Cotton Yield Monitoring: Data Visualization and Interpretation

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Presentation Outline

• Basic information of yield monitors

• Components of yield monitors

• Benefits of using yield monitors

• Yield data to delineate management zones

• Cost of yield monitoring system and related components
Cotton Yield Monitoring Systems

How they work

Glen Rains and Calvin Perry, Biological and Agricultural Engineering, University of Georgia
Cotton Yield Monitoring Systems: Components

Hardware:
• Several brands (AgLeader, Agriplan, Farmscan)
  – Optical sensors → flow rate information
  – Fan speed sensor → compensation
  – GPS receiver → position information
  – Console display → computations

Software:
– Farm management proprietary software (Case-IH, John Deere)
– High-end GIS
– Generic GIS

Data Collection
Data Visualization

Visual interpretation:
– Extent of variability
– Detect (confirm) problematic zones
– Improve management

Zone Management

Integrating different layers of information:
• Physical
  – Electrical conductivity (bulk)
  – Soil texture

• Chemical
  – Salinity

• Biological
  – Nematode population
  – Plant canopy
  – Yield response
Case study: 50 acre field in Safford AZ

Soil Electrical Survey

Veris sensor. Apparent Electrical Conductivity ($EC_a$)

Soil survey data available on-line
Soil texture zones

Yield
Management Zones

Management Zone Analyst
Windows 95, 98, NT, 2000
Version 1.0.1
Copyright 2000
University of Missouri-Columbia

Management Zones

Management Zones
### Variable Rate Applications

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### Cotton Yield Monitoring Systems: Approx. Costs

<table>
<thead>
<tr>
<th>Hardware:</th>
<th></th>
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<tbody>
<tr>
<td>– Optical sensors</td>
<td>$ 10,000</td>
</tr>
<tr>
<td>– Console display</td>
<td></td>
</tr>
<tr>
<td>– Fan speed sensor</td>
<td></td>
</tr>
<tr>
<td>– GPS receiver</td>
<td>$ 1,500</td>
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<tr>
<td>– Retrofit kit</td>
<td>$ 1,700</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Software:</th>
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</thead>
<tbody>
<tr>
<td>– Farm management proprietary software</td>
<td></td>
</tr>
<tr>
<td>– High-end GIS</td>
<td>$ 1,300/year (basic, no modules)</td>
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<tr>
<td>– Generic GIS</td>
<td>$ 300/one-time</td>
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</tbody>
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Free software and other electronic resources available on-line