Better-Faster NM Planning
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608-224-4605
WI Dept. of Agriculture, Trade and Consumer Protection
NM Then and Now

1997  WI’s legislature amended Statute 281.16 & 92 requiring NM – WI’s Admin. Codes NR 151 & ATCP 50 passed NM requirements in 2002

2005  590 Std. with N & P requirements – P management started in 2008

2009  New Farmland Preservation Program $7.50 & $5/ac/year in Ex-Ag Zoning & Ag Enterprise Area – 1st PDF Application Restriction maps available for all WI

2011  Snap Plus checking applications with field attributes for meeting 590 standard – GIS web service and interactive web based restriction maps

2012  NEW NR 151 performance standards promulgated – requiring ATCP 50 to detail how to implement – Runoff Risk weather maps – NEW national 590 standard released requiring states to address new requirements – Snap Plus Ver. 2
A WI 590 Nutrient Management Plan is Updated Annually if plans change

Accounts for all N-P-K applied to fields each year of the crop rotation

79% (42 of 53) of plans had N recommendations that complied with the 590 standard for every field, a 10% increase from 2011. 70% (37 of 53) managed all the manure and P fertilizer for each year of the rotation, most improved this year, a 22% increase from 2011.

Meets tolerable soil loss and has waterways

79% (42 of 53) of the plans had every field meeting tolerable soil loss (T) for sheet and rill erosion, a 13% increase from 2011. 51% (27 of 53) of plans mentioned concentrated flow channels were protected from erosion, most problematic last year, a 12% increase from 2011.

Follows calibrated manure application rates

51% (27 of 53) of the plans used calibrated manure applications, most problematic this year, a 4% decrease from 2011.
A WI 590 Nutrient Management Plan addresses water quality with seasonal restrictions

- **Red** No winter apps.
- **Blue** No winter apps 300’ from perennial streams, 1,000’ from lake and ponds. Other non-winter application restrictions required.
- **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 Dots** No fall apps of fertilizer N. Fall manure apps limited. Best to Spring apply.

74% (39 of 53) of the plans had wells identified.

94% (50 of 53) of plans highlighted surface waters since these areas require application incorporation, 30% plant cover on soil surface, cover crops, or filter strips. Unincorporated liquid applications also have rate limits.

89% (47 of 53) of plans followed winter spreading restrictions on steep slopes and areas near surface waters.

92% (49 of 53) of the plans correctly addressed soil N restrictions helping to reduce nitrate losses to groundwater.
Runoff Risk Advisory Forecast Maps from National Weather Service's flood forecasting

Assess the risk for each field before an application, fields can be saturated and still have a low risk of runoff if no rainfall is predicted.

Liquid manure applications increase soil moisture so runoff risk of liquid manure will be higher than what is shown on the risk map.

Winter Runoff Risk

Soils are frozen or snow-covered and not yet forecasted for runoff. Caution - applications will have limited soil contact and infiltration.

High snowmelt risk and runoff is predicted within 10 days.

Please take the survey.

www.manureadvisorysystem.wi.gov
2012 NM plans were submitted for 1,949,856 acres covering 22% of WI’s 9 M cropland acres. 5% increase in acres compared to 2011.
DATCP increased acres 24% and NR243 increased 30% all other categories lower in 2012 than in 2011
Farmland Preservation Zoning

% of 2010
13,000 Claimants
Under FP Zones
15,000 total
FPP claimants

Out of all WI the counties reporting the largest increases in NMP acres are:
Manitowoc (57,000 acres), Columbia (27,000 acres), Sheboygan (25,000), and Rock (23,000).

6,600 or 53% of FP zoned claimants
600K NMPs acres increased by 133K acres in 2012
2011 Farmland Preservation
protecting water resources & soil productivity
http://workinglands.wi.gov

Working Lands Initiative Started July 1, 2009 for tax year 2010

$27M to WI farmers **decreasing tax due or increasing tax refund** in exchange for keeping land in AG use and complying with soil and water conservation requirements

$7.50/acre in a Certified farmland preservation zoning district

$5.00/acre if farmland preservation agreement in Agricultural Enterprise Area AEA (15 year agreements)

$10.00/acre if agreement in AEA and zoning
Existing WI Agricultural Performance Standards

Counties will monitor compliance and may suspend eligibility for tax credits.

- **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
NR 151 NEW AG PERFORMANCE STANDARDS requires ATCP 50 to add NM plan requirements to limit Phosphorus Index for cropland and pastures to average of 6 over the rotation and 12 or less annually.

Currently farms can be required to implement nutrient management with a $28/ac cost share offer or if:

1. participating in the Farmland Preservation Program
2. required by local manure storage or livestock siting ordinances
3. accepting cost share for manure storage
4. causing a discharge
5. regulated by a WPDES permit

- Process wastewater handling
- 8 year accounting period
- No tillage 5’ to 20’ from water
The PI is not available for:

- some soils
- fruit crops like cranberries and apples
- some vegetable crop sequences
- crops without a RUSLE2 soil loss estimate
- crops without a UW soil test recommendation

For non-permitted animal operations

590 requires P assessment where manure or other organic by-products are applied

- P Index (PI) PI > 6 then no manure
- OR
- Soil Test P > 100 PPM then P2O5 balance <25% of crop removal over 8 yrs or less

For CAFO permitted animal operations

NR 243.14 requires 590 P management if <100 PPM soil test P

- soil test P 100 to 200 PPM
- PI > 6 then no manure app allowed
- AND
- Soil Test P > 100 PPM then P2O5 balance <50% of crop removal over 4 yrs or less

Above 200 PPM soil test P no CAFO manure allowed
Current Pastureland P Management

1. where nutrients are **mechanically applied**

2. where pastures are in SWQMA & winter grazed

**ATCP 50(ATCP 50.04(3))**
Follow 590 where nutrients are **mechanically applied**.

**NRCS 590 Std. (A.2.b.(1) page3&4)**
Prohibits winter applications in SWQMA – EXCEPT when winter grazing and the field is included in the NM plan.

**NRCS 590 Std. (A.1.m. page 3)**
Where pasturing occurs, verify through computations that the nutrients do not exceed the N and P requirements of 590.
NM planning on Pasture in WI

• About 1.5 million acres of land is non-woodland pasture (2007 WI Census of Ag)

• If all get NM planning cost share @ $28/ac = $40 million

• If targeting high risk areas near water (20%) reduces costs to $8 million
LaCrosse farm handwritten 128 acres with 35 fields

Appears to meet soil test P requirements for fields exceeding 50 PPM soil test P.

- For future NR 151 compliance problem annual PI above 12
- 9 fields exceed PI of 6
- 14 exceed an annual PI of 12 on the second year corn

Lower the annual PI below 12 in the future requires

- no-tilled 1st year corn
- single pass 2nd year corn
NM Planning of Pasture
### Field Name: H North Pasture

#### Subfam:
- **Rotation Wizard**
- **NPM Fast Facts**

<table>
<thead>
<tr>
<th>Year</th>
<th>Crop</th>
<th>Yield Goal</th>
<th>Tillage</th>
<th>Soil Test Date</th>
<th>Lime Rec</th>
<th>Irrigation/MRTN Info</th>
<th>Season Notes</th>
<th>N</th>
<th>P205</th>
<th>K20</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>Pasture/dry lot, spars</td>
<td>0-0</td>
<td>None</td>
<td>10/4/2012</td>
<td>NA</td>
<td></td>
<td></td>
<td>6</td>
<td>96</td>
<td>173</td>
</tr>
<tr>
<td>2013</td>
<td>Pasture, rotationally g</td>
<td>3.1-4.0</td>
<td>None</td>
<td>10/4/2012</td>
<td>0</td>
<td></td>
<td></td>
<td>36</td>
<td>45</td>
<td>81</td>
</tr>
<tr>
<td>2014</td>
<td>Pasture, rotationally g</td>
<td>3.1-4.0</td>
<td>None</td>
<td>10/4/2012</td>
<td>0</td>
<td></td>
<td></td>
<td>36</td>
<td>45</td>
<td>81</td>
</tr>
</tbody>
</table>

**Rotation Settings**
- **Rotation wizard**
- **Rotation Summary**
  - Avg soil loss: 0.3
  - Avg P Index: 4
  - P205 removal: 90 lb/acre
  - K20 removal: 360 lb/acre
  - P205 balance: 96 lb/acre
  - K20 balance: -25 lb/acre

**Field notes:**
- 3 year crop rotation starting in
- Contouring:
  - None
  - On contour
  - Strip cropping
- Filter strip:
  - None
  - In-field
- Strip cropping

**Rotation Summary Results 2012 - 2014**
- Soil test P is 50 or less so no P205 balance target is needed.
Farm nutrient source availability

<table>
<thead>
<tr>
<th>Source name</th>
<th>Nutrient type</th>
<th>Units</th>
<th>N</th>
<th>N incorp</th>
<th>P2O5</th>
<th>K2O</th>
<th>S</th>
<th>Available annual volume</th>
<th>Planned applications</th>
<th>Remaining volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef graze</td>
<td>Beef, grazing</td>
<td>Tons</td>
<td>4.0</td>
<td>5.0</td>
<td>5.0</td>
<td>9.0</td>
<td>1.0</td>
<td>539</td>
<td>614</td>
<td>-75</td>
</tr>
</tbody>
</table>

Total solid: 539  614  -75
Total liquid: 0  0  0

Field: H North Pasture  Acres: 32  Crop: Pasture/dry lot, sparse grass  Year: 2012

Field Application Restrictions: Winter Slope  SWQMA  Groundwater Conduit  Other

Manure / Biosolid Applications

<table>
<thead>
<tr>
<th>Season</th>
<th>Source name</th>
<th>Spread method</th>
<th>Rate</th>
<th>Units</th>
<th>Applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>Beef graze</td>
<td>Grazing</td>
<td>9.6</td>
<td>T/A</td>
<td></td>
</tr>
<tr>
<td>Summer</td>
<td>Beef graze</td>
<td>Grazing</td>
<td>9.6</td>
<td>T/A</td>
<td></td>
</tr>
</tbody>
</table>

Fertilizer Applications

<table>
<thead>
<tr>
<th>Season</th>
<th>Fertilizer Name</th>
<th>Spread method</th>
<th>Rate</th>
<th>Units</th>
<th>Applied</th>
</tr>
</thead>
</table>

This field is within a SWQMA and is receiving manure nutrients in the winter that are not being recycled by a crop.

Please explain non-compliant applications:
### Farm Nutrient Source Availability

<table>
<thead>
<tr>
<th>Source name</th>
<th>Nutrient Type</th>
<th>Units</th>
<th>N</th>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Grazing Nutrient Rate Calculator

This calculator finds the nutrient application rate for manure deposited by grazing animals for any field where animals are put out to pasture or for gleaning. If the field is divided into paddocks, then type in the correct number of paddocks.

The calculator can be used either for a single grazing "application" or for a summary of all grazing for a whole season. The number of "Days on each paddock" should reflect which rate you are trying to find.

#### Field Application Restrictions:
- **Field:** H North Pasture
- **Acres:** 32
- **Year:** 2013

#### Manure / Biosolid Applications
- **Add nutrient app**
- **Delete nutrient app**
- **Crop Year:** Fall 2012 - Summer 2013

<table>
<thead>
<tr>
<th>Season</th>
<th>Source name</th>
<th>Spread Method</th>
<th>Rate</th>
<th>Units</th>
<th>Applied</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Beef graze</td>
<td>Grazing</td>
<td>9.0</td>
<td>T/A</td>
<td></td>
</tr>
</tbody>
</table>

#### Grazing Nutrient Rate Calculation
- **Field/Pasture size (acres):** 32.0
- **Number of paddocks in field:** 1
- **Type of Animal:** Beef High Forage 750 lbs
- **Manure production (lbs/day):** 62
- **Number of Animals:** 55
- **Days on each paddock:** 168
- **Percent of each day spent grazing here:** 100%

**Calculated Spreading Rate (tons/acre):** 9.0

[Apply] [Close] [Help]
## Pasture Farm - H North Pasture

**Field Name:** Pasture Farm

**Subfarm:** Rotation Wizard

**County:** WI-Owego

**Acres:** 32

**Slope:** 22

**Soil Name:** NORTHFIELD

**Symbol:** NsE2

**Restrictions:** YES

**Soil Group:** C

**Soil Texture:** LOAM

**pH:** 7.1

**OM %:** 3.0

**P (ppm):** 33

**K (ppm):** 72

### 2014 Soil Test Date: 10/4/2012

| Crop | Yield Goal | Tillage | Soil Test Date | Lime Rec | Irrigation / MRTN Info | Season Notes | N | P2O5 | K2O | N | P2O5 | K2O | N | P2O5 | K2O | N | P2O5 | K2O | N | P2O5 | K2O |
|------|------------|---------|----------------|----------|------------------------|--------------|---|-----|-----|---|-----|-----|---|-----|-----|---|-----|-----|---|-----|-----|---|-----|-----|
| Pasture/dry lot, sparse grass | 0-0 | None | 10/4/2012 | NA | Yes | 77 | 96 | 173 | 0 | 0 | 0 | 36 | 45 | 81 | 0 | 0 | 0 | 36 | 45 | 81 | 0 | 0 | 0 | 36 | 45 | 81 |
| CRP | Pasture seeding, grass/legume | None | 10/4/2012 | NA | Yes | 77 | 96 | 173 | 0 | 0 | 0 | 36 | 45 | 81 | 0 | 0 | 0 | 36 | 45 | 81 | 0 | 0 | 0 | 36 | 45 | 81 |
| Pasture, rotationally grazed, grass/legume | 0-0 | None | 10/4/2012 | NA | Yes | 77 | 96 | 173 | 0 | 0 | 0 | 36 | 45 | 81 | 0 | 0 | 0 | 36 | 45 | 81 | 0 | 0 | 0 | 36 | 45 | 81 |

### Rotation Settings
- 3 year crop rotation starting in 2012
- Contouring: None
- On contour: None
- Strip cropping: None
- Filter strips: None
- Design field: None
- In-field: None

### Rotation Summary Results 2012 - 2020

- Avg soil loss: 6.8
- Avg P Index: 14
- P2O5 removal: 90 lb/ac
- K2O removal: 360 lb/ac
- P2O5 balance: 96 lb/ac
- K2O balance: -25 lb/ac

*Soil test P is 50 or less so no P2O5 balance target is needed.*
### Farm Nutrient Source Availability

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<td>5.0</td>
<td>9.0</td>
<td>1.0</td>
<td>539</td>
<td>286</td>
<td>253</td>
</tr>
</tbody>
</table>

Total solid: 539  
Total liquid: 0

### Field Application Restrictions
- **Field:** H North Pasture
- **Acres:** 32
- **Crop:** Pasture, rotationally grazed, grass/leg
- **Year:** 2013
- **Field Over(+)/Under(-) Application (lbs/acre):** N 36 P2O5 45 K2O -12

### Manure / Biosolid Applications
- **Crop Year:** Fall 2012 - Summer 2013

<table>
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<td>Grazing</td>
<td>9.0</td>
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<td></td>
</tr>
</tbody>
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### Fertilizer Applications

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<th>Rate</th>
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<th>Applied</th>
</tr>
</thead>
</table>

No winter spreading on slopes steeper than 12% or on uncontrolled slopes between 9 and 12%.

Please explain non-compliant applications:
It is about P source and delivery
Simplifying NM planning and applications with Ver. 2 of Snap Plus

- 1 file for 1 database
- Query fields for Groups

Will include UWEX A2809 updates from November 2012
Ver. 2 More flexible soil testing based on SAMPLE size, not FIELD size

Old Snap FIELD size
• 25.5 acre field needs 6 samples (rounded up to a 26 acre field)

Snap Plus V2 looks at Sample size
• a 27-acre field will require 5 samples (27/5 =5.4 rounded to 5).
• Fields that have tested very high or excessively high for both P and K in the last four years need fewer samples according to UW-Extension sampling guidelines.
• Snap Plus’ **Soil Sample Log Report** indicates the recommended number of samples per field and helps maintain the exact field names for the new results when resampling.

42% (22 of 53) of the plans followed the 5 acre per sample, every 4 years soil testing requirement on every field, equal to last year.
Importing your spreading data into Snap Plus from an Excel worksheet similar to DNR Daily Spreading Log for farms with DNR CAFO permits:

- Application Date
- Driver
- Field ID (Snap Plus field name)
- Acres Applied
- Manure/Process Wastewater Source
- Spreader load Volume or weight
- Number of Loads
- Soil Conditions (saturated, non-sat., frozen, snow)
- Weather During Application (temp & precipitation)
- Application (Inject, Incorporated, or Surface)
### Predominant Soil

N rate follow predominant soil if entered

<table>
<thead>
<tr>
<th>County</th>
<th>Soil Map Symbol (critical)</th>
<th>Soil Series Name (critical)</th>
<th>Soil Map Symbol (predominant)</th>
<th>Soil Series Name (predominant)</th>
<th>Restriction Features</th>
<th>Field Slope (%)</th>
<th>Field Slope Length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>yette</td>
<td>EdC2</td>
<td>EDMUND</td>
<td>TaB2</td>
<td>TAMA</td>
<td>yes</td>
<td>9</td>
<td>174</td>
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<tr>
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<td>ASHDABLE</td>
<td>AsB2</td>
<td>ASHDALE</td>
<td></td>
<td>4</td>
<td>250</td>
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<tr>
<td>yette</td>
<td>AsB2</td>
<td>ASHDABLE</td>
<td>AsB2</td>
<td>ASHDALE</td>
<td></td>
<td>4</td>
<td>280</td>
</tr>
</tbody>
</table>
Daily Spreading Log Log for CAFOs

Application Date
Wednesday, June 27

Field ID (Names)

Acres Applied
0.00

Manure Source

Spreader Volume
0

Number Of Loads
0

Soil Conditions *

Weather **

Application

Notes

* If your permit requires reporting on soil conditions, see Ch. NR 243.03, Wis. Admin. Code for soil condition definitions (saturated, frozen, snow-covered).

** Your permit may require that you keep records of weather conditions 24 hours before and after application. This information should be recorded in a separate Weather Log.
Grazing Herds

Crop Year: 2010

Grazing/gleaning herd: Heifers
Animal group: Dairy

Add Animal
Delete Selected Animal

Animal Type | Number of Animals | Daily Manure Production (lbs/animal) | Total Daily Manure Production (lbs/day)
--- | --- | --- | ---
Dairy Heifer 1000 lbs | 15 | 82 | 1230

Total daily production (all animals): 0.6 tons/day
Grazing Manure Application Rate Estimator

Grazing application rate estimator

- Use herd information to fill daily manure production (optional)
- Crop year: 2010
- Herd name: Heifers

Total daily herd manure production: 0.6 tons/day
Field/Pasture size: 22.0 acres
Days on pasture: 365 days
Percent of each day spent grazing: 100%

Estimated application rate: 10.2 tons/acre

Calculate
Survey Simplifying NM Planning
Suggestions from 97 CAFOs

CAFO owners find their NMPs moderately to very easy to implement
• they update them regularly
• are supported by their consultant in understanding and implementing the plan and they recognize that the NMP serves several important functions

Important improvements could be
• better tools for recordkeeping
• electronic options for submittal & updating
• field maps that include setbacks and application rates
• a simple user interface so farmers could update the plan themselves
What CAFOs Liked Most About Their NMP

- **22%**: Keeps manure and fertilizer records in 1 place
- **23%**: Useful maps for record keeping
- **21%**: Reduces risk of environmental problems and Liabilities
- **13%**: Provides basis to respond to complaints
- **13%**: Increased profitability by reducing inputs and improving yields
- **8%**: Clear roles & responsibilities
Simplifying NM Planning
Suggestions from Agronomists for Cons. Staff

• Shoot C slopes verify soils and assist with contouring
• Planning and installing waterways
• Look for substantial compliance
• Use management to fix issues
Summary

• More acres are implementing NM plans because of the Farmland Preservation Program and CAFO permits.
• SNAP Plus helps farmers keep 590 NM plans flexible and updated with current soil loss for improved water quality and profitability.
• ATCP 50 rule revision and hearings coming.
• Snap Plus Ver.2 training at WCMC.
• New maps will be released with Snap Plus Ver.2.

For NM information