PARTNERSHIPS & PROGRAMS TO IMPROVE SUSTAINABLE AGRICULTURE IN SOUTH DAKOTA

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SOUTH DAKOTA CORN GROWERS ASSOCIATION

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DEVELOPMENT OFFICER
PHEASANTS FOREVER AND QUAIL
$\text{CO}_2 + \text{Sunlight (ATP)} \rightarrow \text{Plants} \Rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2$

(glucose/energy)
This map is a plot of 1961-1990 annual average precipitation contours from NOAA Cooperative stations and (where appropriate) NRCS SNOTEL stations. Christopher Day used the PREM model to generate the gridded estimates from which this map was derived; the modeled grid was approximately 4 km latitude/longitude, and was resampled to 26 km using a Gaussian filter. Mapping was performed by Jenny Weisburg. Funding was provided by NRCS Water and Climate Center.
Saline and Sodic Soil Geography in SD
Soil Quality Degradation - (Crop)
Concentration of salts or other chemicals.

An intersection of the USDA-NRCS STATSGO general soils dataset, soil texture w/ 15” of the surface > 26% clay, and subsurface EC > 2 was combined with a vectorization of the USGS 2006 National Land Cover Dataset, specifically with those polygons defined as “Crop”. Federal forest, park, monument and wildlife refuge, along with state parks, were masked out of this dataset to create the SOIL QUALITY DEGRADATION - Concentration of salts or other chemicals for Crop.
The problem is expanding
1. Geology
2. Rainfall
Increased precipitation over past 20 years
Farm site on island now, road closed
3. Management
Misdiagnosing a sodium problem as a saline problem, all can contribute to the sodic problem.

Drainage can reduce the EC and ESP, in many cases drainage can lead to soil dispersion and reduced yields.
Management: Vegetation

• As an alternative to drainage, consider reseeding to permanent grasses.

• Establish vegetation
  • Match the salt tolerance to the soil EC
  • Stabilize the area surrounding the saline or sodic soil.
    • Consider a high water use crop such as alfalfa close to the saline area
  • Developing a stand of vegetation in the salty area.
    • The effected area may be too salty for corn and soybeans
    • Consider dormant of salt tolerant plants.
Saline Soils Program

- 5 year agreement
- Free seed mix
- $150 incentive payment
- Increased flexibility
- Annual haying or grazing allowed
- Education
SHIPP
Soil Health & Income Protection Program

- Up to 15% of cropland acres with low productivity
- 3-5 year SHIPP contract
- Perennial cover
- Haying and grazing after primary nesting season
- No minimum size
- 50% of General CRP payment for the county
- 2% discount on crop insurance for remaining acres
EVERY ACRE COUNTS

production practices for greater profitability
GOALS

• IMPROVE PROFITABILITY, DIVERSITY AND ECOSYSTEM BENEFITS OF AG

• USE PRECISION TECHNOLOGY SO LANDOWNERS CAN USE DATA TO MAKE INFORMED DECISIONS ON MANAGEMENT OF EVERY ACRE
HOW ARE WE GOING TO DO THIS

• PARTNER WITH PRODUCERS THAT HAVE ACRES OF LOW PRODUCTIVITY THAT ARE WILLING TO SHARE THEIR HISTORICAL DATA
• UTILIZE AN INCENTIVE PAYMENT FOR PARTICIPANTS
• USE PRECISION TECHNOLOGY TO ANALYZE FARMS SO WE IDENTIFY TARGET AREAS FOR CONSERVATION MANAGEMENT ALTERNATIVES
• EVALUATE EACH ACRE ON THE FARM TO SHOW FARMERS WHERE THEY ARE LOSING MONEY AND WHICH PRACTICES MAY REMEDY THAT SITUATION
• CASE STUDIES WILL BE DEVELOPED TO
  • EDUCATE OTHER PRODUCERS
  • IMPACT POLICY MAKERS TO INCREASE ON FARM PROGRAMS TO SUPPORT FARMERS
OUTCOMES AND BENEFITS

• Increased On-Farm profitability.
• Decreased risk (economic, environmental, social)
• Improved soil health.
• Improved water quality.
• Increased wildlife habitat.
• Educational opportunity for student learning. (Wildlife, Agronomy, Engineering, Economics)
• Working lands concept and flexibility.
• Decreased reliance on farm program funding (subsidy and insurance payments).
• Increased stakeholder confidence.
Every Acre Counts Primary Focus Counties

Walworth
Potter
Edmunds
Faulk

1. Erosion
2. Wetlands
3. Salty soil

Brown
Spink
Day
Clark

1. Salty soil
2. Wetlands
3. Erosion

Buffalo
Brule
Jerauld
Aurora

1. Erosion
2. Salty soil
3. Wetlands

Lake
Moody
Minnehaha

1. Wetlands
2. Erosion
3. Salty soil
Precision Profitability – Multi year analysis

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
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<tbody>
<tr>
<td>Percent of the Field Profitable</td>
<td>92.30 %</td>
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<tr>
<td>Average Profit/Acre</td>
<td>$ 281.42</td>
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<tr>
<td>Minimum Profit/Acre</td>
<td>$ 144.36</td>
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<tr>
<td>Maximum Profit/Acre</td>
<td>$ 483.58</td>
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<tr>
<td>Standard Deviation Profit/Acre</td>
<td>$ 152.53</td>
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<tr>
<td>Average Total Profit</td>
<td>$ 30,054.69</td>
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<tr>
<td>Average Total Revenue</td>
<td>$ 79,246.11</td>
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<tr>
<td>Average Total Expenses</td>
<td>$ 49,191.43</td>
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<tr>
<td>ROI</td>
<td>61.10 %</td>
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Buffer Strip practice added
### Before and After Comparison

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Acreage</td>
<td>106.8 ac</td>
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<tr>
<td>Average Yield</td>
<td>179.9 bu/ac</td>
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<tr>
<td>Profit</td>
<td>-$12.32/ac</td>
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<tr>
<td>ROI</td>
<td>-2.1 %</td>
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<tr>
<td>Production Efficiency</td>
<td>306.0 bu/$1000</td>
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<tr>
<td>Acreage Opportunity Ratio</td>
<td>35 %</td>
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<tr>
<td>Working Capital Opportunity</td>
<td>$21,770.68</td>
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<tr>
<td>Breakeven Commodity Price</td>
<td>$3.27</td>
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<tr>
<td>Total Field Expenses</td>
<td>$62,796.66</td>
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<tr>
<td>Total Field Revenue</td>
<td>$61,481.29</td>
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<td>Total Field Profit</td>
<td>-$1,315.37</td>
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<tr>
<th>Parameter</th>
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<tbody>
<tr>
<td>Acreage</td>
<td>106.8 ac</td>
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<tr>
<td>Average Yield</td>
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<td>Profit</td>
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<td>ROI</td>
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<td>Production Efficiency</td>
<td>383.7 bu/$1000</td>
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<td>Acreage Opportunity Ratio</td>
<td>26 %</td>
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<td>Working Capital Opportunity</td>
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<td>Breakeven Commodity Price</td>
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<td>Total Field Revenue</td>
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<tr>
<td>Total Field Profit</td>
<td>$3,638.00</td>
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Soil Health Partnership in South Dakota

- Field Manager: Maddy Rabenhorst
- Plan
  - 5 Full Partner sites by end of 2020
  - 10 Associate sites by end of 2020
Reduce tillage

Diversity

Livestock Incorporation

Soil Armor

Living Roots

Diversity

Living Roots
Assignment: MUST READ

A Soil Owner’s Manual
How to Restore and Maintain Soil Health
Jon Stika

Growing a Revolution
Bringing Our Soil Back to Life
David R. Montgomery
The South Dakota Soil Health Coalition is a producer led, non-profit, membership organization that was created in the spring of 2015.

The Coalition is governed by a nine-member board of farmers and ranchers from across the state and includes several staff members.

Staff and board members strive to carry out the Coalition’s mission to “Promote Improved Soil Health” through education and outreach. Major projects and membership benefits include: field walks and workshops, annual Soil Health School, mentoring network, bi-monthly newsletter, informational videos, and the distribution of soil health education kits to school groups. Additional information can be found at www.sdsoilhealthcoalition.org.
Thank you