T59R
Reps: 4
Previous Crop: Corn followed by winter wheat cover crop
Herbicides: ***Pre:*** 22 oz/ac Roundup PowerMAX® and 3 oz/ac Enlite® on 5/24/17 ***Post:*** 22 oz/ac Roundup PowerMAX®, 1.5 qt/ac Warrant®, and 6 oz/ac Section® 2EC on 6/17/17
Seed Treatment: Inoculant, fungicide, Gaucho® insecticide
Foliar Insecticides: None
Foliar Fungicides: None
Fertilizer: 116 lb/ac average 11-52-0 (variable rate application), 116 lb/ac average 0-0-60 (variable rate application), and 6 lb/ac average 36% dry Zn (variable rate application)
Irrigation: Pivot, Total: 4.1"
Rainfall (in):

Soil Test (January 2017):

		Soluble		KCl Nitrate		Mehlich 3	$CaPO_4$	Ammonium Acetate				Sum of	DPTA
Sample	pH	Salts	OM	NO_3-N	NO_3-N	P	SO_4-S	K	Ca	Mg	Na	Cations	Zn
		mS/cm	%	ppm	lb/ac	ppm						meq/100g	ppm
1	6.6	1.1	2.8	13	31	21	71	399	2135	460	145	16	1.1
2	6.7	0.7	2.7	16	38	33	36	461	2491	463	115	18	1.6
3	6.9	0.7	2.8	10	23	31	27	458	2668	479	70	19	2.0
4	6.9	0.6	2.6	11	26	19	23	356	2474	472	67	18	1.5
5	6.5	0.5	2.7	12	29	17	28	389	2470	430	60	17	1.7
6	5.9		2.8	14	34	18	28	327	1816	425	109	16	1.3

Introduction: Soybeans were planted following a winter wheat cover crop, which was terminated on 5/24/17. In this study, all soybeans were planted in 30" rows. The check treatment was soybeans planted no-till. This was compared with soybeans planted into strip-till and soybeans planted into strip-till with 100 lb/ac 11-52-0 applied 8" deep in the strip. Strip-till was completed on 5/8/17. The cost for planting was taken from Nebraska Extension 2016 Nebraska Farm Custom Rates – Part 1 (EC823). Strip-till and fertilizer costs were actual costs charged for the custom strip-till operation and fertilizer product.

Results:

	Moisture (%)	Yield (bu/acre)†	Marginal Net Return‡ ($/ac)
No-Till	11.3 B	75 B	653.87 A
Strip-Till	12.3 A*	78 AB	646.71 A
Strip-Till with Fertilizer	11.5 AB	81 A	652.42 A
P-Value	0.056	0.029	0.860

*Values with the same letter are not significantly different at a 90% confidence level.
†Bushels per acre corrected to 13% moisture.
‡Marginal net return based on $8.90/bu soybean, $18/ac for planting no-till, $48/ac for strip-till and planting, and $69.50/ac for strip-till, additional fertilizer, and planting.

Summary:

- Moisture of the strip-till treatment was significantly higher than the no-till treatment. The strip-till with fertilizer was not significantly different than the strip-till or no-till treatments.
- Yield for the strip-till with fertilizer was significantly higher than the no-till treatment. The strip-till alone was not significantly different than the no-till or the strip-till with fertilizer.
- There were no differences in marginal net return. Actual costs for strip-till application vary; therefore, determining your actual costs is important.

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