Wisconsin Nutrient Management Update

November 2019

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

Nutrient Management Planning

Implementing a nutrient management (NM) plan is one of the best practices farmers can use to protect their soil and water resources and farm profitability. The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) annually tracks NM plans on farms through NM plan checklists submitted from farmers, agronomists, and agency staff. A NM plan follows the USDA Natural Resources Conservation Service's (NRCS) WI 2015-590 NM Standard. A NM plan is prepared by a qualified planner. The planner is the farm's owner, operator, or a certified crop advisor.

2019 NM by the Numbers

- 8,399 NM plans reported by Wisconsin farmers
- 3.4 million acres under a plan
- 36.9% of Wisconsin's 9 million acres of cropland covered by a plan
- 6,245 farmers hired 322 agronomists to assist with plan development *(2% increase from 2018)*
- 74% of all plans are produced by agronomists *(2% more agronomist plans than 2018)*
- 2,154 farmers wrote their own plans on 620,238 acres *(8% more farmer plans than 2018)*
- 26% of all plans are produced by farmers

County conservation staff and programs are a major driver for NM plan implementation. They offer education, provide cost-sharing, provide technical support, assist with conservation compliance, and issue permits under ordinances. Other DNR and NRCS staff and programs also have roles in implementation, Figures 1 and 2. See Figure 3 for NM plan acres, Figure 4 for acres increased from 2018 by county, and Figure 5 for who wrote plans.

Who needs a NM plan? All farms!

Some farms voluntarily plan, others are required to have a plan when applying nutrients to any pasture or field if:

- Offered cost-share for NM or manure storage,
- Participating in the FP program,
- Regulated under a county ordinance for manure storage or livestock siting,
- Regulated under a WI DNR Pollutant Discharge Elimination System (WPDES) permit,
- Found causing a significant discharge.

Percent of County Cropland with 2019 NM Plans

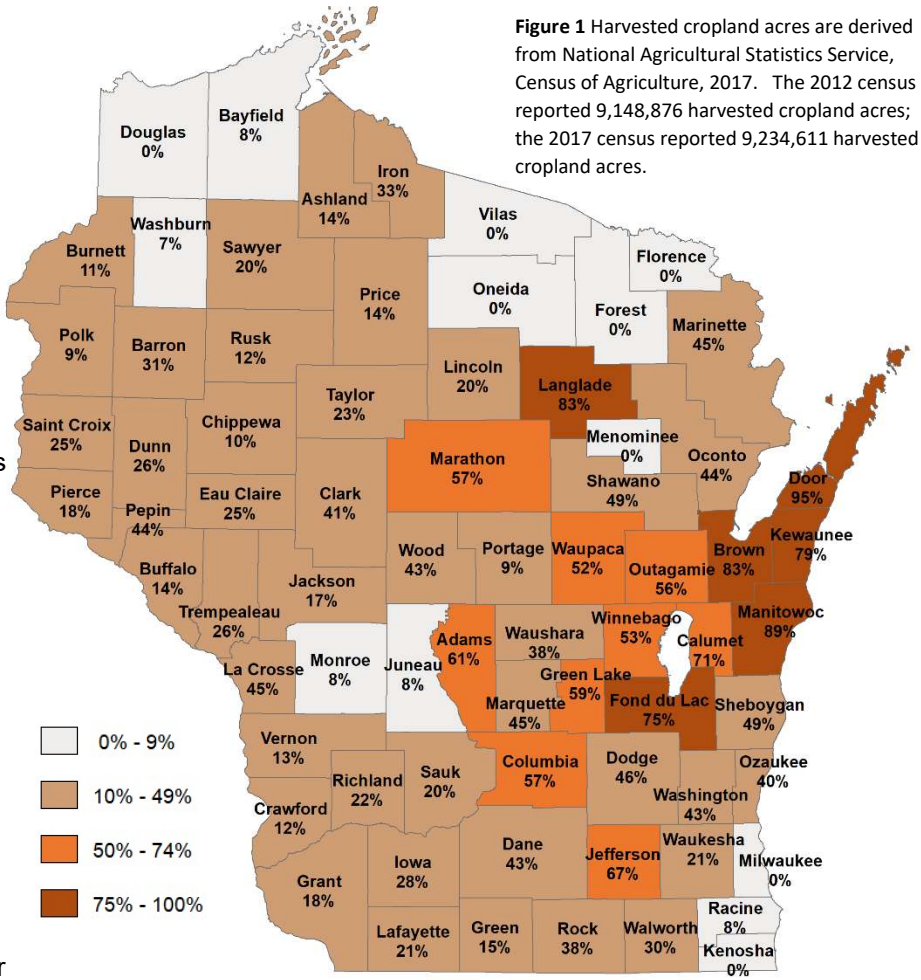

Figure 1 Harvested cropland acres are derived from National Agricultural Statistics Service, Census of Agriculture, 2017. The 2012 census reported 9,148,876 harvested cropland acres; the 2017 census reported 9,234,611 harvested cropland acres.

2009-2019 NM Plan Acres Reported by Program

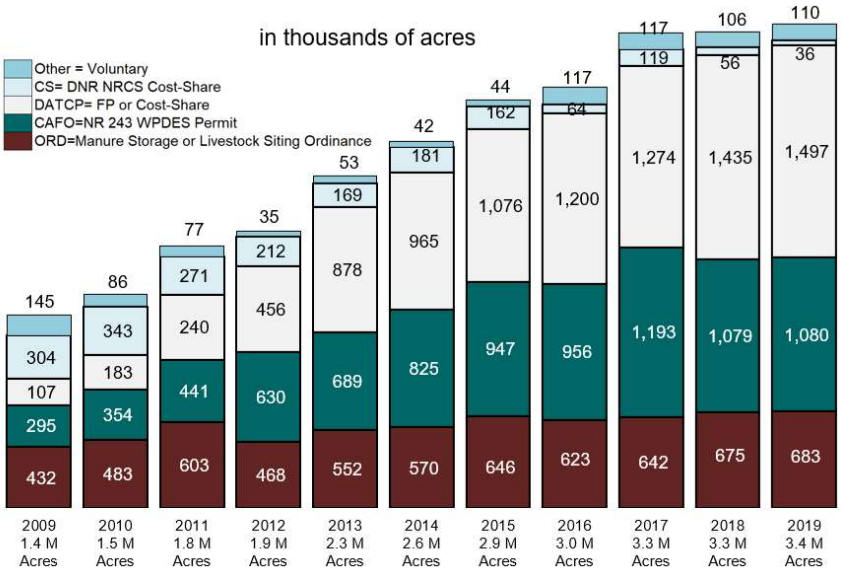

Figure 2 NM plan acres derived from NM plan checklists reported to WDATCP. The Farmland Preservation (FP) program is the major reason for developing and maintaining a NM plan.

2019 County NM Plan Acres in thousands of acres

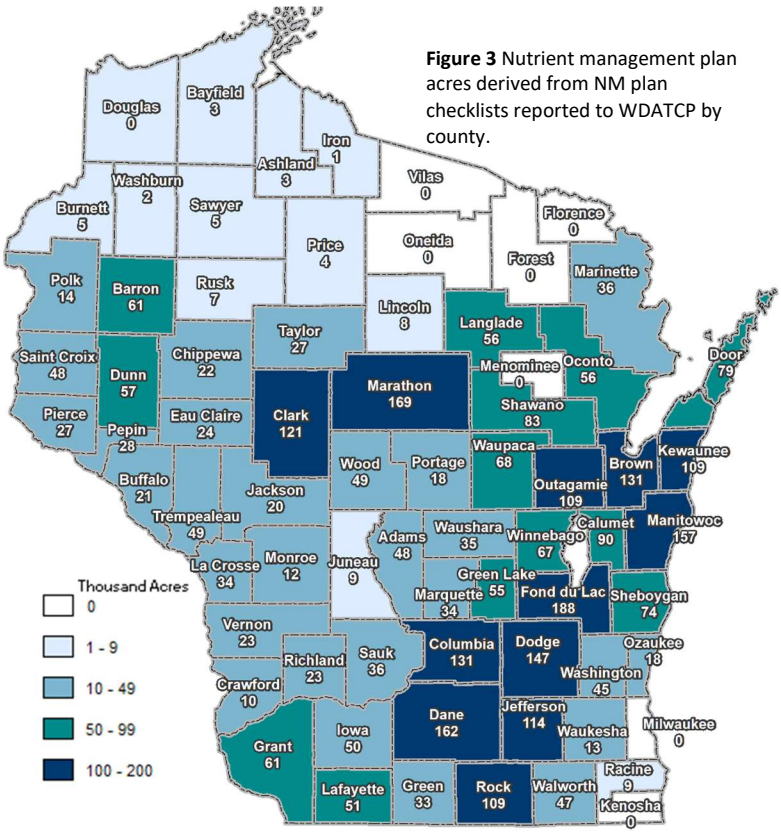

Figure 3 Nutrient management plan acres derived from NM plan checklists reported to WDATCP by county.

2019 NM Plan Acre Increase Compared to 2018

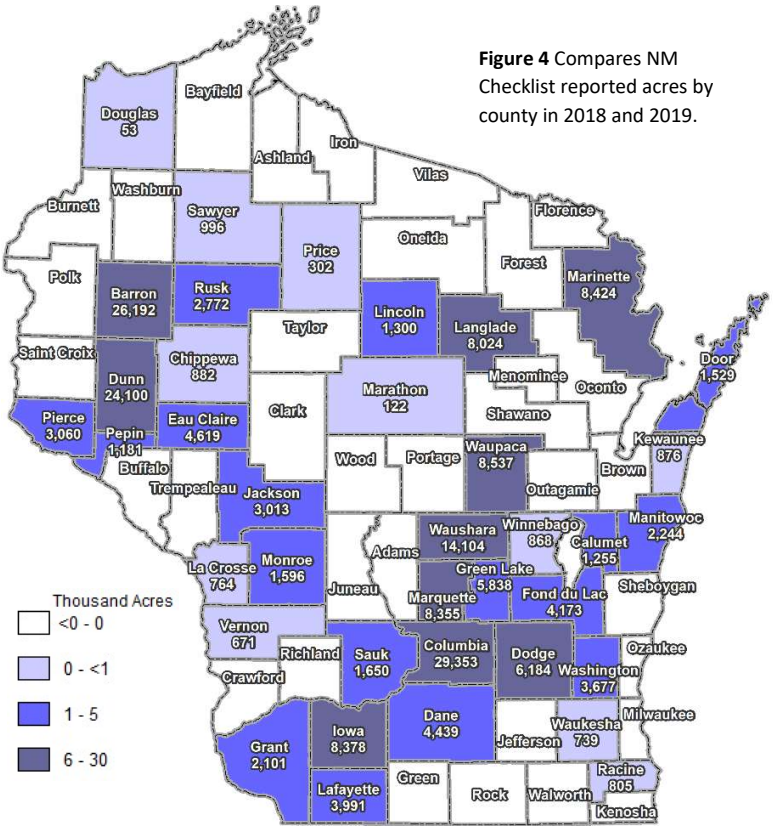

Figure 4 Compares NM Checklist reported acres by county in 2018 and 2019.

Planning and Resources

A NM plan is a planning tool that is annually reviewed and updated to reflect actual crop management practices. As of February 1, 2018, chapter ATCP 50 Wis. Admin. Code requires that farmers follow the 590 standard adopted by NRCS in 2015. To help farmers and planners follow the 2015-590 NM Standard, SnapPlus software is continually being improved by the SnapPlus team led by Dr. Laura Ward Good of the University of Wisconsin's Soil Science Department. The rest of the team consists of Joe Wolter, Jim Beaudoin, Rick Wayne, Sarah Sebrosky, and Mimi Broeske of the UW Nutrient and Pest Management Program. Without these people coordinating with the agencies and incorporating the soil databases, models, map layers, and educational materials, Wisconsin farmers would not be implementing NM at the current level.

SnapPlus Software

- Farmers or their agronomist can use SnapPlus computer software to develop a farm database that uses the farm's soil tests, field maps, crops, and tillage systems to plan applications for manure and fertilizer.
- Download the free software at: https://snapplus.wisc.edu/

Training Opportunities

- Contact your county land and water conservation department or DATCP NM staff listed on the bottom of page 4.
- Learn about Nutrient Management and Farmer Education grants, which can reimburse farmers for soil testing when part of a class to write a plan. Information at: https://datcp.wi.gov/Pages/Programs_Services/NutrientManagement.aspx.

2003-2019 Farmer and Agronomist NM Plans

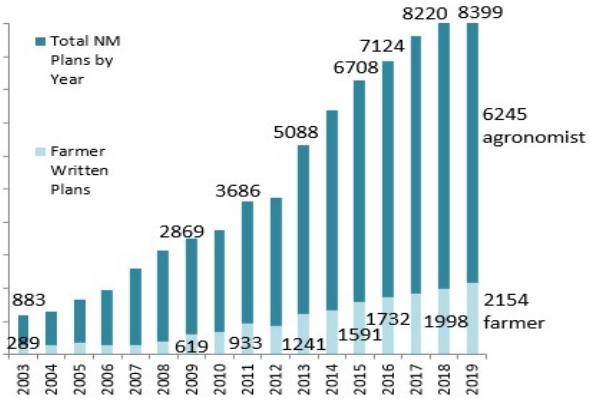

Figure 5 Farmers write more NM plans every year.

NM plans begin with soil tests from DATCP's Certified Soil Testing Labs

- A & L Great Lakes Labs (Fort Wayne IN)
- AgSource Labs (Bonduel WI)
- Dairyland Labs (Stratford WI)
- Minnesota Valley Testing Labs (New Ulm MN)
- Midwest Labs Inc. (Omaha NE)
- Rock River Lab (Watertown WI)
- UW Soil & Forage Analysis Lab (SFAL Marshfield WI)

UW - SFAL and DATCP operate a robust quality assurance program to ensure that the certification process facilitates consumer and regulator confidence in commercial laboratories' ability to effectively deliver precise AND accurate results.

2019 NM Plan Review

Since 1995, we have reviewed NM plans to identify areas to improve our educational tools and outreach. A team of DATCP, DNR, NRCS, UW NPM, and UW SnapPlus staff reviewed 78 plans covering 33,090 acres while testing the next version of SnapPlus for release in Nov. 2019.

Fifteen of these plans were farmer-written, and 63 written by Certified Crop Advisers (CCAs) for the farmer. All of these plans were prepared with SnapPlus software. The team's plan reviews looked at 26 components of the NM plan noted on the 2015-590 Nutrient Management Checklist.

Planning for twenty of these components were being done correctly on all fields in 90% or more of the plans reviewed. We found the 6 components, noted in Figure 6 needed the most improvement. The three brightly colored items relate to 2015-590 standard guidance for manure applications and were first required for all NM plans in 2019.

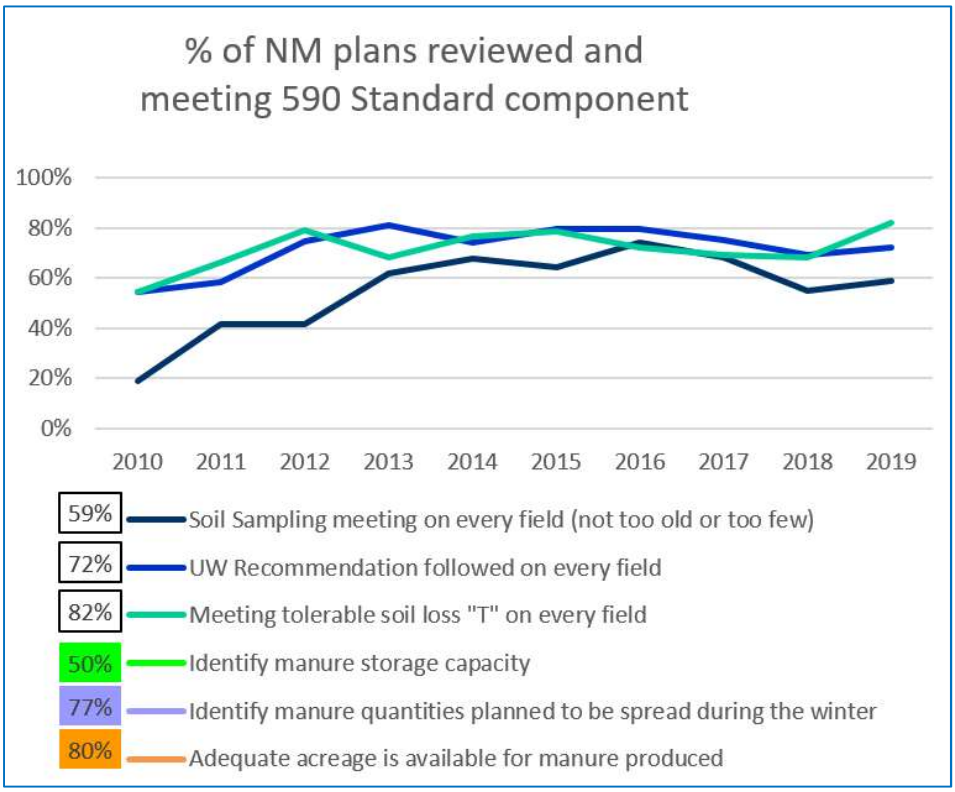

Figure 6 NM plans show improvement over last year in meeting soil testing, University of WI nutrient recommendations, and meeting tolerable soil loss. Requirements for identifying winter manure volume stored, winter manure applied, and adequate acreage for manure produced started being required for all NM plans in 2019 with the promulgation of ATCP 50 Wis. Admin. Code in 2018.

Tips to help with 2020 NM:

Use the NM6 Winter Spreading report. It calculates the solid and liquid manure produced in the winter. That amount of manure needs to be winter stored, applied through grazing animals, or mechanically spread.

Use SnapPlus 19's new NM8 Nutrient Management Checklist report. The NM8 report will show which components of the NM plan need a closer look. If the answer is checked "No" or is left blank, run the other NM reports and check the maps to direct you to the problem. To show the farm has adequate acres to spread the manure produced, at least 90% of each manure source must be allocated to fields in a 3 year span - *past year, current year, and the next crop year*, while maintaining compliance with the 2015-590 Standard.

Soil Erosion = Profit and Nutrient Loss

To protect soil and water resources, NM plans must include controlling the nearly invisible, sheet and rill soil erosion to tolerable soil loss levels and controlling gully erosion. Tolerable soil loss levels on Wisconsin's soils range from 1 to 5 tons per acre per year. See Figure 8 for an example of 1 ton per acre soil loss. Figure 7 compares Wisconsin to the US average annual cropland soil erosion in tons per acre per year on cultivated cropland from the 2015 National Resources Inventory (NRI) report.

Figure 8 Shows 1 ton/acre soil loss in a square foot of land or 0.046 pounds of soil/square foot.

The NRI program collects and produces scientifically credible information on the trends of land, soil, water, and related resources on the Nation's non-federal lands in support of efforts to protect, restore, and enhance the lands and waters of the United States. The NRI is conducted by the U.S. Department of Agriculture's NRCS, in cooperation with Iowa State University's Center for Survey Statistics and Methodology.

One of the best ways to reduce soil erosion and sediment-bound phosphorus in surface water is to reduce the number of tillage passes or implement a true no-till system. In wet years no-till can provide more infiltration, less runoff, and better soil structure. At a cost of about $15 per acre per tillage pass, less really is more!

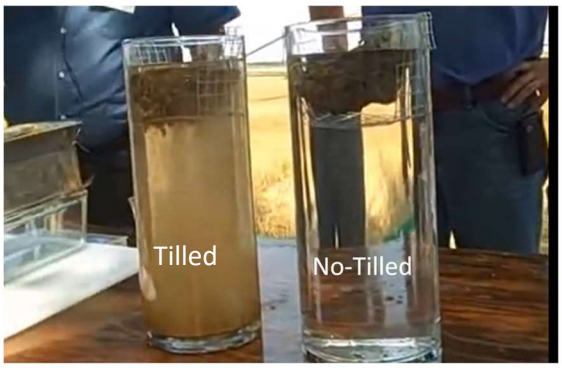

Figure 9 A rainfall simulation showing the differences in soil structure between tilled and no-till soil.

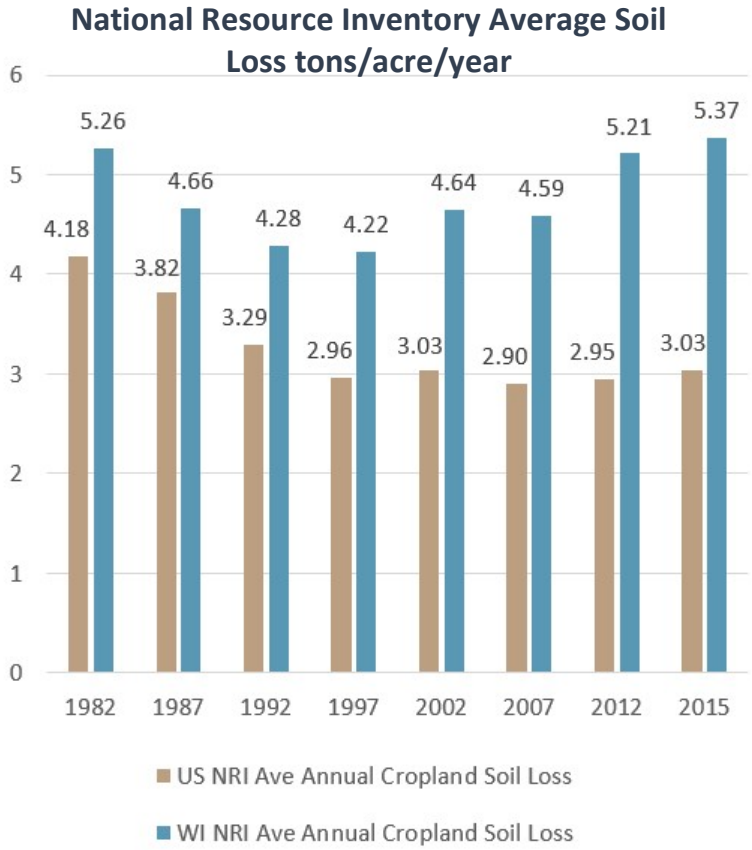

Figure 7 Uses Table 14 of the 2015 National Resource Inventory from September 2018. The US and Wisconsin comparison shows the estimated average annual sheet and rill erosion in tons per acre per year on cultivated, non-Federal, rural, cropland. Wisconsin's soil loss appears to be increasing with a margin of error in 2015 of ±0.38 T/Ac/Yr. The US margin of error in 2015 ±0.05 T/Ac/Yr.