

# Midwest Soil Improvement Symposium:

... — 2012 — ...

*Research and Practical Insights into Using Gypsum*

## *Gypsum User Panel*

*Rodney Rulon*  
*Arcadia, IN*



# **GYPSUM ON OUR FARM**

**Midwest Soil Improvement  
Symposium  
August 21, 2012**

Rodney Rulon

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# Rulon Enterprises

Roy, Ken and Rodney Rulon  
CB rotation in N. Central Indiana on  
Medium Textured Soils

Also Includes:

600 Sow farrow to finish hog operation  
Drainage Design and Installation  
Custom Services  
Consulting, Marketing, Website  
Seed Dealership





# History and Future



# Our cropping system: Continuous No-Till

100% No-Till since 1992 (20 years)

Superior Economics (when all costs considered)

Improved Soil Quality

Superior Sustainability

(we are responsible for what leaves our farm)

Improved Water Management

(catch it where it falls and save it for later)

Improved nutrient efficiency/cycling



# Drainage

A must for No-Till.

Critical to soil quality.

Do not try to use fertility, cover crops or soil amendments (Gypsum) to overcome poor drainage in the long term. Use them to enhance a good drainage plan.



# 1 Acre Grid Soil Samples

## *Whole farm spatial fertility Record Since 1996*

1 Acre Grids = 80% reliable

Resolution = Value

Input Management and Planning

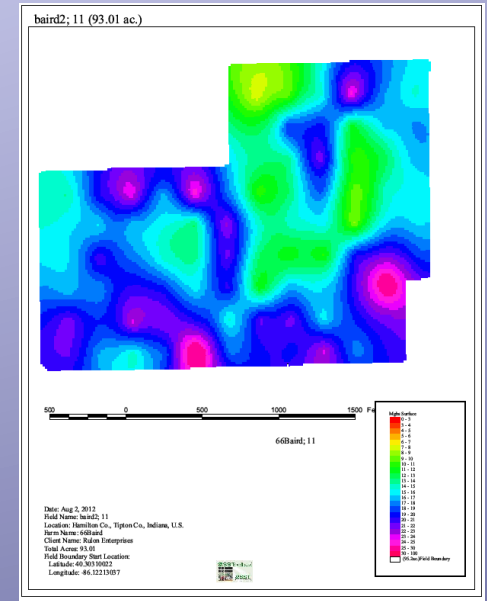
More than P, K, Lime-

Seed, Nitrogen, Gypsum

Yield Correlations and Tracking = Farm Specific Recs

With Prediction and Validation

Manage Productivity, Health and Balance of Soil





# Soil Balance



***Nutrient balance can be more important than nutrient levels. Too much of one thing can easily lead to a deficiency of another – even if test levels are adequate.***

## **Ideal Soil Chemical Properties:**

<b>pH</b>	<b>6.0 – 6.5</b>	<b>Magnesium</b>	<b>12% or less</b>
<b>OM</b>	<b>5.0%</b>	<b>Hydrogen</b>	<b>10-15%</b>
<b>Ca</b>	<b>68%</b>	<b>Sodium</b>	<b>&lt;3%</b>
<b>K</b>	<b>2.0 – 5.0 %</b>	<b>P</b>	<b>125# (reality 30-60)</b>
<b>S</b>	<b>40</b>		



# **Gypsum:**

## **Farming at The Next Level**



***Mission Specific Soil Amendment***

***Critical to build soil structure and healthy no-till soils.***

***Great Sulfur Source for Soil & Plant Nutrition***

***Enhanced Water Management***

***Excellent product for VRT application for Calcium and Magnesium adjustment***

# Why We Use GYPSUM:

- **Water management**
- **Transition from tillage to no-till**
- **Build soil structure with calcium**
- **Promote soil biology and build organic matter**
- **Soil repair (remove magnesium)**
- **High Quality Sulfur Source**
- **Nutrient availability and cycling (Balance)**
- **Take The SYSTEM to the Next Level**



# Application Program:

- Originally targeted problems
- Current program is 6 year cycle
  - Year 1: 1 ton / acre
  - Year 3: VRT (3000# Max – 1000# Min)
  - Year 5: VRT (2000# Max – 0# Min)
  - Year 6: Re-evaluate
  - Example %Mag Based Equation:
    - ([Mag] >=25) : (1.4)
    - ([Mag] <25) and ([Mag] >=23) : (1.3)
    - ([Mag] <23) and ([Mag] >=21) : (1.15)
    - ([Mag] <21) and ([Mag] >=19) : (1.0)
    - ([Mag] <19) and ([Mag] >=17) : (0.9)
    - ([Mag] <17) and ([Mag] >=15) : (0.8)
    - ([Mag] <15) and ([Mag] >=13) : (0.7)
    - ([Mag] <13) and ([Mag] >=11) : (0.5)
    - ([Mag] <11) and ([Mag] >=0) : (0)





# **GYPSUM Results on Our Farm**

**Water Infiltration (Reduced ponding)**

**Improved Root Growth**

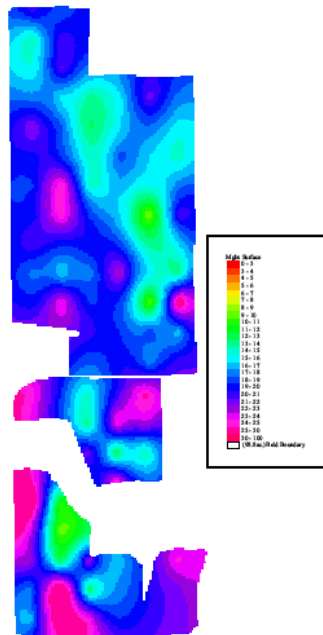
**Reduced Sulfur Deficiencies**

**Mitigated Magnesium Excess**



# Magnesium: Before and After

All; 02 (98.82 ac.)



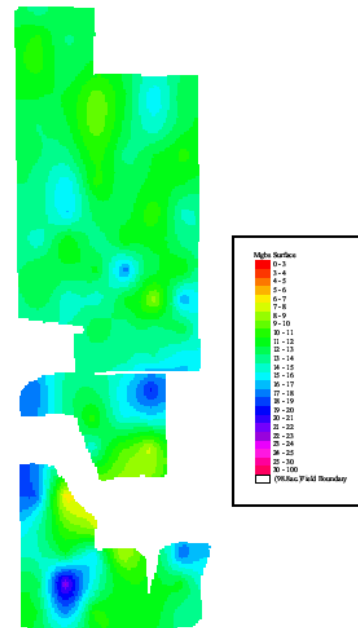
100 0 10 20 30 40 50 60 Feet

41Heinzman; 02

Date: Aug 2, 2012  
Field Name: All; 02  
Location: Hamilton Co., Indiana, U.S.  
Farm Name: 41Heinzman  
Client Name: Rulon Enterprises  
Total Acres: 98.82  
Field Boundary Start Location:  
Latitude: 40.18341822  
Longitude: -86.01294207



All; 07 (98.82 ac.)



100 0 10 20 30 40 50 60 Feet

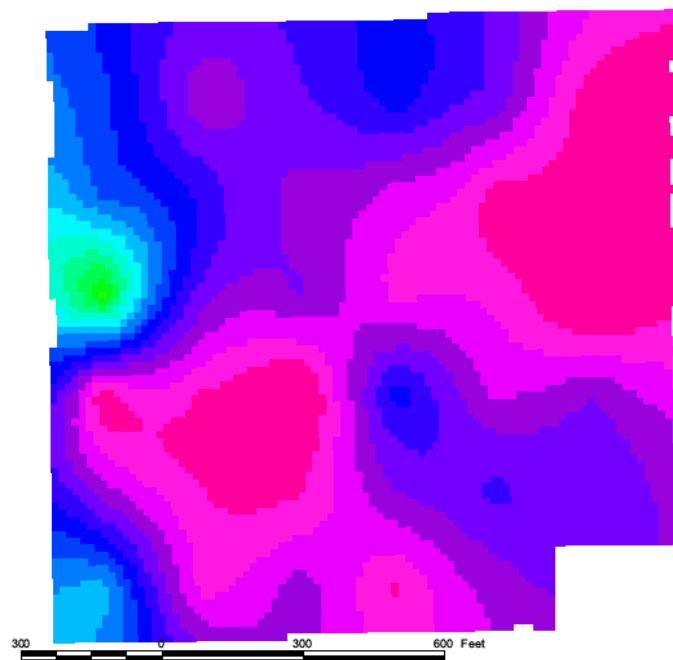
41Heinzman; 07

Date: Aug 2, 2012  
Field Name: All; 07  
Location: Hamilton Co., Indiana, U.S.  
Farm Name: 41Heinzman  
Client Name: Rulon Enterprises  
Total Acres: 98.82  
Field Boundary Start Location:  
Latitude: 40.18341822  
Longitude: -86.01294207



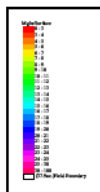
# Magnesium: Before and After

McDonald; 05 (37.91 ac.)

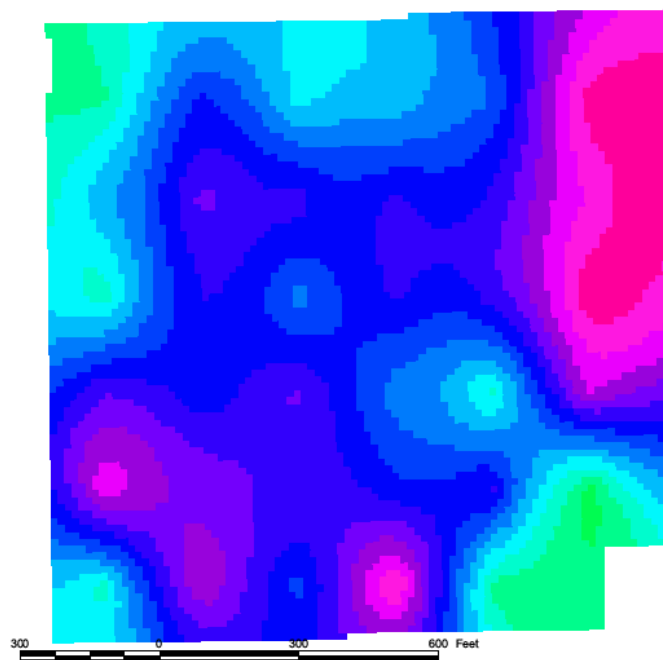


40McDonald; 05

Date: Aug 2, 2012  
 Field Name: McDonald; 05  
 Location: Hamilton Co., Indiana, U.S.  
 Farm Name: 40McDonald  
 Client Name: Radon Enterprises  
 Total Acres: 37.91  
 Field Boundary Start Location:  
 Latitude: 40.20611478  
 Longitude: -85.95786600



McDonald; 10 (39.48 ac.)



40McDonald; 10

Date: Aug 2, 2012  
 Field Name: McDonald; 10  
 Location: Hamilton Co., Indiana, U.S.  
 Farm Name: 40McDonald  
 Client Name: Radon Enterprises  
 Total Acres: 39.48  
 Field Boundary Start Location:  
 Latitude: 40.20607794  
 Longitude: -85.95781381

