Precision Farming

Better Farming, Better Business Records,
But

What & Who Will Make It Work on Your Farm

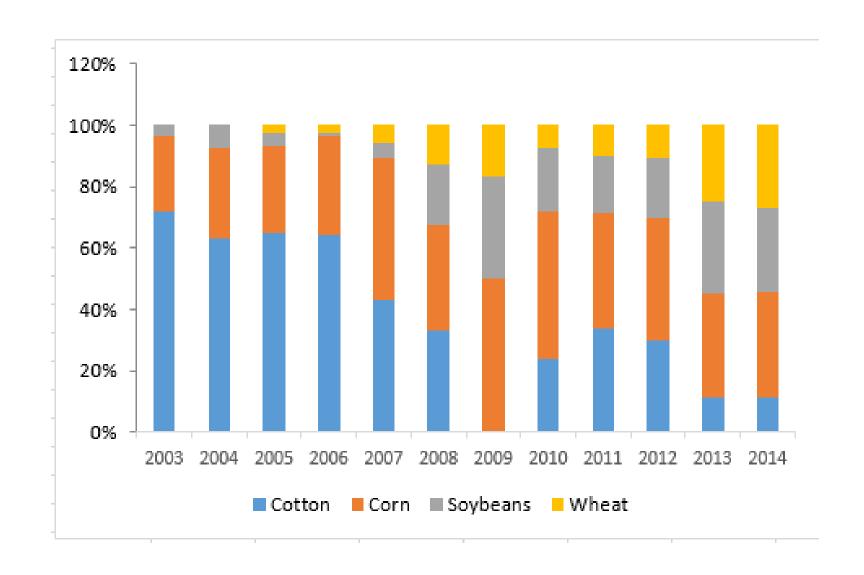
Our Farm

- Northern Alabama, Dryland
- Main Crops: Corn, Wheat, Soybeans, Cotton
- Also: Canola, Sesame, Peanuts & Sorghum
- 28 Different FSA Farms, 112 Fields,
 2 to 3 crops in a Field
- Owned & Rented, Cash & Share
- Came to Precision Ag from a recordkeeping perspective
- No Precision Ag Consultant or Sales Representative Available

14.7 miles E to W,7.7 miles N to S



Annual Decision - What to Plant

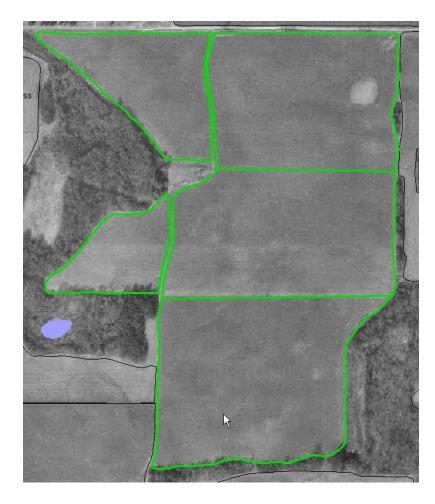


Current Uses of Precision Tools – All Business

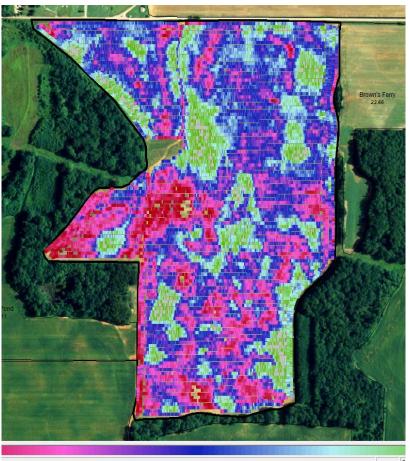
- RTK Guidance, Section and Row control on sprayers and planters, recently telematics for sprayers operating in the same field
- Use yield maps & soil maps to create soil sampling maps
- Prescribe variable rate P, K and lime applications in the farm office
- Have used NDVI imagery from airplanes (InTime) and on board sensors (Greenseeker) to determine variable rate applications of in season nitrogen on wheat and corn and growth regulators and defoliant in cotton
- Use "as applied" GIS data and manual data entry to keep detailed field records for business planning and share rent calculations

Use Yield Maps to Create Soil Sampling Zones

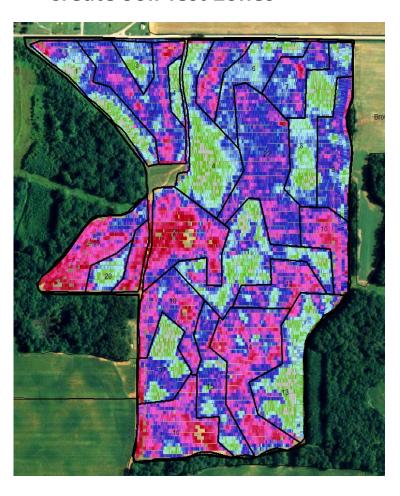
Old Soil Test Zones



Corn Yield Range of 9 to 145 bu/acre



Create Soil Test Zones



Soil Sampling Zone Map Created

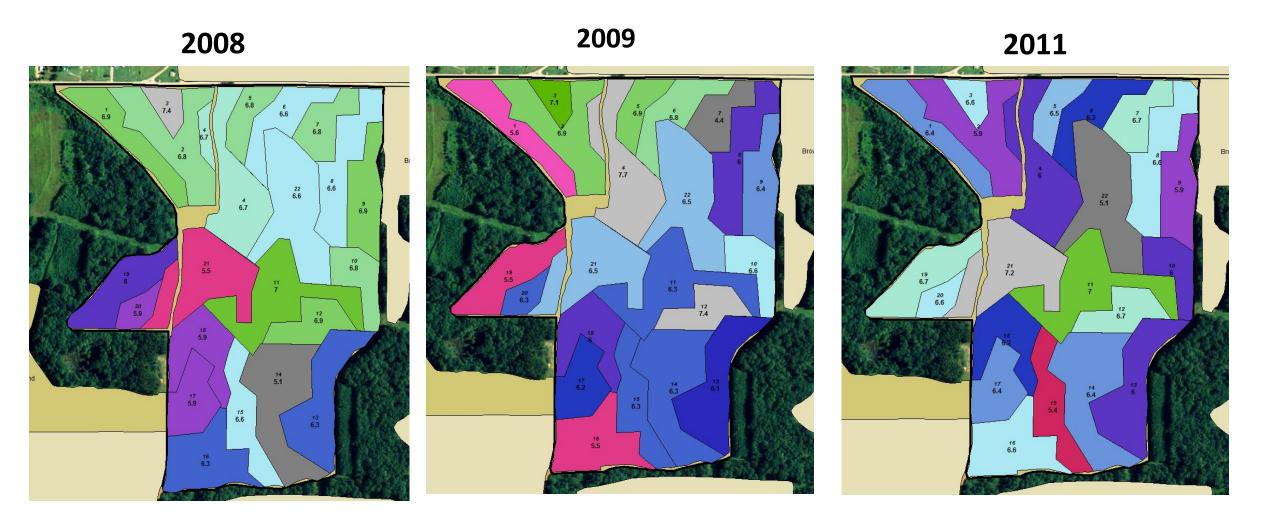
Soil Test Zone Sampling Map



Moderate Correlation to Imagery



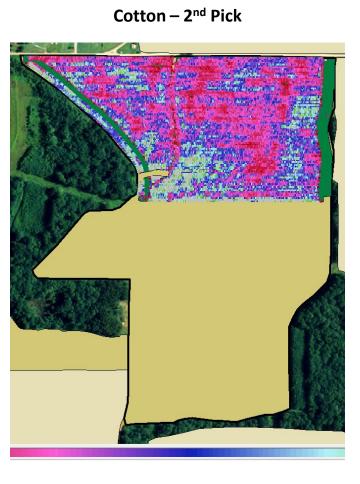
Variance in Results Indicate Sampling Issues



New map every few years. In 2012 the field had 2 crops, corn and cotton.

Corn

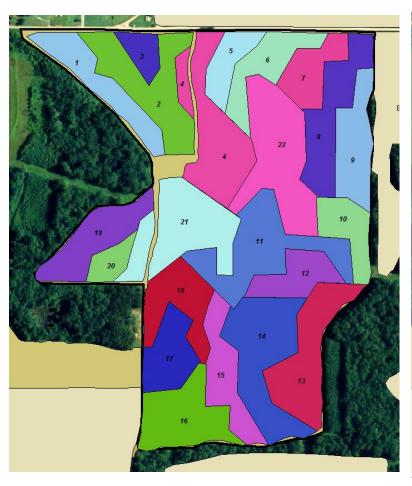


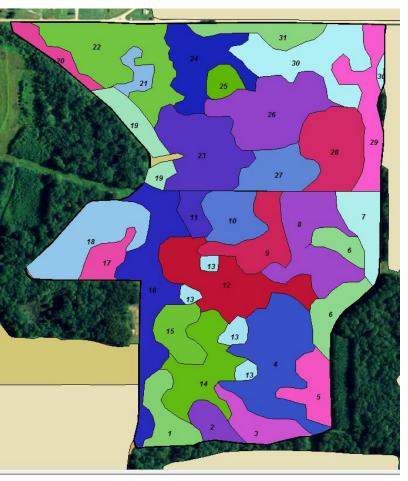


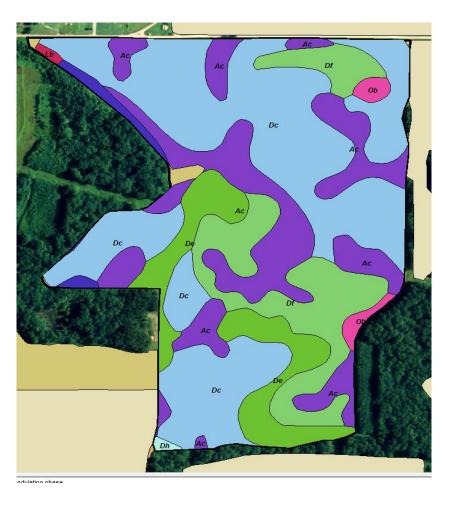
3 to 116 bu/acre 0 to 1,702 lbs/acre

0 to 369 lbs/acre

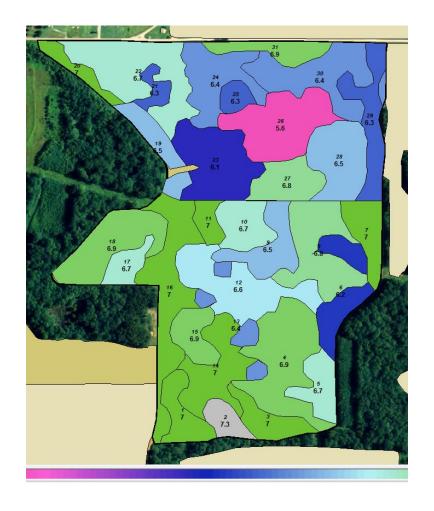
New Zones Created - Soil Map Match?





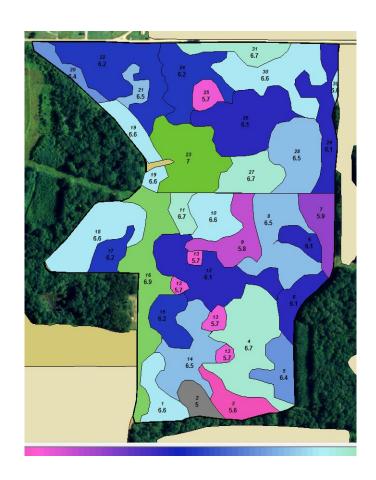


pH – Still not perfect, but getting much better

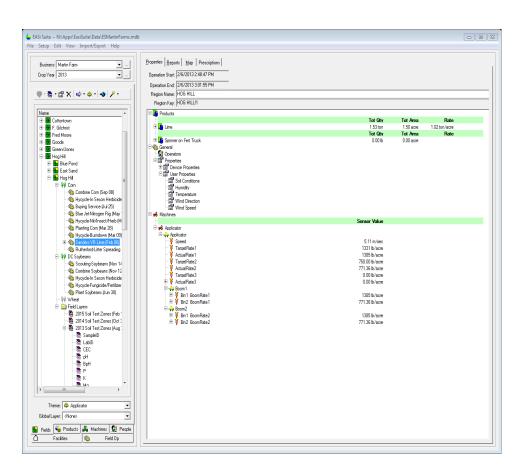


After 2014 Crop

Variable Rate Applications & As Applied Records





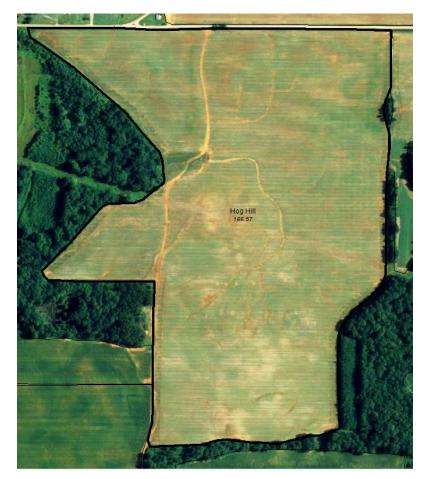


pH Results prior to 2013 Crop

As Applied Results – Custom Applicator Data

Business record of the cost of the material created when record is created.

Same Field – Different Acres



Planter Record – 166.61 acres

Double Crop Soybeans – 93.61 acres

Corn – 73.00 acres



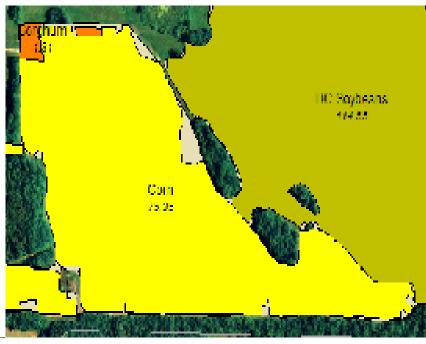
Certified Acres – 163.88 - 98.3% Soybeans - 92.28 acres Corn – 71.60 acres

166.57 acres

Odd Field Shapes and Sizes – This Field: 79.53 Acres









Products			
···	Tot Qty	Tot Area	Rate
🖹 🚹 Com P 2089 Y	6.25 bag	19.47 acre	25698 seed/acre
	Tot Qty	Tot Area	Rate
🕀 🛂 Com DK 62-55	17.37 bag	53.81 acre	25830 seed/acre
	Tot Qty	Tot Area	Rate
🕀 🚹 Com P 1498 Y	2.67 bag	8.23 acre	25935 seed/acre
🐫 General			
Operators			

Planter Says: 81.51 corn acres planted **GIS Map Says:** 75.35 acres planted – 92%

Certification Maps to FSA:

- Show all crops in a field
- Show turn row or unplanted wet areas

Where Our Farm Is Today...

Permanent GIS Data

- Property Boundaries
- Field Boundaries
- Lease Boundaries
- Soil Maps
- NRCS Maps
- VERIS Maps

Annual GIS Data

- Soil Test Results
- Planting Maps Varieties
- Crop Boundaries
- Application Maps
- Sensor Maps
- Yield Maps

Annual GIS Custom Applicators

- Fertilizer Spreading
- Aerial Applications

- No Consultant...
- Thumb drive transfer of information

On Farm Desktop Based Software

Prescriptions: Multiple Formats

- Soil Test Maps
- Variable Rate Farm Applications
- Variable Rate -Custom Applicator

Permanent Business Data

- Lease Terms
- Vendor Data
- NRCS Contracts

Annual Business Data

- Input Purchases (seed, fertilizer, crop protection chemistry)
- Harvest & Storage Records (truckloads, modules)
- Sales & Deliveries (truckloads, bales)

Reports: Tabular and GIS

- Certification Maps and Fields List
- Share Rent Landlord Summaries
- CSP Reports
- Business Analysis by: crop, field, farm, variety, practice
- Crop Insurance Yield Reports
- >>>endless list of needs

Where Are We Going....

Fleet Monitoring & Management

Local Consultant? Sales Rep for an Input Provider? Permanent GIS Data **Annual GIS Data** Ownership Permanent Business Data

Annual Business Data

Annual Custom Applicators

Prescriptions: Multiple Formats

Farm Based

Computer

Software

Cloud

Service

Data Ownership '

3rd Party Service GIS Data

- Weather Data
- Satellite Data?
- NDVI Flight Data?
- Drone Data
- **VERIS Data**
- Water table/well location

Reports: Tabular and GIS

- On Farm Work Orders
- **Business Analysis Reports**
- EPA reporting
- Supply Chain & Marketing Verification
- >>>endless list of needs

Hopes

- Can produce significant productivity gains
- Creates opportunity for informed business analysis and decisions
- Allows for sustainable intensification of production in an increasingly resource limited environment
- For software that combines the tools, via modules, into one integrated package for farm decision making.
- Farm organizations will be proactive, powerful advocates for farmers as the rules of data privacy are debated and written.
- An economic model will evolve to support a robust network of objective, 3rd party advisors helping farmers on the best uses of these tools.

Frustrations

- Farmer complacency/lack of awareness of the power and value of these tools as a business decision aid
- Lack of "standardization" in data file formats
- Lack of focus on business decision making tools (except selling seed and fertilizer) and crops outside of the corn and soybean belt

Concerns

- Data ownership:
 - 1. Who captures the value and how is it used...
 - 2. Where and how long is it stored and who has access
- Non Alignment of Interest Input Providers as Advisors
- The lack of well funded, robust, public research and extension to test and rate claims of efficacy.
- Relevance of aggregated data applying to very local circumstances
- Retail supply chain demands for impractical practices