Smartfield Science, Technology and Processes
Tom Speed, VP Agronomic Services
Cotton Inc
Tunica, MS
Nov 9, 2012
Smartfield is an **INFORMATION** company
Focusing on 3 Business Areas

### Commercial
- Smarter, Faster Trait Selection
- Product Positioning
- Reduce time to market for new technologies
- Intelligence from Data

### Consumer
- Trusted Advisor Role
- Intervention Signals
- Irrigation Management
- Product Positioning

### Forecasting
- Benefit to Insurance Companies
- Farm Land Investors
  Data produced
- Supply Side Information
- In-season Performance
The basis of our business - OPCT

• **Optimum Plant Canopy Temperature (OPCT)** is the basis of our business.

• Smartfield is based on a very simple premise that plant species, varieties, lines and hybrids, have a temperature at which they perform best.

• OPCT differs by Growth Stage, just as water demand differs.
Why Measure Canopy Temperatures?

- Canopy temperatures are **direct, integrated** measurements revealing plant health.
- Reveals how plants are responding to the environment above and below ground.
- Canopy temps are different than ambient temp
- Provides complete picture of the season.
- Smartfield tools answer the question of how is the plant performing.
Tools and Equipment
**Smartfield Tools**

**SmartWeather™**
- turns the Smartfield Base Station into a full function remote weather station
- wind speed and direction
- solar radiation
- barometric pressure

**SmartRate™**
- reads flow and pressure every 5 seconds, reports 1 minute averages
- direct connect to Base Station
- reports status 1-3 pressure gauges
- reports status on 1 flow meter
- reports status on 1-24 valves

**SmartPivot™**
- reports pivot location via GPS
- reports water pressure
Temperature Graph

Ambient: 103 degrees

Rain Events
Irrigation
Ambient Temp
Avg. Sensor Temp

09/04/2012 7:00am - 09/09/2012 7:00pm
Consumer Application

Wheat

Peanuts
Commercial Application

Soybeans

Cotton

Corn
Ambient, Non-Irr, .08”, .16”, .25”/day

A 7 day snapshot of canopy temperatures from different irrigation treatments. The black line in the middle is ambient, the other colors represent various daily irr levels.
Alerts, Triggers and Reports
## Daily Stress Updates

### Update Stress Alert for TTU Quaker LBB Water Regression 2012 - 10279 (.04 IRR)

Crop: Cotton

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<th>24H</th>
<th>3D</th>
<th>YTD</th>
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### Update Stress Alert for TTU Quaker LBB Water Regression 2012 - 10279 (.16 IRR)

Crop: Cotton

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### Update Stress Alert for TTU Quaker LBB Water Regression 2012 - 10279 (.25 IRR)

Crop: Cotton

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Forecasting

- Yield is $f(n)$ of seasonal environment and inputs (Stress)
- Timing or Growth Stage
- Intensity or Severity
- Duration
- Canopy Temps = Integrated Measurement
- Inverse relationship between stress and yield
Timing, Intensity & Duration of Stress
Summary

- New tools allow for new insight
- Powerful, decision making data
- Immediate, real time feedback
- Predictive Information