

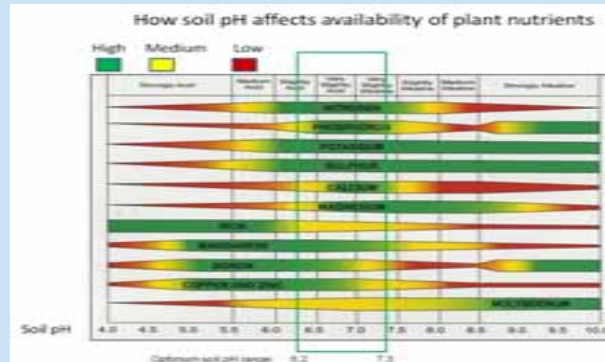
## Fertility Strategies for Lean Times

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## Soil Test

- “Current” soil test is four years old or less
- \$8/sample+\$4 for collection=\$12/sample, \$12/5 acres/4 years=\$0.60/acre/year
- Test for pH, organic matter, phosphorus, potassium
- Micro nutrient tests are not well calibrated to yield in Wisconsin
- Use a Wisconsin certified lab

## Lime!



## Practice the 4Rs of Nutrient Stewardship

- Right source
- Right rate
- Right time
- Right place

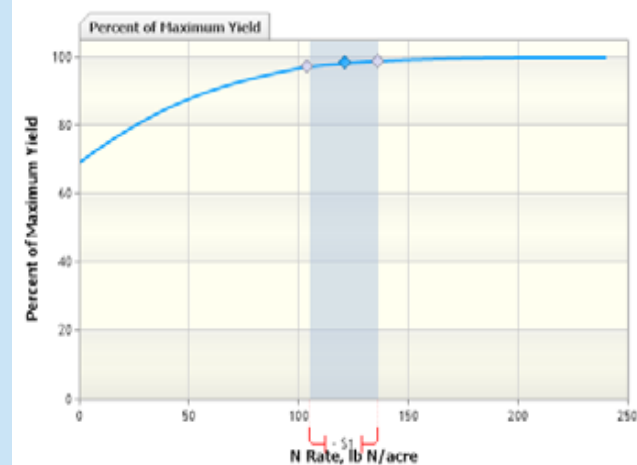
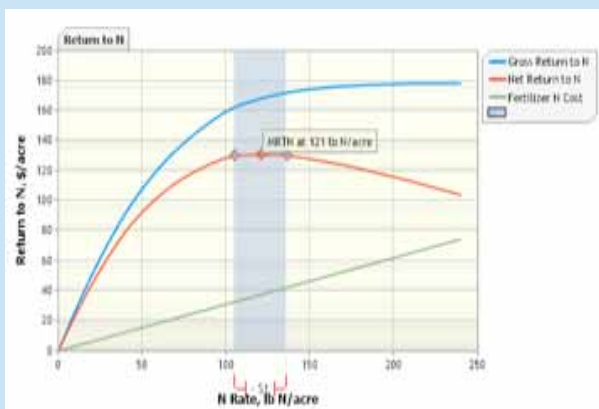


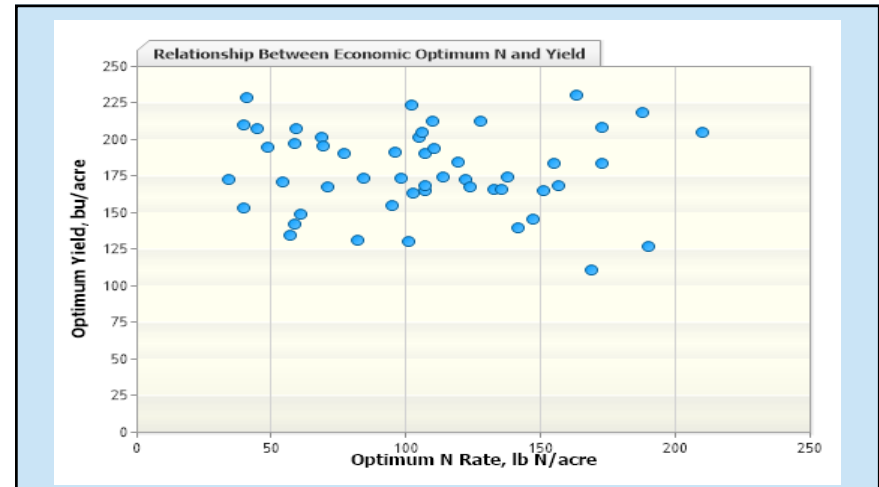
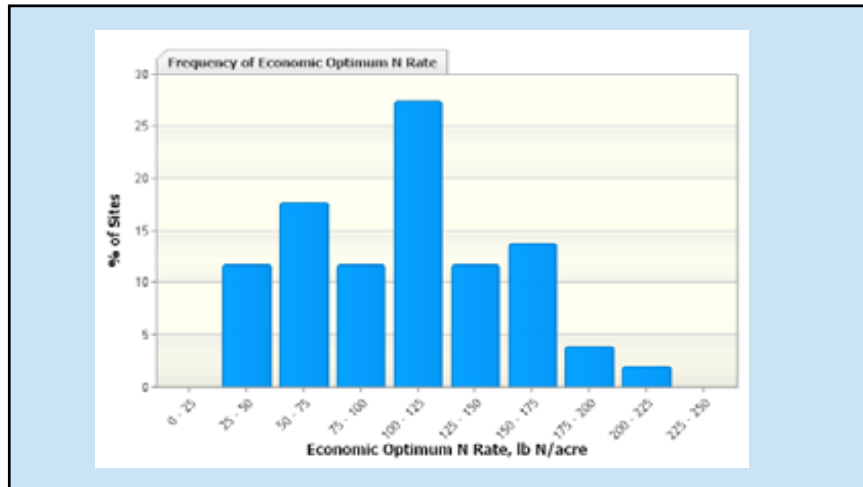
## Maximum Return to Nitrogen calculator (MRTN)

- <http://cnrc.agron.iastate.edu/nRate.aspx> website for nitrogen rate calculator
- Correct nitrogen rate is very difficult to predict
- Nitrogen mineralization is affected by soil moisture
- Corn yield is affected by the “Too’s”: too hot, too cold, too wet, too dry, too early, too late,...
- Nitrogen rate does not equal corn grain yield
- MRTN uses many years of plot data to get an economical optimum nitrogen rate

State: Wisconsin  
 Soil Type: HYP Soils  
 Number of sites: 51  
 Rotation: Corn Following Soybean

Nitrogen Price (\$/lb):	0.31
Corn Price (\$/bu):	3.25
Price Ratio:	0.10
MRTN Rate (lb N/acre):	121
Profitable N Rate Range (lb N/acre):	104 - 136
Net Return to N at MRTN Rate (\$/acre):	\$130.77
Percent of Maximum Yield at MRTN Rate:	98%
Anhydrous Ammonia (82% N) at MRTN Rate (lb product/acre):	147
Anhydrous Ammonia (82% N) Cost at MRTN Rate (\$/acre):	\$37.51





### Cut back on P & K applications

- Always fertilize according to a current soil test
- Probability of response to P is very low if soils are optimum to high
- P is vital for growth and development, used as a catalyst
- Response to K is more probable
- Use limited dollars to supply K



### Evaluate necessity of starter

- Wisconsin research shows no response to starter if P tests optimum or higher
- Starter response is not affected by placement
- 2x2 less risk of injury
- Fields with manure applications very low probability of response to starter
- Soybean does not respond to traditional starter



## Sulfur

- Use sulfur on low organic matter, sands
- Manure supplies more than enough sulfur
- Use sulfate forms, elemental very slow release
- 150 bushel corn requires 9 lbs. sulfur



## Micronutrients

- Micronutrients are seldom deficient in Wisconsin
- Do not add micros just because a pass is being made across a field
- Manure is great source of micros
- Corn and soybean never show boron deficiency in Wisconsin
- Tissue sampling is calibrated to specific growth stages of each crop



## Manure is awesome stuff!

- Credit what you spread
- Target manure to fields that have shown sulfur deficiency
- Light applications across many acres could be beneficial over heavy on a few acres
- Be mindful of slope, frozen ground, distance to streams, etc.



## Tissue testing

- Tissue testing calibrated to specific crop growth stage
  - Corn, ear leaf before silks brown, most mature leaf below whorl, or entire above ground plant <12" tall
  - Soybean, last fully expanded trifoliolate leaf at R1, do not sample when pods begin to fill
  - Alfalfa, top six inches at pre-flower
- Testing outside of the calibrated stage is not reliable
- Tissue and micro-nutrient testing does not have to be state certified
- Tissue testing best used to diagnose problem areas compared to good areas



## Summary

- Using evidence based inputs yields best chance for success
- Avoid the temptation to add “only a few dollars per acre”
- Use labs and procedures certified by Wisconsin
  - Procedures and recommendations calibrated for Wisconsin climate and soils
- Be sure pH is correct first
- Micros seldom deficient
- Use MRTN for nitrogen rates!