Delineating Management Zones for Variable Rate Fertilizer

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Geographic Information System Software

Precision Agriculture Software

Map Shots  www.mapshots.com
EASi Suite Farm
EASi Suite Multi-Client
EASi Suite Professional
Farm Works  www.farmworks.com
  Farm Site
  Site Pro
  Site Mate
AgLeader  www.agleader.com
  SMS Basic
  SMS Advanced
  SMS Mobile
SST  www.sstsoftware.com
  SSToolbox
  SST Stratus
John Deere  www.deere.com
  Apex
Spatial Data From the Internet

USDA NRCS

http://datagateway.nrcs.usda.gov

- Hydrologic Units
- Topographic Images
- Aerial Imagery
- Soils maps
- Temperature Maps
- Precipitation Maps
Delineating Management Zones

- Old Field Boundaries
Historical Information

• Past Cropping History

03 Cotton

03 Soybeans
### Past Cropping History

<table>
<thead>
<tr>
<th>Year</th>
<th>Crop</th>
<th>Avg. Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Corn</td>
<td>153 bu/ac</td>
</tr>
<tr>
<td></td>
<td>Cotton</td>
<td>2 ba/ac</td>
</tr>
<tr>
<td>02</td>
<td>Corn</td>
<td>117 bu/ac</td>
</tr>
<tr>
<td></td>
<td>Cotton</td>
<td>2.25 ba/ac</td>
</tr>
<tr>
<td>03</td>
<td>Wheat</td>
<td>57 bu/ac</td>
</tr>
<tr>
<td></td>
<td>Beans</td>
<td>49 bu/ac</td>
</tr>
<tr>
<td></td>
<td>Cotton</td>
<td>2.1 ba/ac</td>
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<tr>
<td>04</td>
<td>Corn</td>
<td>178 bu/ac</td>
</tr>
<tr>
<td>05</td>
<td>Cotton</td>
<td>2.3 ba/ac</td>
</tr>
</tbody>
</table>
Fertilization History

Good Years:
- 80 lbs/ac K
- 80 lbs/ac P

Lean Years:
- 60 lbs/ac K
- 60 lbs/ac P

I Don’t Skimp on Nitrogen
Delineating Management Zones

- Aerial Imagery

http://datagateway.nrcs.usda.gov
Delineating Management Zones

- Bare Soil Aerial Photo
Delineating Management Zones

- Topo Map

http://datagateway.nrcs.usda.gov
Delineating Management Zones

- Digital Soil Map

http://datagateway.nrcs.usda.gov
Delineating Management Zones

- Soil Electrical Conductivity

  3 ft. Depth

  Range
  5.6 – 27.8 (mSiem/m)
Delineating Management Zones

• Soil Electrical Conductivity

3 ft. Depth

Range
5.6 – 27.8 (mSiem/m)
Delineating Management Zones

- Yield Stability

Normalized Yield

Normalized Yield

0.69 - 0.75
0.76 - 0.85
0.86 - 0.95
0.96 - 1.05
1.06 - 1.15
1.16 - 1.20
Delineating Management Zones

Yield Stability

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- 0.76 - 0.85
- 0.86 - 0.95
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Delineating Management Zones

Yield Stability

05 - 04

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0.76 - 0.85
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Yield Stability

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- 0.76 - 0.85
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- 1.16 - 1.20
Delineating Management Zones

Yield Stability

05 - 01

05 - 02

05 - 03

05 - 04

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- Management Zones Based on Yield Stability
Delineating Management Zones

- Management Zones Based on Yield Stability

<table>
<thead>
<tr>
<th>Normalized Yield</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.69 - 0.75</td>
<td>0.76 - 0.85</td>
<td>0.86 - 0.95</td>
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<tr>
<td>0.96 - 1.05</td>
<td>1.06 - 1.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.16 - 1.20</td>
<td>1.21 - 1.30</td>
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</tr>
</tbody>
</table>

05 - 04 Normalized Yield

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0.76 - 0.85
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Delineating Management Zones

- Digital Soil Map
Delineating Management Zones

- Topo Map
Delineating Management Zones

- Soil Electrical Conductivity

3 ft. Depth

Range
5.6 – 27.8 (mSiem/m)
Delineating Management Zones

- What’s the Next Step