

On-Farm Comparison Results Mulliken

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Nebraska Soybean & Feed Grains Profitability Project

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Years:	2001-2002, 2004-2010
Title:	Profitability of Incorporating Lime
Crop:	Soybean/Corn Rotation
NSFGPP Operator:	Jerry Mulliken, Dodge County
Private Industry Cooperator:	Jerry Mulliken
Objective:	To determine & document the effect on incorporating lime on the profitability of crop production. Soil pH 5.5.
Treatments:	No tillage, no lime vs. tillage, no lime, vs. no tillage, with lime, vs. tillage w/lime. Lime incorporated April 2001.
Soil Type:	Moody Silty Clay Loam Soil, No-Till
Costs:	Lime - $2.4 \text{ T/ac} \times 14.30/\text{T} = \34.32 Prorate for 8 yrs = $\$4.29/\text{ac/yr}$ Tillage - $2 \times \text{Disc} @ \$7/\text{ac} = \14.00

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Results: 2001

Soybeans

<u>Treatment</u>	<u>Yield, bu/ac</u> <u>@ 13%</u>	<u>Moisture</u> <u>%</u>	<u>Test Wt</u> <u>lbs/bu</u>	<u>Cost</u> <u>\$/ac</u>
No Tillage, no lime	48	9.7	56.0	---
No Tillage, lime	51	9.9	56.2	4.29
Tillage, no lime	51	10.0	56.2	1.75
Tillage, lime	54	10.1	55.9	6.04

Statistical Analysis: (Prob >F)

Tillage (T)	0.002 ***	0.399 ns	0.746 ns
Lime (L)	0.008 ***	0.544 ns	0.935 ns
TxL	0.778 ns	0.776 ns	0.302 ns

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Results: 2002

Corn (Pioneer 34M94)

<u>Treatment</u>	<u>Yield, bu/ac</u> <u>@ 15.5%</u>	<u>Moisture</u> <u>%</u>	<u>Test Wt</u> <u>lbs/bu</u>	<u>Cost</u> <u>\$/ac</u>
No Tillage, no lime	92	17.1	58.4	---
No Tillage, lime	94	16.9	58.2	4.29
Tillage, no lime	83	16.7	58.6	1.75
Tillage, lime	91	16.8	58.6	6.04

Statistical Analysis: (Prob >F)

Tillage (T)	0.009 ***	0.228 ns	0.260 ns
Lime (L)	0.022 **	0.754 ns	0.601 ns
TxL	0.190 ns	0.281 ns	0.703 ns

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Results: 2004

Corn (GH 8906)

<u>Treatment</u>	<u>Yield, bu/ac</u> <u>@ 15%</u>	<u>Moisture</u> <u>%</u>	<u>Cost</u> <u>\$/ac</u>
No Tillage, no lime	159	15.5	---
No Tillage, lime	167	15.9	4.29
Tillage, no lime	160	15.5	1.75
Tillage, lime	174	15.6	6.04

Statistical Analysis: (Prob >F)

Tillage (T)	0.382 ns	0.334 ns
Lime (L)	0.018 **	0.037 **
TxL	0.424 ns	0.204 ns

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Results: 2005

Soybeans (Latham 967)

<u>Treatment</u>	<u>Yield, bu/ac</u> <u>@ 13%</u>	<u>Moisture</u> <u>%</u>	<u>Cost</u> <u>\$/ac</u>
No Tillage, no lime	45	11.0	---
No Tillage, lime	47	11.4	4.29
Tillage, no lime	46	11.6	1.75
Tillage, lime	48	11.2	6.04

Statistical Analysis: (Prob >F)

Tillage (T)	0.465 ns	0.341 ns
Lime (L)	0.006 ***	0.907 ns
TxL	0.680 ns	0.148 ns

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Results: 2006

Corn (Dekalb 6716)

<u>Treatment</u>	<u>Yield, bu/ac @ 15.5%</u>	<u>Moisture %</u>	<u>Cost \$/ac</u>
No Tillage, no lime	123	16.2	---
No Tillage, lime	125	16.2	4.29
Tillage, no lime	123	16.3	1.75
Tillage, lime	124	16.3	6.04

Statistical Analysis: (Prob >F)

Tillage (T)	0.951 ns	0.313 ns
Lime (L)	0.444 ns	0.696 ns
TxL	0.914 ns	0.859 ns

Planting Date: 4/28/06

Harvest Date 10/18/06

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Soil Tests: 3/15/06

Water pH <u>Treatment</u>	Depth, inches			
	<u>0-2</u>	<u>2-4</u>	<u>4-6</u>	<u>6-8</u>
No Tillage, no lime	5.9	5.3	5.6	5.4
No Tillage, lime	6.6	5.5	5.5	5.7
Tillage, no lime	5.8	5.3	5.5	5.6
Tillage, lime	6.6	5.8	5.5	5.7
<u>Buffer pH</u>				
No Tillage, no lime	6.7	6.5	6.6	6.5
No Tillage, lime	7.0	6.6	6.5	6.7
Tillage, no lime	6.4	6.5	6.6	6.6
Tillage, lime	7.0	6.6	6.5	6.6

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Results: 2007

Soybeans (Latham 967)

<u>Treatment</u>	<u>Yield, bu/ac</u> <u>@ 13%</u>	<u>Moisture</u> <u>%</u>	<u>NDVI</u>	<u>Cost</u> <u>\$/ac</u>
No Tillage, no lime	56	9.3	0.08	---
No Tillage, lime	60	9.2	0.28	4.29
Tillage, no lime	57	9.3	0.17	1.75
Tillage, lime	60	9.3	0.27	6.04

Statistical Analysis: (Prob >F)

Tillage (T)	0.524 ns	0.762 ns	0.057 *
Lime (L)	0.0007 ***	0.497 ns	<0.0001 ***
TxL	0.224 ns	0.786 ns	0.028 **

Planting Date: 4/30/07

Harvesting Date: 9/22/07

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Results: 2008

Corn (Hybrid)

<u>Treatment</u>	<u>Yield, bu/ac</u> <u>@ 15.5%</u>	<u>Moisture</u> <u>%</u>	<u>Cost</u> <u>\$/ac</u>
No Tillage, no lime	129	15.1	--
No Tillage, lime	133	14.8	4.29
Tillage, no lime	131	15.1	1.75
Tillage, lime	129	14.7	6.04

Statistical Analysis: (Prob >F)

Tillage (T)	0.524 ns	0.973 ns
Lime (L)	0.535 ns	0.313 ns
TxL	0.021 **	0.973 ns

Planting Date: 5/5/08

Harvest Date 10/30/08

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Results: 2009 Soybeans (Pioneer 93M43)

<u>Treatment</u>	<u>Yield, bu/ac @ 13%</u>	<u>Moisture %</u>	<u>Cost \$/ac</u>
No Tillage, no lime	63	9.9	---
No Tillage, lime	65	10.2	---
Tillage, no lime	65	10.1	---
Tillage, lime	65	10.8	---

Statistical Analysis: (Prob >F)

Tillage (T)	0.231 ns	0.327 ns
Lime (L)	0.606 ns	0.300 ns
TxL	0.285 ns	0.626 ns

Planting Date: 4/24/09

Harvest Date 10/11/09

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Results: 2010 Corn (DK 62-29)

<u>Treatment</u>	<u>Yield, bu/ac</u> <u>@ 15.5%</u>	<u>Moisture</u> <u>%</u>
No Tillage, no lime	159	15.7
No Tillage, lime	160	15.7
Tillage, no lime	158	15.8
Tillage, lime	160	15.6

Statistical Analysis: (Prob >F)

Tillage (T)	0.641 ns	0.915 ns
Lime (L)	0.558 ns	0.347 ns
TxL	0.765 ns	0.311 ns

Planting Date: 4/18/10

Harvest Date: 9/27/10

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Summary: In 2001, Tillage & Lime increased soybean yields independently & the effects were additive. In 2002, grain yield was lower due to tillage done in 2001 where no lime was applied. Yield data were not obtained in 2003. In 2004, grain yield & grain moisture at harvest were increased by lime applied in 2001. Soybean seed yield was increased by lime in 2005 where lime was applied in 2001. In 2006, corn growth was not affected by lime applied in 2001. In 2007, seed yield was increased significantly but seed moisture at harvest was not affected. The NDVI (an estimate of crop canopy density) was increased slightly by tillage where no lime was applied in 2001, however, lime increased NDVI significantly regardless of tillage. In 2008, corn yields were not increased by lime applied. Soybean yields were not increased in 2009 and corn yields were not affected by treatments in 2010.

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