Improved Nutrient Management and Conservation Planning

• Nutrient Management Plan Reporting and Review - managing fields to maximize profitability and minimize runoff risks

• Working Lands Initiative - tax credits for conservation & protecting farmland

• Snap Plus Software & Maps - a field record keeping system for past and present crops and applications

Sue.Porter@wi.gov  WDATCP 608-224-4605
When Are Producers Required to Have a Nutrient Management Plan?

- When participating in **Working Lands Initiative** (farmland preservation, PACE, or AEA)
- When offered **cost-share for NM**
- When accepting **manure storage cost-share**
- When regulated under a **county** manure storage or livestock siting **ordinance**
- When regulated under a DNR **WPDES** permit
- When required to prevent or **mitigate imminent harm** to waters of the state as an emergency or interim response to a grossly negligent pollution discharge
1.5 million acres NM plans reported in 2010

Percentage of Cropland Reported from NM Plan Checklists 2010

% of Drinking Wells Exceeding the Health Std. 10 PPM Nitrate-N

Data shown were obtained between 1988 - October 2007, are from various sources, and represent the most recent nitrate concentration reported for a well.
NM Planning has increased

2010 NM Plan Acres by Region

nc, 221,979, 15%
ne, 617,736, 41%
w, 222,851, 15%
sc, 150,931, 10%
se, 228,461, 15%
sw, 64,652, 4%

Compared to 2009, NM planning has increased in every region of WI by: 20% in the south east; 15% in the south central; 14% in the north central; 11% in the north east; 8% in the north west; and 1% in the south west.
2010 Nutrient Management plans cover ~ 17% of WI cropland

- 695 farmer wrote their own plans on 204K ac
  77 more farmers than last year

- 2383 agronomist written plans (77%)

- 81% of plans reviewed were written in Snap Plus computer software developed & maintained by UW Soil Science & DATCP, a 6% increase from last year

Snap Plus allows the farms to keep cropping records, calculate soil loss, estimate fertilizer costs, and manage to the 590 standard
Fertilizer Tonnage Reporting 1980-2009

Commercial Nitrogen Consumption
2008-09  0.28 million tons

Commercial Phosphates Consumption
2008-09  0.06 million tons

Commercial Potash Consumption
2008-09  0.16 million tons

WI Reported Fertilizer Tonnage
2008-09  1.2 million tons
Working Lands Initiative

Farmland Preservation Program
Agricultural Enterprise Areas
Purchase of Agricultural Conservation Easement

Agriculture is a $59 billion annual business responsible for more than 10% of jobs in the state, so it’s essential that we protect our working lands.

Effective July 1, 2009
Working Lands Initiative brings $27M to participating WI farmers

Expands the existing Farmland Preservation Program ~18,000 participants

Participants with 2004 agreements or later & Exclusive Ag Zoning participants

MUST follow ATCP 50 & NR 151 performance stds
Agricultural Enterprise Areas

- Area devoted to agricultural use and locally targeted for agricultural preservation
- After July 1, 2009 FPP agreements must be 15 years & within an approved AEA
- Petitioners to DATCP from the municipality of at least 5 owners of eligible farms located in a contiguous area - primarily in agricultural use
- State designates, through Administrative Rule, Public hearing, Legislative notice

To be released from the terms of the agreement, requires payment of a conversion fee. This conversion fee is equal to three times the per acre value of the highest value category of tillable cropland in the place of the agreement. The highest value category is specified at http://www.revenue.wi.gov/report/a.html.

Petitions submitted by February 18, 2011 will be reviewed and selected through a competitive evaluation process.
Purchase of Agricultural Conservation Easements Grant Program

Voluntary

Protects agriculture

Deed restriction

Permanent

- $12 million available to provide
  - 50% matching grants to purchase permanent easements that permanently restricts non-agicultural development

- Conversion Fee establishes a Working Lands Trust Fund for future PACE purchases

16 farms are selected to participate in the state’s Purchase of Agricultural Conservation Easement (PACE) program to protect Wisconsin’s best farmland.

The farms cover more than 5,000 acres in Columbia, Dane, Dodge, Iowa, Jefferson, and Waupaca counties.

A deadline for 2011 applications is anticipated in February 2011.

http://workinglands.wi.gov
Income Tax Credits
decreases tax due or increases tax refund

Average credit prior to **2010 tax year** $650/yr
~$3.30/acre

- $7.50/acre if located in a Certified farmland preservation zoning district
- $10.00/acre if agreement in AEA and zoning
- $5.00/acre if farmland preservation agreement in Agricultural Enterprise Area AEA (15 year agreements)
FPP tax credits claimants can only certify they are in compliance on their tax return if the farm either:

- (1) **Is certified in compliance by the county** with the state agricultural performance standards under NR 151 & ATCP 50

- (2) **Will be covered by a schedule of compliance** that enables claimants to comply with state conservation standards by a specific deadline set by the county (2009 claimants schedules can not extend beyond December 31, 2015)

county may issue a notice of non-compliance to suspend eligibility for tax credits
Soil & Water Conservation

- Counties must **monitor participant compliance** through farm inspections every 4 years
- DATCP must monitor each county every 4 years
- DATCP sent out 12,000 letters to 2008 claimants in participating counties asking land owners to contact the conservation department for assistance
- Counties may require landowners to **certify** their compliance *not more than* annually

http://www.datcp.state.wi.us/workinglands/soil-water_compliance.jsp
WI Agricultural Performance Standards

– Meet tolerable soil loss (T) on cropped fields
– Follow 590 NM plan technical standard
– Prevent direct runoff from feedlots or stored manure to waters of the state
– Limit livestock access along waters to maintain vegetative cover
– Maintain manure storage structures to prevent leaking and overflow
– Follow manure storage technical standards for constructing and abandoning near surface water or areas susceptible to groundwater contamination
– Do not stack manure in an unconfined pile
– Divert clean water away from feedlots, manure storage, and barnyards
Plan Development & Review
What’s in a NM plan?

- **UW Soil test Crop need – nutrient credits = fertilizer to apply**
- Accounts for **all** N-P-K nutrients for the crop rotation
- Assess P management for runoff control
- Based on UW soil test recommendations (Pub.A2809) with sampling every 4 yrs (UW Pub. A2100, certified lab)
- **Update 590 NM plan annually** to feed crops and protect water

Requires qualified planners
CCA’s, CPAg, SSSA, CPCC, farmer planners
UW Snap Plus developers, helping NM planners address basic needs

- Snap Plus V 1.132 was tested on 48 NM plans in the 2010 Quality Assurance Team review.
- 9 plans were hand written but entered into Snap Plus as part of the review process. 39 used Snap Plus for compliance with the 590 standard:
  - soil loss calculations
  - P balancing, and
  - nutrient limits flagging
2010 NM plan reviews

most problematic issues
• properly soil testing
• identifying the dominant critical soil
• spreader calibration
• phosphorus management

most improvement
• nutrient spreading restrictions
Does the NM plan properly test soil?

- 19% (9 of 48) of the plans strictly followed the 5 acre per soil sample requirement on every field, a 31% decline from last year.

Of the farms that did not soil test properly:
- 20 of the farms needed to add another sample on 1 to 5 fields; 14 farms missing samples on more than 5 fields;
- 3 farms only provided the average soil test with no sample data;
- 11 farms had old tests.

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Year</th>
<th>Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>2011</td>
<td>Soil test too old: 11/21/2005</td>
</tr>
<tr>
<td>01</td>
<td>2011</td>
<td>Too few soil samples for field size. Required 2 samples, actual 1 samples</td>
</tr>
<tr>
<td>02</td>
<td>2011</td>
<td>Soil test too old: 11/21/2005</td>
</tr>
<tr>
<td>03</td>
<td>2011</td>
<td>Soil test too old: 11/21/2005</td>
</tr>
<tr>
<td>03</td>
<td>2011</td>
<td>Too few soil samples for field size. Required 2 samples, actual 1 samples</td>
</tr>
<tr>
<td>04</td>
<td>2011</td>
<td>Soil test too old: 11/21/2005</td>
</tr>
<tr>
<td>04</td>
<td>2011</td>
<td>Too few soil samples for field size. Required 2 samples, actual 1 samples</td>
</tr>
</tbody>
</table>

Have your soil testing lab email you the soil test in Snap Plus format. Import them into Snap Plus saves time and allows for calculating lime recommendations. To review plans we use the Snap Plus Compliance Check Report.
Wisconsin DATCP Certified Soil Testing Laboratory

5 Acre Samples Every 4 Years

<table>
<thead>
<tr>
<th>UW Soil &amp; Plant Analysis Laboratory</th>
<th>UW Soil &amp; Forage Lab</th>
<th>Agsource Soil &amp; Forage Lab</th>
<th>Rock River Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madison, WI</td>
<td>Marshfield, WI</td>
<td>Bonduel, WI</td>
<td>Watertown, WI</td>
</tr>
<tr>
<td>Dairyland Laboratories</td>
<td>A&amp;L Great Lakes Laboratories</td>
<td>Mowers Soil Testing Plus, Inc.</td>
<td>Toulon, IL</td>
</tr>
<tr>
<td>Arcadia, WI</td>
<td>Fort Wayne, IN</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

http://www.datcp.state.wi.us/arm/agriculture/land-water/conservation/nutrient-mngmt/planning.jsp
Does the NM plan have a spreader calibration?

- 35% (17 of 48) of the plans mentioned using calibrated manure applications to account for application speed and manure consistency, a 30% decline from 2009
  - Use manure production book values to start.
  - Subsequent plans should track all manure applied by counting loads or storage volume.

### Annual Manure Production and Use by source

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production (Tons)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Used (Gallons)</td>
<td>1100000</td>
<td>1100000</td>
<td>1100000</td>
<td>1100000</td>
<td>1100000</td>
</tr>
<tr>
<td>Analysis Date</td>
<td>250400</td>
<td>275460</td>
<td>249700</td>
<td>762000</td>
<td>346000</td>
</tr>
<tr>
<td>Analysis Date</td>
<td>710-5-16</td>
<td>710-5-16</td>
<td>710-5-16</td>
<td>710-5-16</td>
<td>710-5-16</td>
</tr>
<tr>
<td>Dry Matter (%)</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Total Value (tons, source volume, inorganic, includes slurry)</td>
<td>1100000</td>
<td>1100000</td>
<td>1100000</td>
<td>1100000</td>
<td>1100000</td>
</tr>
<tr>
<td>Dairy Pit</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Dairy Nutrient (P-K)</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
</tr>
<tr>
<td>Dairy Yeast</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
</tr>
<tr>
<td>Dairy Nutrient (P-K)</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
</tr>
</tbody>
</table>

### Estimated Livestock Nutrient Production for 2011

<table>
<thead>
<tr>
<th>Animal Type</th>
<th>No. of animals</th>
<th>Total No. of days</th>
<th>% Solid Collected</th>
<th>% Liquid Collected</th>
<th>Yearly Tons</th>
<th>Yearly Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy Lactating Cows 1,000 lbs</td>
<td>25</td>
<td>365</td>
<td>100</td>
<td>0</td>
<td>209035</td>
<td></td>
</tr>
<tr>
<td>Dairy Lactating Cows 1,400 lbs</td>
<td>100</td>
<td>365</td>
<td>100</td>
<td>0</td>
<td>168520</td>
<td></td>
</tr>
<tr>
<td>Dairy Dry Cows 1,000 lbs</td>
<td>30</td>
<td>365</td>
<td>100</td>
<td>0</td>
<td>197190</td>
<td></td>
</tr>
<tr>
<td>Dairy Dry Cows 1,400 lbs</td>
<td>25</td>
<td>365</td>
<td>100</td>
<td>0</td>
<td>228215</td>
<td></td>
</tr>
<tr>
<td>Dairy Heifer 250 lbs</td>
<td>20</td>
<td>365</td>
<td>100</td>
<td>0</td>
<td>237</td>
<td>0</td>
</tr>
</tbody>
</table>

### Manure Storage Pits for 2011

<table>
<thead>
<tr>
<th>Pit Name</th>
<th>Volume</th>
<th>Number of Times</th>
<th>Total Collected</th>
<th>Total Collected Annually</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pit 1</td>
<td>901000 Gallons</td>
<td>2</td>
<td>1800000</td>
<td>1800000</td>
</tr>
</tbody>
</table>

### Spreader Use for 2011

<table>
<thead>
<tr>
<th>Spreader Name</th>
<th>Spreader Size</th>
<th>Number of Loads</th>
<th>Total Collected</th>
<th>Total Collected Tons</th>
<th>Calibration Date</th>
<th>Calibration Rated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spreader 1</td>
<td>5 Tons</td>
<td>50</td>
<td>250 Tons</td>
<td>118020</td>
<td>20 T/ha rate</td>
<td>1803100</td>
</tr>
</tbody>
</table>
Does the NM plan have protected concentrated flow areas?

- 46% (22 of 48) of plans mentioned they protected areas of concentrated flow with perennial cover nutrients should not be applied to established water ways, a 4% decline from last year.

<table>
<thead>
<tr>
<th>Yield Name</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Pasture (not rotational), grass/legume</td>
<td>Pasture (not rotational), grass/legume</td>
<td>Alfalfa/Brome Seeding</td>
<td>Pasture (not rotational), grass/legume</td>
<td>Alfalfa/Brome Seeding</td>
</tr>
<tr>
<td></td>
<td>None 3.1-4.0 ton/acre</td>
<td>None 3.1-4.0 ton/acre</td>
<td>Spring Fall 1st</td>
<td>None 3.1-4.0 ton/acre</td>
<td>Fall 1st spring</td>
</tr>
<tr>
<td>02</td>
<td>Pasture (not rotational), grass/legume</td>
<td>Alfalfa/Brome Seeding</td>
<td>Pasture (not rotational), grass/legume</td>
<td>Pasture (not rotational), grass/legume</td>
<td>Alfalfa/Brome Seeding</td>
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<td>None 3.1-4.0 ton/acre</td>
<td>Spring Fall 1st</td>
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<td>None 3.1-4.0 ton/acre</td>
<td>Alfalfa/Brome Seeding</td>
</tr>
<tr>
<td>03</td>
<td>Wheat winter grain + straw</td>
<td>Wheat winter grain + straw</td>
<td>Corn grain</td>
<td>Corn silage</td>
<td>Soybeans 15-20 in</td>
</tr>
<tr>
<td></td>
<td>Fall 1st, disked 61-80 buAcre</td>
<td>Fall 1st, disked 61-80 buAcre</td>
<td>Fall 1st, disked 131-150 buAcre</td>
<td>Fall 1st, disked 21-25 buAcre</td>
<td>row Fall 1st, disked 36-45 buAcre</td>
</tr>
<tr>
<td>04</td>
<td>Wheat winter grain + straw</td>
<td>Corn grain</td>
<td>Corn silage</td>
<td>Soybeans 15-20 in</td>
<td></td>
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<td></td>
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<td>row Fall 1st, disked 36-45 buAcre</td>
<td></td>
</tr>
</tbody>
</table>

Note: Maps show concentrated flow channels protected with perennial cover. This report also compares yields over time for consistency in planning and actual updates.

Updating the NM plans with the nutrient applications and crop management that really occurred, allows the farmer to maintain compliance with the 590 NM standard.
Does the NM plan have phosphorus management?

- 40% of plans (19 of 48) included P management for each year of the crop rotation, a 15% decrease from 2009.
- New Snap Plus flags for **excess fertilizer P2O5** show when a field has more than the entire P2O5 recommendation for the planned rotation applied as manure or fertilizer.
- **Proper P management must account for all the manure produced annually** and allocate additional P fertilizer if applicable **for each year of the rotation**.

**Snap Plus keeps track of soil-banked P & K between soil tests on the Cropping Screen so farmers do not apply more than they need. Use the Snap Plus Compliance Check Report to know if the plan follows the 590 Std.**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Rotation Years</th>
<th>Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>2009-2012</td>
<td>Soil test P is greater than 100 ppm so P2O5 balance should be less than -44 lb/acre.</td>
</tr>
<tr>
<td>02</td>
<td>2009-2012</td>
<td>Soil test P is greater than 100 ppm so P2O5 balance should be less than -44 lb/acre.</td>
</tr>
<tr>
<td>13-14</td>
<td>2009-2012</td>
<td>Soil test P is greater than 100 ppm so P2O5 balance should be less than -44 lb/acre.</td>
</tr>
</tbody>
</table>

**Rotational restriction problems**

**Application restriction problems**

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Year</th>
<th>Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>2011</td>
<td>Excess fertilizer P2O5. More than the entire P2O5 recommendation for the planned rotation on this field (0) has already been applied as manure or fertilizer.</td>
</tr>
</tbody>
</table>
Does the NM plan have the correct soil type and meet T?

- 33% of the (16 of 48) NM plans used the proper soil type on all fields, a 3% increase from last year.
- 54% (26 of 48) plans had every field meeting tolerable soil loss (T) for sheet and rill erosion, a 26% decrease from 2009.
  - Of the 22 plans found with fields exceeding tolerable soil loss levels 11 of the planners chose the predominant soil type and not the more erosive, “Dominant Critical Soil” type that covers 10% or more of the field.
  - The other 11 of 22 plans exceeded soil loss because of incomplete rotations or crop and tillage choices.

Snap Plus allows farmers & planners to update crops, tillage, calculate soil loss over the crop rotation, making it an excellent tool for conservation planning and to meet 590

Snap Plus is available free
http://www.snapplus.net/
Developing or Reviewing a plan

Snap Plus Field Tab

- Link to restriction maps & List restrictions for each field
- Select the field’s dominant critical soil type covering 10% or more of the field.
- **Below Field Slope to Water (%)** follow the soil types slope from edge of field down hill
- **Distance to Perennial Water (ft)** use map scale
Does the NM plan have correct application restrictions?

- **O** 200’ setback from wells, sinkholes, fractured bedrock at the surface - nutrient applications must be incorporated within 72 hours.

- **Blue** No winter apps 300’ from perennial streams, 1,000’ from lake and ponds. Other non-winter application restrictions required.

- **Red** No winter apps.

- **Pink** and **clear** can have winter manure apps if contoured or if slopes are 9% or less. Winter manure apps can not exceed 7,000 gals/acre or P removal of the crop.

- **Yellow** No fall apps of fertilizer N. Fall manure apps limited. Best to Spring apply.
Does the NM plan have correct application restrictions?

- **O** 65% (31 of 48) of the plans correctly incorporated applications 200’ up slope of wells, a 5% improvement from 2009.

- **Blue** 83% (40 of 48) of plans included spreading restrictions for **surface waters**, a 38% increase from last year.

- **Blue & Red** 75% (36 of 48) of plans properly planned for **winter spreading restrictions**, a 10% increase from last year. The 590 standard restricts winter spreading on steep slopes and close to surface waters.

- **Yellow** 79% (37 of 48) of the plans properly planned for **N soil restrictions**. A 24% improvement from 2009. These soils are likely to leach N to groundwater.

Nutrient and Manure Application Restriction Maps available free for all of Wisconsin

http://mmas-mapping.soils.wisc.edu/
Summary

• Keep good records of all manure & fertilizer applied each year of the rotation
• Farmer can receive tax credits $5 to $10/acre/yr for preserving farmland & protecting water quality
• Use the new application restriction maps to identify: water restrictions, soils, slope, concentrated flow channels, wells & other groundwater conduits
• SNAP Plus helps farmers keep NM plans flexible and updated with correct soil loss and applications that meet the 590 standard
  www.snapplus.net
• For NM information
  http://www.datcp.state.wi.us/arm/agriculture/land-water/conservation/nutrient-mngmt/planning.jsp

Sue Porter, DATCP  608-224-4605 sue.porter@wi.gov