V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Soil Science

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
<th>%1862 Extension</th>
<th>%1890 Extension</th>
<th>%1862 Research</th>
<th>%1890 Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>102</td>
<td>Soil, Plant, Water, Nutrient Relations</td>
<td>60%</td>
<td>60%</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>205</td>
<td>Plant Management Systems</td>
<td>40%</td>
<td>40%</td>
<td>60%</td>
<td>60%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100%</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

<table>
<thead>
<tr>
<th>Year: 2009</th>
<th>Extension 1862</th>
<th>1890</th>
<th>Research 1862</th>
<th>1890</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>1.0</td>
<td>0.0</td>
<td>3.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Actual</td>
<td>1.0</td>
<td>0.0</td>
<td>3.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

<table>
<thead>
<tr>
<th></th>
<th>Extension</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smith-Lever 3b &amp; 3c 1890 Extension</td>
<td>31200</td>
<td>1890 Extension</td>
</tr>
<tr>
<td>Hatch 1862 Matching</td>
<td>111600</td>
<td>1862 Matching</td>
</tr>
<tr>
<td>Evans-Allen 1890 Matching</td>
<td>0</td>
<td>1890 Matching</td>
</tr>
<tr>
<td>1862 All Other</td>
<td>0</td>
<td>1862 All Other</td>
</tr>
</tbody>
</table>

V(D). Planned Program (Activity)

1. Brief description of the Activity

• N rate calibration research projects  
• Update producer-oriented resource materials to reflect research results of N rate studies  
• Present research results at workshops, field days and conferences  
• Evaluate nitrate levels in waterways

2. Brief description of the target audience

• Growers  
• Soil testing laboratories  
• Government agencies  
• Federal land managers  
• Consultants, agricultural industry staff, public

V(E). Planned Program (Outputs)

1. Standard output measures

Report Date 06/02/2010
<table>
<thead>
<tr>
<th>2009</th>
<th>Direct Contacts Adults</th>
<th>Indirect Contacts Adults</th>
<th>Direct Contacts Youth</th>
<th>Indirect Contacts Youth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>3000</td>
<td>100000</td>
<td>100</td>
<td>5</td>
</tr>
<tr>
<td>Actual</td>
<td>3200</td>
<td>200000</td>
<td>100</td>
<td>50</td>
</tr>
</tbody>
</table>

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2009
Plan: 0
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

<table>
<thead>
<tr>
<th>2009</th>
<th>Extension</th>
<th>Research</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Actual</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- (No Data Entered)
### V. State Defined Outcomes Table of Content

<table>
<thead>
<tr>
<th>O. No.</th>
<th>OUTCOME NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Number of individuals receiving individual assistance</td>
</tr>
<tr>
<td>2</td>
<td>Number of individuals decreasing excessive N use</td>
</tr>
<tr>
<td>3</td>
<td>Number of individuals using alternative N sources</td>
</tr>
<tr>
<td>4</td>
<td>Number of individuals implementing recommended action or practice</td>
</tr>
<tr>
<td>5</td>
<td>Continued decline of N in ground and surface water (%)</td>
</tr>
<tr>
<td>6</td>
<td>Estimated dollar value of adopted best management practices ($)</td>
</tr>
<tr>
<td>7</td>
<td>Less commercial N is used (%)</td>
</tr>
<tr>
<td>8</td>
<td>The number of acres of ND spring wheat and durum managed by trained growers.</td>
</tr>
</tbody>
</table>
 Outcome #1
  1. Outcome Measures

   Number of individuals receiving individual assistance

   Not Reporting on this Outcome Measure

 Outcome #2
  1. Outcome Measures

   Number of individuals decreasing excessive N use

   Not Reporting on this Outcome Measure

 Outcome #3
  1. Outcome Measures

   Number of individuals using alternative N sources

   Not Reporting on this Outcome Measure

 Outcome #4
  1. Outcome Measures

   Number of individuals implementing recommended action or practice

   Not Reporting on this Outcome Measure

 Outcome #5
  1. Outcome Measures

   Continued decline of N in ground and surface water (%)

   Not Reporting on this Outcome Measure

 Outcome #6
  1. Outcome Measures

   Estimated dollar value of adopted best management practices ($)

   Not Reporting on this Outcome Measure

 Outcome #7
  1. Outcome Measures

   Less commercial N is used (%)

   Not Reporting on this Outcome Measure
Outcome #8

1. Outcome Measures

The number of acres of ND spring wheat and durum managed by trained growers.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>(No Data Entered)</td>
<td>6000000</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

North Dakota spring wheat and durum nitrogen recommendations were at least 30 years old. Cultural practices have changed, as well as grain and nitrogen fertilizer prices. The new recommendations were based on over 50 site-years of archived data from 1970 to 2004, along with over 50 site-years of data generated by Extension area agronomists and researchers at Research and Experiment Stations across North Dakota in concert with the state Extension Soil Specialist in Fargo. The resulting recommendations are a combination of grain yield/protein responses to soil available nitrogen, including soil test nitrate, with economic consideration of wheat price and N costs, adjustments for tillage system, previous crop N credits, and consideration of previous year straw load, nitrogen application method, soil characteristics and grower experiences. The recommendations also divide the state into three zones based on nitrogen response uniqueness between the regions, as well as dividing the recommendations into three productivity levels (low, medium and high) within each region. The recommendations are available on both a printed/web-available circular and in an interactive web-based calculator.

**What has been done**

The new recommendations were unveiled Dec. 1, 2009. Since then growers around the state have had the opportunity to attend over 30 presentations by the state Extension Soil Specialist and other Extension area agronomists and county educators detailing the logic and data behind the new recommendations and showing how to access the new process.

**Results**

Most growers and consultants who have attended the recommendation presentations have expressed positive feedback. The new recommendations will result in greater use of soil testing, and consideration of adjustments that many have not considered before the new recommendations and especially the web-interactive site were available. The recommendations are useful for site-specific nutrient management due to their adjustments at the state, regional and local scale, as well as consideration of within-field productivity of soils and the emphasis on local soil testing. The recommendations should assist growers as wheat prices rise and fall, and the cost of nitrogen changes over years. The major soil testing laboratory in the region will refer its clients to the spring wheat and durum web-site for their recommendations.

4. Associated Knowledge Areas

<table>
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<tr>
<td>205</td>
<td>Plant Management Systems</td>
</tr>
</tbody>
</table>
V(H). Planned Program (External Factors)

External factors which affected outcomes
- Other (none)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned
   - Retrospective (post program)
   - During (during program)

Evaluation Results
{No Data Entered}

Key Items of Evaluation
{No Data Entered}