

## Variable Rate Nitrogen for Cotton Using Directed $R_x$

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SC Cotton Growers Meeting  
Santee, SC  
January 22, 2019

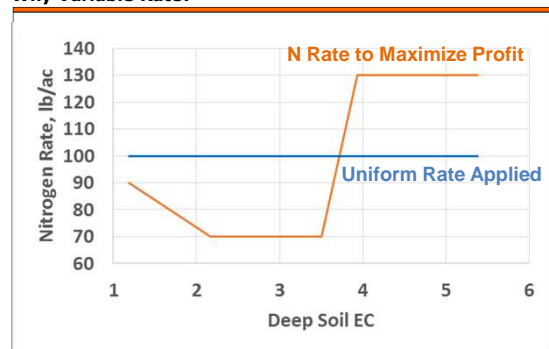
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### Why Variable Rate?



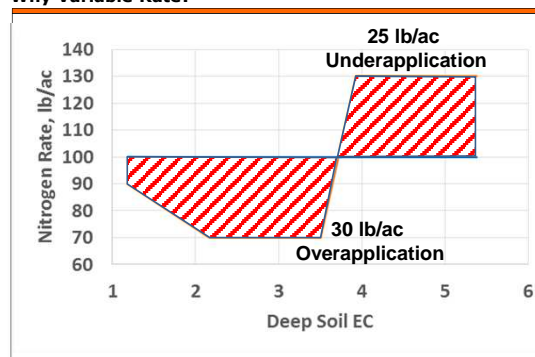
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### Why Variable Rate?



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### Use of NDVI for N Prescription in Cotton



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A NEW CONCEPT IN  
VARIABLE RATE PRESCRIPTION DEVELOPMENT: D- $R_x$   
THE CLEMSON "DIRECTED PRESCRIPTION" SYSTEM

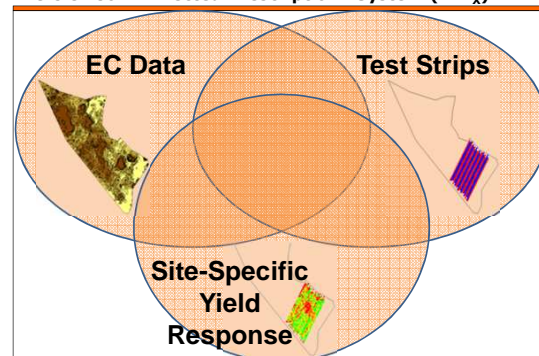
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### The Clemson "Directed Prescription" System (D- $R_x$ )

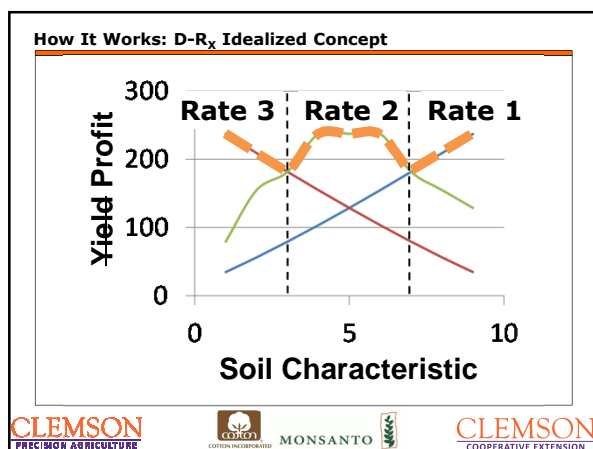
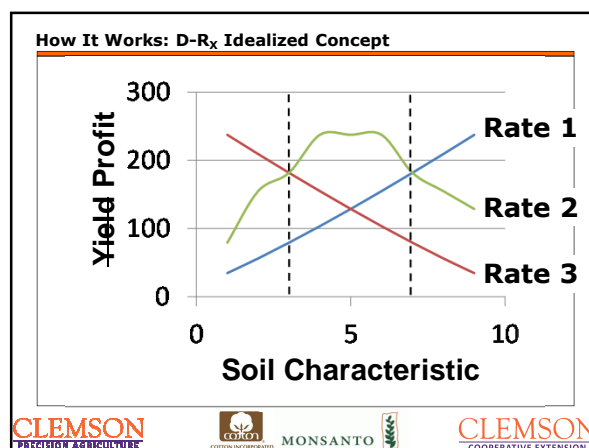
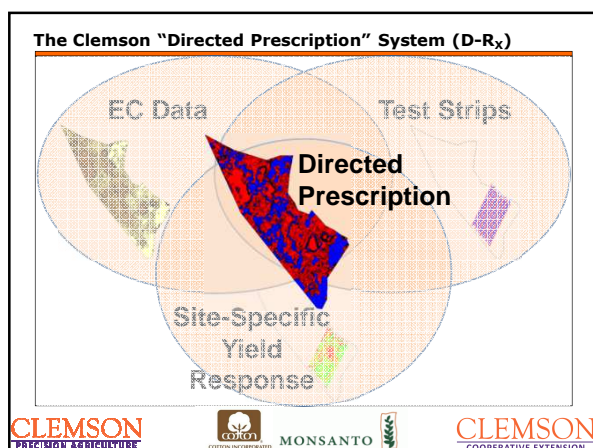


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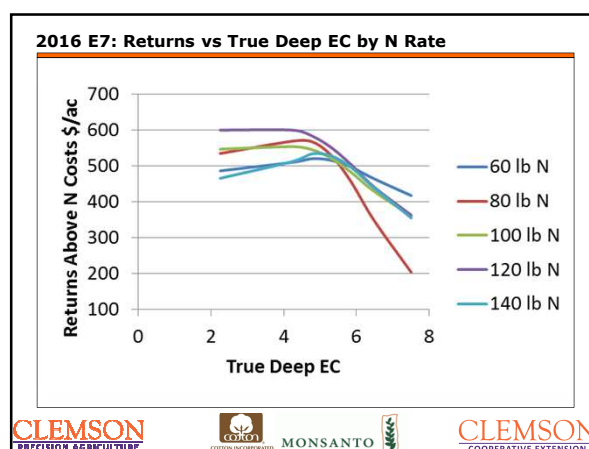
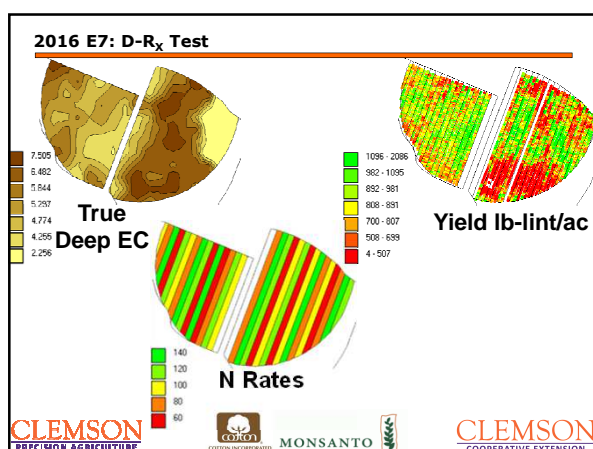
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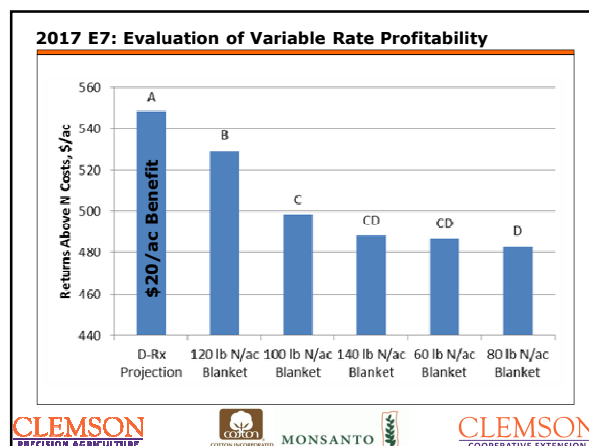
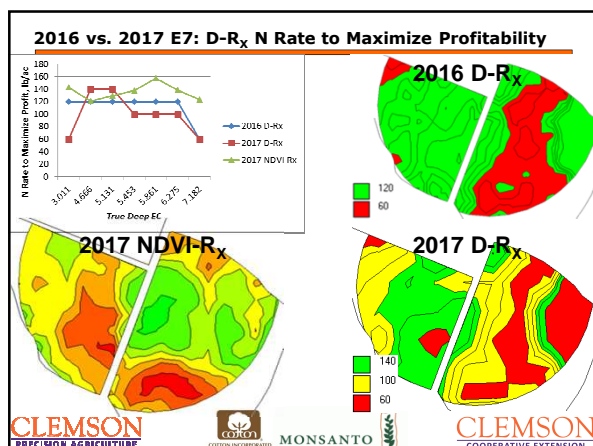
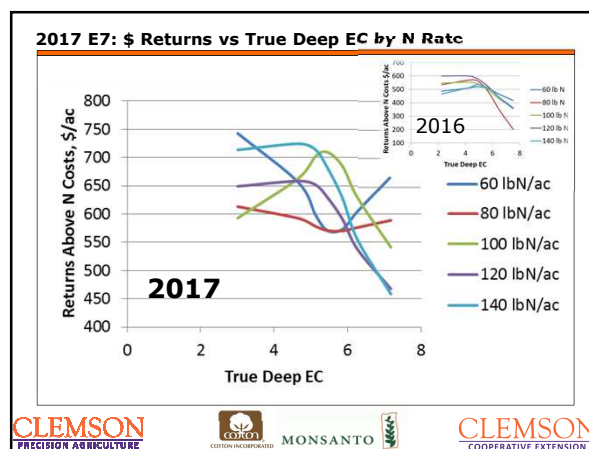
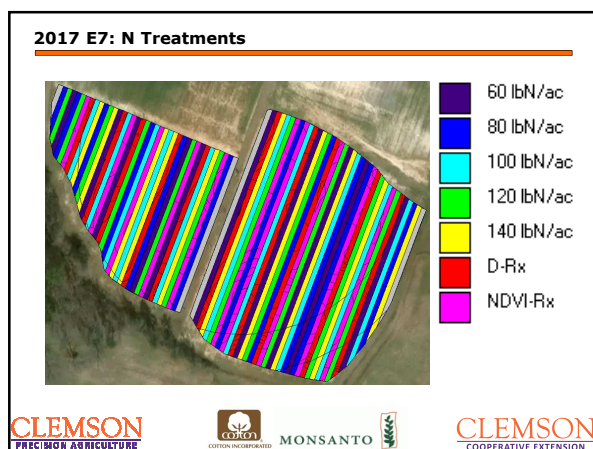
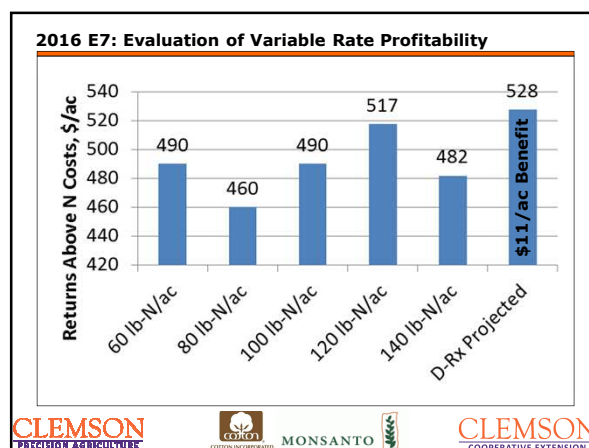
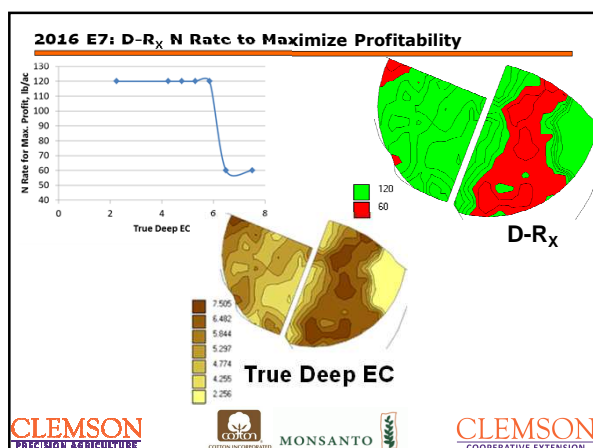
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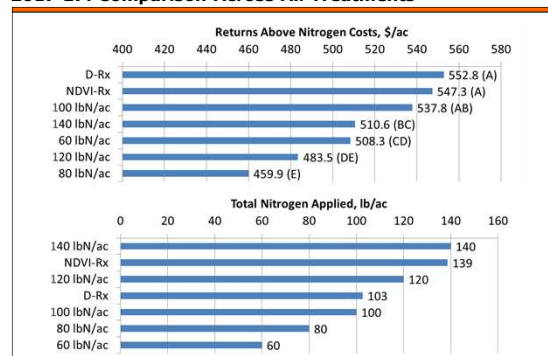
**EXAMPLE 1: E7 FIELD**  
8 IRR. AC; DP 1538

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## 2017 E7: Comparison Across All Treatments

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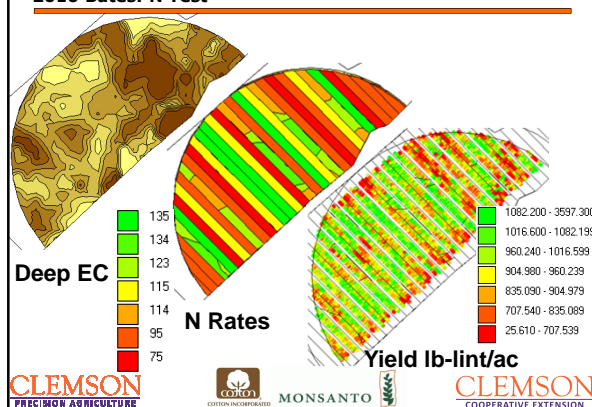
CLEMSON  
COOPERATIVE EXTENSIONEXAMPLE 2: BATES FIELD  
21 IRR. AC; DP 1538CLEMSON  
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## 2016 Bates: N Test

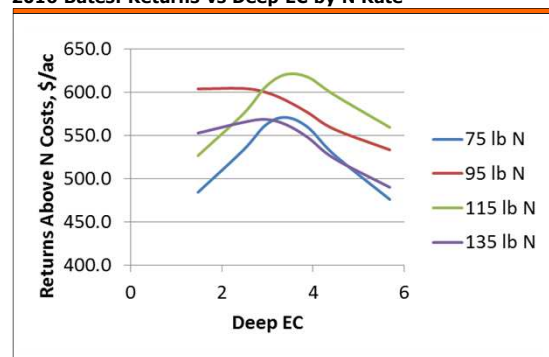
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## 2016 Bates: Returns vs Deep EC by N Rate

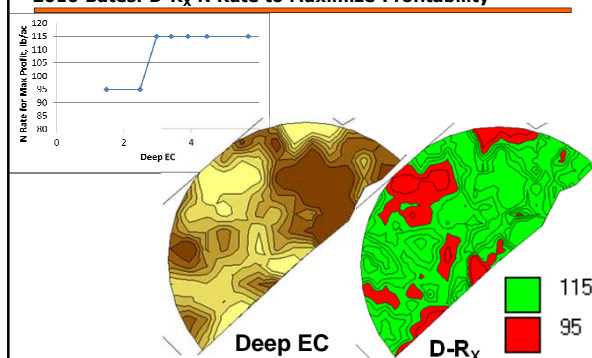
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## 2016 Bates: D-Rx N Rate to Maximize Profitability

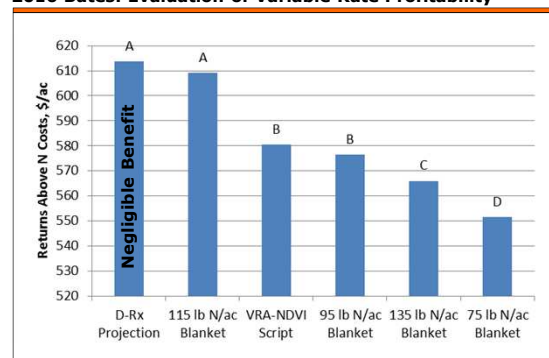
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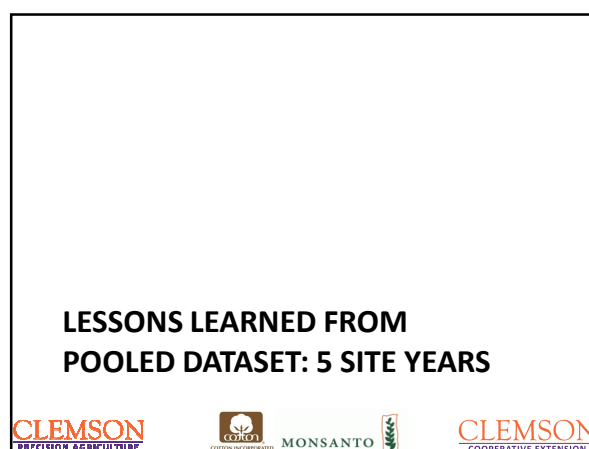
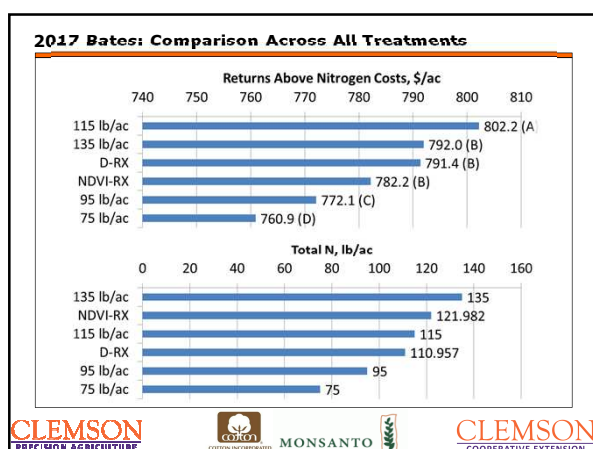
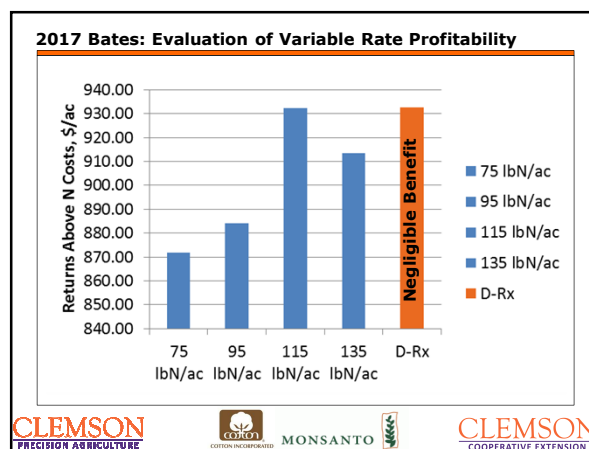
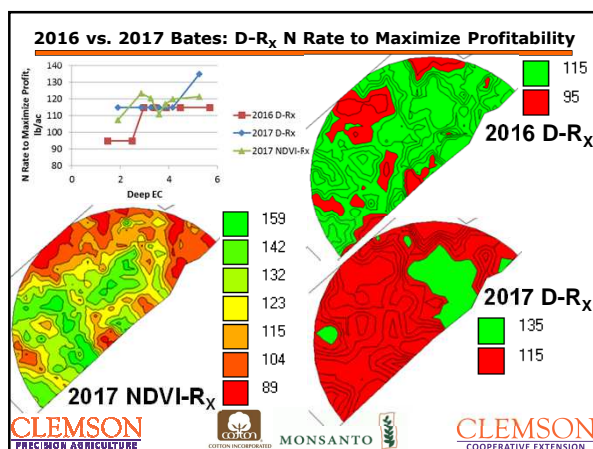
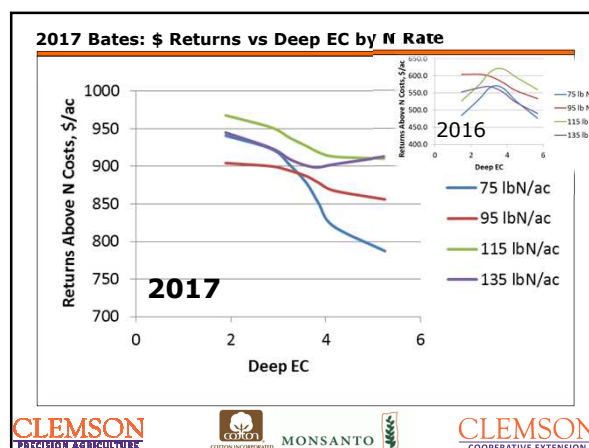
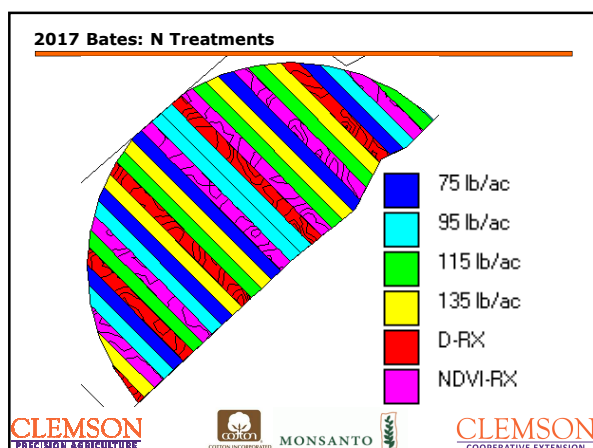
## 2016 Bates: Evaluation of Variable Rate Profitability

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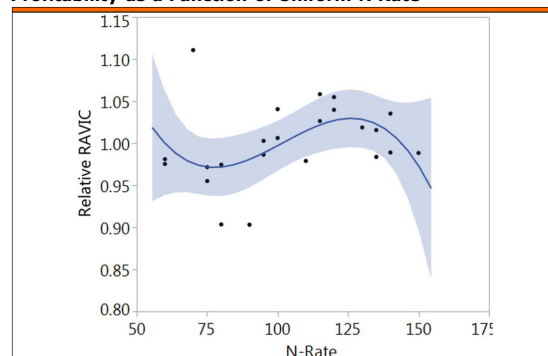
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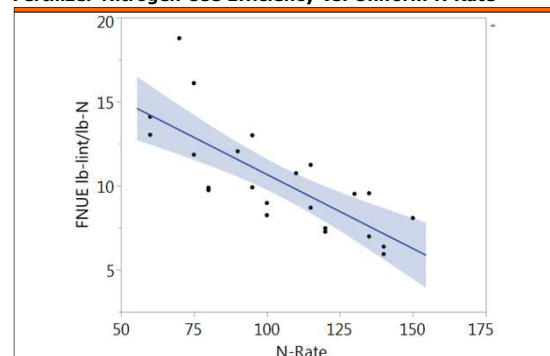
Profitability as a Function of Uniform N Rate

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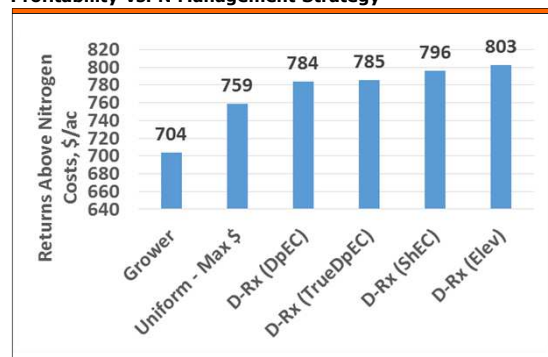
Fertilizer Nitrogen Use Efficiency vs. Uniform N Rate

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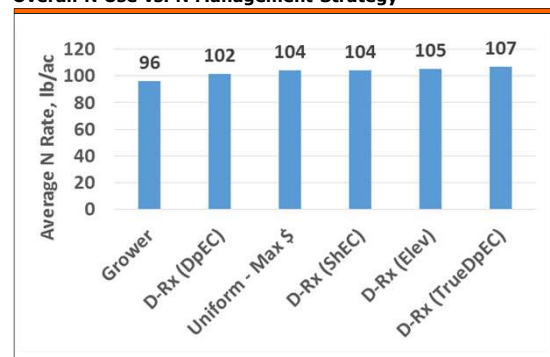
Profitability vs. N Management Strategy

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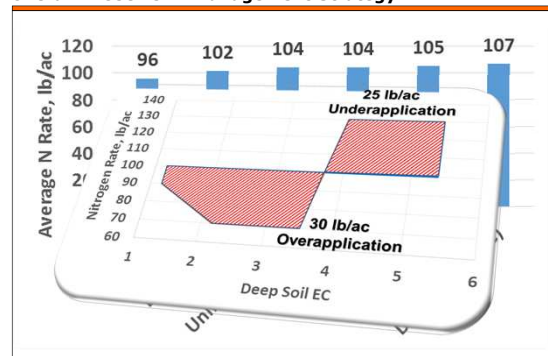
Overall N Use vs. N Management Strategy

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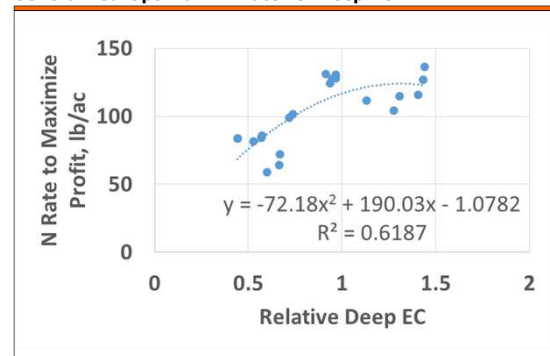
Overall N Use vs. N Management Strategy

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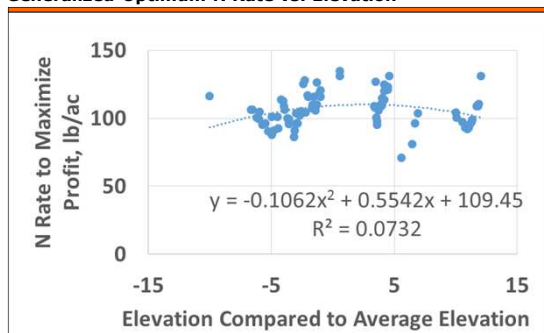
Generalized Optimum N Rate vs. Deep EC

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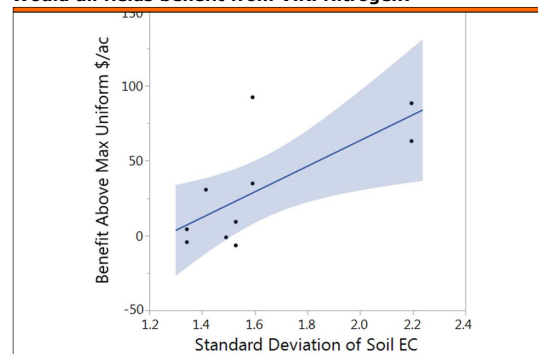
## Generalized Optimum N Rate vs. Elevation

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## Would all fields benefit from V.R. Nitrogen?

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## CONCLUSIONS

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## Conclusions

- Not all fields are good candidates for variable rate nitrogen, but D-R<sub>x</sub> test can still benefit grower
- D-R<sub>x</sub> system can increase profitability at similar overall N rates
  - E7 2017: +\$15/ac; +3 lb-N/ac
- 2017 D-R<sub>x</sub> f(2016) out-ported NDVI-R<sub>x</sub> in both fields, but not significantly different
- Trends in optimum N rates to maximize profitability are similar across years
- Deep soil characteristics were generally better classification bases than shallow characteristics

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## Questions?

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Thank you to:

- Walker Nix Farms (Barnwell Co., S.C.)
- JCO Farms (Allendale Co., S.C.)



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