



The Value of Connectivity in Precision Farming

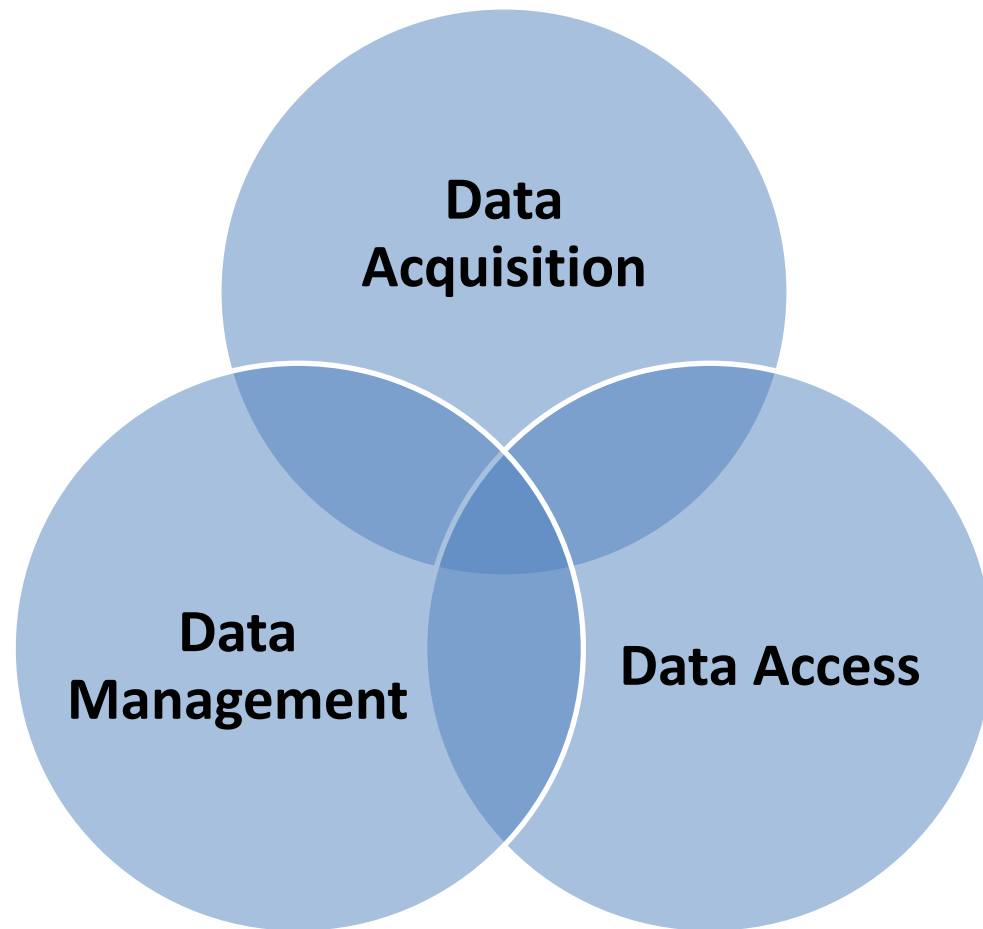
Devon Liss
Daniel Hedgecock

What is Connectivity?

Definitions

- **Merriam-Webster Dictionary (*def*):** the quality, state, or capability of being connective or connected
- **Oxford English Dictionary (*def*):** the ability of a computer, program, device, or system to connect to the internet, another computer, etc.

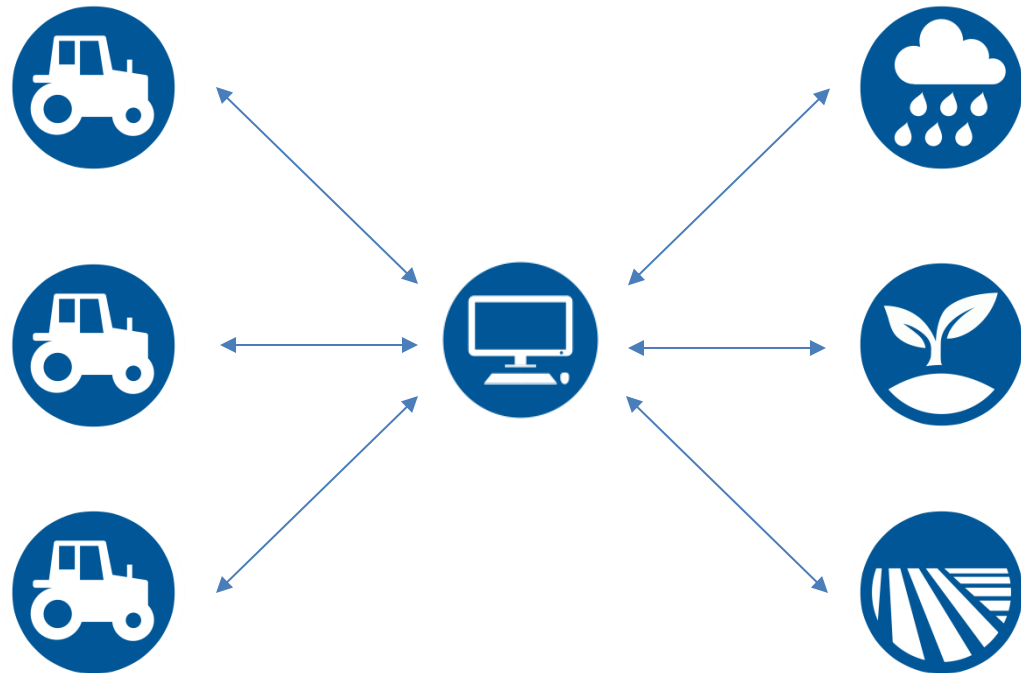




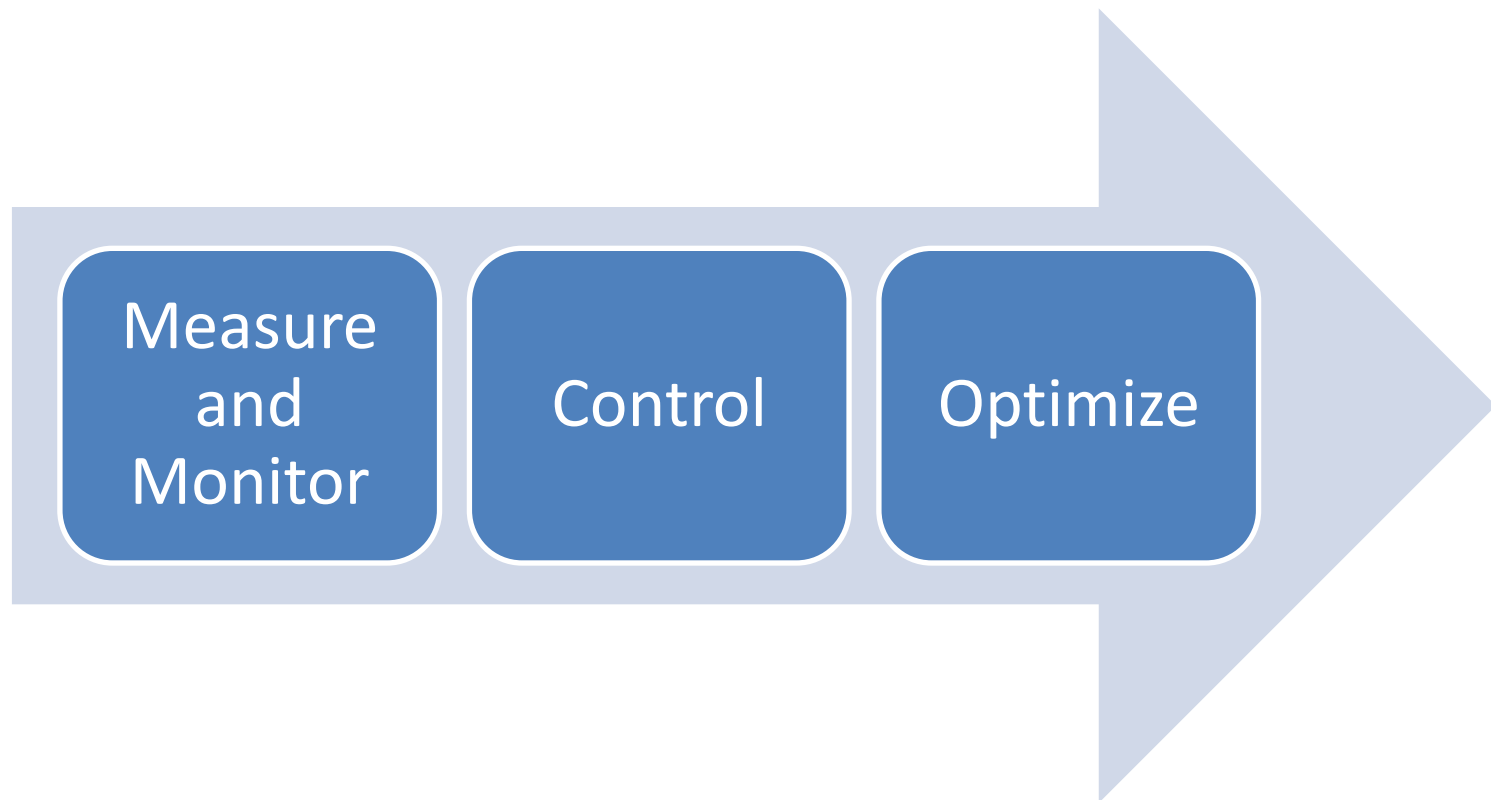
One to One

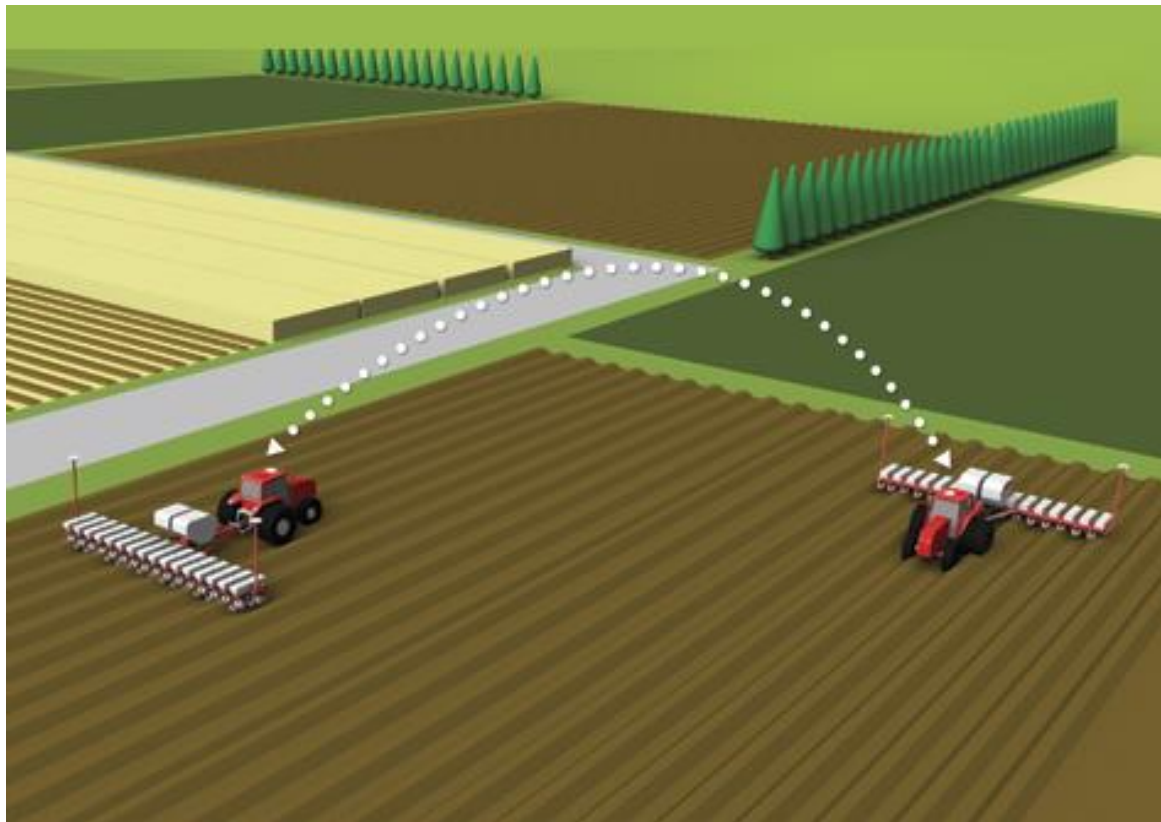
One to Many

Many to Many

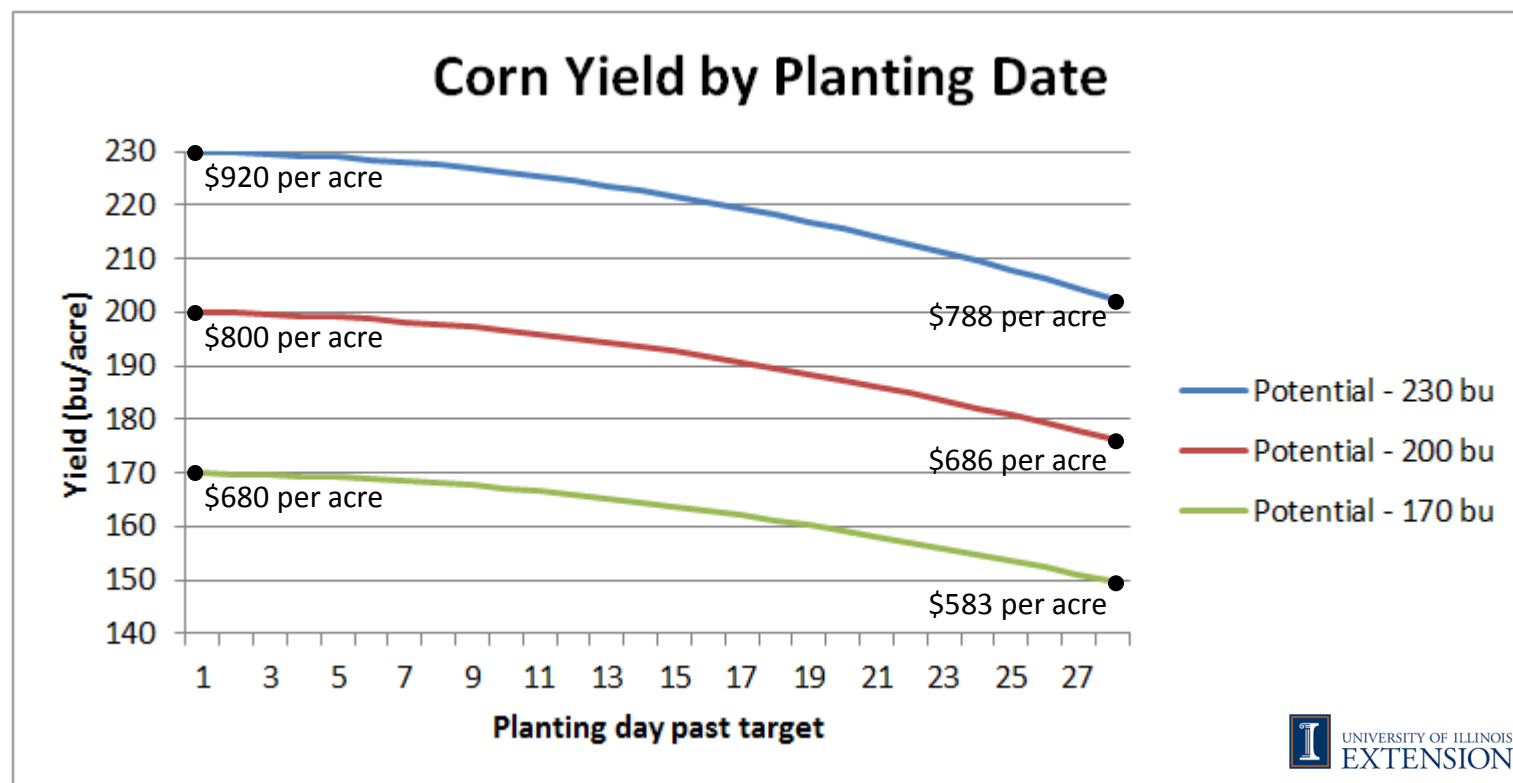


Connectivity is important because it can translate to value





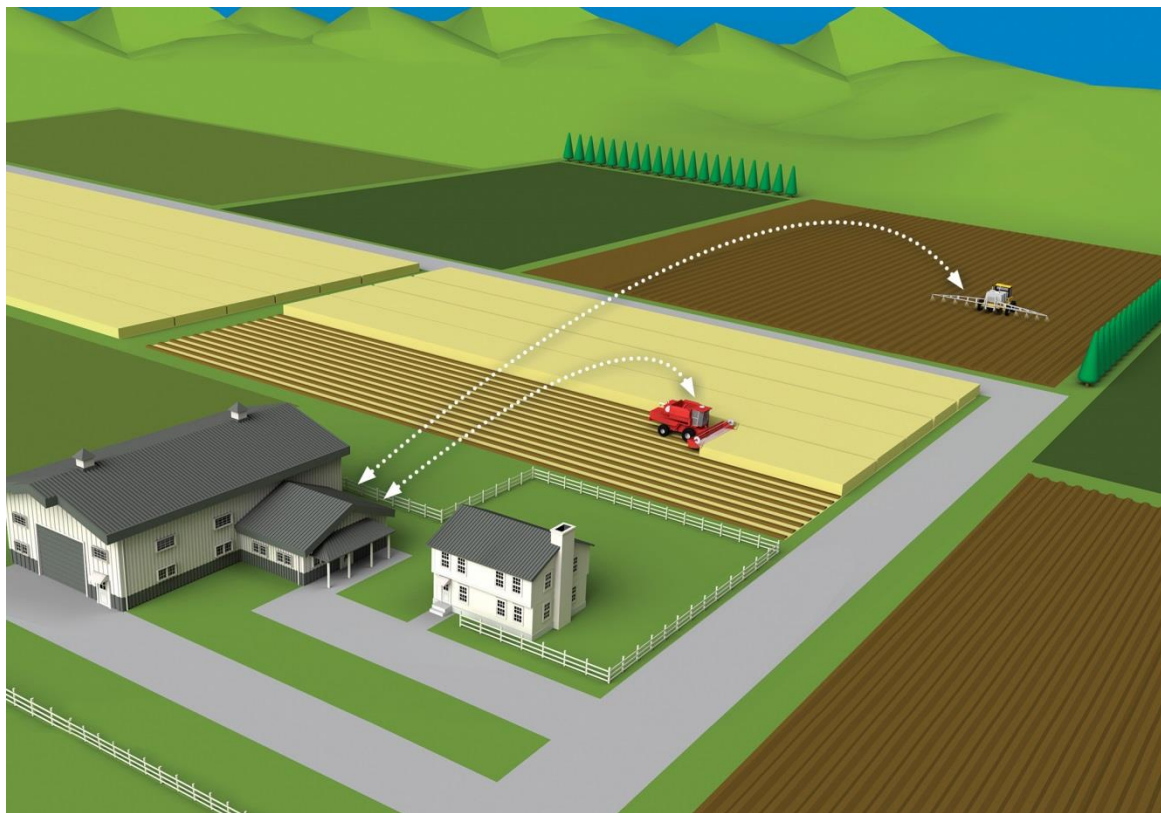
Optimizes operations → translates into real dollars



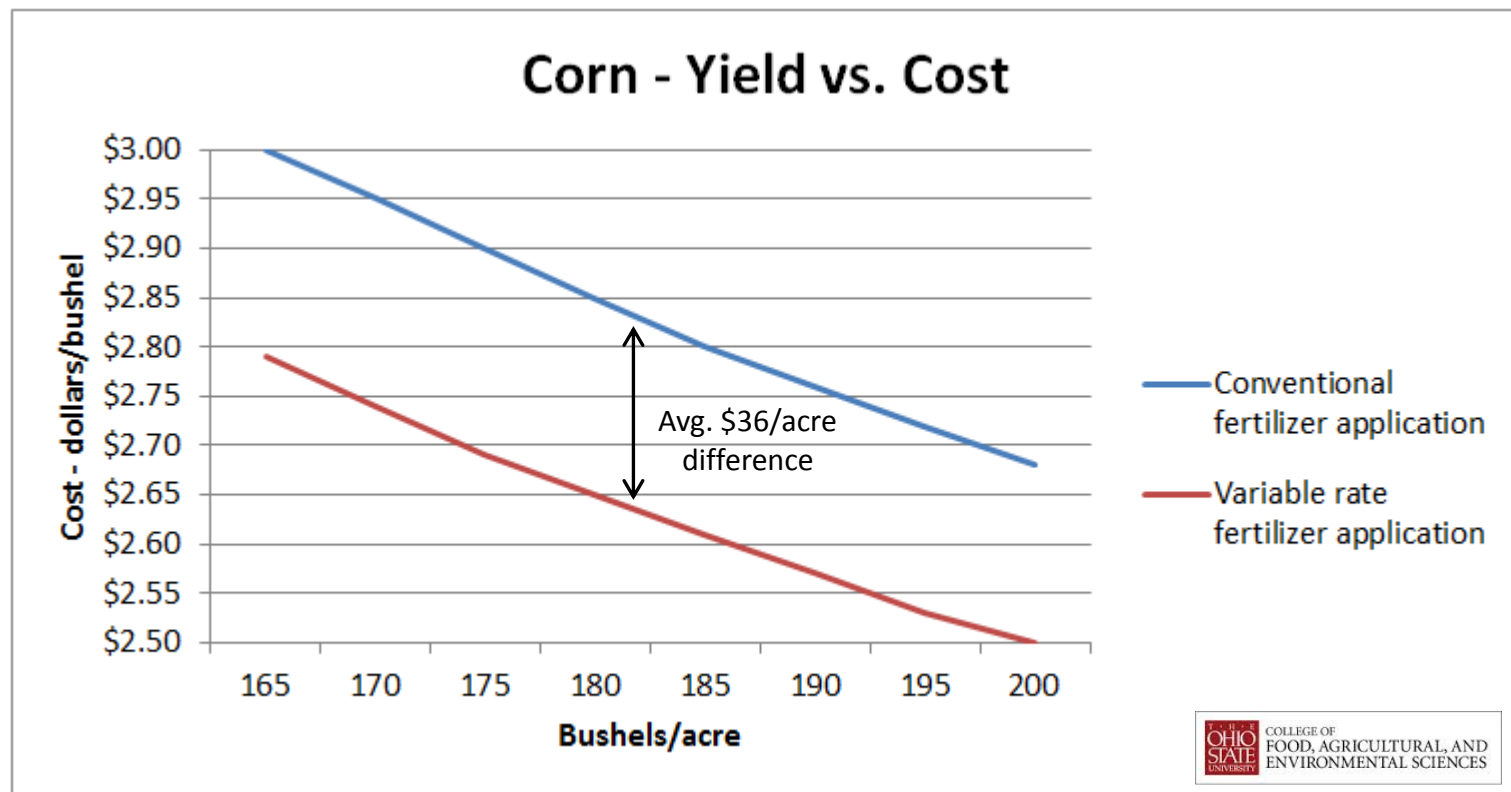
Note: per acre revenue figures assume \$4.00/bu

CONNECTIVITY

Harvest & Fertilizing



Optimizes operations → translates into real dollars





Connected Farm

Water Solutions

Guidance &
Steering Solutions

Flow &
Application Control

Harvest

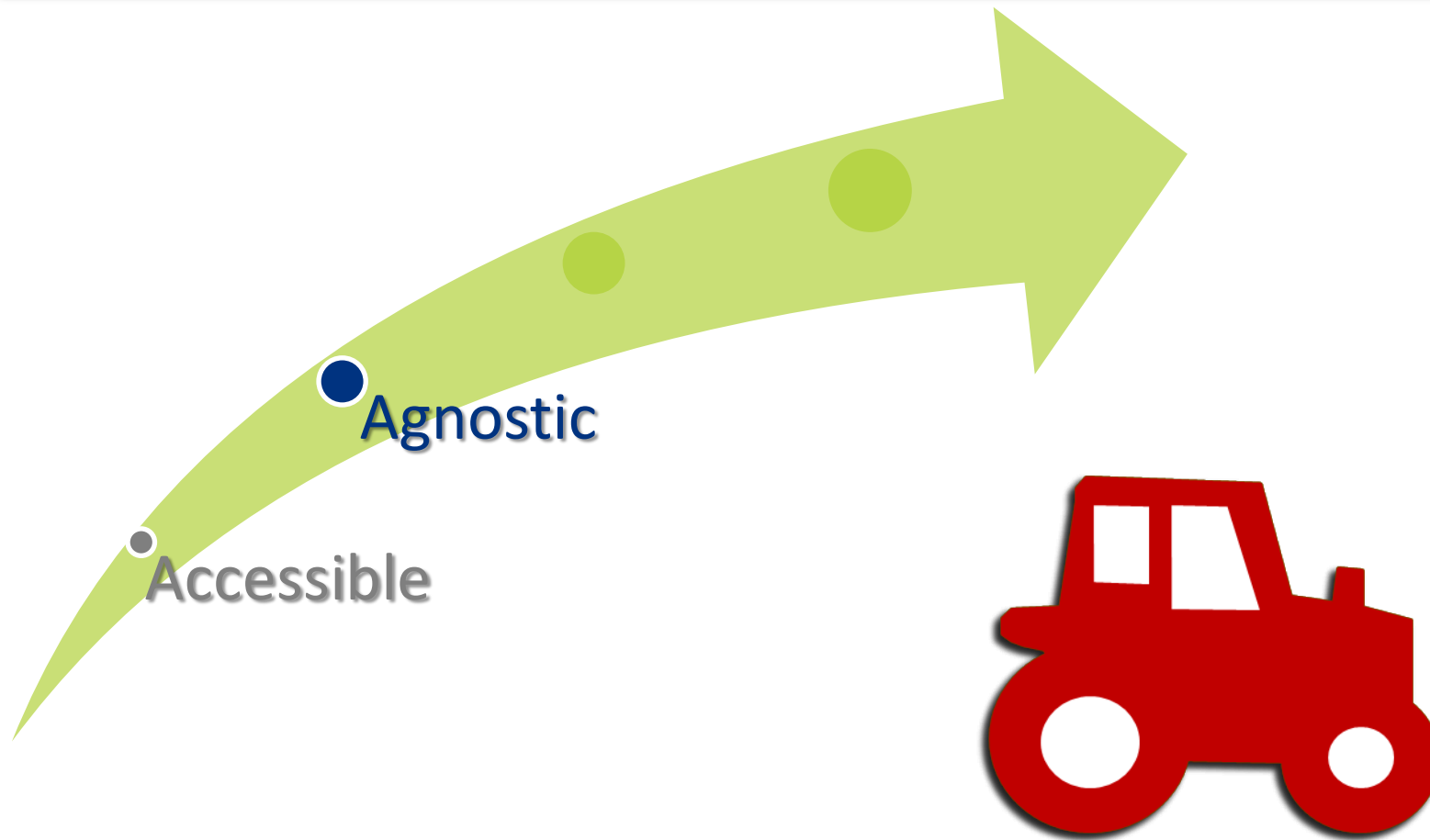


How does Trimble provide Connectivity?

Accessible



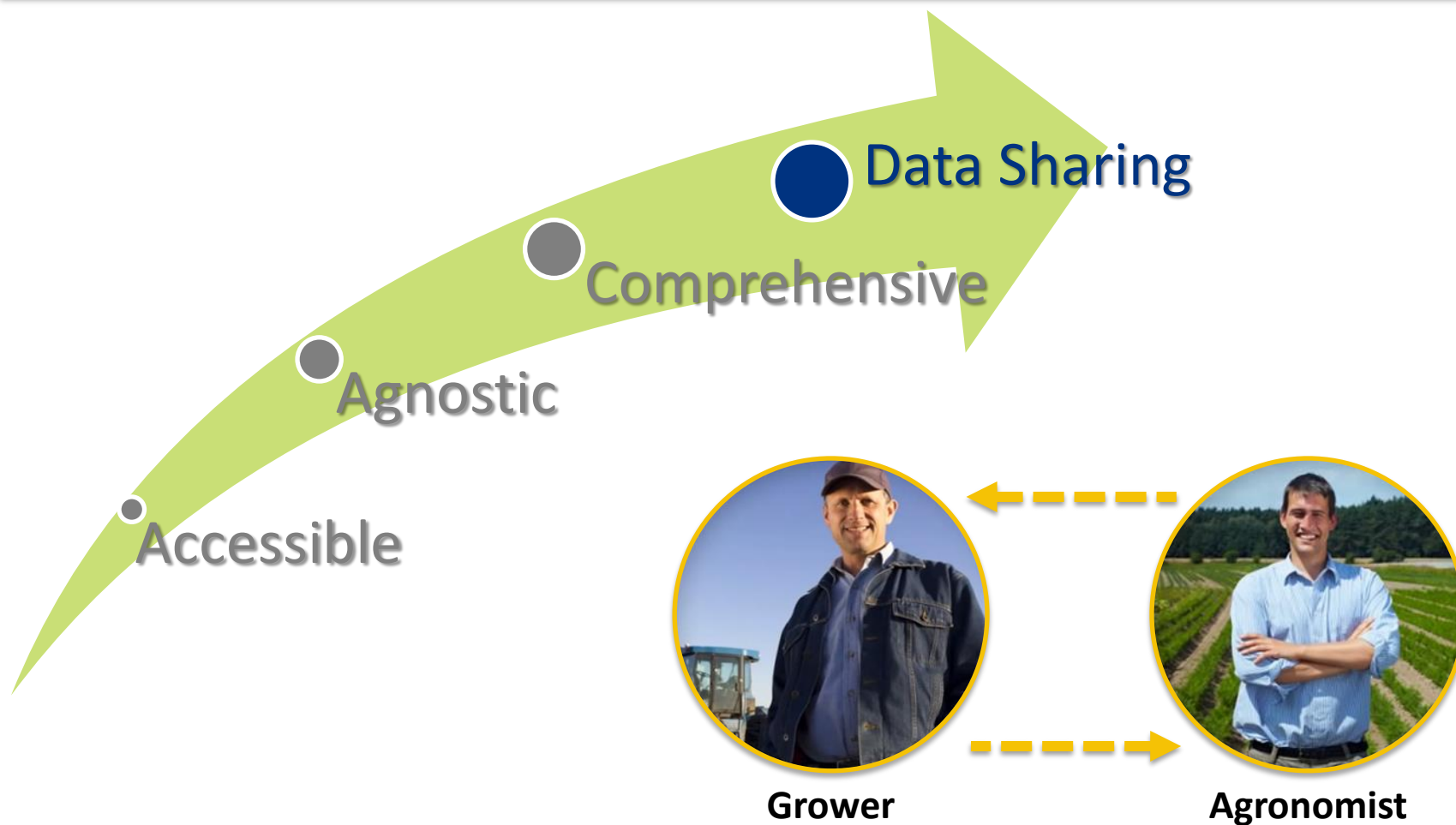
How does Trimble provide Connectivity?



How does Trimble provide Connectivity?



How does Trimble provide Connectivity?



Accessible Software

- Desktop, mobile, and web components that facilitate connectivity.

User Benefits

- ✓ *Cloud based*
- ✓ *Online access*
- ✓ *Work Offline*



ACCESSIBLE

Cloud Based



DASHBOARD



FIELD



ADVISOR



FLEET

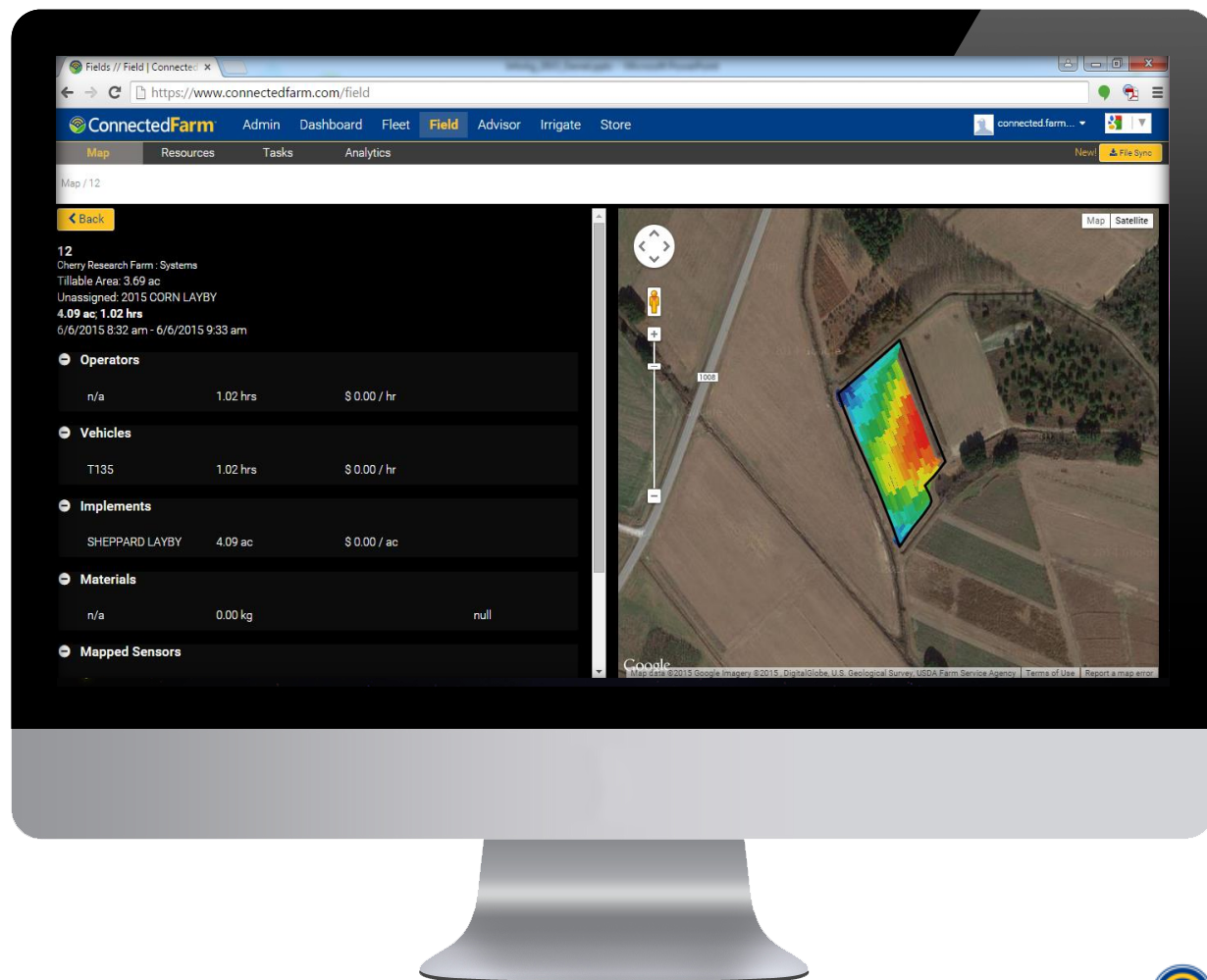


IRRIGATION



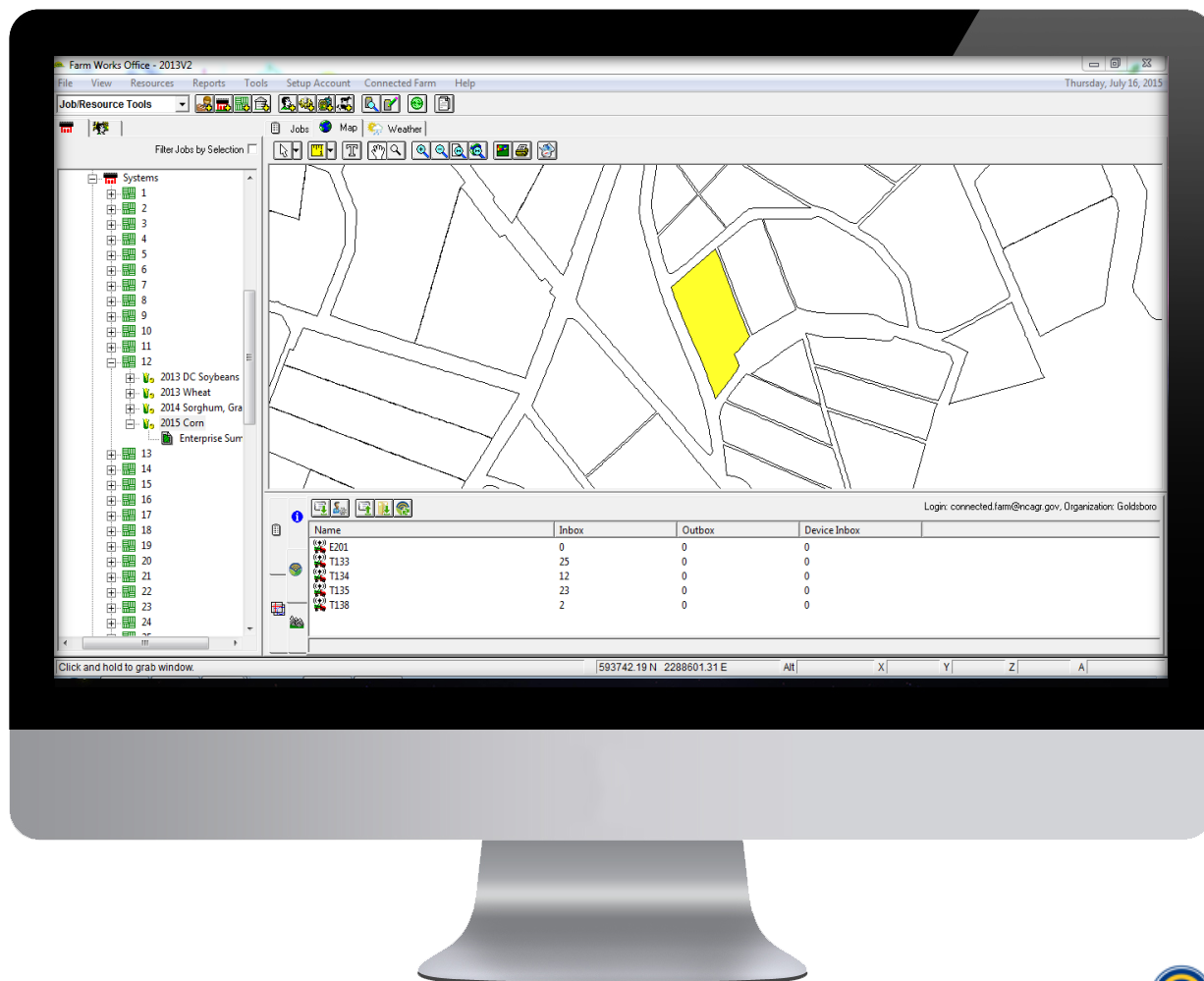
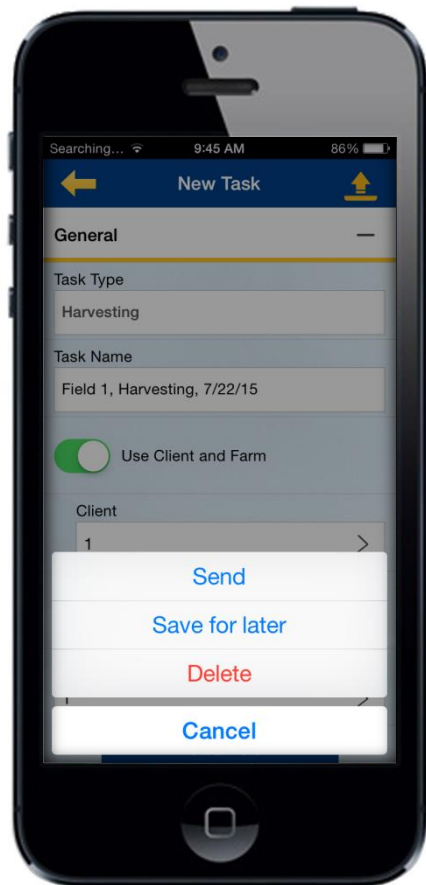
ACCESSIBLE

Online



ACCESSIBLE

Offline



Agnostic Approach

- Interoperable among various systems.

User Benefits

- ✓ *Data management focus*
- ✓ *Compatible with industry data formats*
- ✓ *Third party connections*



AGNOSTIC

Industry Data Formats



AGNOSTIC

File Sync



AGNOSTIC

Office Sync



AGNOSTIC

Third Party Connections

The image shows a computer monitor displaying the ConnectedFarm dashboard. The dashboard has a top navigation bar with tabs: Admin, Dashboard (selected), Fleet, Field, Advisor, Irrigate, and Store. On the right of the navigation bar are buttons for '+ Add Widget', '+ Customer', and a user profile for 'thomas_leurck'. The main content area is divided into several widgets: 'Weather' (Mountain View, CA, 60°F, May 21, 8:47 PM, Cloudy), 'AgCommand' (a list of tractors with checkboxes), 'Map' (a Google Map showing a location with a popup for 'A0700HEN901001AGCOMMAND' showing engine hours and other details), and 'RainWave' (showing 'Trimble' with 'Avg: 0.02\"

AgCommand

Tractor Icon	ID
<input checked="" type="checkbox"/>	A0700HEN901001
<input checked="" type="checkbox"/>	A0700HEN901002
<input checked="" type="checkbox"/>	A0700HEN901003
<input checked="" type="checkbox"/>	A0700HEN901004
<input checked="" type="checkbox"/>	A0700HEN902001
<input checked="" type="checkbox"/>	A0700HEN902002
<input checked="" type="checkbox"/>	A0700HEN902003

User Settings

Section	Details
Accounts	Connected Farm
User Preferences	thomas_leurck@trimble.com [Demo]
Themes	RainWave
	Demo Account [Live]
Irrigation	Demo Account [Remove]
AgCommand	Username: agc2.owner.1@agcocorp.com
	Password: [Masked]
	Forgot password?
	<input checked="" type="checkbox"/> I understand all data in the AgCommand widget will follow Trimble's Data Privacy Policy
	[Login] [Cancel]

InfoAg • July, 29 2015

ConnectedFarm
DASHBOARD

Comprehensive Solution

- Connected Farm is apart of a larger portfolio of solutions.

User Benefits

✓ *Integrated solutions in:*



Connected Farm



Water Solutions



Guidance &
Steering Solutions



Flow &
Application Control



Harvest

Data Sharing Platform

- Built so a user(s) can share datasets.

User Benefits

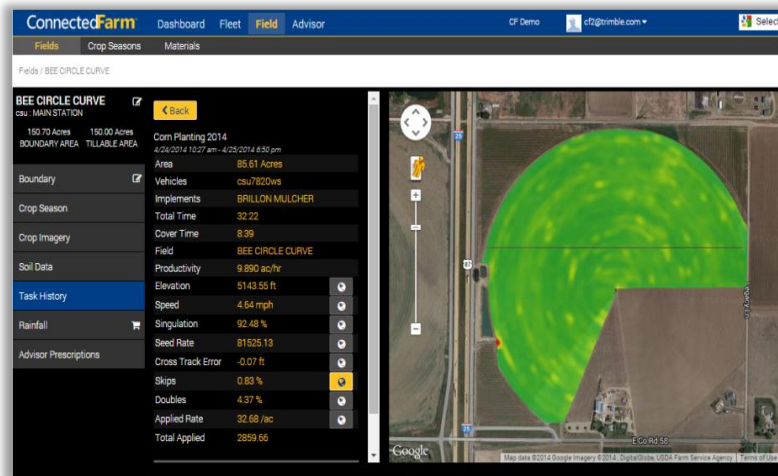
- ✓ *Multi-user platform*
- ✓ *Enhances collaboration*
- ✓ *Organizes data*
- ✓ *Wireless data transfer*



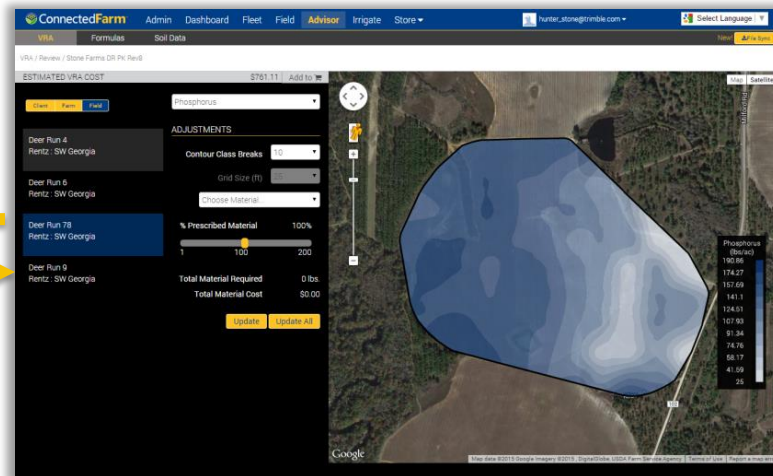
DATA SHARING

Overview

FIELD



ADVISOR



Grower



Agronomist



DATA SHARING

Data Flow



How is Connectivity valuable in the farming cycle?



Agronomist Value

- Increases efficiency and makes data accessible.

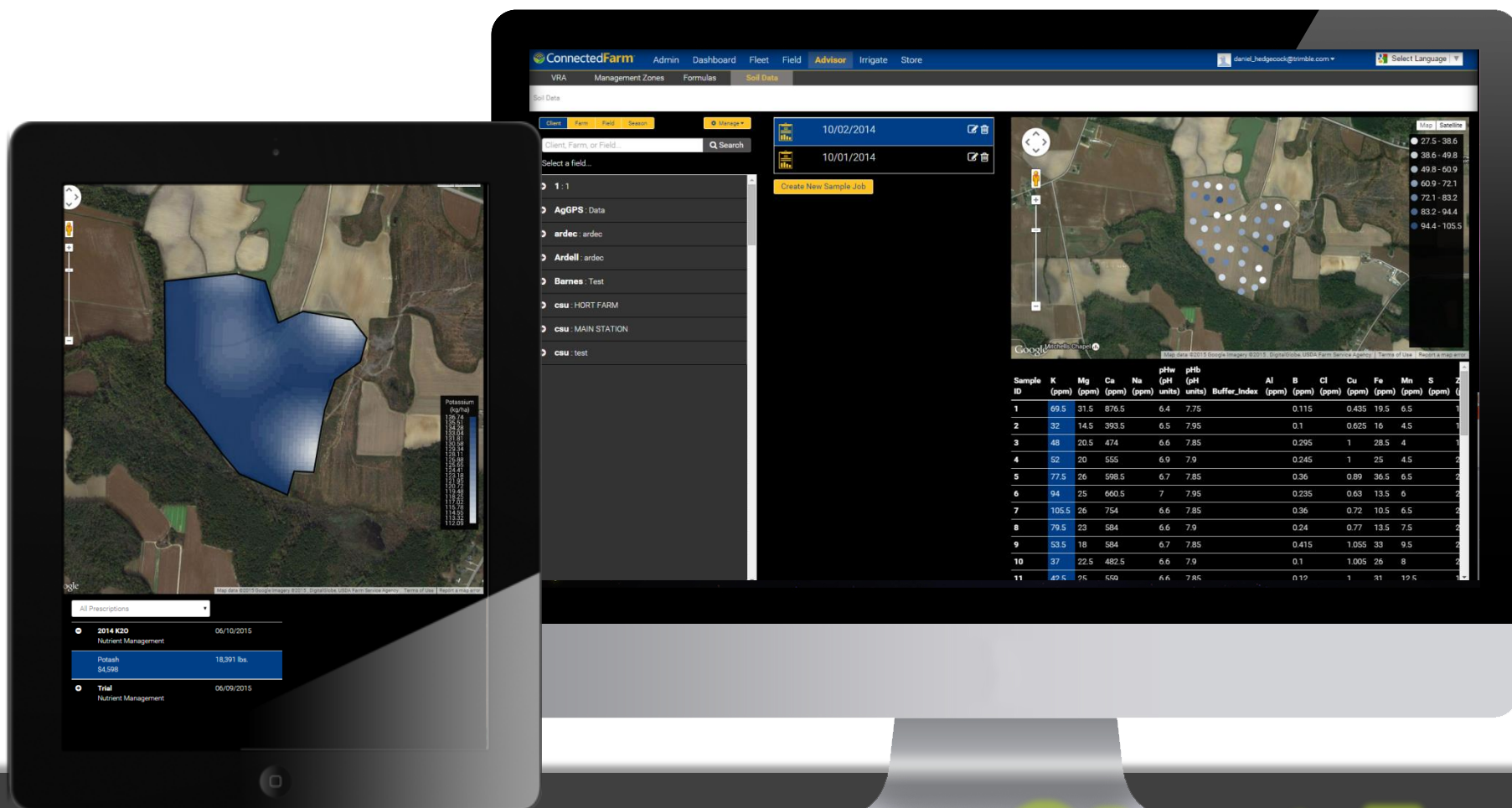
User Benefits

- ✓ *Data collection and storage*
- ✓ *Connectivity to the grower*
- ✓ *Recognize issues in real-time*



AGRONOMIST

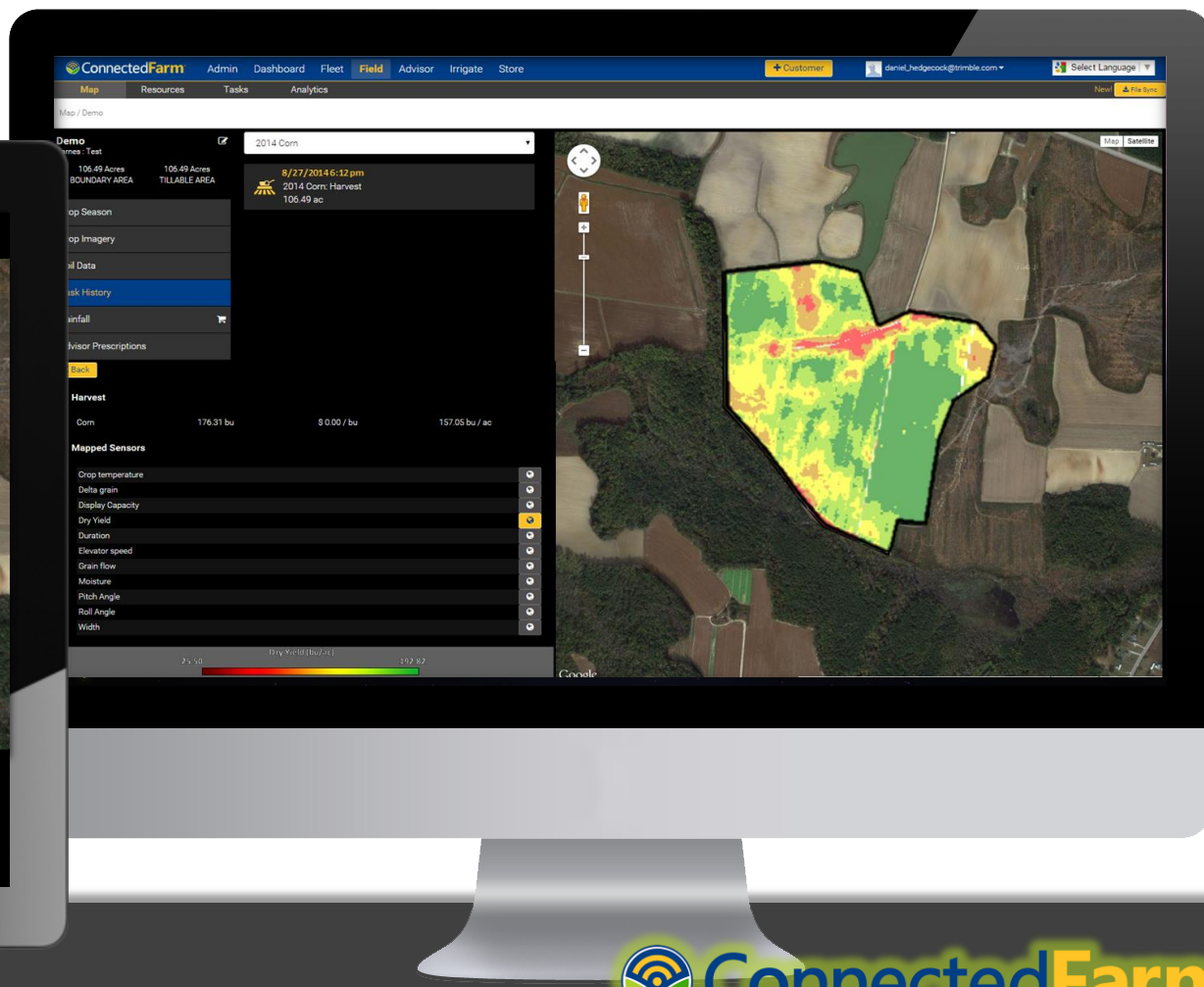
Instant Access



AGRONOMIST

Being Informed

May 20th



AGRONOMIST

Real-time



Grower Value

- Data is available, organized, and ready to utilize.

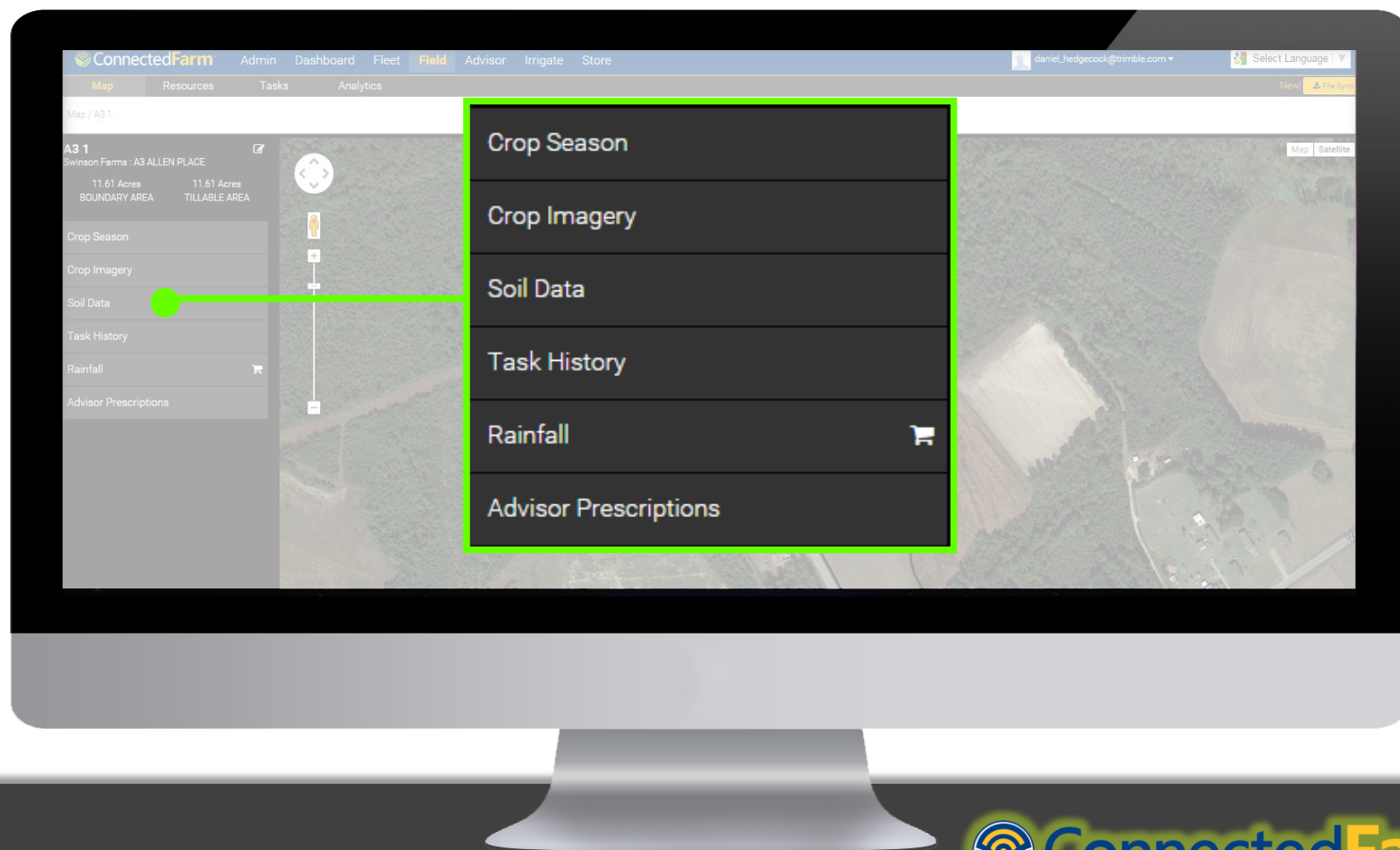
User Benefits

- ✓ *Aids in record keeping*
- ✓ *Fast data transfer*
- ✓ *More control of operation*
- ✓ *Asset tracking*



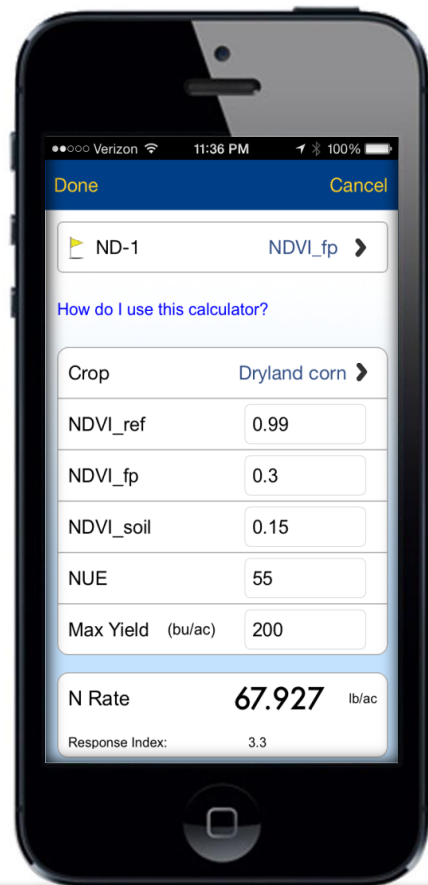
DATA SHARING

Record Keeping



GROWER

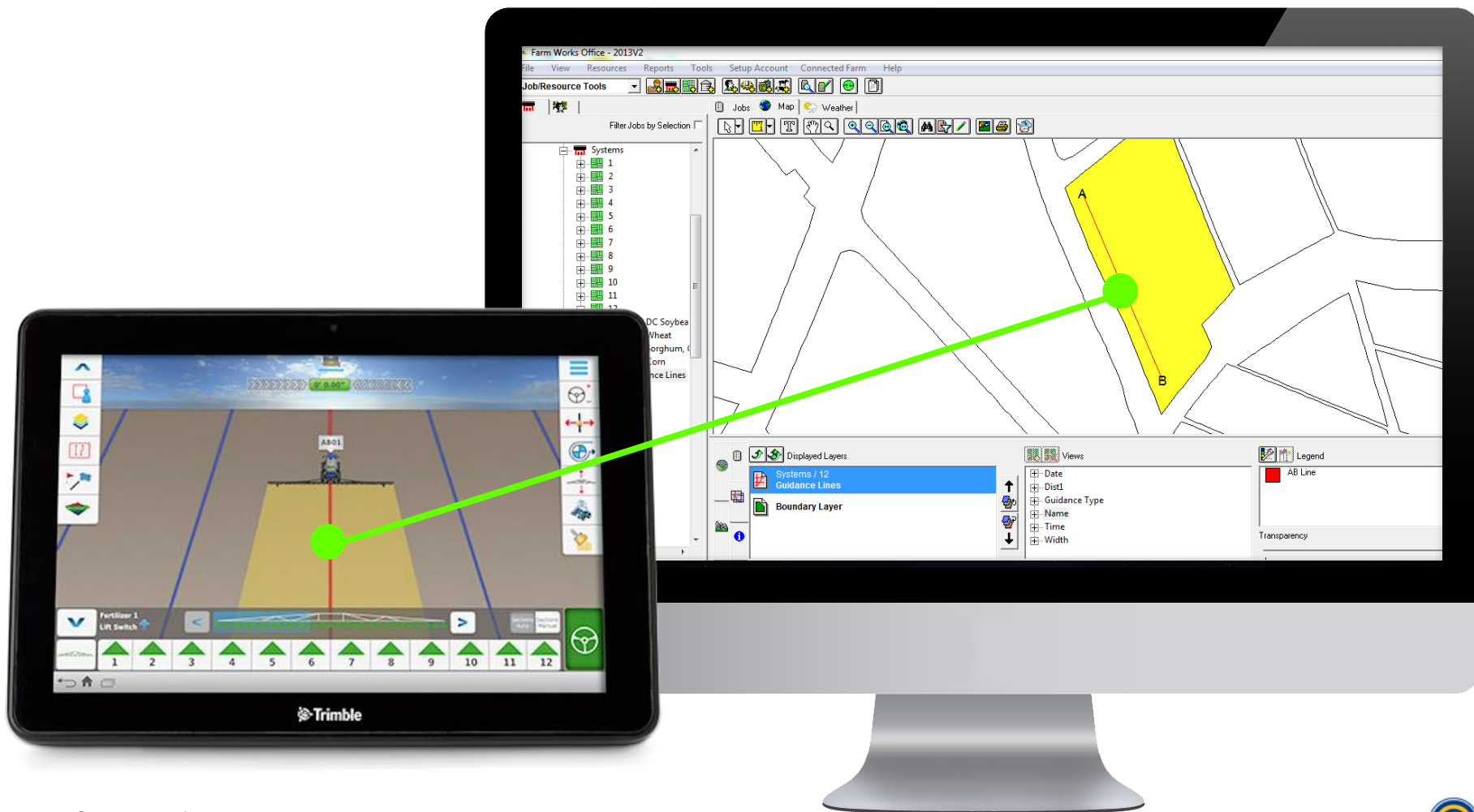
Record Keeping



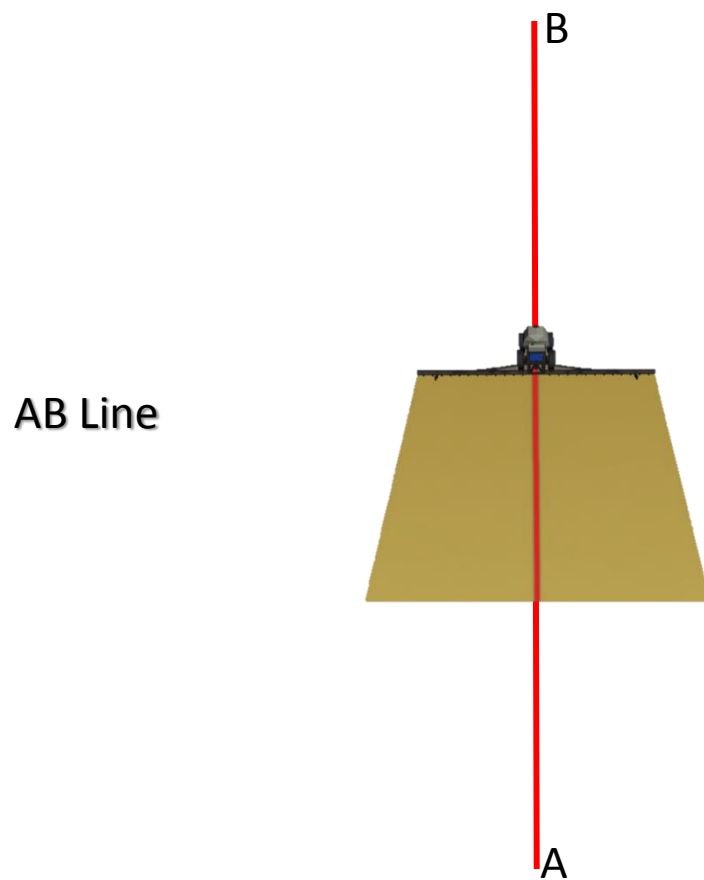


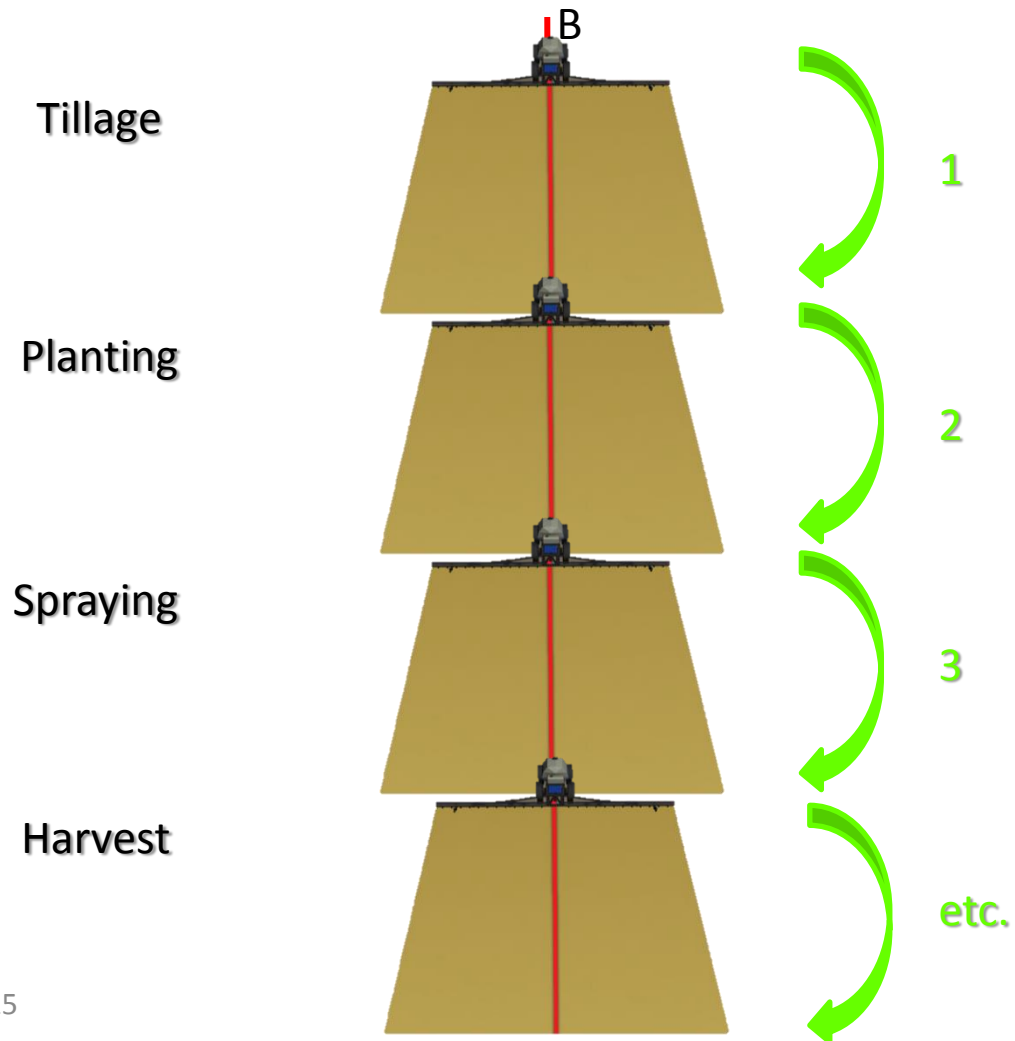
GROWER

Data Transfer



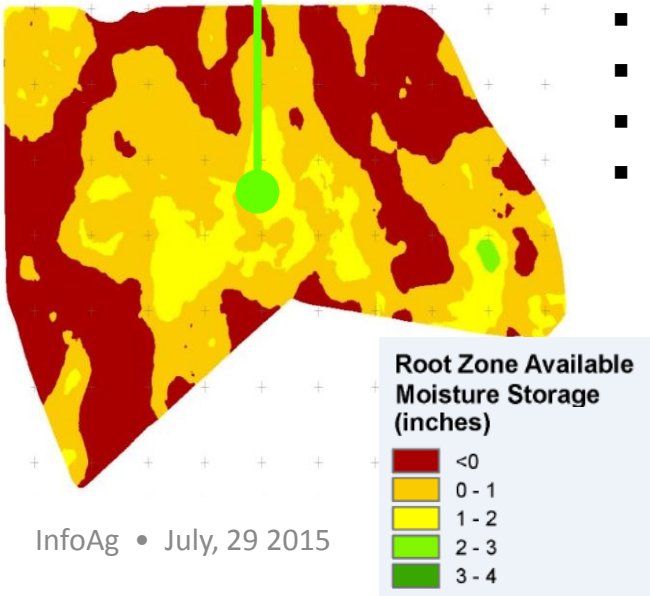
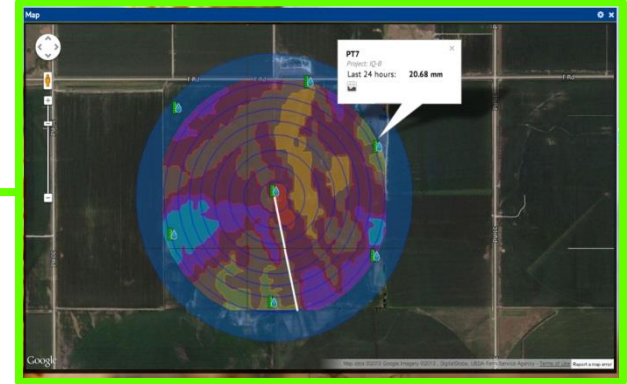
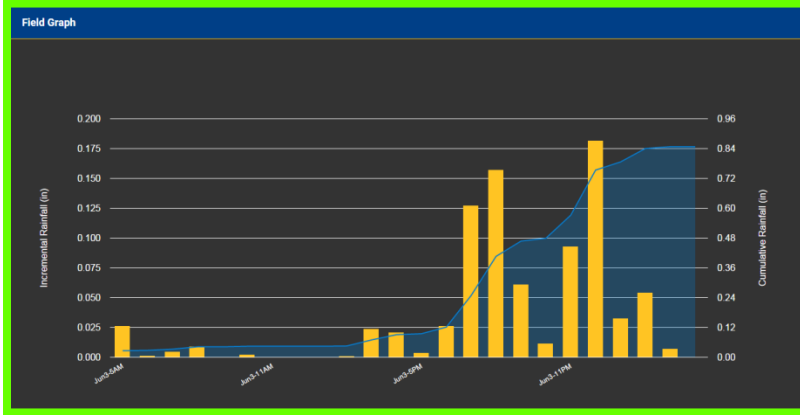






GROWER

Control

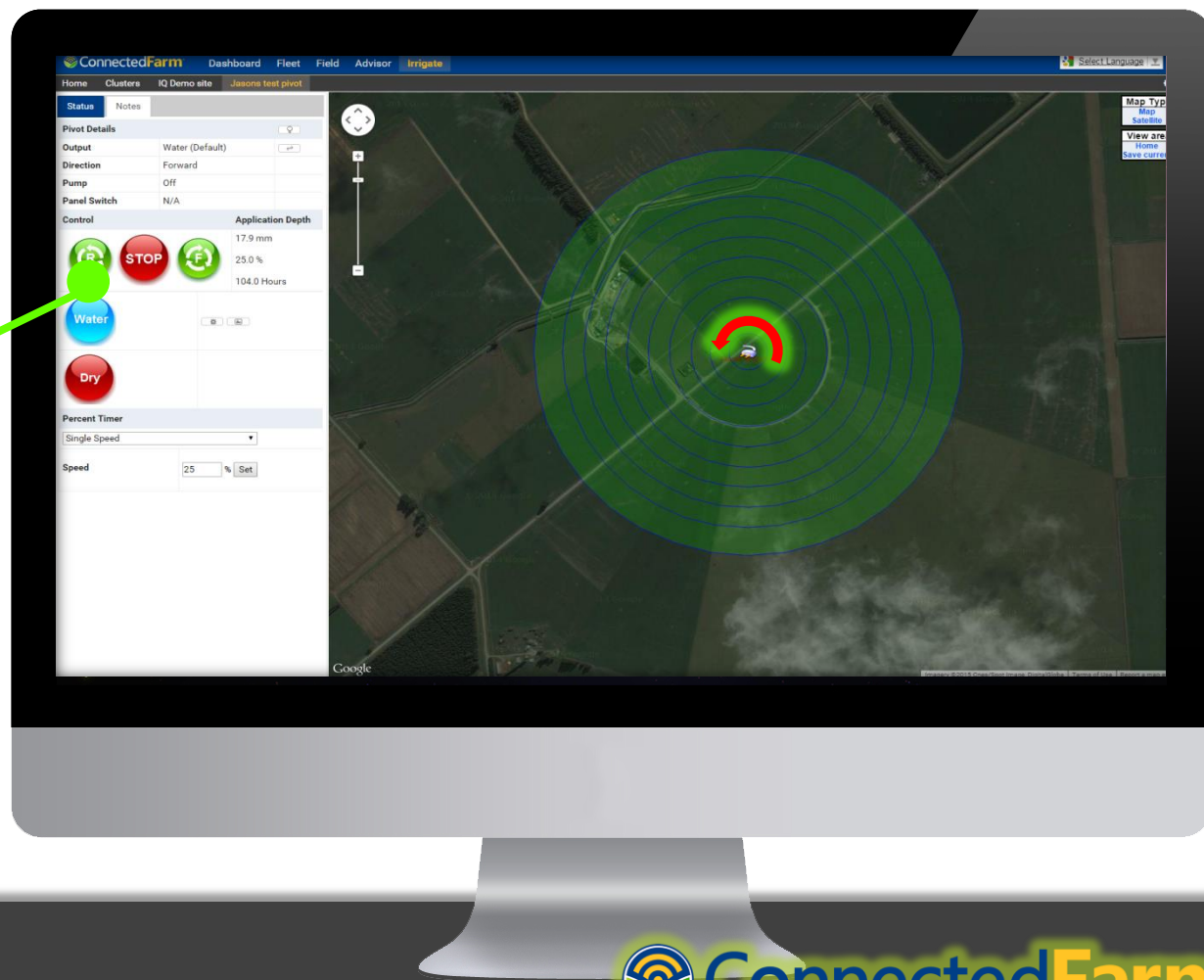
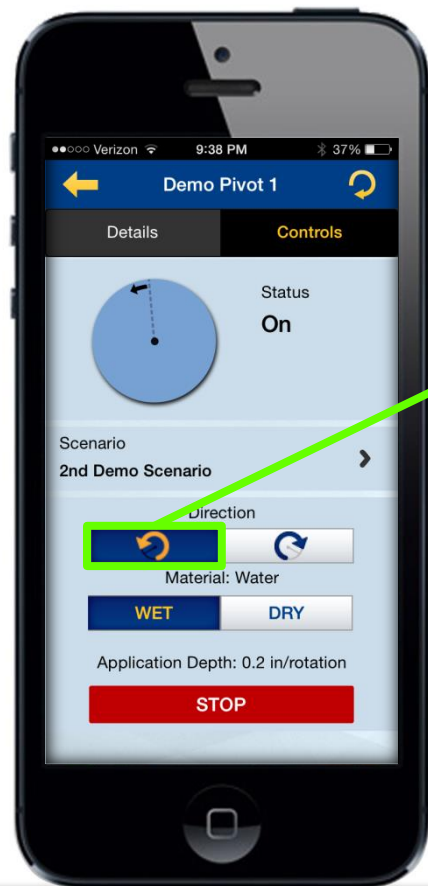


- 3D soil available water info from SIS
- Rainfall data from RainWave
- VRI generated
- Irrigate-IQ for precision irrigation



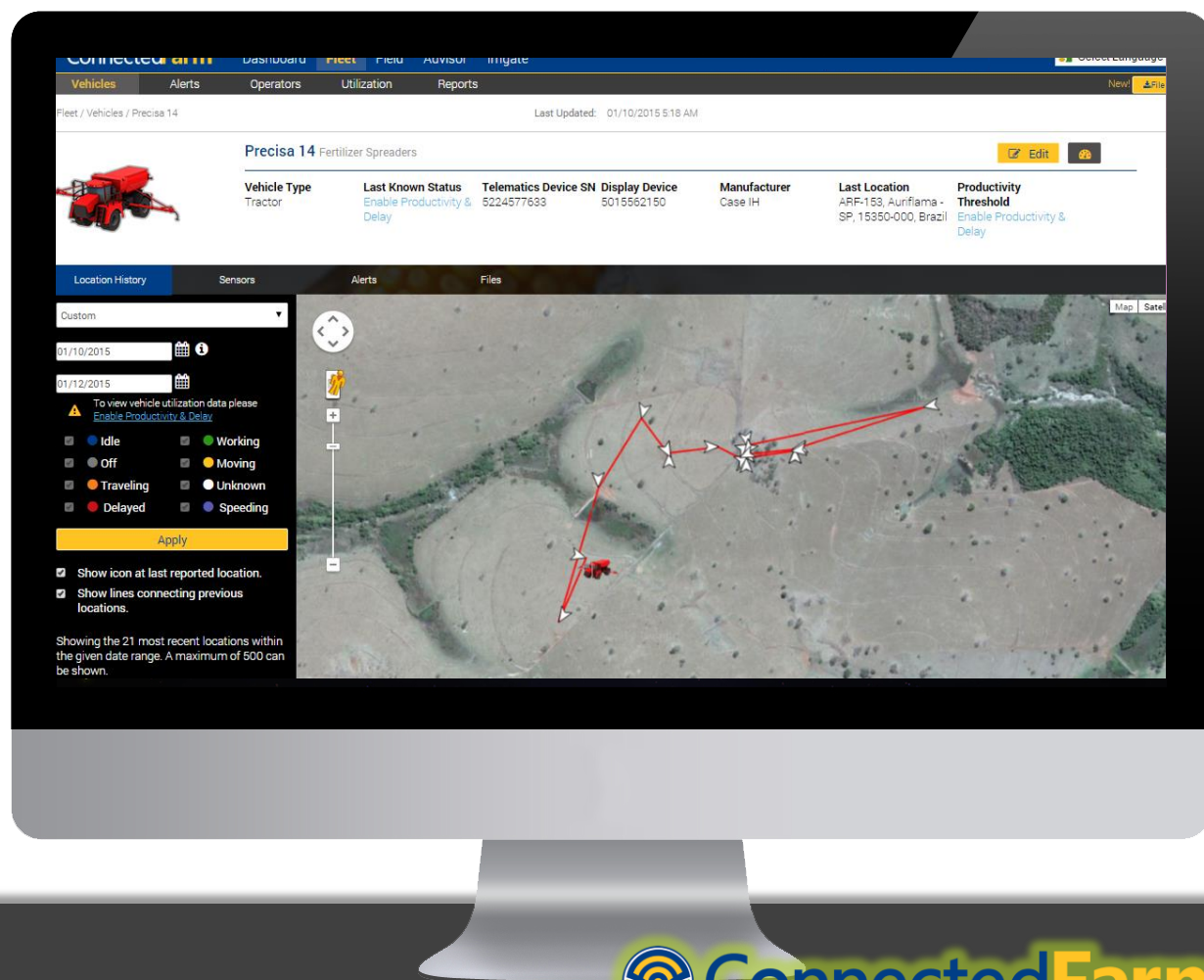
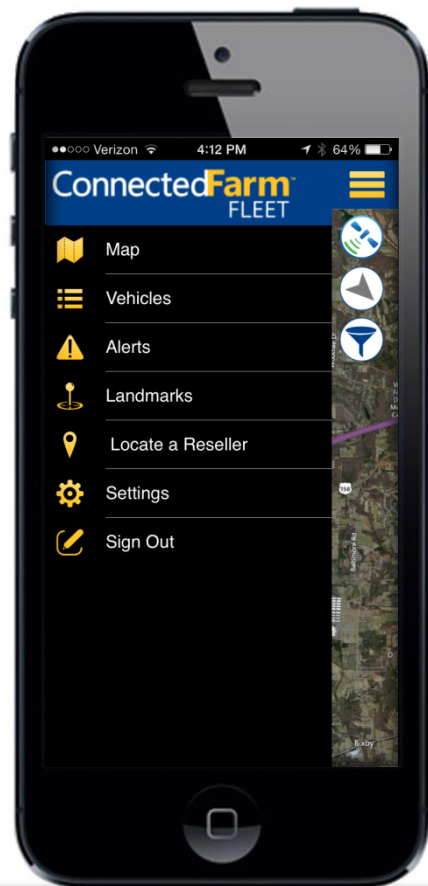
GROWER

Control



GROWER

Tracking



GROWER

Tracking



Business Value

- Monitor efficiency and address issues from a distance.

User Benefits

- ✓ *Remote access*
- ✓ *Oversee entire operation*
- ✓ *Performance metrics*
- ✓ *Financial analysis*



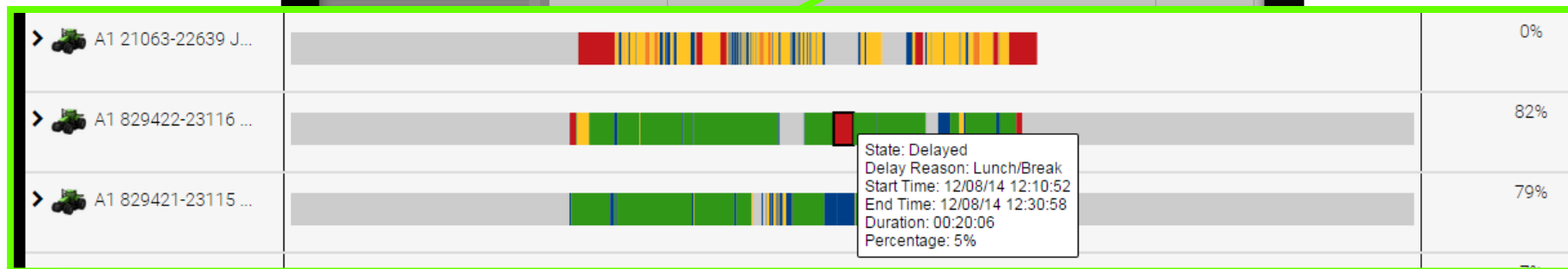
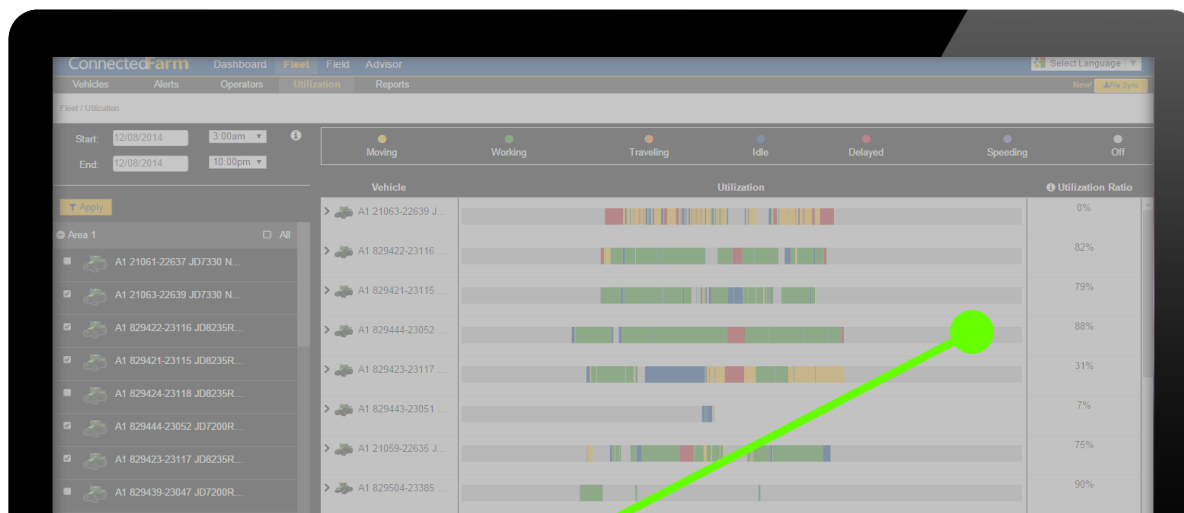
BUSINESS

Remote Assistant



BUSINESS

Oversee Operation



BUSINESS

Performance Metrics

Total Machine States

Color by:
State + -

- Delayed
- Idle
- Moving
- OnTheRoad

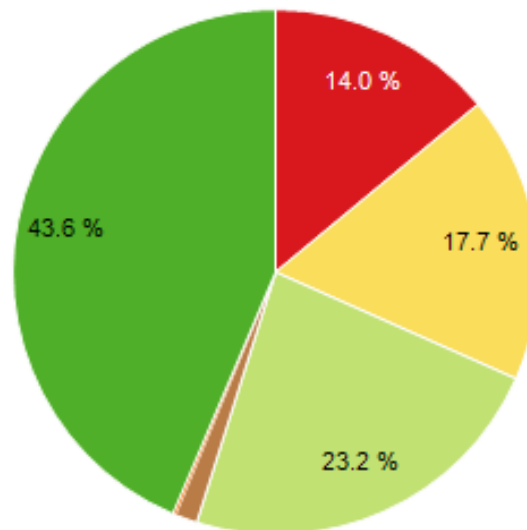
Delay Reasons



Total Machine States

Color by:
State + -

- Delayed
- Idle
- Moving
- OnTheRoad
- Speeding
- Working



0 50 100 150 200 250 300 350 400 450 500 550 600 650 700

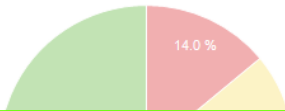
TotalHours + -



BUSINESS

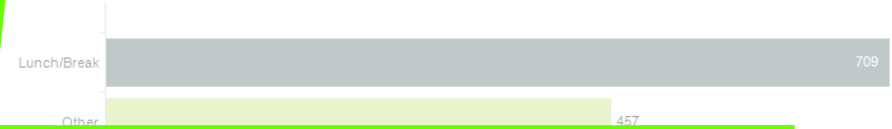
Performance Metrics

Total Machine States

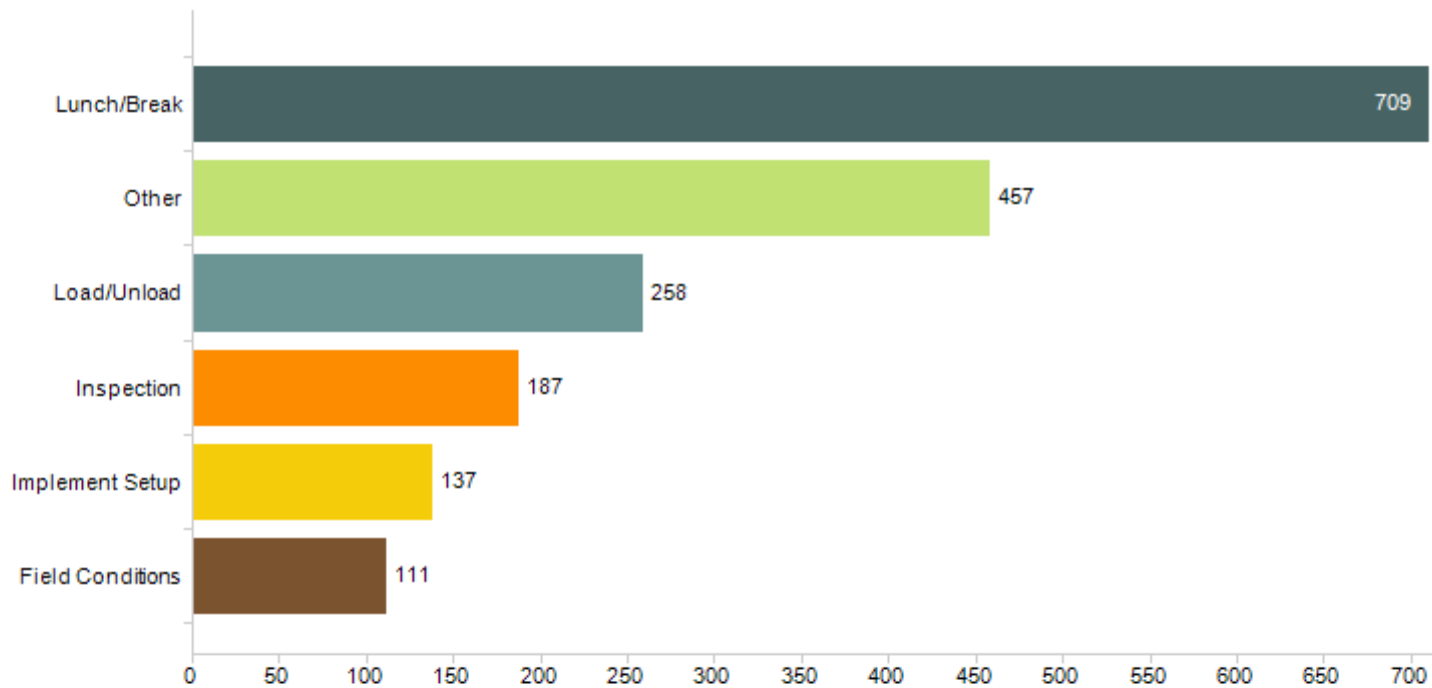


Color by:
State + -
Delayed
Idle
Moving
OnTheRoad

Delay Reasons



Delay Reasons



TotalHours + -

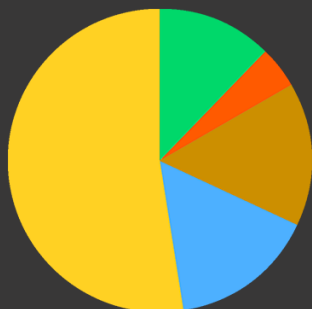


BUSINESS

Financial Analysis

Profit/Loss Overview

Overall Expenses (per acre)



● Labor \$243
● Seed \$53
● Chemicals \$22
● Fertilizer \$42
● Equipment \$42

\$402
 \$943 revenue
 \$943 Costs

321 111 32 537 planted
 1,216 Total

Field

Crop

Revenue/Cost (per acre)

Field 1
Stone: SWGA Farm



\$632

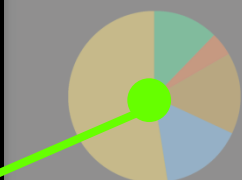
\$144

ConnectedFarm

VRA Formulas Soil

Profit/Loss Overview

Overall Expenses (per acre)



Labor \$243
 Seed \$53
 Chemicals \$22
 Fertilizer \$42
 Equipment \$42

\$402
 \$943 revenue
 \$943 Costs

321 111 32 537 planted
 1,216 Total

Corn



\$200

\$735

Soybeans



\$500

\$134

Wheat



\$632

-\$142

Field

Crop

Revenue/Cost (per acre)

Field 1
Stone: SWGA Farm

\$632

\$144

Field 2
Stone: SWGA Farm

\$421

\$198

Field 3
Stone: SWGA Farm

\$567

\$198

Field 4
Stone: SWGA Farm

\$211

\$652

Field 5
Stone: SWGA Farm

\$632

\$322

Field 6
Stone: SWGA Farm

\$421

-\$277

Field 7
Stone: SWGA Farm

\$567

\$301

Field 8
Stone: SWGA Farm

\$211

-\$302

Soybeans



\$500

\$134



Overall Benefits

Connected Farm can enable all of the following:

- **Time savings**
- **Accurate record-keeping**
- **More precise and efficient management**
- **Opportunities to improve crop results**
- **Effective collaboration with partners**





Thank You!