Better farm decisions through science, software and data

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Our first challenge: Nitrogen Fertilizer (N)

- $100B industry that helps produce half of the world’s food
- 50%+ of N is wasted, due primarily to complexity of the nitrogen cycle: soil, weather, crop, field behavior
- Current tools are useful, but insufficient

Highly inefficient crop systems from a nutrient standpoint
Existing methods to determine N rates

• Rely largely on broad averages
• Lack the ability to adjust to weather events
• Do not account for soil and field management characteristics
• Farmers often over-apply N to avoid yield losses – “insurance fertilizer”

Results in excess costs, missed yield opportunities, and environmental damage
Excess N Applications Cause Substantial Environmental Damage

Greenhouse Gases

- Methane (36%)
- Nitrous Oxide (44%)
- Carbon Dioxide (20%)

Hypoxic “Dead Zones”

Source: NOAA
Corporations like Walmart are getting involved
Goal: Find the Sweet Spot

Main Factors:

- Snow
- Spring rains
- Summer drought
- Intervention
- Nonintervention

Since farmers can apply N multiple times per year, leverage our ability to be increasingly accurate.
Web-based software that continuously identifies optimal nitrogen rates for corn fields

- Simulates N dynamics through software models
- Based on rigorous science developed at Cornell
- Proven ROI for commercial farmers
- Commercially available in 28 US states
- Completely independent to the sale of crop inputs, such as seed and fertilizer
Answers Critical Questions

- How much N should I apply now?
- Did I apply too much N last year? Too little?
- What if I change my fertilizer schedule?
- How much N will I lose due to a major rainfall event?

Recognized by key entities for breaking the tradeoff between financial and environmental performance.

Walmart, The Nature Conservancy, EDF, USDA
User Inputs:
- Land
- Soil
- Crop

Fertilizer, Manure, Irrigation Applications

Adapt-N Simulations:
- High-Resolution Climate Data (Precip, Temp, Solar Radiation)
- 13 Interrelated Software Models
  - Uptake, loss, crop growth, manure, drainage, etc.
  - 2,000 proprietary soil dictionary records

Results for every zone:
- Daily recommendations
- PDF reports
- Interactive graphs
- N-Alerts
- Prior-season analysis
SOIL INFORMATION

Smith Farming
Tillage Method
Conservation Tillage
Tillage Date
N/A
Tillage Depth (inches)
N/A
Tillage % Residue
50%

Soil Test
There was a soil test in the last 3 years
Soil Test Sample Depth (inches)
12
Soil Organic Matter %
3.5

Submit

FIND FIELDS OR ZONES TO APPLY:
Region:
- Show Midwest
  - Check all zones across all farms
    - Farm: Cambridge
    - Farm: Corey’s Farm
      - Field: Skunk River East
        - Main Zone
        - Low Yield
    - Farm: Ithaca
    - Farm: North Dakota
    - Farm: Skunk River
    - Farm: South Dakota
3 years of strip trails demonstrated $38/acre added grower profit (5-10% increase), with an 88% success rate
Interactive Graphs and Alerts

E.g., N loss & precipitation, N Mineralization, N Crop Availability, Crop Growth
Thousands of customer fields across 25 states
Thank You

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