Soil Health Partnership: What do the data show?

Nicholas J. Goeser, Ph.D.
Vice President, Production & Sustainability
National Corn Growers Association
General Mills Deepens Investment in Soil Health with $735,000 Contribution to National Wheat Foundation

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MINNEAPOLIS — General Mills has doubled its investment in soil health practices, giving the National Wheat Foundation $735,000 over the next three years to advance wide adoption of soil-health practices in wheat fields across the Southern Plains, the company said in a statement.

The company will use the funds to support the National Wheat Foundation’s (NWF) Soil Health Partnership, an initiative to improve soil health and promote greater consumer-appropriate wheat in the region.

"General Mills is committed to help farmers improve soil health and the health of their land, and to educate consumers about the proven benefits of healthier soils. We cannot achieve the kind of food system that works for all of us without a healthy soil," said John Morrell,总裁, General Mills, Inc.

The Soil Health Partnership was founded in 2015 by the National Corn Growers Association and is a voluntary program that encourages farmers to adopt conservation practices that help maintain or improve soil health.

"This investment will expand our work creating healthier soils, improving yield, and increasing the quality and safety of our wheat farmers' crops," said Dave Muth, vice president of agronomic planning and sustainability for EFC Systems. "General Mills is a leader in the food industry for its commitment to sustainability and this investment will only strengthen that positive relationship with its farmers and consumers."
What are our farmers looking for?

“At the end of the five years, hopefully we can say we do have just the right amount of **nitrogen in the soil**, a **good yield bump** and **improved organic matter** in the soil. I want to see if these claims are true and I want to **see it for myself on our land**.”
- **Chase Brown**, SHP Farmer, Decatur, IL

“I’ve learned a lot more about the science of soil health. I gained knowledge on **nutrient availability**, the **soil’s microbiome** and improving tilth, **organic matter** and **reducing nutrients leaving the field**.”
- **Mark Mueller**, SHP Farmer, Waverly, IA
Soil Health Partnership

Farmer led

Translational research

Communications and education

Collaboration and partnership
Bigger Picture – Working Together
Soil Health Partnership

STEERING COMMITTEE

National Corn Growers Association
Monsanto
Midwest Row Crop Collaborative
National Association of Wheat Growers

Technical Advice

The Nature Conservancy
EDF - Environmental Defense Fund

Additional Financial Support

The Walton Family Foundation
United States Department of Agriculture
NRCS
General Mills
FFAR
PISCES Foundation

http://soilhealthpartnership.org/
Many Business Tools
How are you making decisions?

- In-season management
- Societal pressure
- Soil Health
- Machinery
- Replanting

- Nutrients
- Insects
- Labor
- Weeds
- Markets
- Diseases
- Cash flow

- Risk
- +
- Market Opportunities
- +
- Decision tools

- Yield
- Profitability
- Environmental risk

40+ decisions
Getting started

1. Create a goal
2. Start simple
3. Anticipate issues
4. Build network
5. Evaluate success
Soil Health Partnership
Impact Map

4000+ acres in SHP research fields
Estimated reach – 30-40 million acres
Soil Health Partnership Impact Map

4000+ acres in SHP research fields

60+ events in 2017

Estimated reach – 30-40 million acres
Soil Health Partnership
FY17 Media Impact

415 earned media pieces (385 (FY16))
387,445,642 earned media impressions

Web
Sessions – 17,873
Users – 11,277
Pageviews – 46,598

Social media
Twitter – 1286 followers
Facebook – 904 likes, 961 following
The Soil Health Partnership

Staff

Nick Goeser
Interim Director

Business Strategist
Jack Cornell
Field Team Director
Anne Dietz
Program Manager
Debbie Lewis
Contract Accountant
Elyssa McFarland
Key relationships Director

Lead Scientist

Comm. Specialist
Rose Media
Communications
Strategy: Contract

MO Field Manager
IA Field Manager
Jacob Ness
IA/NE FM
Alex Flock
IN FM
Hans Kok
IN FM
Abigail Peterson
IL FM
Jim Isermann
IL FM

WI/MN Field Manager
KS/NE Field Manager

Contract Accountant
Debbie Lewis

Contract
Business Strategist

Communications
Strategy: Contract

Field Team
Director

Field Manager

Field Manager

Field Manager
Integrate Tools for Soil Health

- Cover crops
- Nutrient Management
- Tillage

Expanding Network

- Precision sampling

Economics

Soil sampling

Crop growth

Yield
Soil Health Partnership Farmer Representation Rotation
Soil Health Partnership
Farmer Representation

Figure 2
No-till or strip-till use on corn, soybeans, wheat, and cotton acres by farm resource region in the continental United States, 2010-11

Tillage Types Across SHP Program

- Convention: 20%
- No Till: 37%
- Reduced Tillage: 33%
- Reduced/No Till: 10%

Note: Cropland acreage is the total acreage in corn, soybeans, wheat, and cotton for 2010 and 2011.
SHP Data Set

**Field (Empirical) Data**
- 111 farms across 12 states
- Each farm
  - 165 measurements or metrics annually
- Crop input and management: **260 site years**
- Soil sampling: **17,468**
- Aerial imagery: **3+ years**
- Strip-level yield points: **1,942**
- Crop scouting notes - opportunistic

**Modeled data**
- Erosion
- Soil quality index
- Nitrogen leaching
- Carbon sequestration
- Nitrous oxide emissions
## Multi-year comparisons

### 2017 Year over Year comparisons:
- Iowa = 12 farms
- Illinois = 4 farms
- Indiana = 2 farms
- Ohio = 1 farm

### 2018 Year over Year comparisons:
- Illinois = 17 farms
- Indiana = 16 farms
- Iowa = 22 farms
- Minnesota = 1 farm
- Missouri = 1 farm
- Nebraska = 2 farms
- North Dakota = 1 farm
- Ohio = 1 farm
- Wisconsin = 2 farms

### Total multi-year comparisons in 2018: 80+
Principal Components Analysis
<table>
<thead>
<tr>
<th>Corn</th>
<th>Yield</th>
<th>%Sand</th>
<th>%Silt</th>
<th>%Clay</th>
<th>Ag Stab</th>
<th>WHC</th>
<th>OM</th>
<th>Active C</th>
<th>Protein</th>
<th>Respiration</th>
</tr>
</thead>
</table>
Corn

Aggregate Stability

WHC

OM

Active Carbon

r² = 0.0787

r² = 0.9061
Yield = 195.878 + 0.45x - 0.1288y
Silty Clay Loam

n=710

Mean with 2 * Standard Error

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The graph shows the aggregates stability (%) for different tillage practices: Conventional tillage, No Till, Reduced tillage, and Strip Till. The data is presented for the years 2015, 2016, and 2017.
Silt Loam

n=1723

Mean with 2 * Standard Error
2015 (Baseline) – Showing Field Variability

2016 (1 year of Treatment)

2017 (2 years of Treatment)
Results: Environmental Performance
Environmental Performance

Carbon offset equivalent portal
Path Forward: Scenario Modeling

Economics of treatments across:
- Whole operation
- County
- State
- Region

Environmental performance of treatments across:
- Whole operation
- County
- State
- Region

Economic summaries by:
- Treatment
- Soil texture
- Soil slope
- Climate characteristics
- Measured soil metrics
Where can farmers go for help?

• soilhealthpartnership.org
• Local experts
• Courses
• Events
• Books, flyers, handouts
Continued need

Consistent Information

Systems level answers

On-farm integration
How to get involved:

Email: soilhealth@ncga.com

Website: soilhealthpartnership.org

Twitter handle: @SoilPartners

Facebook