

4th Annual
Midwest Soil Improvement Symposium:
 2014
Research and Practical Insights into Using Gypsum

**Gypsum research projects in Kansas:
 Effects of different GYPSOIL rates on soil
 properties and crop yield**

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**Gypsum research projects in Kansas:
 Effects of different FGD Gypsum rates on
 soil properties and crop yield**

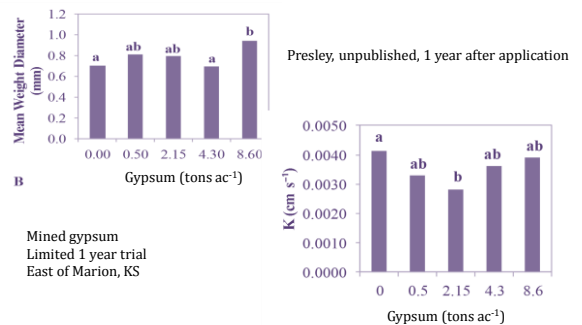
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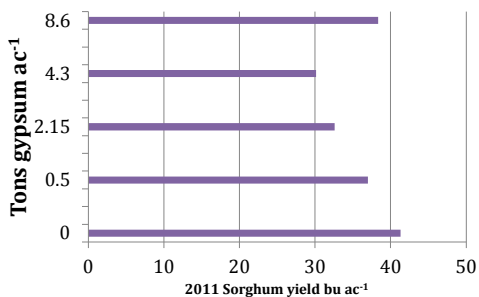
Rationale

- A few extension questions from farmers in central Kansas (Marion, McPherson, Harvey counties)
- “High magnesium”
- Reviewed literature, looked at CEC values and cation ratios for those producers
- One small study on a particularly “poor” soil

Physical Properties (Marion)



Rationale (Marion)



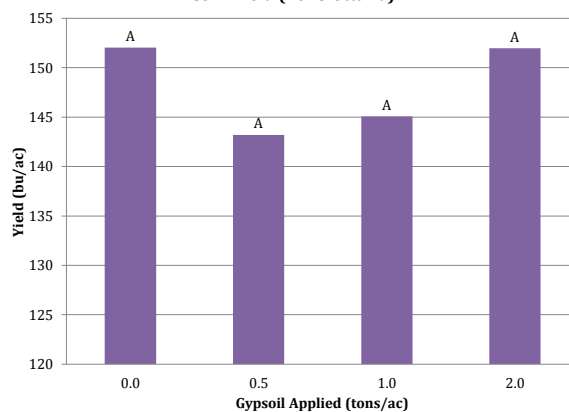
Objectives

- To evaluate the impact of FGD gypsum on
 - soil chemical properties
 - soil physical properties
 - soil biological properties
 - water movement into soil (infiltration)
 - grain quality (total nutrient content) and agronomic yield
- Presenting data from first year of project
 - Awareness of what K-State research is happening

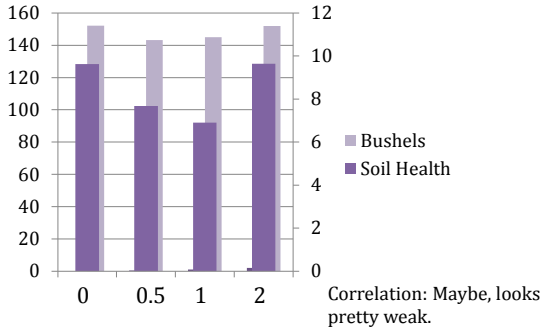
Small plot site

- East Central Kansas Experiment Field
 - Ottawa, KS
 - Soil type:
- Small plots 6 rows wide (15'), 30 feet long
 - 2013: Corn
 - 2014: Soybeans
 - 2015: Corn
 - Plan to continue indefinitely
- Plot combine

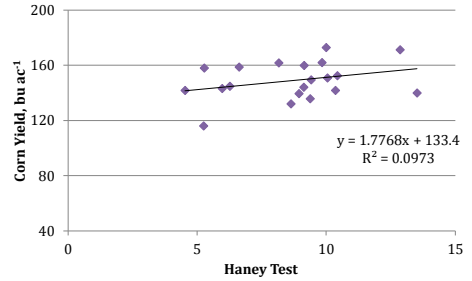
Corn Yield (2013 Ottawa)



Haney Soil Health Number



Soil Health and Yield (Ottawa, F2013)



Large strip trial

- Producer 80 ac field south of Goessel, KS
 - 2013: Alfalfa terminated, wheat planted (no tillage)
 - 2014: wheat followed by sudangrass, strip-tilled
 - 2015: corn
- 90 foot wide strips, commercial spreader
- 3 replications (fit the field east-west)
- Yield: Producer's combine
- Soil data: collected from center of the strip, center of the field

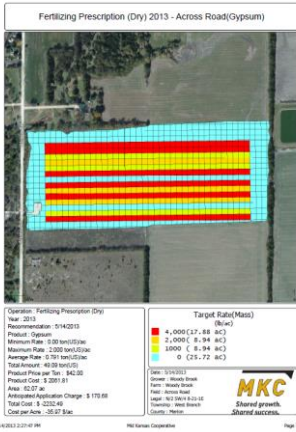
Strip trial site, Goessel, KS



Marion County, Kansas	
Map Unit Symbol	Map Unit Name
3491	Wells loam, 1 to 3 percent slopes
3521	Cass fine sandy loam, occasionally flooded
3857	Goessel silty clay, 0 to 1 percent slopes
3890	Ladysmith silty clay loam, 0 to 1 percent slopes

Sodic Spot

Selected because of clayey-textured soils. Known areas of high sodium.



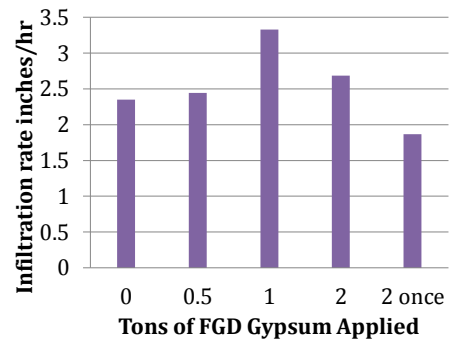
Rates:
 0 tons
 0.5 ton/ac/year
 1 ton/ac/year
 2 ton/ac/year
 2 tons/ac once

Dispersed organic matter, 9/4/2013, Goessel



Photo by DeAnn Presley, September 2013, field by Goessel, KS

Goessel, after 2nd application



Summary

- One year of data, two sites
- More data to be analyzed for more grain and soil properties
- Too soon to draw conclusions
- Study to continue through harvest 2015

Acknowledgements

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- Landowner

