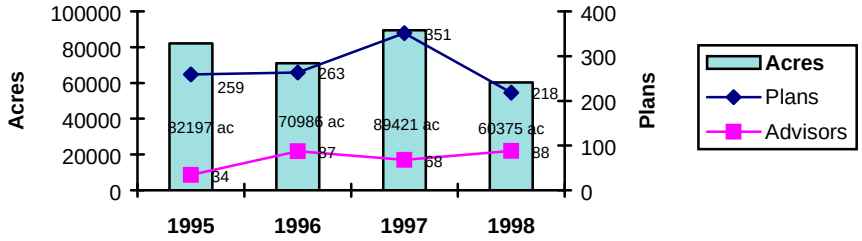
Nutrient Management Briefings - 1998

A Quality Assurance Team review of 1998's growing season's nutrient management plans

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

This report is directed toward certified crop consultants, conservation staff, and other individuals interested in nutrient management. This report summarizes the findings from the Quality Assurance Team's review of 15 nutrient management plans written for the 1998 growing season. Forms listing the required and recommended components of the nutrient management plan are enclosed.

NM Plans Written for Conservation Programs
Figure 1



Wisconsin's nutrient management (NM) program and the USDA-Natural Resources Conservation Service (NRCS) 590 Nutrient Management Standard were developed to address excess application of plant nutrients. These nutrients, particularly nitrogen and phosphorus, can cause severe water quality problems. Additionally, applying nutrients at rates greater than crop needs can result in unnecessary expense to the farmer.

In an effort to promote nutrient management planning (NM) and to ensure the quality of nutrient management plans, a multi-agency and agri-business group was formed in 1995. The intent of this Quality Assurance Team (QAT) is to review nutrient management plans for adherence to the 590 nutrient management standard. This means following the University of Wisconsin fertilizer recommendations and using a certified soil testing lab. In addition, the plan must be planned or approved by a certified planner addressing the components of the *Nutrient Management Plan Checklist* (enclosed).

Since 1995, 1,087 nutrient management plans have been developed for farmers involved in county, state, or federal programs and ordinances encompassing approximately 300,000 acres. These plans have been developed in accordance with the USDA-Natural Resources Conservation Service (NRCS) 590 Nutrient Management Standard.

A nutrient management plan is required when a landowner is regulated under a county ordinance or a Wisconsin pollution discharge elimination system permit (WPDES) from DNR. A nutrient management plan is also required when a landowner voluntarily accepts government cost-share dollars for the installation of a manure storage facility or barnyard runoff control structures. Contact the county conservation offices in your area for more information on the opportunities available regarding nutrient management planning.

DATCP tracks NM acreage planned and the number of crop advisors developing these plans through the *NM Plan Checklists* submitted by conservation staff. The *NM Plan Checklists* are required for every plan written for any county, state, or federal program.

Figure 1 indicates that in 1995, 34 NM planners developed 259 plans on 82,197 acres. In 1996, 87 planners developed 263 plans on 70,986 acres. In 1997, 68 planners developed 351 plans on 89,421 acres. In 1998, 88 planners developed 218 plans on 60,375 acres. Since 1995, the acres tracked through the *NM Plan Checklists* have decreased. This is due to program and funding fluctuations.

QAT identified challenges for future nutrient management planning

The 1998 Quality Assurance Team (QAT) categorizes the findings of the QAT review of the nutrient management plans. Individual plan comments are directed into four categories: field information, soil test information, manure information, and the plan printout. Only the plan printout category shows improvement.

Inside This Issue

The 1998 Quality Assurance Team members:

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QAT identified challenges for future nutrient management planning *(continued)*

***Category 1** - Soil Test Information:*

The most pervasive problem found by the QAT is related to soil testing. Soil test information has not improved over the last three years. It has actually declined by 5% from 1997. The QAT estimates the current level of activity in this category, or an overall grade, to be 64% in 1998.

University of Wisconsin (UW) recommendations are required as the basis of nutrient management plans written with the NRCS 590 Standard.

These recommendations must come from Wisconsin Farm Services Agency (FSA) approved laboratories. These laboratories use similar analytical procedures and follow the UW recommendation program if the sample is identified as being for cost-sharing purposes. In some cases, Wisconsin FSA - approved laboratories may also provide non-UW recommendations. Quality control samples are periodically sent to each of these labs to standardize procedures and to ensure that instruments are functioning properly.

Rock River Laboratory
Route 3, N8741 River Rd
Watertown, WI 53904
(920)261-0446

UW Soil & Plant Analysis Lab
5711 Mineral Point Rd
Madison, WI 53705
(608)262-4364

UW Soil & Forage Lab
8396 Yellowstone Drive
Marshfield, WI 54449
715)387-2523

Agsource Soil &Forage Lab
106 N. Cecil Street
Bonduel, WI 54107
(715)758-2178

Dairyland Laboratories
217 E. Main Street
Arcadia, WI 54612
(608)323-2123

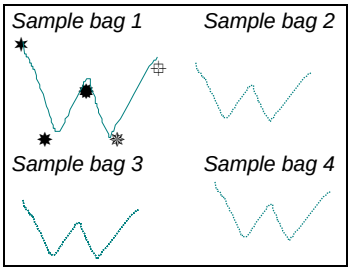
Currently, there are five FSA certified laboratories. The nutrient management planning process is less complicated if nutrient management planners use approved labs, obtain UW recommendations as part of the soil test reports, and apply manure to lower soil testing fields. Future state law may define a Wisconsin certified soil testing lab as a lab which only provides UW fertility recommendations.

Missing the "1 composite sample per 5 acres" guideline - In 9 of the plans submitted for the 1998 growing season, soil sampling exceeded the recommended rate of 1 composite sample per 5 acres or 1 sample per field, whichever is less. This problem is not critical in most situations. However, the QAT reviewed a plan with soil sampling ratios of 1 to 21 acres. When planners make fertility recommendations with so few soil samples the results are likely to be inaccurate. Improperly developed fertility recommendations can lead to crop failure, lack of confidence in the University of Wisconsin recommendations, and back-sliding of nutrient management implementation.

County	Agronomists	Acres
Adams	2	650
Brown	4	9546
Chippewa	5	1277
Dane	4	1817
Door	3 & 23 farmer	9912
Eau Claire	6 farmer	1560
Fond du Lac	1	412
Grant	6	4888
Kewaunee	3	3922
Manitowoc	2	1541
Marathon	4	5026
Monroe	3	307
Outagamie	5	3018
Portage	3 & 3 farmers	4492
Polk	2	1114
Sauk	4	2175
Shawano	2	984
Waukesha	1	292
Waupaca	5 & 1 farmer	4520
Winnebago	5	2508

These results were submitted to DATCP from conservation offices. Plans were written for county, state, and federal programs and ordinances.

Soil sampling recommendations can be found in UW Publication A2100.



In this 20 acre field, the soil sampler takes a composite sample from each five acre section. A composite sample is a combination of cores ✶✸✹❋⌗ as shown for sample bag 1. These soil cores are mixed in a bucket and poured into a soil bag. This field will have 4 sample bags. Each bag will have one composite sample of 5 cores for every 5 acres.

Missing the UW recommendation mark

The QAT found that 4 of the 15 plan submitted for review had soil tests recommendations that did not meet UW recommendations. All 4 of these plans had soil test saying *Agrisource* which are prepared by Rock River Laboratory, a Wisconsin certified lab. Even though this lab is certified, these recommendations are not the same as UW recommendations. The nutrient management planner must reconfigure the *Agrisource* recommendations. In 2 of these 4 plans, planners did not reconfigure the recommendations. These plans were not consistent with the 590 Standard. The QAT believes that starting with UW recommendations in the first place will save the farmer and planner time and money.

One NM plan was found to be unacceptable in the 1998 QAT review. This plan lacked soil tests and recommended excessive nitrogen. The QAT will review the 1999 growing season update to this plan for compliance with the 590 standard.

Lacking field information - Another problem that we saw last year and continue to see, is where soil samples are taken and

Where Are the Planners?

In 1998, 21 counties reported nutrient management planning. This is a decrease from 24 counties last year. One of the main reasons for the decline is the transition of federal and state programs. Even with the number of nutrient management planning counties reduced, the 1998 growing season has increased the number of nutrient management planners from 68 in 1997 to 88 in 1998. This increase can be largely attributed to local promotion of nutrient management. Approximately 33 farmers developed their own nutrient management plans for the 1998 growing season. Farmer developed plans increased by 33% or 11 planners from 1997 to 1998. Also the number of private sector planners increased by 16% or 9 planners from 1997 to 1998.

For 1998, DATCP hoped to see at least a 5% increase in planners and a corresponding increase in the total acreage being planned under 590 NM plans. We saw an overall 23% increase in the number of planners and a 32% decrease in the number of acres being planned. In 1997, approximately 46 certified planners prepared NM plans. In 1998 this number increased to 55 certified planners. As of September 1998, 560 individuals in Wisconsin have attained certification through the American Society of Agronomy. This is an increase of 97 planners more than October of 1996.

Out of 39 counties that have reported planning nutrient management since 1995, 19 counties have stayed constant or improved the number of nutrient management planners as reported by the *NM Checklists*. These counties are:

field information related to soil type, crop, or acreage is missing. This occurred in 3 plans this year. In this situation, the lab will assume recommendations for the sample using soil texture and color to determine recommendations. If soil names are provided to the soil testing laboratory, more specific recommendations are possible. Submitting all this information will save planners time and allow the laboratory to compile recommendations based on an adjusted averages of soil test organic matter, yield goals, phosphorus, and potassium values.

Providing test results with no UW recommendations - In 2 of the 15 plans reviewed for the 1998 growing season, soil test values were provided for each soil sample but lab-calculated fertilizer recommendations were not. One of the certified labs gives it customers the option of paying less for the soil testing report if the recommendations are not included. Members of the QAT agreed that test results without recommendations are useful when the soil sampler makes a mistake or does not have time to fill out the soil test form. However, if the farmer only receives soil test results and no recommendations, it would be difficult to determine nutrient needs. Also, only receiving the test results means that the planner must identify yield goals, fertility recommendations, manure, and legume credits somewhere else in the plan. This information would normally be part of the soil test reports that includes UW fertility recommendations.

***Category 2** - Field Information:*

Field information has not improved over the last three years. It has actually declined by 9% giving and overall grade of 78% in 1998.

Confusing field numbering - Twelve of the 15 nutrient management plans had understandable numbering systems that will improve the effectiveness of the plan when placed in the hands of the farmer. In 3 plans, we found that some of the field numbering systems seemed to be somewhat confusing and difficult to follow

between soil testing maps, conservation maps, and the fertilizer recommendations. We suggest using a correlation table for field numbers if field numbering systems could be confusing.

Lacking manure spreading restrictions - We found 5 of the 15 plans lacked manure spreading restriction maps. Manure spreading maps should identify fields where manure should never be spread or where it can be spread but needs incorporation. These restrictions are attributed to their steep slopes, proximity to streams, areas of concentrated flow, high potential to pollute surface or groundwater, and fields exceeding the tolerable soil loss. Fields with manure spreading restrictions can be identified and explained using a map legend.

***Category 3** - Manure Information:*

Manure information has not improved. Since 1997, the grade in this category decreased from 84% to 69%.

Lacking animal numbers for manure production - Approximately 40% or 6 of the 15 plans were missing animal numbers and their manure production estimates. The nutrient management plan should project the application of all the manure produced on this farm during the growing season or explain why the information is lacking. We recommend that the enclosed *Manure Information* sheets for calculating manure production and spreader capacity also be submitted with the nutrient management plan to the county conservation office.

Useable manure rates - Approximately 4 of the plans had manure application rates that appeared to be unrealistic to apply because of the multiple calibrations required or a too precise (in tenths per acre) manure application rate. We recommend that planners use about two manure rates and group the rates by crops for easier implementation. Placing this information in a summary sheet should be very useful to the farmer.

***Category 4** - Plan Printout:*

The plan printout has improved. Since 1995, the category grade has increased from 77% to 87%.

Making plans easy to use - All of the plans that were submitted in 1998 were easy to use because they all included a summary of inputs to the field. Some plans grouped fields by crop.

Translate fertilizer into product - In 11 out of the 15 plans submitted for the 1998, planners clearly specified to the grower the amount of additional fertilizer needed for fields. These plans took the next step indicating the amount of fertilizer product to be purchased and rate of application. This information seems to be helpful to the growers and makes the plan easier to use. The QAT would also like lime recommendations included in the "products to purchase list." To make the plan easy to use, the QAT recommends that planners consider using only a few application rates and products. It may also be helpful to lump fertilizer application by crop and rate.

Evaluating Implementation

I. QAT Farmer Survey Results

To be effective in improving nutrient management planning, the QAT surveyed farmers whose plans that were being reviewed. We asked 8 questions to determine level of implementation, value of the planning service, and how NM planning could be more widely implemented by them and their neighbors. This year we saw 2 of the 15 plans were farmer written. The other 13 farmers all commented that their planners worked with them to learn about the farming operation and took their preferences into account. All the farmers thought the plan was easy to reference.

- Ten of the 15 farms said that they followed 80 to 100% of the plan recommendations for manure and fertilizer applications.
- When these farmers were asked how their plans could be improved, 75% had no suggestions saying that they liked the delivery format. The other 4 farmers (25%) each had different comments saying: The plan could have been delivered sooner for improved usefulness; The manure spreading rates were unrealistic; There should of been more field visits; The government red tape consumed too much time.
- When asked if they used manure and legume nutrients more effectively or saw improved profitability, 53% said yes and the rest were unsure and would need time to run the numbers.
- Plans are likely to be updated next year on 14 of the farms (93%). One farmer was unsure whether he would update the plan unless cost sharing was provided.
- When asked what they thought the service was worth, 42% thought $5 to $7 per acre, 29% thought $3 per acre, 14% thought less than $2 per acre, and another 14% knew they were saving money but were unsure of the value.
- To increase nutrient management statewide, the majority of farmers (47%) said incentives are the key. Another 24% said that education and awareness is needed. Another 24% said that operators with manure storage should be the focus of local nutrient management efforts. When farmers participate in water quality programs with cost sharing for manure storage or when operations fall under county manure storage ordinances, nutrient management is needed.

II. Number of Repeat Plans

The number of plans that are updated from previous years is another method we looked at to help the agencies determine level of implementation. If the plans are updated, we can assume the farmers are making some effort to implement nutrient management practices. Approximately 44% or 94 plans that were written for the 1998 growing season are repeat plans from the 1997 growing season. We believe that local methods of promoting planning and continued agency and private sector follow-up, is improving implementation. Since 1995, approximately 37% or 405 plans are repeat plans. This means that of the 301,866 acres having nutrient management plans, about 12%, 35,415 acres, are repeated. Given these statistics, we can see that updating of plans is becoming more prevalent and is likely to be occurring to a greater degree now as compared to 1995. *These percentages are approximate estimates. Acres varied for the same farm's repeat plans. Also, NRCS reporting of plans from 1995, 1996, and 1997 had many plans lumped into a single report.*

III. Developing Local nutrient and pest management user Groups

For 1999, DATCP, UW-NPM, NRCS, DNR, and local conservation staff will be initiating the development of nutrient and pest management (NPM) regional user groups to increase the adoption of this practice and the number of planners available. These groups will provide a public and private sector forum to identify local NPM issues and training needs for conservation staff, farmers, and crop advisors. Every conservation office will need staff to promote and understand NM plans. Each county should be a clearing-house of information for crop advisors and farmers.

The Future of Nutrient Management in Wisconsin

The Governor's Budget Bill is reforming the nutrient management program in Wisconsin. This legislation requires DATCP to develop administrative rules to improve nutrient management. These rules are to include incentives, education and outreach provisions, and compliance requirements.

The nutrient management work group, made up of agency and private sector individuals, is considering the following performance standards, technical standard, and implementation strategy. The work group has not developed its final recommendation on the implementation strategy at this time. This effort will join other water quality strategies to assist in reaching water quality goals. These nutrient management strategies are presented here for discussion purposes only.

Goal: Improve water quality related to nutrients by achieving nutrient management performance standard on 80% of Wisconsin's 9 million cropland acres (7.2 million) by the year 2010.

Recommended Performance Standards

Recognizing that nutrient management relates to both the application of nutrients and the transport of soils, the nutrient management work group recommends the following ***uniform performance standards:***

1. Nutrient management to meet crop needs, according to 590 NM Standards, in agricultural settings. This performance standard pertains to commercial N & P fertilizer and the application of manure and other organic byproducts.
2. Sediment control to limit nutrients delivered to surface water by meeting tolerable soil loss or "T" on every field.
3. Nutrient management to meet turf needs according to UW recommendations.

Targeted area performance standards may be developed for specific regions or watersheds in order to meet water quality standards. These targeted areas may have regional performance standards.

Recommended Technical Standard

Natural Resources Conservation Service - Nutrient Management Standard 590

A technical note has been developed for use with the 590 Standard. This technical note provides guidance for nutrient management planning. Wisconsin has the flexibility to amend these technical notes independent from federal review.

Recommended Evaluation Tools

Careful evaluation will be critical to determining the success of the outreach and education efforts, incentives, and nutrient management plan implementation. After evaluation, the UW recommendations may need to be revisited for water quality reasons.

At this time, it is unknown whether or not the recommended performance and technical standards will achieve the desired water quality standards. Nutrient management strategies, and progress toward water quality standards, will be reviewed as a whole with other water quality initiatives developed through the nonpoint source program redesign process.

As part of the evaluation of nutrient management practices benchmarks will be set for current and projected nutrient management adoption and environmental impact. The following methods are possible evaluation tools.

- Measure soil for P and determine soil test phosphorous trends
- Measure statewide nutrient mass balance (N & P)
- Monitor the number of plans written and the acreage these plans cover
- Check for meaningful implementation of plans
- Monitor sediment loading erosion rates
- Measure groundwater for N trends
- Monitor surface water for N & P
- Monitor soil testing trends

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

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