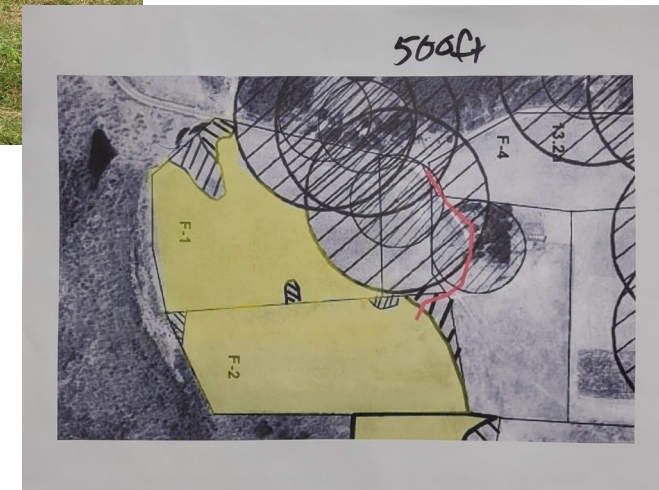
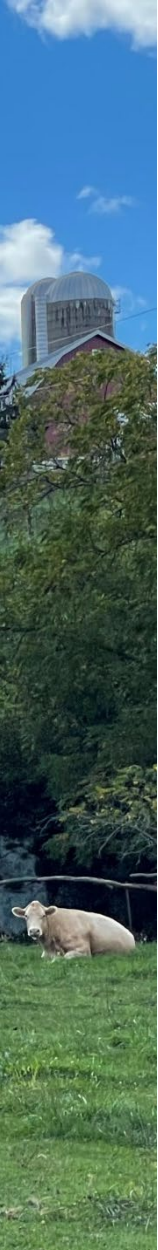


Incorporating Off Farm Wastes in Nutrient Management Planning



Matt Bolen, NPM Outreach Specialist,
mjbolen@wisc.edu or 715-681-1660

Incorporating Off Farm Wastes in Nutrient Management Planning

- Nutrient Management Plans (regulated under chapter ATP 50) guide nutrient applications and conservation practices on farms that mechanically apply nutrients to cropland and pasture.
- Nutrient Management Performance Standards (WI chapter NR 151 & USDA NRCS 590) provide direction for manure and fertilizers.
- However, the standards do not provide guidance for application of:
 - Industrial wastes (industrial liquid waste, industrial by-product solids, and industrial sludge regulated under WI chapter NR 214)
 - Municipal sewage sludge (regulated under WI chapter NR 204)
 - Septage (regulated under WI chapter NR 113)
- If the above material listed above is comingled with manure prior to application, then manure application regulations may apply.
- Any application of these materials must be approved and permitted by the Wisconsin Department of Natural Resources.

Limiting Nutrient for Material Application

Nutrient Source	Limiting nutrient
Manure	Nitrogen & Phosphorus Rate restrictions based on soil test phosphorus and the P Index
Sewage	Nitrogen based (Using standard mineralization rate unless otherwise specified). Note: While sewage applications are nitrogen based, WPDES permits require phosphorus and potassium sampling. Analytical results should be provided for farmers and nutrient management planners to be included in the nutrient management plan.
Septage	Nitrogen based, rate restricted to nitrogen crop need
Industrial	Nitrogen based on TKN unless otherwise specified. Note: While industrial waste landspreading is nitrogen based, WPDES permits require phosphorus and potassium sampling. Analytical results should be provided for farmers and nutrient management planners to be included in the nutrient management plan. Additional slope and application rate restrictions apply.

Applications restrictions near wells measured in feet

Nutrient Source	Community Wells ¹	Non-Community Wells ²	Private Wells ³	Irrigation & Non-Potable Wells
Manure⁴	1000	100	50	8
Sewage	1000 ⁵	250	250	250
Septage	1000 ⁶	250	250	250 ⁷
Industrial	1000	250	250	----

1. Wells for a town, village, city
2. Wells that include public places such as schools, restaurants, etc. unless otherwise noted in the table
3. Wells for private residences
4. Unless manure is treated or deposited by grazing animals
5. Includes schools
6. Includes schools and healthcare facilities
7. Distances to non-potable wells used for irrigation or monitoring may be reduced to 50 ft. if the septage is incorporated or injected and the Department of Natural Resources does not determine that a greater distance to the wells is required to protect the groundwater.

Application restrictions near buildings measured in feet

	Nutrient source	Not incorporated	Incorporated (4 inches)	Injected (4 to 12 inches)
Residence, business, or recreation area	Sewage	500	200	200
	Septage	500	500 ² or 200 ³	200
	Industrial	500	500	500
Residence or business with permission	Sewage	250	100	100
	Septage	250	200 ² or 100 ³	100
	Industrial	---	200 ⁴	200 ⁴
Rural schools and health care facilities	Sewage	1000	1000	500
	Septage	1000	1000	500
	Industrial	None ⁵	None ⁵	None ⁵
Distance to property line¹	Sewage	50	25	25
	Septage	50	25	25
	Industrial	---	---	---

1. Distance may be reduced with written permission from both owners and occupants
2. if not lime stabilized but incorporated in 6 hours
3. if lime stabilized and incorporated in 6 hours
4. sludge must be incorporated and all owners and occupants provide their written consent for the reduced distance
5. Unless well is present then follow restrictions for wells

Application restrictions depth to bedrock & ground water

Nutrient Source	Depth to Bedrock	Depth to Watertable
Manure	20 inches on high permeability (P) and rock soils (R)	12 inches on wet (W) soil
Sewage (restricted on high permeable soils)	3 feet	-----
Septage (restricted on high permeable soils)	3 feet	3 feet
Industrial (Unless groundwater concerns)	3 feet or 18 inches with DNR approval	3 feet or 18 inches with DNR approval

Application restrictions near surface water measured in feet

Manure Applications:

- 1000 feet from lakes and ponds
- 300 feet from rivers and streams
- Allowed with reduced application rate and additional practices implemented

Slope & site for Sewage & Septage Applications	Not incorporated	Incorporated (4 inches)	Injected (4 to 12 inches)
0-6% surface water or wetlands	200	150	100
6-12% surface water or wetlands	Not allowed	150	100
0-6% dry runs or grass waterways	100	50	25
6-12% dry runs or grass waterways	Not allowed	100	50

Industrial wastes

- 200 feet to any surface water including any wetlands
- 100 feet when a vegetative buffer
- 50 feet if incorporated

Additional limitations on above sewage, septage, and industrial waste materials may be imposed if resource concerns are present

Frozen or snow covered ground application restrictions

Nutrient Source	Application Limit
Manure	7000 gallons of liquid manure or no more than 60 pounds P2O5 Additional restrictions apply based on slope, distance to ground and surface water
Sewage	Not allowed unless no other reasonable disposal method available and DNR approval
Septage	Restrict by POWTS category and DNR approval
Industrial	6800 gallons per acre per day not to exceed weekly Restricted to <2% slope. >2% needs DNR approval

Use of wood ash to adjust soil pH

WI chapter NR 518 Landspreading of Solid Waste

An analysis is required to determine the composition and neutralizing index of ash.

- Limit 15 dry tons per acre per application
- Total cumulative limited to 50 dry tons per acre
- Spreading location restrictions if top dressing:
 - 100 feet of navigable bodies of water
 - 25 feet of intermittent streams, drainages ways, road ditches, surface tile inlet
 - 1000 feet of public water supply
 - 200 feet of private water supply wells
 - 200 feet of residences unless written permission is provided from the residence
 - 25 feet of public roads
 - Can not be spread on frozen ground
 - Not on slopes greater than 6% unless in a soil conservation management plan then can be spread on slopes less than 12%

How to add materials to V3 located on SnapPlus V3 Help Wiki site:

<https://wiki.snapplus.wisc.edu/nutrients/biosolid-analysis>



 SnapPlus V3 Help

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Getting Started

Creating an Account

Converting a V2 Farm

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Farm

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nutrients

biosolid-analysis

Entering a Biosolid Analysis

Entering a Biosolid Analysis

If you have a typical lab report for biosolids, where the nutrient content is reported on a dry weight basis, this will not be difficult.

1. Select the appropriate biosolids or organic waste type in the Manure Sources table on the Nutrients tab.
2. Above the Manure Analysis table, click **New Biosolid Analysis**

Manure sources					
Active?	Name	Organic nutrient type	Off-farm source?	CAFO source?	Delete
☒	Sewage Sludge	Organic by-products, liquid	☐	☐	
☒	barn	Dairy, semi-solid	☐	☐	
☒	heifers	Dairy, slurry	☐	☐	
☒	pit	Dairy, liquid	☐	☐	

NEW BIOSOLID ANALYSIS

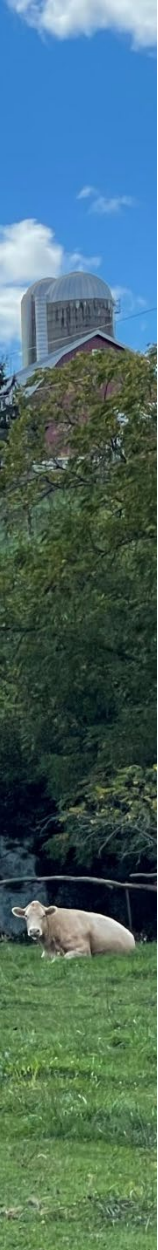
CREATE AVERAGE

SET MANURE ANALYSIS

IMPORT MANURE ANALYSES

DOWNLOAD MANURE ANALYSIS IMPORT TEMPLATE

Manure analysis										
Name	Analysis Date	N Surface (lb/1000 gal)	N Incorp (lb/1000 gal)	N Inject (lb/1000 gal)	P2O5 (lb/1000 gal)	K2O (lb/1000 gal)	S (lb/1000 gal)	Dry Matter %	Use for planning?	Delete
Book value		0	0	0	0	0	0	0	☒	



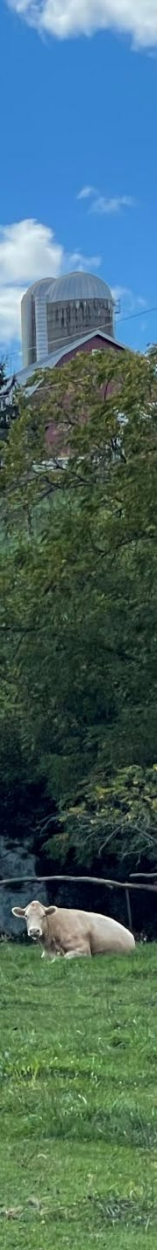
Incorporating Off Farm Wastes in Nutrient Management Planning: A Summary of Manure, Sewage Sludge, Septage, Industrial Wastes, and Wood Ash Application Restrictions on Wisconsin Farms

Posted on the
Extension Crops and Soils Topic Hub

<https://cropsandsoils.extension.wisc.edu/articles/incorporating-off-farm-wastes-in-nutrient-management-planning/>



Contact: Dan Marzu, NPM Outreach Specialist,
Dan.Marzu@wisc.edu or 608-381-6702



Resources

- DATCP, Nutrient Management Program,
https://datcp.wi.gov/Pages/Programs_Services/NutrientManagement.aspx
- WI ch NR 113, Servicing Septic or Holding Tanks, Pumping Chambers, Grease Interceptors, Seepage Beds, Seepage Pits, Seepage Trenches, Privies, or Portable Restrooms,
https://docs.legis.wisconsin.gov/code/admin_code/nr/100/113
- WI ch NR 204, Domestic Sewage Sludge Management,
https://docs.legis.wisconsin.gov/code/admin_code/nr/200/204
- WI ch NR 214, Land Treatment of Industrial Liquid Wastes, By-Product Solids and Sludges, https://docs.legis.wisconsin.gov/code/admin_code/nr/200/214
- WI ch NR 518, Landspreading of Solid Waste,
https://docs.legis.wisconsin.gov/code/admin_code/nr/500/518



2025 Update from the Nutrient & Pest Management Program



Extension
UNIVERSITY OF WISCONSIN-MADISON

Regional Specialists

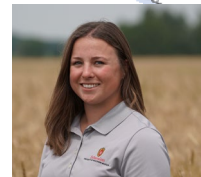
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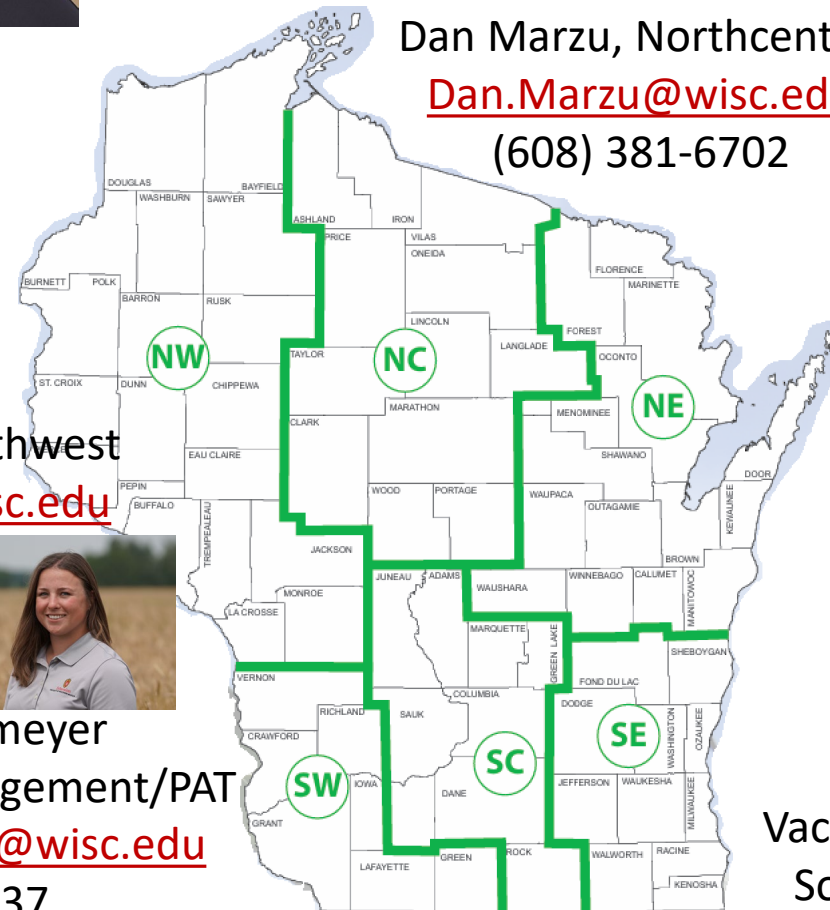


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Vacant Position:
Southcentral



NMFE Online Course

- Hosted in Canvas
- 10 modules spanning several topics
- Mixed media content
- Available all year

Nutrient Management Farmer Education > Assignments > 1.1 What is a Nutrient Management Plan?

Ongoing

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Modules

Assignments

Files

Pages

Quizzes

Grades

Course Analytics

Library Resources

1.1 What is a Nutrient Management Plan?

Due No Due Date Points None

1.1 What is a Nutrient Management Plan...

Watch later Share

Watch on YouTube

1: Introduction to Nutrient Management Plans & USDA 590

- Module 1: Instructions
- 1.1 What is a Nutrient Management Plan?
- 1.2 Who needs a Nutrient Management Plan?
- Review 1.1-1.2: Quick Summary

S6_UWNMFE_QuickSummary.pdf

Download S6_UWNMFE_QuickSummary.pdf (223 KB)

Page 1 of 2

UW Nutrient Management Education Quick Summary

S6: SOIL TESTING AND SAMPLING PROCEDURES

Proper collection and analysis of a soil sample is essential for nutrient management. Follow prescribed protocols to ensure quality data. Don't Guess, Soil Test!

Goals and economics of soil testing

- The proper collection of soil samples and interpretation of soil test results assists farmers in allocating on-farm and commercial nutrient sources in an agronomically and economically efficient manner.
- Proper interpretation and application of soil test results can result in nutrient applications that protect local surface and groundwater quality.
- Regular soil testing often provides a positive economic return through improved on-farm and commercial nutrient allocation and management.
- The basis of soil testing is to predict the probability of crop response to applied nutrients, thereby balancing crop productivity and profitability.

SnapPlus CONNECTION

The importance of naming fields

SnapPlus has a web application called SnapMaps, which uses GIS and lets you locate and draw your fields' boundaries.

It is really important that you name your fields on your maps and then be consistent when you submit your soil samples for testing. That way, your results will match-up when you import them back into SnapPlus!

You can also print out your maps and mark them up while you are sampling. That way you have a record of where the samples were taken!

Drawing Field Boundaries in SnapMaps VIDEO

How To Access The Course



State of Wisconsin
Department of Agriculture, Trade and Consumer Protection



Online Services ▾ Licenses/Permits ▾ Publications ▾ Programs/Services ▾ Ag Development ▾ News/Media ▾ About Us ▾



Nutrient Management

Announcements

2024 Nutrient Management Update

Review the [2024 nutrient management update](#).

Nutrient Management Cost-Share Opportunities

Review [nutrient management cost-share opportunities](#).

About

Nutrient management refers to the use of manure and other fertilizers to meet crop nutrient needs, while reducing the potential for them to run off fields to lakes, streams and groundwater. It helps assure that crops get the right amount of nutrients -- nitrogen, phosphorus and potassium, often referred to as N-P-K -- at the right time and place. This benefits the farmer by improving crop yields and reducing costs, and benefits the environment by keeping nutrients on fields and preventing them from running off to streams or down to groundwater.

Nutrient management planning requires testing both soil and manure to learn what the nutrient content is. Nutrient management plans must meet requirements:

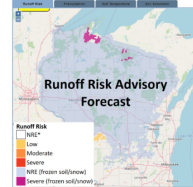
- In [ATCP 50](#), which is a state regulation that lays out how farmers meet standards, administered by the Wisconsin Department of Agriculture, Trade and Consumer Protection
- In [NR 151](#), a state regulation that sets performance standards, enforced by the Wisconsin Department of Natural Resources
- [Wisconsin NRCS 590 Standard](#), set by the USDA Natural Resources Conservation Service and state conservation agencies, serving as the basis for a nutrient management plan

In Wisconsin, all farms should have a nutrient management plan. Some farms will follow a nutrient management plan if they:

- Participate in the Farmland Preservation Program
- Are offered cost-sharing to develop a plan
- Accept cost-sharing for manure storage systems
- Are large livestock operations that require a Wisconsin Pollutant Discharge Elimination System permit
- Are regulated under a local ordinance for manure storage or livestock siting

More than a third of Wisconsin's 9 million cropland acres are under nutrient management plans. DATCP provides financial help and training to farmers, agronomist and agriculture educators. The University of Wisconsin-Madison has developed free software called SnapPlus to help in developing plans. Farmers can work with an agronomist to write nutrient management plans, or write their own if they successfully complete training that meets the standards.

Runoff Risk Advisory Forecast



Resources

[ATCP 50 webpage](#)

[Nutrient Management Brochure](#)

[Manure Management Advisory System/590 Maps](#)

[Nutrient Management Farmer Education Grants](#)

[Understanding Manure Irrigation \(UW-Extension\)](#)

[BLWR Trainings for Counties and Local Governments](#)

[Land and Water Conservation Directory by county](#)

[Historic Nutrient Management Annual Reports](#)

NUTRIENT MANAGEMENT TRAININGS

RESOURCES ON WISCONSIN'S



Training Resources

Self-Paced Online Nutrient Management Farmer Education Class Now Available!

Do you have a UW-Madison Net ID? If yes, access the course here: <https://canvas.wisc.edu/courses/430912>.

If no, please click here to fill out a survey to request a UW-Madison Net ID: https://uwmadison.co1.qualtrics.com/jfe/form/SV_bOb5GeLbQej7qKO.

Once you have a UW-Madison Net ID, you can use the link above to access the course.

https://datcp.wi.gov/Pages/Programs_Services/NutrientManagementTraining.aspx



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Wisconsin Cover Crop Data Network

Project Partners

**Michael Fields
Agricultural Institute**



Agricultural Research Service
U.S. DEPARTMENT OF AGRICULTURE



Welcome

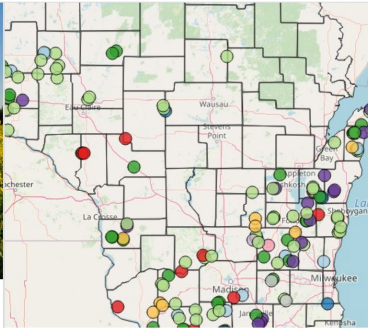
Since 2020, farmers around Wisconsin have shared cover crop and other soil health practices with us. Each colored dot on the map represents one of their fields. Click the map or graph images to explore the data.



Cover crop scenarios

On-farm data by farmers, for farmers.
Explore how cover crops are being used
by farmers around Wisconsin.

[Go to the scenarios](#)



Map of participating citizen science farmers

Do you see your dot? Click each location
for more information on cover cropping
practices.

[Go to the map](#)

- Began in 2020 with fall biomass and farmer survey
- Fall of 2022 started testing for nutrient content & forage quality
- First spring samples were taken in 2024
- Data from over 220 fields in a variety of locations, soil types, farm sizes, and crop production systems.
- Data searchable on website and the new cover crop scenario page
- Now taking registrations to participate in the 6th annual survey



Scan to explore the
Data Network Website
and view past season reports

For more information contact:

Dan Marzu, NPM Outreach Specialist

Dan.Marzu@wisc.edu or 608-381-6702



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On-farm cover crop data by farmers, for farmers

Select your cover crop goal under the Scenario dropdown. Then select the county or counties and soil texture(s) that represent the conditions you are most interested in. View participating farms with operations which meet the goals and conditions you have selected. Click on the farm card to see additional data about that operation, including agronomic information as well as biomass, forage, and nutrient analysis of the cover crop.

Scenarios

Select a scenario from the dropdown to show a list of participating farmers who have operations with results which meet the goal of the scenario. Note the farmers may not be planting covers for the selected scenario, but their results would meet the goals of the scenario.

Erosion control

Erosion control

Nutrient scavenger

Above ground nitrogen

Weed suppression

Fall grazing

Spring grazing

...nes the goal of planting cover crops is to
...e list below are farms which have the highest
...e high biomass will slow water flow over a field
...e soil.

Filters

Soil texture

County

Dodge County, WI



This farm planted buckwheat, radish, hairy vetch, red clover, sunflower following wheat. The cover crop was drilled on July 29, 2024. The soil had adequate moisture at planting.

Fall sampled biomass was **3.3** tons per acre.

Farm details

Field 167

Mix sampled October 15, 2024



General info:

ID	167
Farmer yrs of cc experience	4
Yrs of covers in field	null
Field acreage	12
Previous cash crop	wheat
Previous crop planting date	October 9, 2023
Cover crops	buckwheat, radish, hairy vetch, red clover, sunflower
Cover crop seeding rate	2 lbs/acre buckwheat, 2 lbs/acre radish, 1 lbs/acre hairy vetch, 1 lbs/acre red clover, 1 lbs/acre sunflower
Cover crop seeding method	drilled
Cover crop seed cost	\$35 per acre
Cover crop planting cost	\$20 per acre
Cover crop planting date	July 29, 2024
Soil conditions at planting	had adequate moisture
Dominant soil texture	silty clay loam
Tillage intensity	Conservation, >30% residue remaining
Primary tillage equipment	none
Secondary tillage equipment	none
Termination	plant green, herbicide termination

	Fall	Spring
Sampling date	October 22, 2024	May 15, 2025
Precipitation (in)	6.88	Not sampled
Cumulative growing degree days	2032.35	Not sampled

Forage quality	Fall	Spring
cp	12.42	19.95
andf	34.18	36.98
undfom30	Not sampled	12.45
ndfd30	Not sampled	63.19
tdn_adf	67.27	65.18
milktm	Not sampled	3407
rfq	Not sampled	208.65
undfom240	Not sampled	10.37
dry_matter	17.94	20.34
rfv	180.89	163.71

Nutrient	Fall	Spring
CC Biomass (tons/acre)	3.3	0.5
N %	1.87	3.59
P %	0.3	0.38
C %	0.3	0.38
K %	1.65	2.81
Ca %	1.77	0.84
Mg %	0.7	0.33
S %	0.37	0.24
C to N Ratio	22.7	14
N lbs/acre	124.05	38.07
P lbs/acre	45.48	9.22
C lbs/acre	2815.96	532.91
K lbs/acre	131.08	35.74
Ca lbs/acre	117.17	8.9
Mg lbs/acre	46.34	3.5
S lbs/acre	24.49	2.54
Height of stand (in)	45	Not sampled

NEW!

Explore the
Cover Crop Scenarios



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UNIVERSITY OF WISCONSIN-MADISON

SnapPlus Version 3 Quick Guide

SnapPlus Version 3

Wisconsin's Nutrient Management Software



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SnapPlus Tip: SnapPlus auto-fills checkboxes on the **NM5 590 Checklist Report** based on NMP data and your answers to questions when generating the report. It is your responsibility to review and sign the checklist. See the **NM Checklist and Tips** section on pages 36–39 for more information.

Quick Guide

9 Steps to Develop a Nutrient Management Plan

1. Go to v3.snapplus.wisc.edu and create an account.
2. Enter your account and contact information. Business information is used to auto-fill the NM5 590 Checklist.
3. Click **ADD FARM** and **+ CREATE FARM MANUALLY**. Enter a farm name in the pop-up and click **CREATE FARM**.
4. Import your soil tests on the overview tab of the **FIELDS** page.
5. Draw your fields and enter field data from the maps tab of the **FIELDS** page.
6. Enter your nutrient sources, storage, and all types of spreaders in the **NUTRIENTS** page.
7. Enter cropping and nutrient application information in the **MANAGEMENT** page.
8. Run the reports from the **REPORTS** page. Review and correct problems. Suggested reports include NM1, NM2, NM3, NM4, and NM5.
9. Archive the completed version of your plan from the Archives tab of the **FARM** page.

5 Steps to Update a Nutrient Management Plan with SnapPlus

1. Update last year's cropping data, fertilizer, and manure applications for each field in the **RECORDS AND UPDATES** page.
2. Add any new fields, soil tests, crops, animal numbers, nutrient sources, storage systems, or spreader metrics in the **FARM, FIELDS, NUTRIENTS, and MANAGEMENT** pages.
3. Update crop and nutrient application information for the current year and future year for each field.
4. Run the reports from the **REPORTS** page. Review and correct errors. Suggested reports include NM1, NM2, NM3, NM4, and NM5.

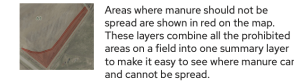
Map Layers

Map Legend: Colors and Symbols Explanations

This publication explains the symbols used in maps for nutrient management planning. Symbols for 590 farms and WPDES permitted farms (CAFOs) are included. 590 farms do not need to follow rules for CAFOs (NR 243).

Spreading Layers

Manure Prohibited (Red fill with double outline)

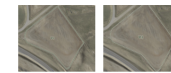


Areas where manure should not be spread are shown in red on the map. These layers combine all the prohibited areas on a field into one summary layer to make it easy to see where manure can and cannot be spread.

Manure prohibited layers show either year round prohibitions or winter prohibitions.

When is winter? Winter conditions are defined as having frozen or snow-covered soils that prevent effective incorporation at the time of application.

Farm Layers



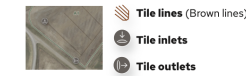
Field Boundaries (Green outline with tan halo)

Active field (Solid line)

Inactive field (Dashed line)

Field boundaries can be either drawn in SnapPlus or imported as shapefiles.

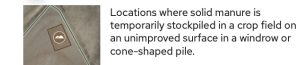
Field Drainage



Tile drainage removes excess water from soil below the surface, so it is important to document where tile lines, inlets, and outlets are located. In SnapPlus, you can create multiple tile lines in one edit session. Do not forget to add the tile inlets (if known) and outlets as point features.

✓ Unincorporated liquid manure applications are limited to 12,000 gallons per acre.

Headland Stacks



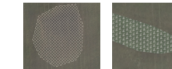
Locations where solid manure is temporarily stockpiled in a crop field on an unimproved surface in a windrow or cone-shaped pile.

Planner identified locations where manure should not be applied. These are locations where SnapPlus has not automatically created a prohibition.

Manure prohibited drawn areas



Exclusion Areas



Not farmed area

Grass filter area / Vegetated buffer

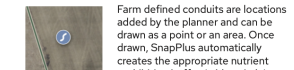
Exclusion areas are drawn by the planner on the map. They represent uncropped areas of a field that should not be included in the field acres for nutrient management planning.

✓ Nutrients cannot be applied in exclusion areas.

Direct Conduits to Groundwater

Conduits to groundwater may provide a direct pathway for water to carry contaminants from the surface to groundwater. Planners are responsible for drawing conduits that affect their fields. Some counties submit locations of conduits for inclusion on the map.

Farm Defined Conduits (Various symbols with blue background)



Farm defined conduits are locations added by the planner and can be drawn as a point or an area. Once drawn, SnapPlus automatically creates the appropriate nutrient prohibition buffer (a blue circle) around all features that would provide a pathway for groundwater contamination.

- ✓ All nutrients prohibited except for corn starter within 50 ft
- ✓ No manure within 50 ft (590) or 100 ft (NR 243) year-round.
- ✓ No manure within 300 ft in winter.
- ✓ (NR 243) No manure within 600 ft in winter on slopes 6–9%.

A private drinking well is a private well for a household or farmstead.

A public well is a well that serves at least 25 people for at least 6 months per year. Also known as non-community potable water wells, examples include schools, restaurants, and churches.

An irrigation well is used only for irrigation, never for drinking water.

✓ No fertilizer application within 8 ft

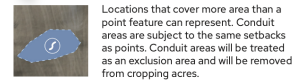
Fractured bedrock is bedrock that has cracks or fractures extending to the ground's surface

A sinkhole is a depression in the ground that has no natural external surface drainage so that rainwater or runoff entering the sinkhole typically drains to the subsurface.

A non-metallic mine is typically a gravel pit or sand mine.

Other types of conduits that aren't captured in the above categories, such as other karst features or depressional groundwater recharge areas.

Conduit areas



Locations that cover more area than a point feature can represent. Conduit areas are subject to the same setbacks as points. Conduit areas will be treated as an exclusion area and will be removed from cropping acres.

✓ Nutrients cannot be applied in conduit areas.

County Defined Conduits (Various symbols with gray background)

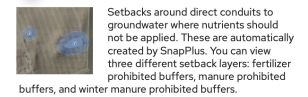
County defined conduits are mapped by some counties, mainly in the eastern part of the state. These conduits are subject to the same rules as planner drawn conduits.

- ✓ No fertilizer (except corn starter) within 50 ft
- ✓ No manure within 100 ft year-round and within 300 ft in winter.

Karst features mapped by the county in Brown, Door, Kewaunee and Manitowish counties. They are considered direct conduits to groundwater.

Other conduits are mapped by Door County.

Conduit Buffers



Setbacks around direct conduits to groundwater where nutrients should not be applied. These are automatically created by SnapPlus. You can view three different setback layers: fertilizer prohibited buffers, manure prohibited buffers, and winter manure prohibited buffers.

Treated manure only

A fourth type of conduit buffer is included that shows locations where spreading is prohibited unless using treated manure. These are areas around municipal wells.

✓ Manure and other organic amendments may not be spread within 1,000 ft unless treated to remove pathogens.

✓ Commercial nitrogen fertilizer is prohibited in the late summer or fall except on fall seeded crops or in blends with other fertilizers, max. application rate is 36 lb N/a.



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Department of Soil and
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Nutrient Management Farmer Education Curriculum



Nutrient Management Farmer Education Curriculum

Since its original release in 1999, the *Nutrient Management Farmer Education Curriculum* has been an evolving collection of instructional tools for educating farmers (and others) on improved nutrient management practices. The goal is to involve farmers in the design of their own nutrient management plans.

[Download Curriculum](#)[Curriculum Guidelines](#)[Full Course](#)[Refresher Course](#)[Review Notes](#)[Resources](#)

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Bumper Crops: Manure Sampling for NPK

Univ of Wisconsin Integrated Pest and Crop Management · 145 views · 9 months ago

Dan Marzu and Chris Clark discuss how to sample manure for laboratory analysis. Excerpt: "Chris, we're getting close to harvest here, and a lot of farmers might be thinking about spreading..."

For You

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Welcome to the new **Nutrient Management Fast Facts** magazine! The Nutrient and Pest Management (NPM) Program has produced many stand alone publications to help learn the basics of what is involved in writing and implementing a nutrient management plan. This new format combines many of these existing publications with new materials to provide a comprehensive reference guide!

NUTRIENT MANAGEMENT Fast Facts magazine

NUTRIENT MANAGEMENT

- What is a farm nutrient management plan?
- Benefits of a nutrient management plan
- Nutrient management on pastures
- What is the Wisconsin Phosphorus Index?
- Tolerable soil loss scenarios

Nutrient
Mgmt

SOILS

- Soil testing basics
- Soil sampling for SnapPlus and DATCP certified labs
- Soil pH
- Crop Nutrients 101

Soils

NITROGEN

- Nitrogen cycle for general cropping systems
- University of Wisconsin nitrogen guidelines for corn
- Nitrogen credits for alfalfa and soybean
- University of Wisconsin nitrogen guidelines for wheat
- Soil nitrate tests for corn

Nitrogen

PHOSPHORUS AND POTASSIUM

- Phosphorus cycle for general cropping systems
- Potassium cycle for general cropping systems
- Determining soil test P & K categories
- University of Wisconsin P & K nutrient recommendations

P & K

MANURE

- Credit what you spread
- How to determine 1st year manure nutrient credits
- Sampling manure for analysis
- Know how much you haul
- Manure load weight worksheet
- How to determine application rate

Manure

MISCELLANEOUS

- Fertilizer analysis and conversions
- Planting and harvest information

Misc

Determining soil test P&K categories

To determine your soil test phosphorus (P) category:

- Choose the highest demanding crop in your rotation.
- Choose the soil group for the predominant soil in the field.
- Find your soil test category by using the analysis number for phosphorus from your soil test results.

Soil test category				
soil test P (ppm)				
Very low (VL)	Low (L)	Optimum (O)	High (H)	Excessively high (EH)

Soil group

demand level 1: Corn grain, Soybean, Clover, Small grains (but not wheat), Grasses, Oilseed crops, Pasture

Loamy	< 10	10-15	16-20	21-30	> 30
Sandy, Organic	< 12	12-22	23-32	33-42	> 42

demand level 2: Alfalfa, Corn silage, Wheat, Beans, Sweet Corn, Peas, Fruits

Loamy	< 12	12-17	18-25	26-35	> 35
Sandy, Organic	< 18	18-25	26-37	38-55	> 55

demand level 3: Tomato, Pepper, Brassicas, Leafy greens, Root, Vine, and Tree crops

Loamy	< 15	15-30	31-45	46-75	> 75
Sandy, Organic	< 18	18-35	36-50	51-80	> 80

demand level 4: Potato

Loamy	< 100	100-160	161-200	> 200	
Sandy, Organic	< 30	30-60	61-90	91-120	> 120

To determine your soil test potassium (K) category:

- Choose the highest demanding crop in your rotation.
- Choose the soil group for the predominant soil in the field.
- Find your soil test category by using the analysis number for potassium from your soil test results.

Soil test category				
soil test K (ppm)				
Very low (VL)	Low (L)	Optimum (O)	High (H)	Excessively high (EH)

Soil group

demand level 1: Corn grain, Soybean, Clover, Small grains (but not wheat), Grasses, Oilseed crops, Pasture

Loamy	< 70	70-100	101-130	131-160	161-190
Sandy, Organic	< 45	45-65	66-90	91-130	> 130

demand level 2: Alfalfa, Corn silage, Wheat, Beans, Sweet Corn, Peas, Fruits

Loamy	< 90	90-110	111-140	141-170	171-240
Sandy, Organic	< 50	50-80	81-120	121-160	161-200

demand level 3: Tomato, Pepper, Brassicas, Leafy greens, Root, Vine, and Tree crops

Loamy	< 80	80-140	141-200	201-220	221-240
Sandy, Organic	< 50	50-100	101-150	151-165	166-180

demand level 4: Potato

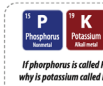
These tables can help you determine your soil test categories, which you will need when using the University of Wisconsin's recommendations for P, O₂, and K, O fertilizer application rates; there are different application rates for each of the soil test categories.

To get started, you will need your soil test results for P and K in parts per million (ppm) from a Wisconsin DATCP certified soil testing lab along with information about your crops and soils.

The goal of the UW soil testing and nutrient applications guidelines program is to maintain soil test levels near optimum. This ensures maximum economic yield and provides flexibility in nutrient management planning.

For soils that test greater than optimum, the objective of the nutrient application guidelines is to rely on the soil to supply the bulk of the nutrients needed for crop growth and to reduce the soil test level to optimum. For soils that test less than optimum, the objective is to build-up soil test levels to optimum.

If the desired crop is not listed on the table or you are unsure of your soil group, consult tables 4.1 and 4.2 in the UNEX publication A2809 Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin.



If phosphorus is called P, why is potassium called K?

K stands for potassium, Latin for al-
kali, which is derived from Arabic
"al alkali" (the soda ash). Many
modern languages use the name
potassium instead of potassium.

Potassium was named in 1807
by Humphry Davy when he first
isolated the pure element using
electrolysis; it is derived from the
Greek word "kalos" meaning "good".
In term pot-ash, the process
used to isolate potassium.

CORN

		SOIL TEST LEVEL OF THE FIELD					
		Very Low	Low	Optimum	High	Very High	Ex. High
		lb P ₂ O ₅ or K ₂ O/acre to apply					
GRAIN	Yield goal (bu/acre)	80	70	40	20	0	0
	91-110	85	75	45	25	-	0
	111-130	95	85	55	30	-	0
	131-150	100	90	60	30	-	0
	151-170	110	100	70	35	-	0
	171-190	115	105	75	40	-	0
	191-210	125	115	85	45	-	0
	211-230	130	120	90	45	-	0
	231-250	140	130	100	50	-	0
	251-270	150	140	110	55	-	0
SILAGE	Yield goal (bu/acre)	105	95	65	35	-	0
	91-110	110	100	70	40	-	0
	111-130	120	110	80	40	-	0
	131-150	130	120	90	50	-	0
	151-170	140	130	100	50	-	0
	171-190	150	140	110	55	-	0
	191-210	160	150	120	60	-	0
	211-230	170	160	130	65	-	0
	231-250	180	170	140	70	-	0
	251-270	190	180	150	75	-	0

ALFALFA

When an alfalfa stand is to be maintained for more than three years increase the annual top-dressed K₂O by 20%.

		SOIL TEST LEVEL OF THE FIELD					
		Very Low	Low	Optimum	High	Very High	Ex. High
		lb P ₂ O ₅ or K ₂ O/acre to apply					
GRAIN	Yield goal (bu/acre)	65	55	25	15	-	0
	1.5-2.5	65	55	25	15	-	0
	2.6-3.5	70	60	30	20	-	0
	3.6-4.5	80	70	40	25	-	0
	4.6-5.5	90	80	50	30	-	0
	5.6-6.5	100	90	60	35	-	0
	6.6-7.5	110	100	70	40	-	0
	7.6-8.5	120	110	80	45	-	0
	8.6-9.5	130	120	90	50	-	0
	9.6-10.5	140	130	100	55	-	0
SILAGE	Yield goal (bu/acre)	105	95	65	35	-	0
	1.5-2.5	105	95	65	35	-	0
	2.6-3.5	110	100	70	40	-	0
	3.6-4.5	120	110	80	45	-	0
	4.6-5.5	130	120	90	50	-	0
	5.6-6.5	140	130	100	55	-	0
	6.6-7.5	150	140	110	60	-	0
	7.6-8.5	160	150	120	65	-	0
	8.6-9.5	170	160	130	70	-	0
	9.6-10.5	180	170	140	75	-	0

SOYBEAN

		SOIL TEST LEVEL OF THE FIELD					
		Very Low	Low	Optimum	High	Very High	Ex. High
		lb P ₂ O ₅ or K ₂ O/acre to apply					
GRAIN	Yield goal (bu/acre)	65	55	25	15	-	0
	26-35	65	55	25	15	-	0
	36-45	70	60	30	20	-	0
	46-55	80	70	40	25	-	0
	56-65	90	80	50	30	-	0
	66-75	100	90	60	35	-	0
	76-85	110	100	70	40	-	0
	86-95	120	110	80	45	-	0
	96-105	130	120	90	50	-	0
	106-115	140	130	100	55	-	0
SILAGE	Yield goal (bu/acre)	105	95	65	35	-	0
	26-35	105	95	65	35	-	0
	36-45	110	100	70	40	-	0
	46-55	120	110	80	45	-	0
	56-65	130	120	90	50	-	0
	66-75	140	130	100	55	-	0
	76-85	150	140	110	60	-	0
	86-95	160	150	120	65	-	0
	96-105	170	160	130	70	-	0
	106-115	180	170	140	75	-	0

University of Wisconsin

P₂O₅ & K₂O

nutrient

recommendations

for corn, alfalfa and soybean



Notes: -- Very high category does not exist for soil test phosphorus

How long can it take to lower excessively high P and K levels in a corn, corn, oats+alfalfa seedling, alfalfa, alfalfa, alfalfa rotation?

Soil test P can go from 75 ppm to 56 ppm in 5 years, still excessively high; 18 pounds of P₂O₅/acre needs to be removed to lower soil test phosphorus 1 ppm.

Soil test K can go from 200 ppm to 56 ppm or very low in just 5 years; 6-7 pounds of K₂O/acre needs to be removed to lower soil test potassium 1 ppm.



Extension
UNIVERSITY OF WISCONSIN-MADISON

2026 Virtual Nutrient Management Training

March 13, 2026

2026 VIRTUAL NUTRIENT MANAGEMENT TRAINING FOR FARMERS

Learn how to write
your own nutrient
management plan!

March 13
10 a.m. – 3 p.m.
Live via Zoom
Free

The Nutrient and Pest Management Program within the University of Wisconsin–Madison Division of Extension and the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) are offering a **virtual training for farmers interested in writing their own nutrient management plans.**

This training provides the basics of nutrient management and an introduction to SnapPlus. It will take place on March 13, 2026, from 10 a.m. – 3 p.m. **online via Zoom.**



Scan QR code or visit go.wisc.edu/OnlineNMTraining to register.

Questions? Contact Dan Smith: dhsmith@wisc.edu or (608) 219-5170

SCHEDULE

10:00 – 10:15	Why Nutrient Management?
10:15 – 10:30	Soil Sampling
10:30 – 10:45	Soil Test Interpretation
10:45 – 11:00	Soil pH and Liming
11:00 – 11:15	Break
11:15 – 11:35	Manure and Legume Crediting
11:35 – 12:05	Nitrogen Management
12:05 – 12:40	Lunch Break
12:40 – 1:10	Phosphorus Management
1:10 – 1:25	Soil Test P and Water Quality Implications
1:25 – 1:40	Potassium Management
1:40 – 2:00	Manure Application Precautions
2:00 – 2:10	Break
2:10 – 2:25	Soil Conservation
2:25 – 3:00	SnapPlus Introduction

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