Economics of Cotton Fertility Management

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2019 Expectations

• 2018 yields: 1,140 pounds per acre

• Acreage in 2019
  • How much cotton?

• Yield expectations
  • Very concerned

• Will be forced to maximize return on investment
  • Spend less to make more?
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Up, Up, and Away

- Cotton price is up – relatively speaking
- Yields are better than ever
- Expenses are higher than ever
  - Equipment
  - Land
  - Crop protection
  - How much money is spent when the planter goes through the field?
Investing in Fertilizer and Lime

• Nitrogen:
  • Many downstream effects from over/under application

• Potassium
  • 2nd only to nitrogen in terms of importance

• Lime
  • Tends to be forgotten until root problems arise
Cotton Yield with Various N Fertilizer Rates

- Starkville LSD (0.05) = 114
- Brooksville LSD (0.05) = 78
Economic Returns with Various N Fertilizer Rates

- Increasing from 0 to 40 lbs N:
  - Starkville: +$70.00
  - Brooksville: +$64.40

- Increasing from 40 lb to 80 lb N:
  - Starkville: +$83.30
  - Brooksville: +$77.70

- Increasing from 80 lb to 120 lb N:
  - Starkville: -$13.30
  - Brooksville: +$56.70

- Increasing from 120 lb to 160 lb N:
  - Starkville: -$36.40
  - Brooksville: +$56.00
Investing in Fertilizer and Lime

• Not uncommon to hear: “I have 140 oz of Pix on this cotton and can’t stop it.”

• Reduction in nitrogen application rates:
  • $10 – 12 per acre on N cost alone
    • Only selected soils
  • Help on plant bugs
  • Help on PGR’s
  • Help on defoliation

• Potassium
  • $12 per acre saved on Nitrogen = 85 lbs of potash
Potassium Accumulation in Cotton

Source: Oosterhuis and Berkowitz/IPNI
Maximum Daily Uptake of K, N, and P Occurs Near Peak Blooming

Lint yield 1,513 lb/A

Source: Schwab et al., 2000
Building Soil Test K

• Is it worth the money?

• Enhance use of soil moisture

• Maximize production in optimum years

• Weather the storm in challenging year?
Building Soil Test K

• 1000 lb cotton removes:
  • ~31 lbs $K_2O$ in seed and lint
  • ~72 lbs $K_2O$ in stalks, leaves, and burs

• Will likely take 8 – 16 lbs of Potash above how much is removed to build soil test levels 2 – 3 lbs on soil test

• Potassium fertilizer is an investment that you can’t afford not to make
Source: Oosterhuis, 1990
Based on 36,000 plants/A, there were 9,545 miles of roots /A

Source: Schwab, Mullins & Burmester, 2000/IPNI
Farming Is An Investment – Invest Wisely

• Extra money at planting
  • Seed treatments
  • In-furrows

• Re-plant decisions?

• Fertilizer/Lime
  • ~60 lbs to pay for a ton of lime

• Irrigation management

• Harvest aids
Closing Thoughts

- Big crops – big expense
- Don’t win the yield game – win the money game
- Don’t spend money frivolously
- Given current situation – spend money where you know it will return on investment
- Willingness to adapt
Thank You

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Photo: Dennis Reginelli