Fertilizer & Soil Management

2002 Cotton Production Workshop
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Topics

Economics

pH and Liming

Manganese

Troubleshooting

Nitrogen and Potassium

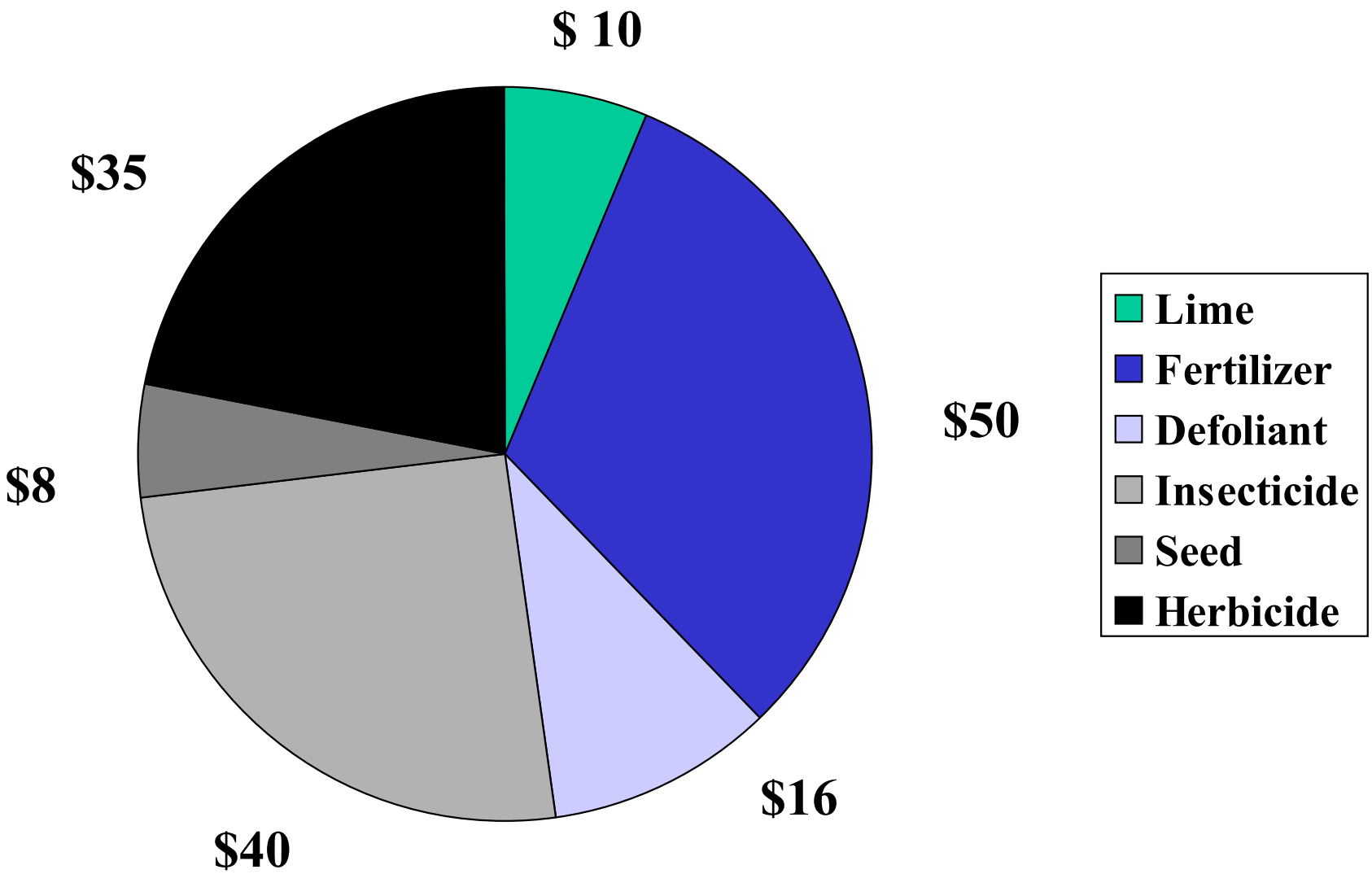
Conservation Tillage

Poultry Litter

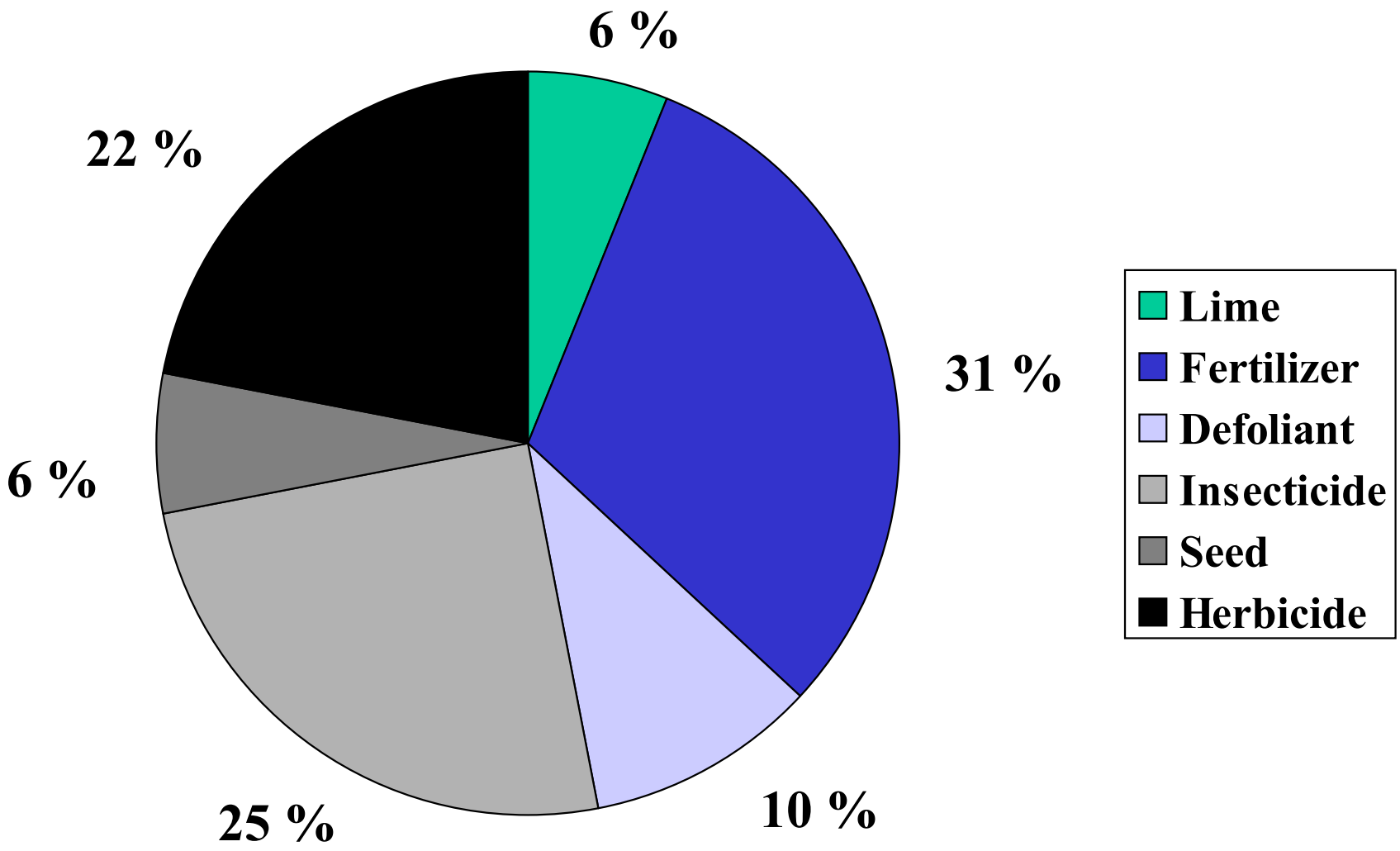
Black Root

2002 Field Trials

Estimated Costs - ($/a)

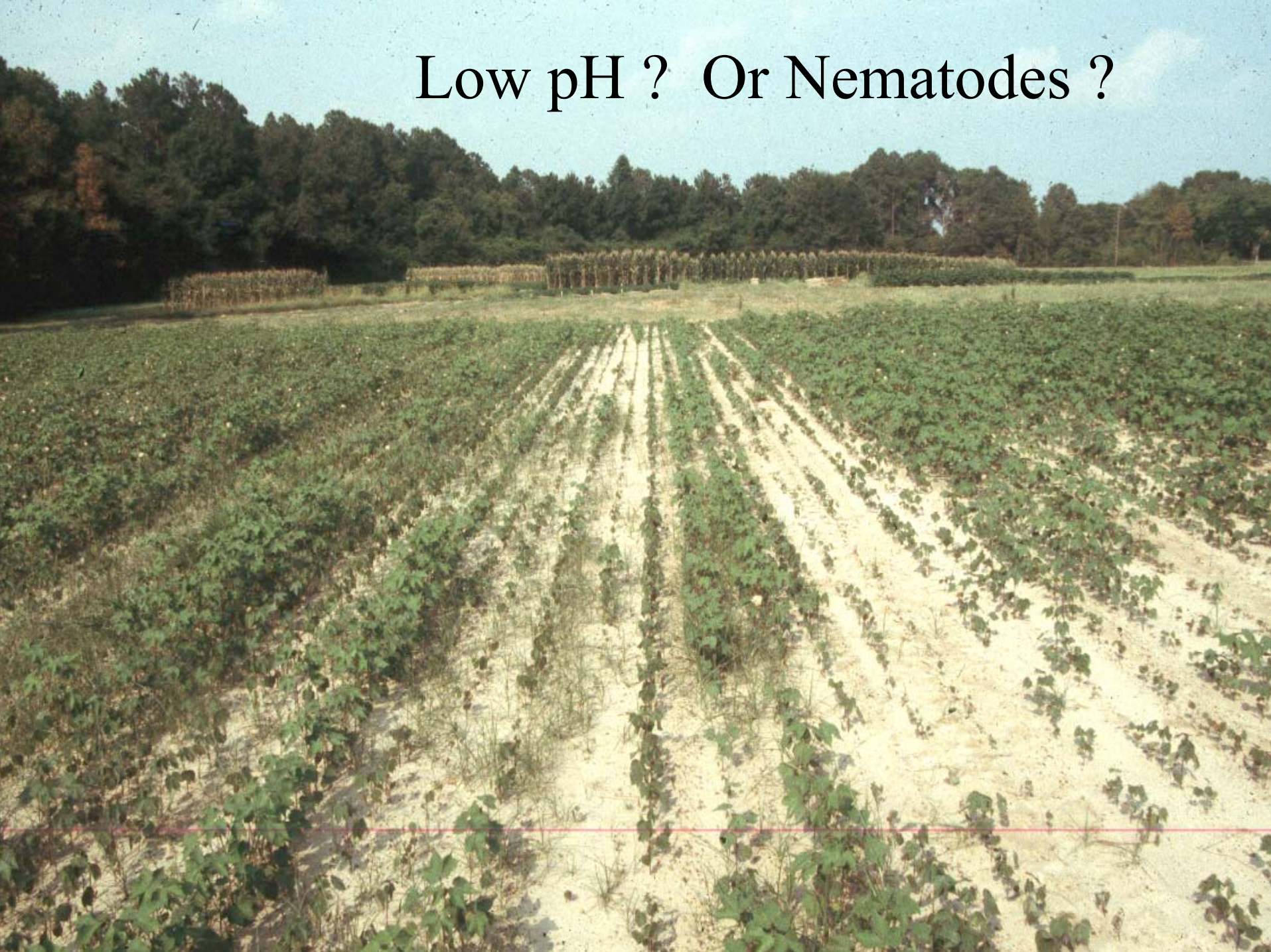


Estimated Costs - (%)



Fertilization Strategy

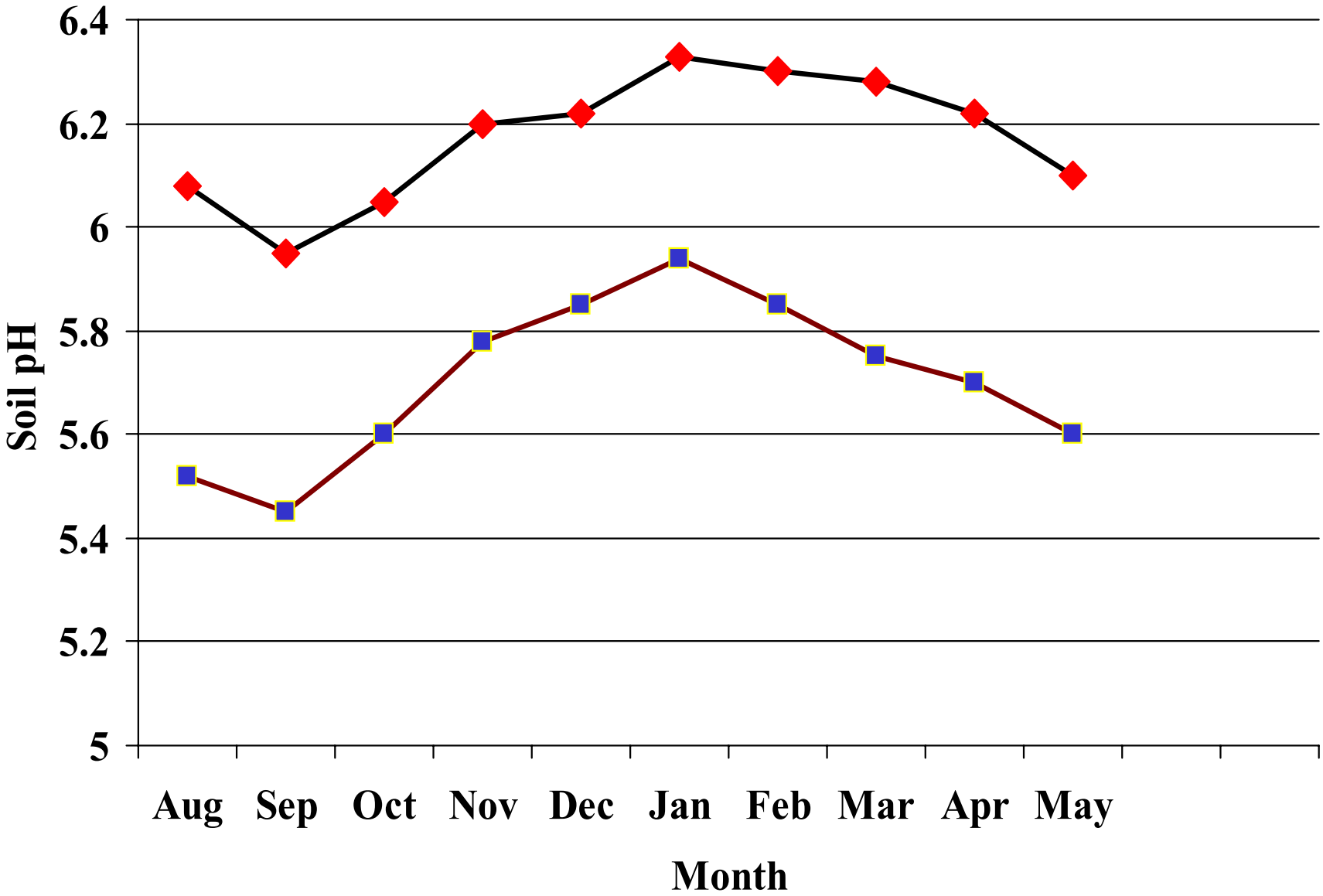
- Soil Test
- Lime to pH 6.0
- Apply Recommended P & K At Planting
- Approx. 80 lb N/a in Split Applications
- Apply 0.5 lb/a Boron Foliar at First Square
- Tissue and/or Petiole Test


Low pH ? Or Nematodes ?


Un-Reacted Lime Due To Drought ?

Too Wet To Soil Sample ?

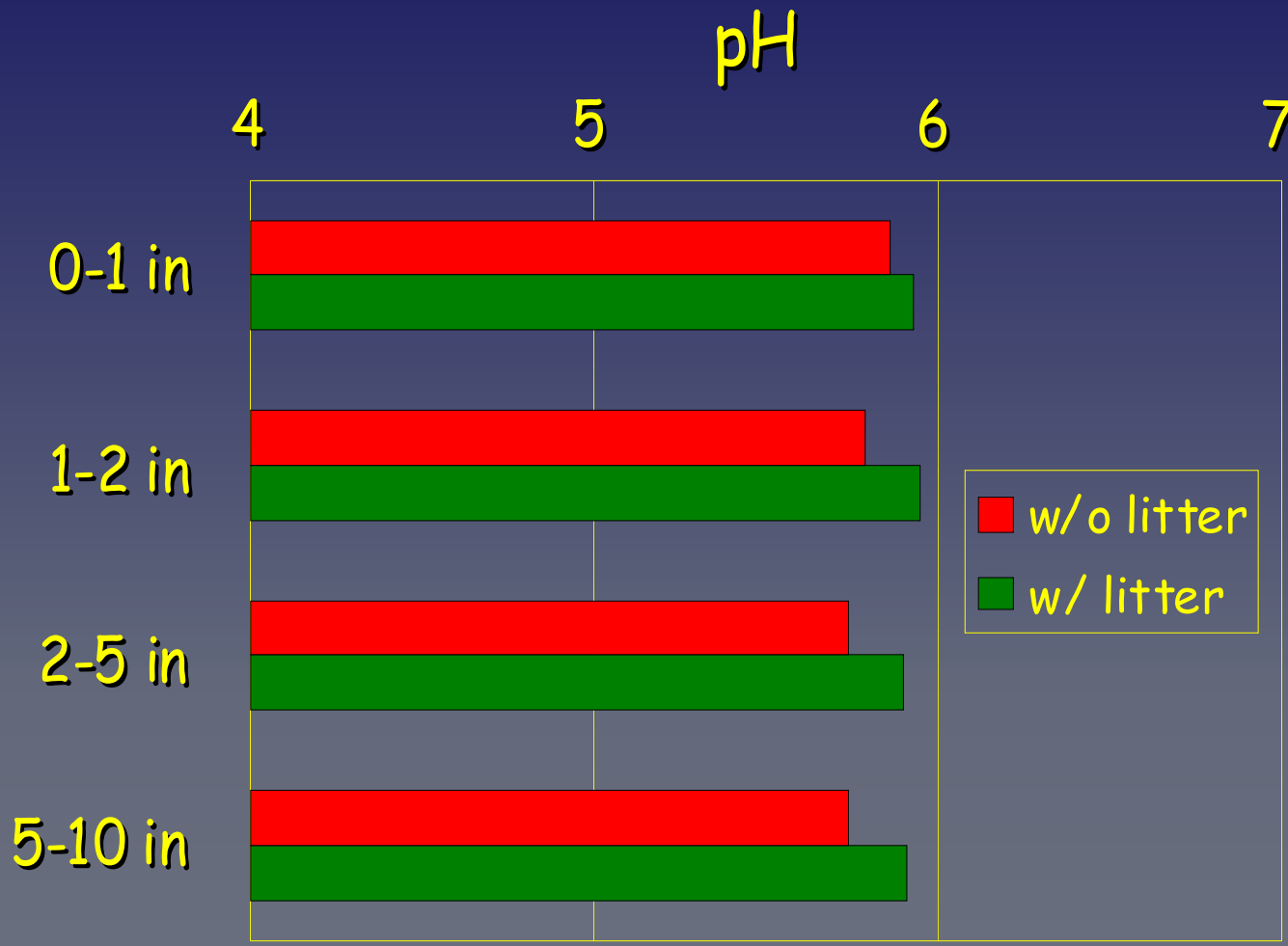
Seasonal Variation of pH



Lime (Calcium Carbonate) In Irrigation Water ?

Poultry Litter Has a Slight Liming Capacity

Effect of poultry litter on pH . . .

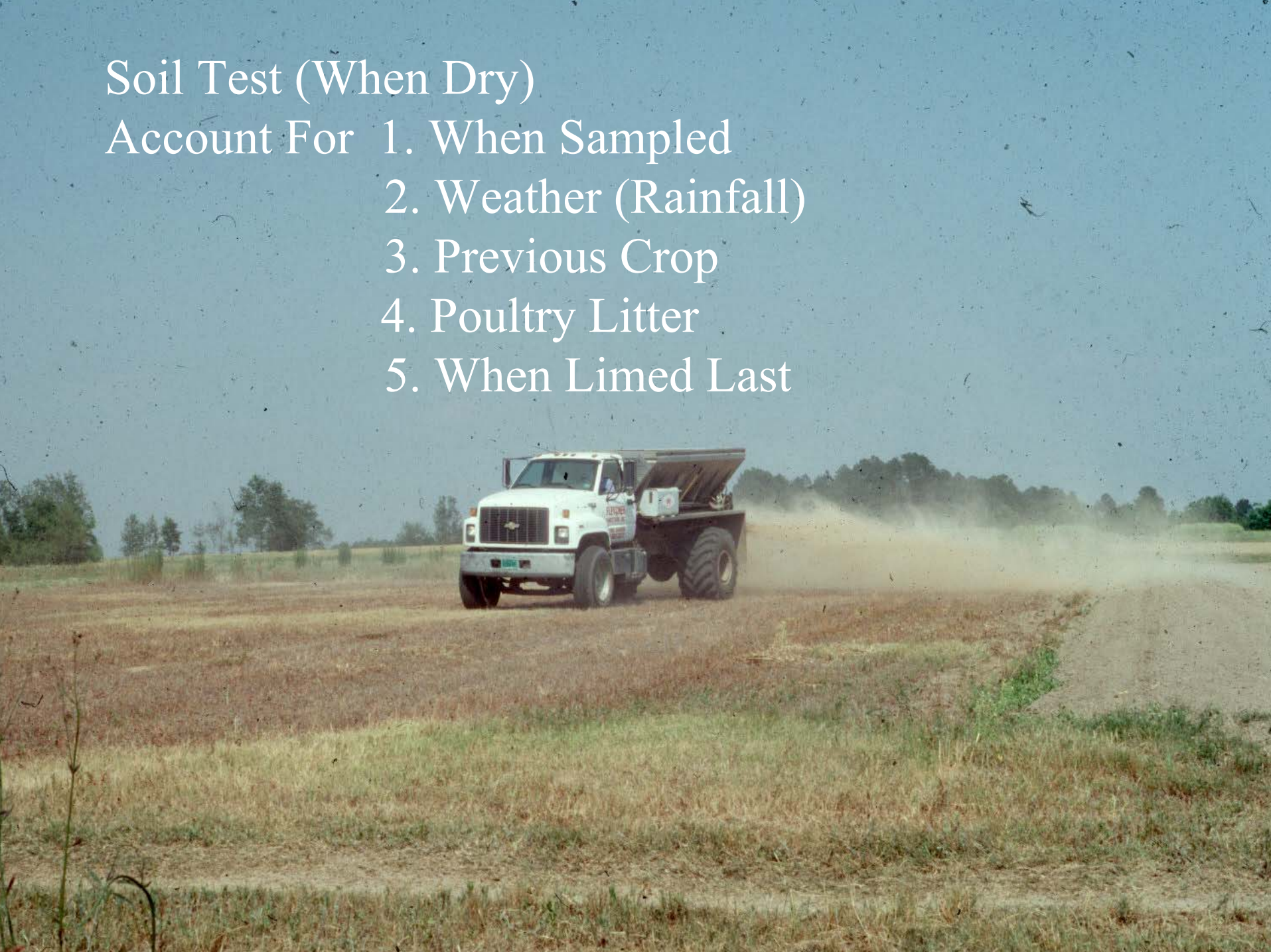


Motta et al., 1998

Conservation-Tillage = SOM = CEC = Less Lime ?

Soil Test (When Dry)

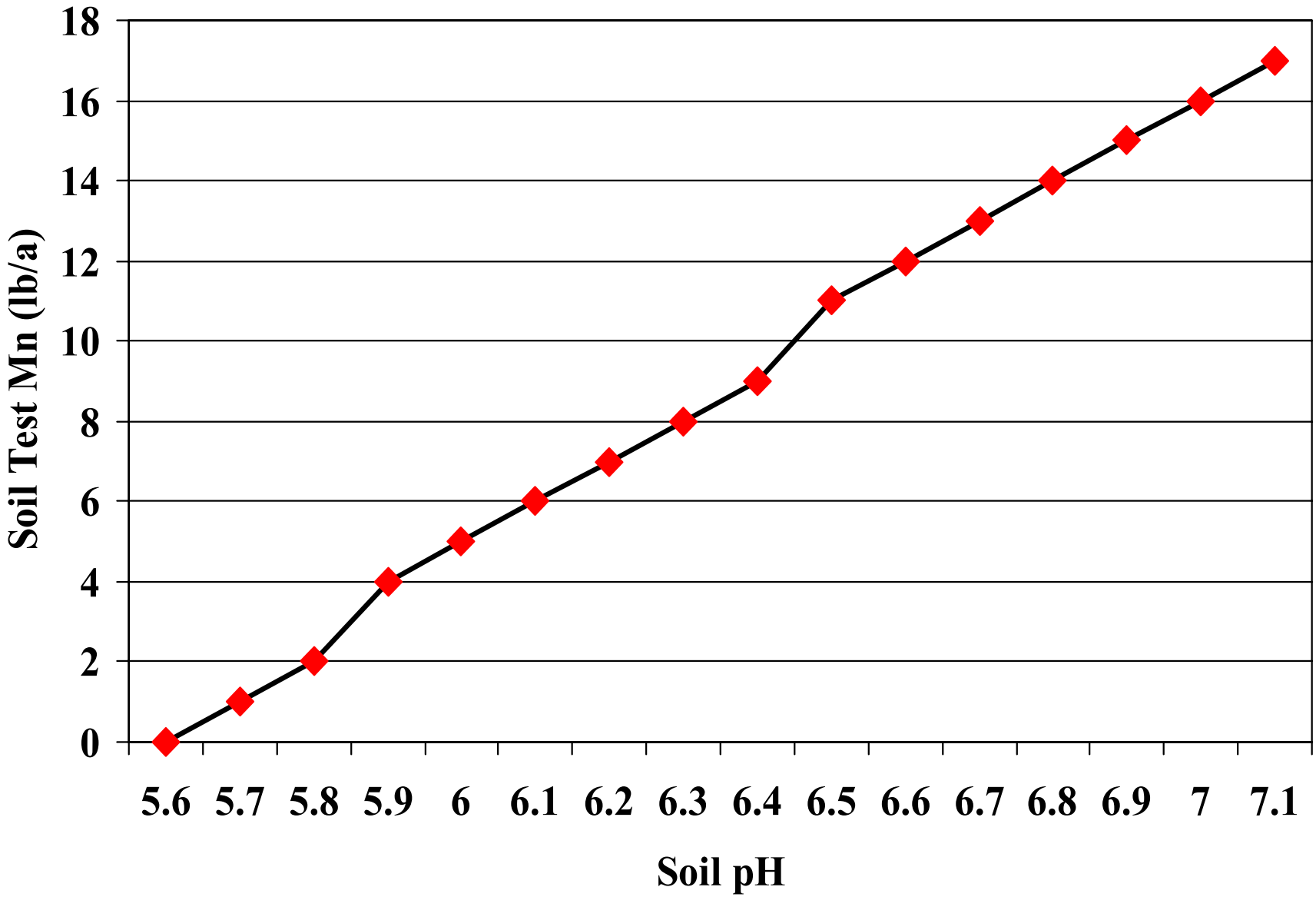
Account For
1. When Sampled
2. Weather (Rainfall)
3. Previous Crop
4. Poultry Litter
5. When Limed Last



Manganese For Cotton

- UGA Dropped Recommendation
- Mn Deficiency on Cotton Rare
- Maintain Soil Test Mn by pH
- Expensive to Build ST Mn All at Once
- Look For Borderline Fields
- Consider Starter or Foliar Mn
- Tissue Test To Confirm Problem

Recommended Soil Test Mn with Different pH



Troubleshooting

✔ Likely Culprits

- Low pH
- Nitrogen
- Potassium
- Sulfur
- Boron ?

Troubleshooting Sampling

Prior To First Bloom

- ✔ Soil and Tissue Sample
- ✔ “Good” & “Bad”

After First Bloom

- ✔ Soil, Tissue and Petiole
- ✔ Good” & “Bad”

Nitrogen Management

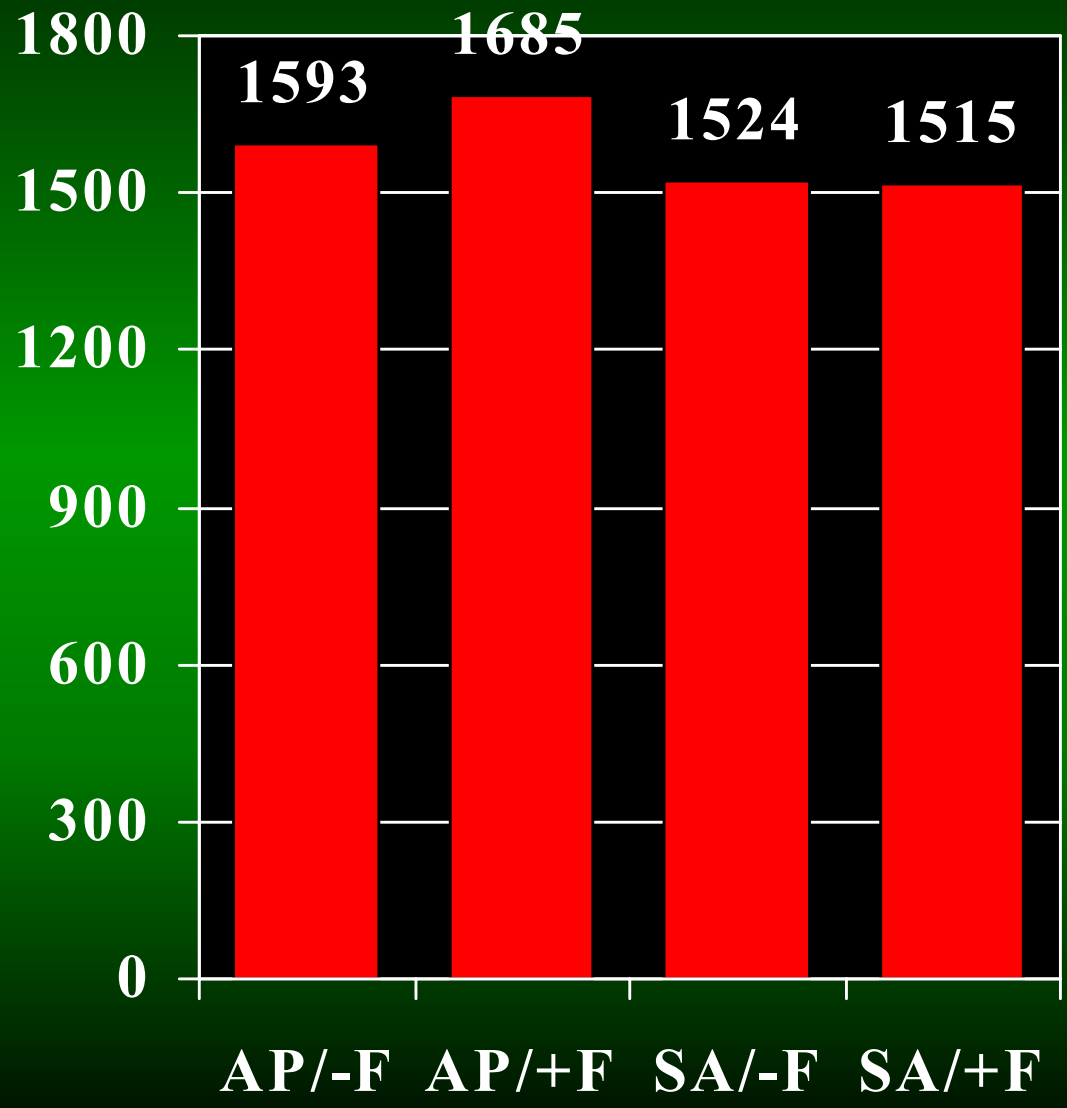
- By Yield Goal
- Dryland vs. Irrigated
- Split Applications
- Sidedress Materials

Potassium Management

- All At Planting
- Anticipate Problems
- Foliar vs. Sidedress ?

Results :1998

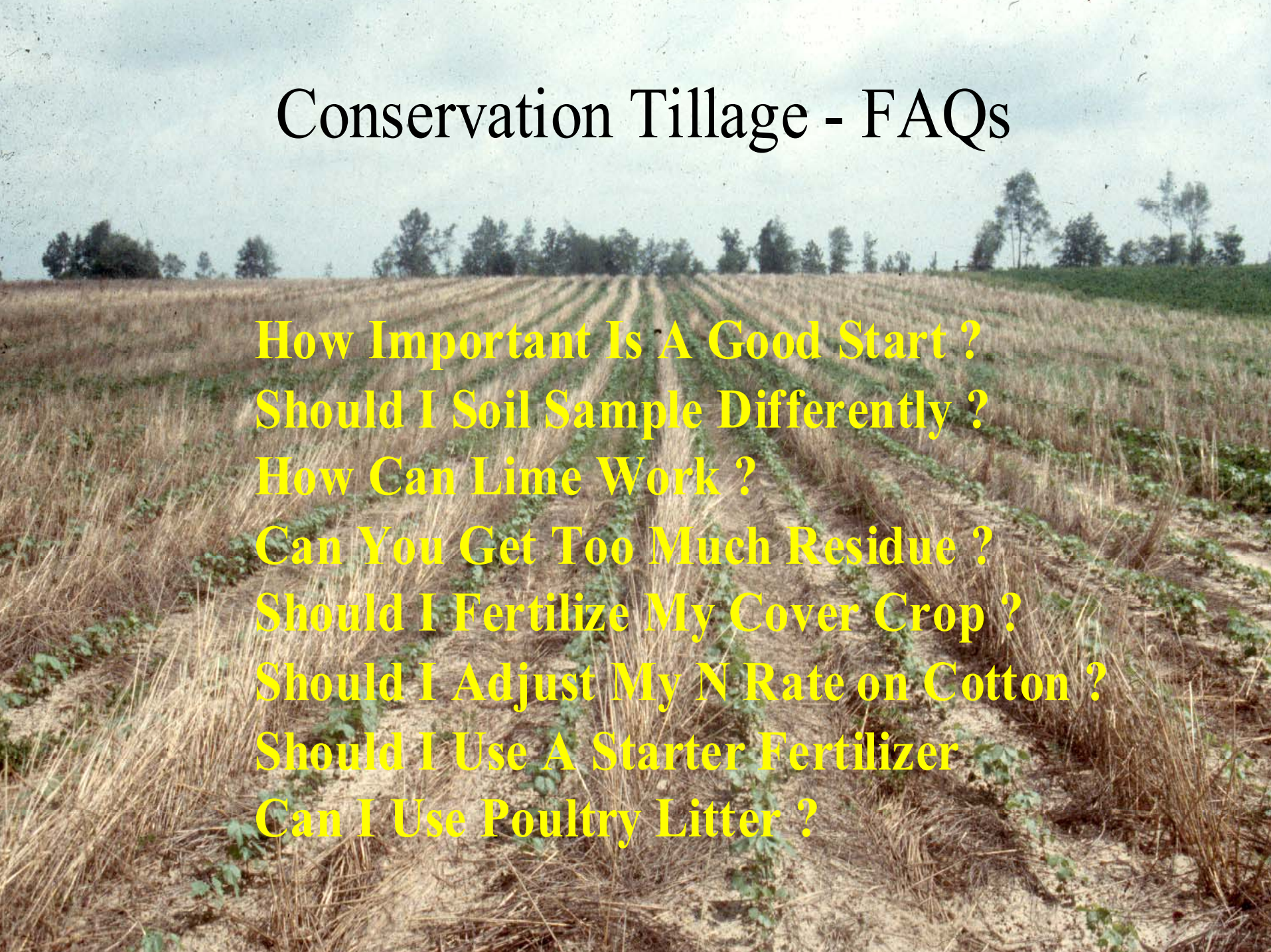
- Significant Interaction
- AP/+F = Best Treatment



Foliar Fertilization

- Rescue vs. High Yield
- High Boy vs. Plane
- Alone or With Insecticide
- Source, Rates and Timing
- N, K, B (maybe Zn or Mn)
- Not P or Ca or Snake Oils

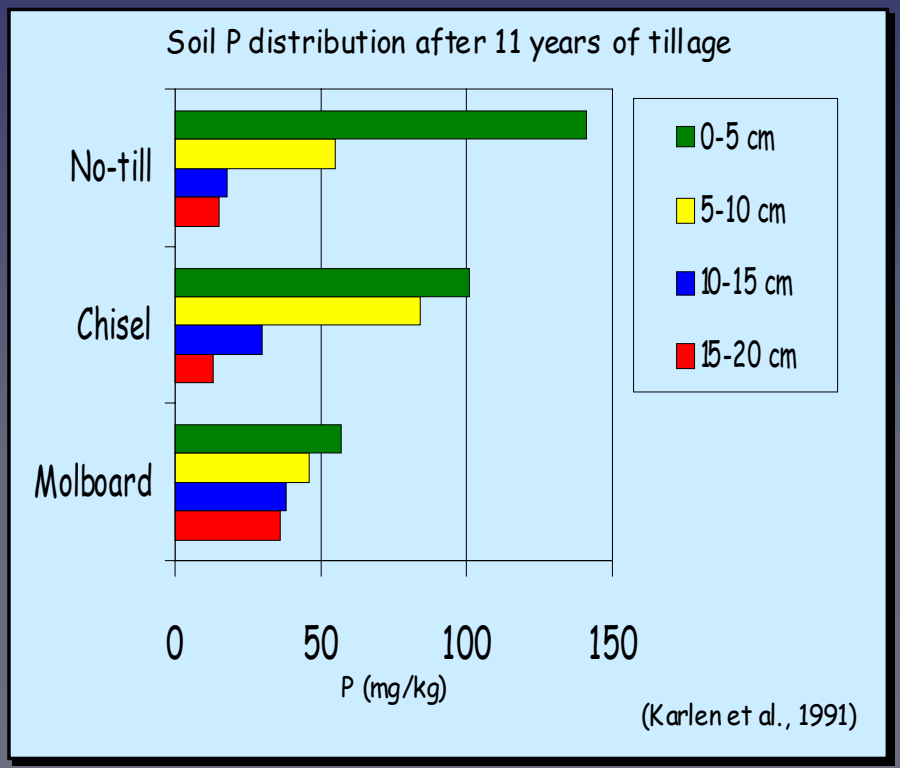
Conservation Tillage - FAQs

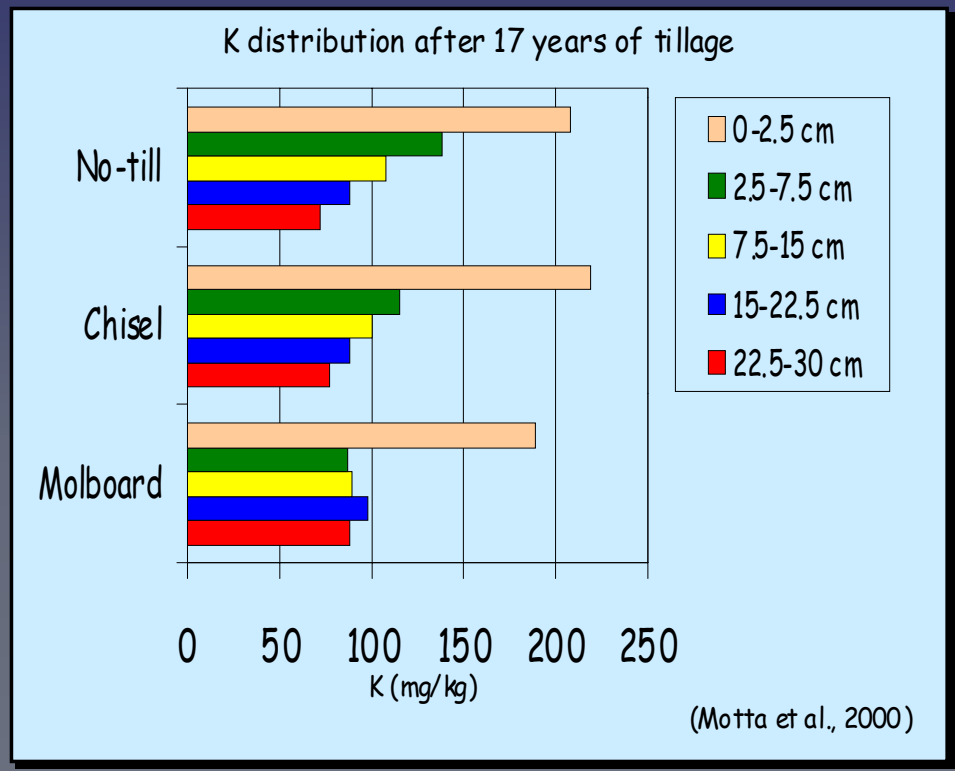


How Important Is A Good Start ?
Should I Soil Sample Differently ?
How Can Lime Work ?
Can You Get Too Much Residue ?
Should I Fertilize My Cover Crop ?
Should I Adjust My N Rate on Cotton ?
Should I Use A Starter Fertilizer
Can I Use Poultry Litter ?

Nutrient stratification . . .

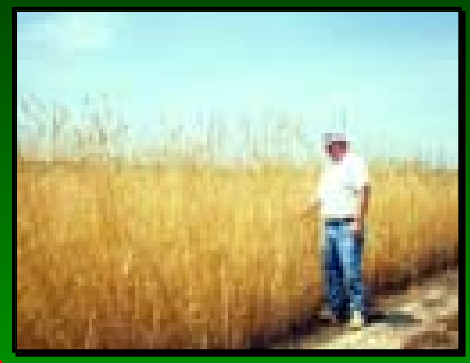
- P and K become horizontally banded





Nitrogen Management . . .

- N and cover crops



C : N Ratio

N Available	N Not Available
10:1 ←	→ 40:1
20:1	
Mineralization	Immobilization

Poultry Litter on Cotton

- 2 ton/a + 50 lb N/a Sidedress
  Basically = P Based Plan

- 3 - 4 ton/a If Blackroot

- Phosphorous Issue

“Black Root” Update

- ✓ First Observed in 1997
- ✓ Isolated to Poorly Drained Flatwoods Soils
- ✓ Disease Organism Never Isolated
- ✓ Gary Gascho (1998) - Chloride Toxicity ?

2002 Field Trials

- Helena - Foliar N
- Agrotain - UAN vs. Urea
- GPFES - Sidedress vs. Foliar K
- Agri-SC - Laurel sulfate
- Stoller - Load
- Goemar - BM 86


Good Luck
in
2003 !
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