

NUTRIENT MANAGEMENT UPDATE

A Quality Assurance Team Review of 2007's Nutrient Management Plans

Prepared by the Wisconsin Department of Agriculture, Trade and Consumer Protection

The 2007 growing season is the 12th year of quality assurance review for WI nutrient management (NM) plans. The team involved in this 2007 review wants to thank all the 190 planners reviewed for protecting WI's agricultural industry and promoting stewardship of our soil and water. The Quality Assurance Team's (QAT) review of 19 NM plans is sent to all qualified NM planners, and those providing planning assistance to agricultural producers.

Wisconsin qualified planners are:

- American Society of Agronomy *Certified Crop Advisors* and *Professional Agronomists* and Soil Science Society of America *Soil Scientists* see <https://www.soils.org/certifications/>;
- National Association of Independent Crop Consultants *Certified Professional Crop Consultants* see the website below [http://www.naicc.org/Directory/bystate.cfm?c=wi](http://www.naicc.org/Directory/bystate.cfm?c=wi;);
- Farmers developing their own NM plans and submitting to DATCP a NM Planning Checklist form with their address.

As of December 2007, 388 farmers and 717 other certified planners in Wisconsin are considered qualified NM planners compared to the 598 planners in 1999.

Managing nutrient applications to *maximize* profitability and *minimize* water degradation is a smart move and a nutrient management plan is a great way to do it. A nutrient management plan is an annual plan updated to follow USDA Natural Resources Conservation Service's 590 Nutrient Management Standard, (2005). A plan accounts for all N-P-K nutrients applied to each field and is the

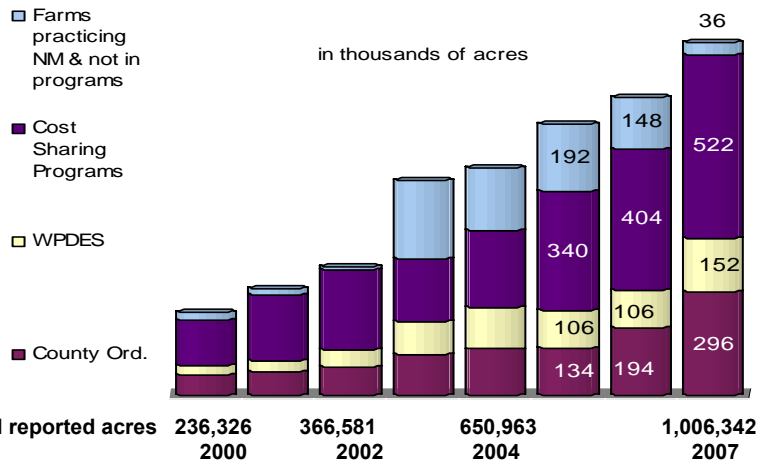


for each field. Soils need to be tested by a DATCP certified laboratory every 4 years, with each field sampled approximately every 5 acres.

The 2007 Quality Assurance Team Members:

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Wayne Solinsky – Jay-Mar Inc.	Cyndi Heath – Blacks Valley Ag	

2000-2007 Nutrient Management Acres



About 91% of the NM plans (2,106 plans covering 927,700 acres) reported in 2007 were written to the phosphorus based nutrient management 590 standard. In 2003, only 6% of the plans (38 plans covering 25,260 acres) were written to the P based standard. Of the N base NM plans written for 2007, about 74% are in Brown and Marathon Counties.

NRCS 590 NM Standard Promulgated

Changes to Wisconsin Administrative Code, ATCP 50, went into effect June 1, 2007 to implement the USDA Natural Resources Conservation Service's the N and P based 590 Nutrient Management Standard, (2005). A nutrient management plan can be required everywhere in Wisconsin after January 1, 2008 when producers:

1. Are offered or accept cost-share dollars for NM;
2. Accept cost-share for installing manure storage;
3. Participate in the farmland preservation program;
4. Are regulated under a DNR WPDES permit, mostly farms over 1,000 animal units;
5. Are regulated under a county manure storage or livestock siting ordinance.

Inserts: ♦ Certified soil testing labs ♦ Manure Production and Nutrient Tables ♦ 590 NM Checklists ♦ Plan Narrative ♦ Print NM documents from: <http://www.datcp.state.wi.us/arm/agriculture/land-water/conservation/nutrient-mngmt/planning.jsp>

Nutrient Management Progress

The DATCP collects NM acreage planned through bulk fertilizer suppliers and through the enclosed NM Plan Checklist form submitted by farmers, agronomists, and public agency staff. In 2007, 503 NM planners (283 farmers and 220 agronomists) submitted Nutrient Management Plan Checklist forms for 2,320 NM plans covering 1,006,342 acres. This reported acreage is a 28% increase from the acres reported in 2006. This is about the same numbers of farmer planners and acreage as last year. However, we see improved progress with the numbers of agronomists and the plans produced with 14% more agronomist planners covering 30% more acres than last year. The NM plans were reported from 60 counties in 2007, as compared to 54 in 2006. Suppliers of bulk fertilizer to Wisconsin farmers reported 2,484 plans covering 1,050,454 acres in 2007. In 2007, 76 suppliers reported 20% of farmers purchasing bulk fertilizer had 590 plans, up 3% since 2006, and giving the industry substantial room for growth in providing NM planning services.

Our hope is that in reviewing planners and their plans, we will improve the plans written in future years. Compared to previous years, we see improvement in the soil test recommendations and manure application rates and a decline in spreading restrictions and phosphorus planning. The 2005 version of the 590 standard requires planners to think about the whole crop rotation for tolerable soil loss and P applications and not all planners are accustomed to this change. Fourteen of the 19 plans reviewed were written using the Snap Plus NM computer software and emailed to us for review. The UW Madison, Soil Science Department's Snap Plus NM software is available free of charge from <http://www.snapplus.net/>. The Snap Plus software provides a record that helps maintain a soil conservation plan, track crops, annual nutrient applications and credits, calculate P risks with the WI Phosphorus Index, and determine if adequate feed is produced each year. Of the five plans that did not use Snap Plus, 2 were over applying N; 3 did not show erosion rates were controlled and did not calculate P applications over the rotation.

2007 Nutrient Management Plan Review

Spreading Restrictions 14 of 19 plans need improvement

Wells 12 plans have no manure spreading prohibitions around all adjacent wells.

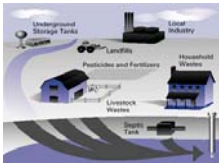


- ★ Areas within 50' of a drinking water well shall not receive mechanical manure applications.
- ★ Areas contributing runoff within 200' up slope of direct conduits to groundwater (wells, sinkholes, surface fractured bedrock, tile

inlet or gravel/sand mines) unless the nutrients are effectively incorporated within 72 hours.

- ★ Within 1000' of a municipal well, apply 590 criteria in section B, where commercial N is not fall applied.

Groundwater 4 plans did not correctly identify specific soils where fall N applications are restricted. These restrictions reduce N losses to groundwater. Use Snap Plus for plan development and these soils will be identified. See the updated soils list at



<http://www.datcp.state.wi.us/arm/agriculture/land-water/conservation/nutrient-mngmt/planning.jsp>.

Surface water 4 plans lacked identification of areas with spreading restrictions that require one or more of the following practices on non-frozen soils within 1,000 feet of lakes and ponds or 300' of perennial streams (SWQMA).



- ★ Permanent vegetative buffers.
- ★ Maintain 30% crop residue or vegetative cover on the soil surface.

- ★ Incorporate nutrients within 72 hours leaving adequate residue.
- ★ Cover crops established promptly following application. In addition, unincorporated liquid manure (less than 12% solids) applications on non-frozen soils in a SWQMA can not exceed maximum acceptable rates based on soil texture and listed in the 590 standard on page 4.

Winter 6 plans have winter applications with no mention of winter application restrictions on maps or within the printed plan. 1 plan showed a winter manure application on 16% slope.



On frozen or snow-covered soils that prevent effective incorporation at the time of application:

- ★ Do not apply nutrients within the 1,000 feet of lakes and ponds or 300' of perennial streams (SWQMA) except if manure is deposited through winter gleaning of plant residue. Where winter gleaning occurs in these areas, calculate manure nutrients applied and do not exceed the N and P requirements of this standard.
- ★ Do not apply manure on slopes greater than 9% or up to 12% if slopes are contoured farmed AND do not exceed the P removal of the following growing season's crop when applying manure. Limit liquid manure applications to 7000 gallons per acre.
- ★ Do not apply nutrients to locally identified areas delineated in an approved conservation plan. In the case of livestock siting ordinances, locally identified areas with winter spreading restrictions must be codified to protect public health and safety.
- ★ Do not apply commercial N and P fertilizer except for grass pastures and winter grains.

2007 Nutrient Management Plan Review

Missing Information

P Management 14 plans needed to address all the P applications across the rotation.

- ★ A complete P assessment must follow the crop rotation (up to 8 years) and identify which P strategy the farm is using for manure applications (PI or soil test P).
- ★ Farms with only fertilizer and no manure applications can not exceed the total P and K soil test recommendation for the rotation. These fertilizer applications can be combined into a single applications to meet the total P & K needs during the crop rotation (up to 8 years) or comply with the soil test P and K recommendations annually.

Soil Erosion 3 plans have fields exceeding tolerable soil loss and are not documenting if concentrated flow areas are protected with perennial cover. Last year, this was the main problem found because plans were missing soil erosion control information. This year’s improvement can be attributed to more conservation plans being developed in Snap Plus where crop rotations are planned into the future. This conservation planning will help farmers control soil loss, manage P, track past and calculate future nutrient applications, even as the plan changes.

N applications 5 plans have some field N applications exceeding UW soil test recommendations. Some plans recommended applying commercial N fertilizer on soybeans where it is not needed. 2 plans recommended N applications that exceeded the 590 standard without explanation. These excess applications ranged from 36 lbs. N to 200 lbs. of N per acre.

Soil tests 5 plans did not have an adequate number of soil samples to determine if nutrients are needed or not. 1 of these plans did not specify if a DATCP certified soil testing laboratory analyzed the soil samples. The following soil testing laboratories are Wisconsin DATCP certified.

Why soil test every 4 years? The answer is to save money. At a cost of only about \$.50/acre/year, it is a small but important production item. Soil sampling according the UW Publication A2100, *Sampling Soils for Testing*, will provide a recommendation that will not under supply or over supply nutrients.

Soil type 1 plan selected soil map units that were inconsistent with the soil survey causing a changed recommendation and a fall limitation on N applications. Planners that select the most “dominant critical soil” type that covers 10% or more of the field are using the correct soil for the field. To learn more about basic planning concepts for RUSLE 2, go to <http://www.wi.nrcs.usda.gov/technical/consplan/rusle.html> and select RUSLE 2 Planning Choices.

Calibrate 12 plans did not show manure spreader calibrations for the farmer applied manure. A good place to explain this important information would be the plan narrative. See insert.

Field IDs 6 plans did not cross reference field IDs and acres consistently within the plan and its maps.

Manure produced / applied 6 plans should include the amount of manure produced, collected, and how and when it will be applied. We saw differences between the amounts of manure produced and the planned application ranging from 150,000 to 1.8 million gallons. 1 plan had liquid manure daily hauled, yet most of the applications are planned for spring. Daily haul operations should designate which fields will have winter, spring, summer, or fall applications. 1 plan did not address all nutrient needs. Incomplete plans could leave planners open for liability issues. Nutrient needs should be met with legumes, manure, and fertilizer.

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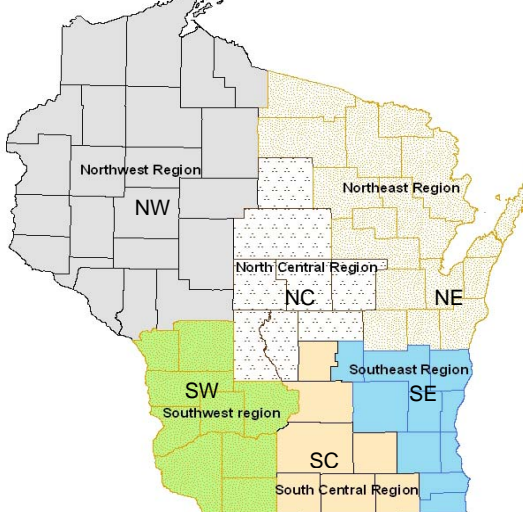
Will maintaining a nutrient management plan provide liability protection?

Maintaining a nutrient management plan will provide more protection than not having a plan. The nutrient management plan is designed to reduce runoff and ensure adequate annual crop nutrients for each field. In addition, ATCP 50 Wis. Admin. Code presumes a farmer complies with the nutrient management code requirements if the nutrient management plan is prepared or approved by a qualified planner other than the farmer and the farmer follows the plan (effective June 1, 2007). NM plans need to be properly written and farmers need to follow these plans.

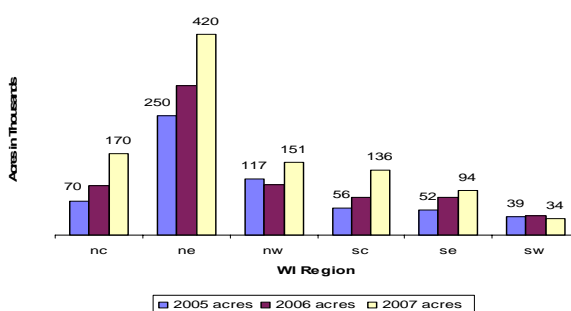
What is Manure Worth?

To answer this question, we looked at a 20 acre continuous-corn field in Dane County and what commercial fertilizer would cost. This field has a soil test recommendation or crop need of: 160 lbs. /acre nitrogen (N); 70 lbs. /acre phosphate (P2O5); and 50 lbs. /acre potash (K2O). If no manure is applied to this field the cost for this commercial fertilizer amounts to \$2,195.20 for the 20 acre corn field per year. If this field had 14,000 gallons of liquid dairy manure applied/acre and 50 lbs. /acre of commercial urea fertilizer to meet the crop need, instead of all commercial fertilizer, the nutrient cost would only be \$230 for the entire 20 acre corn field. On this field, the manure nutrients are worth \$1,965.20 per year.

Nutrient Management Regions



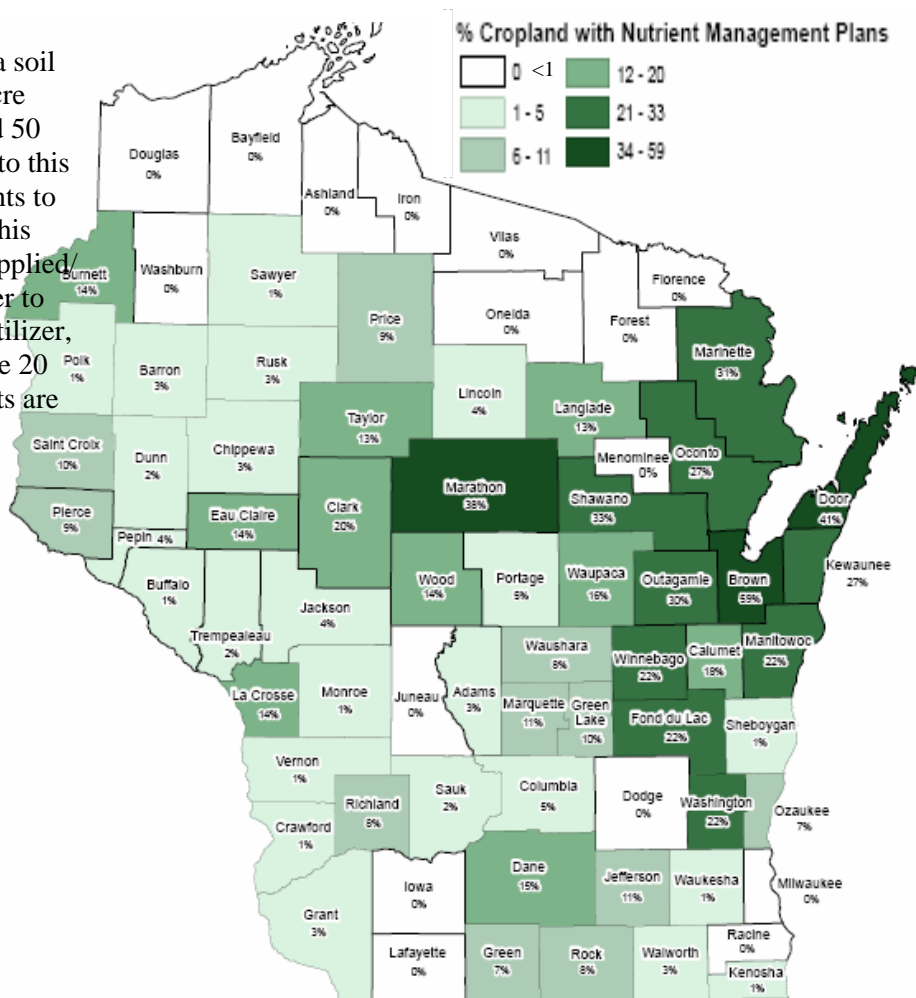
NM Plan Acres by Region 2005-2007



2007 County Cropland with NM Plans

Counties reporting 20% or more of their cropland acres under NM in 2007

County	Region	2007 NM reported acres	% of county cropland in NM plan	# NM Plans change from 2006	# Acres in NM change from 2006
MARATHON	nc	108,771	38%	188	43,974
BROWN	ne	89,612	59%	37	10,009
FOND DU LAC	ne	56,530	22%	16	10,040
OUTAGAMIE	ne	56,146	30%	24	18,467
SHAWANO	ne	53,494	33%	62	30,430
CLARK	nw	53,018	20%	3	5,768
MANITOWOC	ne	40,759	22%	6	-5,950
OCONTO	ne	33,549	27%	16	6,344
KEWAUNEE	ne	34,645	27%	-8	-1,320
DOOR	ne	33,432	41%	48	8,048
WINNEBAGO	ne	25,249	22%	3	3,862
MARINETTE	ne	22,753	31%	11	8,294
WASHINGTON	ne	21,119	22%	6	1,358



Region	2006-2007 NM Acre Change	% Change
nc	65,593	39%
ne	108,496	26%
nw	44,960	30%
sc	56,344	41%
se	15,682	17%
sw	-4,974	-14%

Questions, comments or suggestions about the Quality Assurance Team review of nutrient management plans should be forwarded to:

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