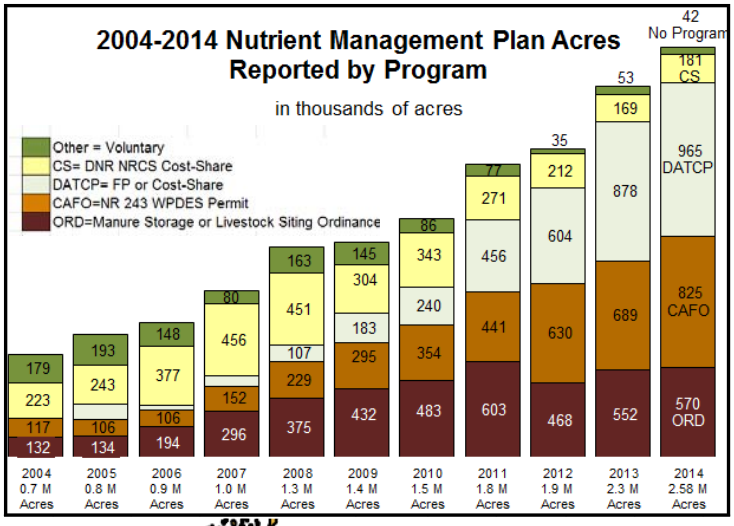
Wisconsin Nutrient Management Update

& Quality Assurance Team Review of 2014's Nutrient Management Plans

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

November 2014

Nutrient management (NM) planning is one of the best practices farmers can use to reduce excess nutrient applications to their cropland and the water quality problems that result from nutrient runoff to lakes, streams and groundwater. The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) tracks farms that develop and update their 590 NM plans when NM Plan Checklist forms are submitted to DATCP by farmers, agronomists, and public agency staff. In 2014, Wisconsin farmers made impressive strides toward implementing soil and water conservation through the development of **6,053 NM plans** on **2,583,737 acres**, a 10% increase from 2013, covering 28% of Wisconsin's 9 million cropland acres.



Who Wrote 2014's Nutrient Management Plans?

1,339 farmers wrote their own plans on 359,387 acres, 9 thousand more acres than 2013, a 3% increase in acres. In 2014, farmer-written plans accounted for 22% of all NMPs on 4% of Wisconsin's cropland acres.

4,714 farmers hired 282 agronomists to assist them with NM planning on 2,224,350 acres, 233 thousand more acres than last year, a 12% increase from 2013. In 2014, agronomists produced 78% of all NMPs on 24% of Wisconsin's cropland acres.

Nutrient Management Reported by County

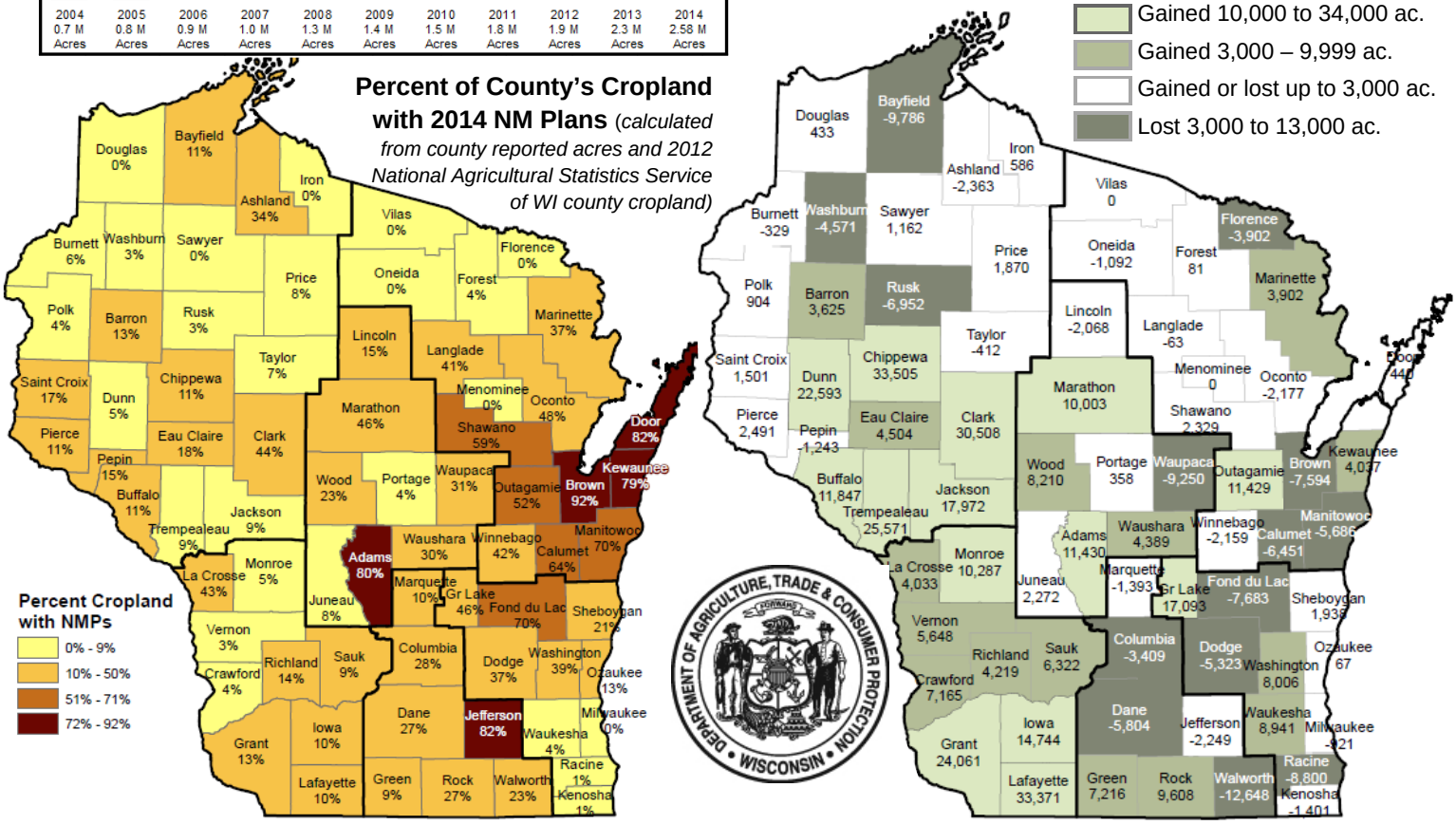
64 of 72 WI Counties Reported NM Plans in 2014

Most Acreage with NMPs

Fond du Lac (172K)	Clark (129K)	Outagamie (104K)
Marathon (140K)	Manitowoc (122K)	Shawano (104K)
Jefferson (140K)	Dodge (115K)	Dane (100K)
Brown (134K)	Kewaunee (107K)	Rock (77K)

County's Cropland Acreage Change from 2007 to 2012

Shown in the map below is the change in cropland acres by county. ***WI gained 265,000 acres of cropland for a total of 9.15 million acres.*** *The most cropland gained, 133,416 acres, from 2007 to 2012 was in the Northwest (NW) region. Every county in the Southwest (SW) region gained cropland amounting to 109,850 acres. However, both these regions have the lowest percent of the region's cropland in NM, 14% in the NW and 11% in the SW. The other 4 regions of WI gained about 22,000 acres combined.*



Percent of County's Cropland with 2014 NM Plans (*calculated from county reported acres and 2012 National Agricultural Statistics Service of WI county cropland*)

2014 QAT Nutrient Management Plan Review Summary

Since 1995, the agency staff and private sector agronomists of the **Quality Assurance Team** (QAT) have conducted reviews of NM plans with the goal of improving implementation and protection of our soil and water resources. A one-page *NM Plan Checklist* form represents each current 590 plan. This form is submitted by agronomists and farmers each spring to county conservation departments. This year the QAT reviewed 56 plans covering 19,000 acres selected from this pool of Checklists.

General Findings

Most Improved:

Compared to last year, we found a 12% improvement in the plan maps where 50% (28 of 56) of the plans followed the map restrictions and soils, last year's most problematic issue. Every year the mapping software gets easier to use. Nutrient Management Planning Maps are available from:

www.manureadvisorysystem.wi.gov

These Interactive maps help farmers identify vulnerable areas on their farm. They show 590 (and some NR243) application restrictions related to slopes, soils, and surface waters. GIS users can download individual county layers at:

ftp://ftp.datcp.state.wi.us/GIS/COUNTY_590/

The 2nd most improved items were showing groundwater conduits and meeting Tolerable Soil Loss on every field in their plan. Both were met on 9% more plans than last year. Sheet and rill erosion is calculated in SnapPlus using RUSLE2. Use the soil map to select the **"Dominant Critical Soil"** or the steepest part of the field that covers 10% or more of the area.

Most Problematic:

Compared to last year, we had the largest drop in plan quality, a 17% decrease, with our rotational phosphorus (P) management. Assessing if the farm has enough land to manage the N and P nutrients is an important function of a NM plan. **Be sure to add the P applications for the crop rotation and not just a single year to properly calculate the P Index or the management of soil test P.**

Plan Review

Again this year we see many improvements over last year's plans!

In 2014, 89% of the plans reviewed were written with SnapPlus software. **SnapPlus** (Soil Nutrient Application Planner) is a nutrient management computer program that works with farmers to ensure that they properly credit legume sources of nitrogen and manure nutrients (N-P-K). The software aids with economically planning manure and fertilizer applications to cropland. SnapPlus reduces the risk of soil loss and water pollution by calculating fertilizer need by using: [**soil test** crop need] MINUS [**nutrient credits** from all manures and legumes] EQUALING [the amount of **fertilizer to apply**].

Surface water quality management areas adjacent to water followed 590 in 93% (52 of 56) of the plans. A 5% increase from 2013.

Nitrogen applications complied with the 590 standard in 88% (49 of 56) of plans. A 4% increase from 2013, the highest in 6 years.

Tolerable soil loss or "T" from sheet and rill soil erosion was controlled in 77% (43 of 56) of the plans with every field meeting tolerable soil loss (T). A 9% increase from 2013.

Soil Testing followed 590 in 68% (38 of 56) of the plans. A 6% increase from 2013, the highest in 6 years.

Calibrated manure application rates were used in 61% (34 of 56) of the plans. About the same as 2013.

Nitrogen soil restrictions were properly planned & explained in 88% (49 of 56) of the plans. A 6% increase from 2013, the highest in 6 years.

Winter applications followed 590 in 86% (48 of 56) of the plans. A 4% increase from 2013.

Applications near wells and other groundwater conduits followed 590 and were incorporated within 200 feet of these features in 77% (43 of 56) of the plans. A 9% increase from 2013, the highest in 6 years.

Phosphorus applications complied with the 590 requirements in 61% (34 of 56) of plans. A 17% decrease from 2013.

Concentrated flow channels were protected from gully erosion with perennial vegetation in 48% (27 of 56) of plans, the same as last year with the lowest score.

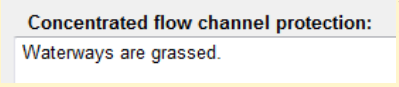
Soil Testing Laboratories

Ask these DATCP certified soil testing labs to email your soil test results in SnapPlus format. Import the file into SnapPlus to save time and to reduce errors.

UW Soil & Forage Lab Marshfield, WI (715)387-2523
UW Soil & Plant Analysis Laboratory Verona, WI (608)262-4364
A & L Great Lakes Laboratories, Inc. Fort Wayne, IN (260)483-4759
Ag Source Cooperative Services Bonduel, WI (715)758-2178
Dairyland Laboratories Arcadia, WI (608)323-2123
Rock River Laboratory Watertown, WI (920)261-0446

Soil Erosion Control:

The 590 standard was created to reduce loss of nutrients so they will be available for plant production and not pollute our water resources. Soil erosion must be controlled for the same reasons. Sheet and rill erosion is calculated in SnapPlus using RUSLE2. SnapPlus assumes that all gully erosion is controlled and does not calculate this loss. **Again this year we see less than 1/2 the plans noting concentrated flow channels are protected with perennial cover such as grass**. The 590 standard requires gully erosion to be controlled. Use SnapPlus' farm **narrative** in the **farm screen** to explain which fields have or will have waterways installed to control gully erosion. Show these areas on your maps so nutrients will not be applied in them.



Policy and Research Affecting Nutrient Management Planning

ATCP 50 & NM Planning

ATCP 50, Wis. Admin. Code was passed by the legislature in May 2014. Farmland Preservation Program participants will start complying with the new performance standards in **2016**, at which time, county conservation staff will work with farmers to add these practices to those they are currently implementing.

Tillage Setbacks from Streams

All banks will have tillage setbacks starting at 5 feet. The setback is 5 to 20 feet from surface water where tillage is prohibited and adequate vegetation must be maintained.

Phosphorus Index (PI)

Each field or pasture in the NM plan must implement the NR 151 performance standards requiring an average rotational PI of 6 or less and an annual PI of less than 12. Currently the soil test P assessment method is incorporated into Wisconsin's 590 NM Standard as an alternative to using the PI and is likely to remain in the next revision also.

Pastures

ATCP 50 clarifies methods for implementing the PI on pastures. Pastures stocked at a rate of 1 animal unit (AU) or less during the grazing season do not have to develop a NMP. Any pastures that receive mechanical applications of nutrients require soil tests and a NMP according to the 590 standard, as they always have. In lieu of soil testing pastures that do not receive mechanical applications of nutrients, an assumed soil test P of 150 PPM and organic matter of 6% can be used for calculating the P Index for pastures stocked with more than 1 animal unit per acre during the grazing season. Pastures that are winter grazed will also need soil tests if they are not considered a feedlot. Feedlots must comply with applicable NR 151 requirements.

SnapPlus14.0 Makes NM Planning Easier

Visit http://www.snapplus.wisc.edu/ for SnapPlus14 downloads, training opportunities, and how-to videos at

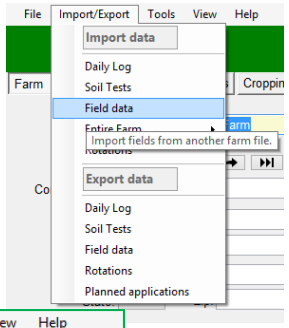
http://snapplus.wisc.edu/news-help/how-to-videos

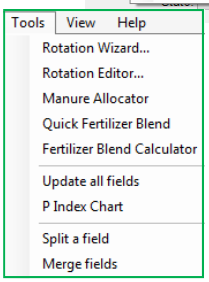
New in SnapPlus 14.0:

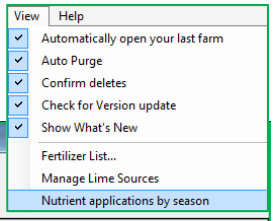
- 14.0 means 2014 initial release
- SnapPlus2 farm databases auto convert to/from 14.0
- New tools for moving data between farms
- New tools for allocating nutrients based on NPK needs in a popup
- Creates a new merged field while keeping the old ones
- View nutrient applications by season
- CAFO updates: W soil, CAFO Winter Spreading
- Soils and STIR data on snapplus.wisc.edu

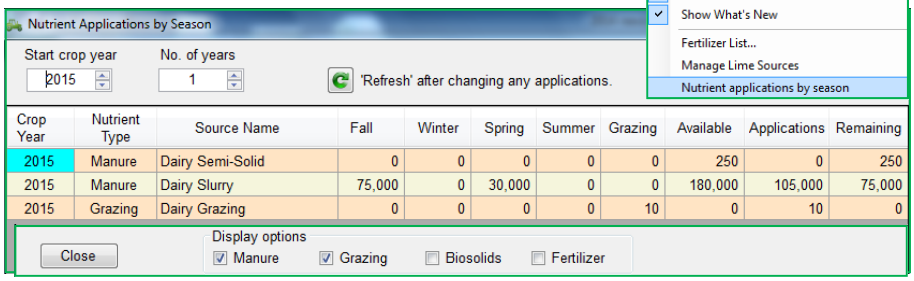
See the Help menu in SnapPlus for a complete list of what's new. This is the Last Windows XP release.

The NM Training Manual can be downloaded from http://datcp.wi.gov/Farms/Nutrient_Management/index.aspx . You can download the entire manual or parts of it.

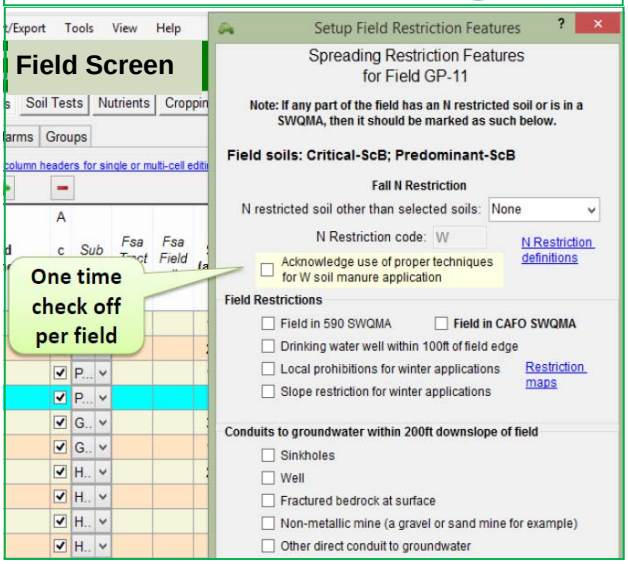








CAFO W soil acknowledgement



Cost of Soil Erosion:

One dump truck of soil (about 16 tons) costs approximately $**384** to buy replacement topsoil. On average a ton of soil has 2 lb N, 9 lb P, and 3 lb K in it. If the soil's nutrients are valued at $0.40/lb N, $0.50/lb P, $0.40/lb K a nutrient loss of $6.50 per ton or $**104** per dump truck of nutrients lost. We are losing $**488** for every dump truck worth of soil lost. One 16 ton dump truck worth of soil or 400 cubic feet, will be lost from a gully that's: 175 ft. long x 4 ft. wide x 0 .5 ft. deep.

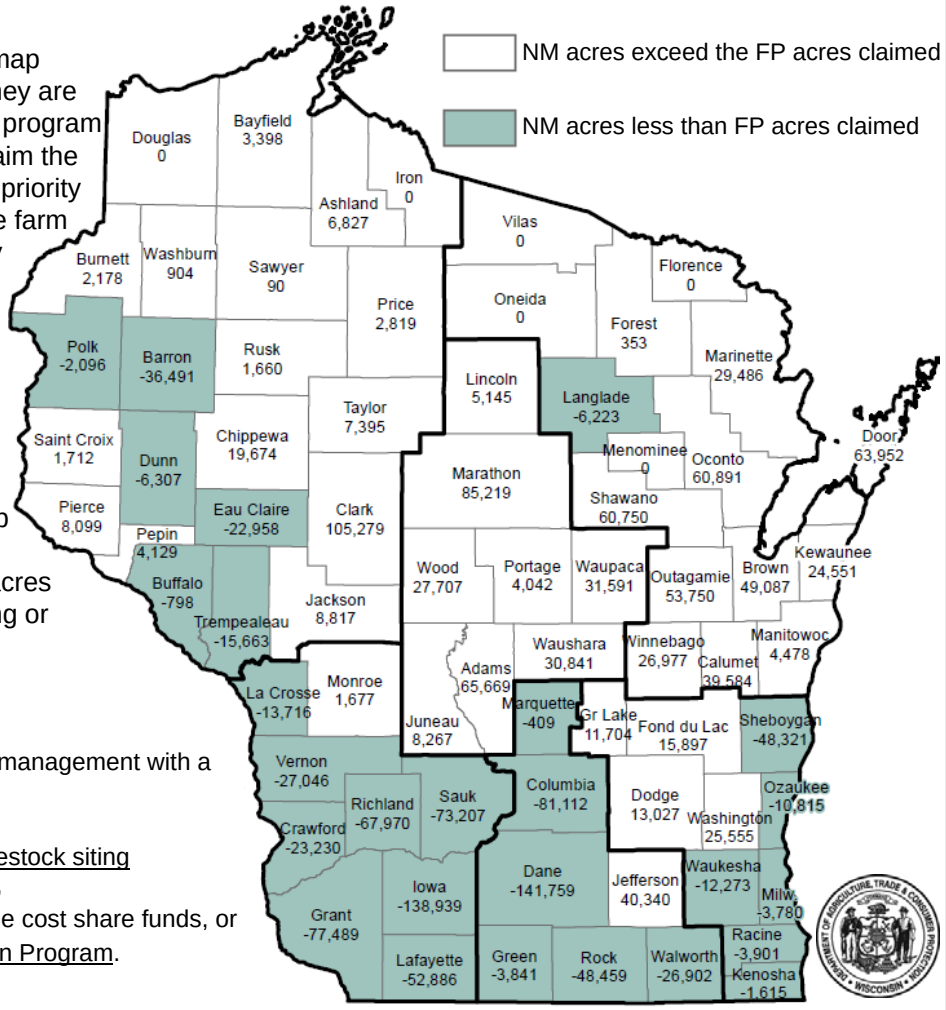
2014 Nutrient Management Plans

Farmland Preservation Tax Credits Have Increased NM Acres

The 27 counties shaded in green on the map have 626,000 acres of NMPs in 2014. They are working hard with Farmland Preservation program (FP) claimants so they can continue to claim the Farmland Preservation tax credit. A high priority is to get NM plans in place and assure the farm does not have runoff issues so the county can issue the owners a Certificate of Compliance. Participation is highest in Dane, Iowa, Columbia, Grant, Sauk, Richland, and Lafayette Counties where each county needs to add 50,000 to 140,000 NM acres for FP claimants to remain eligible for tax credits.

The 45 counties that are white on the map have almost 2 million acres of NMPs in 2014. These counties have many more acres in NM than the acres involved in FP zoning or Agriculture Enterprise Areas AEAs.

Farmland Preservation Claimant Acres Compared to 2014 NM Plans

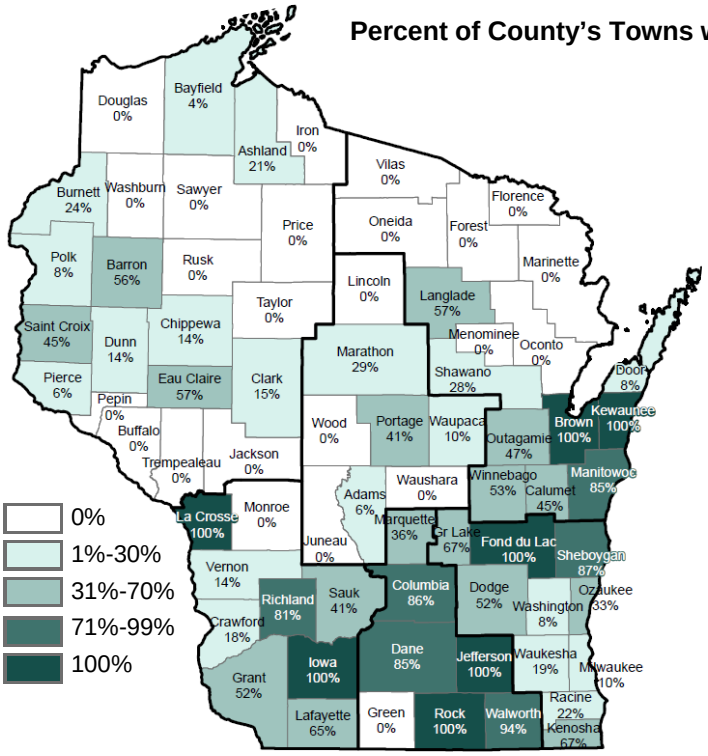


When can a NM Plan be Required?

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

1. Causing a significant discharge.
2. Regulated by local manure storage or livestock siting ordinances, or by a DNR WPDES permit,
3. Accepting NM planning or manure storage cost share funds, or
4. Participating in the Farmland Preservation Program.

Percent of County's Towns with FP Zoning or Ag Enterprise Areas



The map to the left shows the percent of each county's townships that are in the Farmland Preservation Program zoning or under new agreements in Ag Enterprise Areas. The darkest counties tend to have the highest number of tax credit claimants and the most NM plans being implemented.

A NM plan is a crop practice record that is **annually reviewed**, and when necessary, updated. A NM plan follows Natural Resources Conservation Service's WI 590 Nutrient Management Standard and is prepared by a qualified planner, which may be the farmer or a certified crop adviser. A NM plan **accounts for all N-P-K nutrients** applied, and planned to be applied, to fields over the crop rotation.

Knowing where nutrients are needed and where they are not helps farmers allocate nutrients economically while also helping to ensure they are not over-applying nutrients, which could cause water quality impacts. If an item does not comply with the standard, planners should explain in the narrative when and how the problem will be resolved.

For More Nutrient Management Information and Forms:
http://datcp.wi.gov/Farms/Nutrient_Management/index.aspx
or Sue Porter, DATCP at (608) 224-4605; sue.porter@wi.gov