SnapPlus

Wisconsin's Nutrient Management Software

QUICK GUIDE

8 basic steps to developing a nutrient management plan using SnapPlus

1. **Install and open** the current version of SnapPlus.

   Download SnapPlus for free!

   snapplus.wisc.edu

   Click the menu tab>**DOWNLOADS**

   Select **DOWNLOAD SNAPPLUS 20** from the dropdown menu.

   Click the **Build link**

   Open the downloaded **exe. file** and follow through the steps in the Install Wizard.

   If you have a new computer that isn't allowing the download of the SnapPlus program to complete, see page 4 for instructions.

2. **Create a new farm** on the Farm Screen.
3. **Import your soil tests** on the Soil Tests Screen.
4. **Draw your fields & enter field data** on SnapMaps.
5. **Enter nutrient sources** on the Nutrients Screen.
6. **Enter crop & nutrient application information** using the Rotation Wizard and Cropping Screen.
7. **Run the Reports** from the Reports screen; review and correct problems. Suggested reports include Nutrient Mgmt Reports (NM2,NM3, NM6 & NM8) and Farm Mgmt Reports (FM2 & FM3).
8. **Archive your files using the** File Menu>Archive.

5 basic steps to updating a nutrient management plan using SnapPlus

When updating, it's important to remember to plan for next fall's manure applications in the future year. This will help you anticipate problem areas and address potential compliance issues before they have already occurred.

1. **Before making <u>any</u> changes,** save a Snapshot.
2. **Update previous year's cropping data,** fertilizer, and manure applications for each field by using the Cropping Grid. To access click on the plant icon in the upper left portion of the screen.

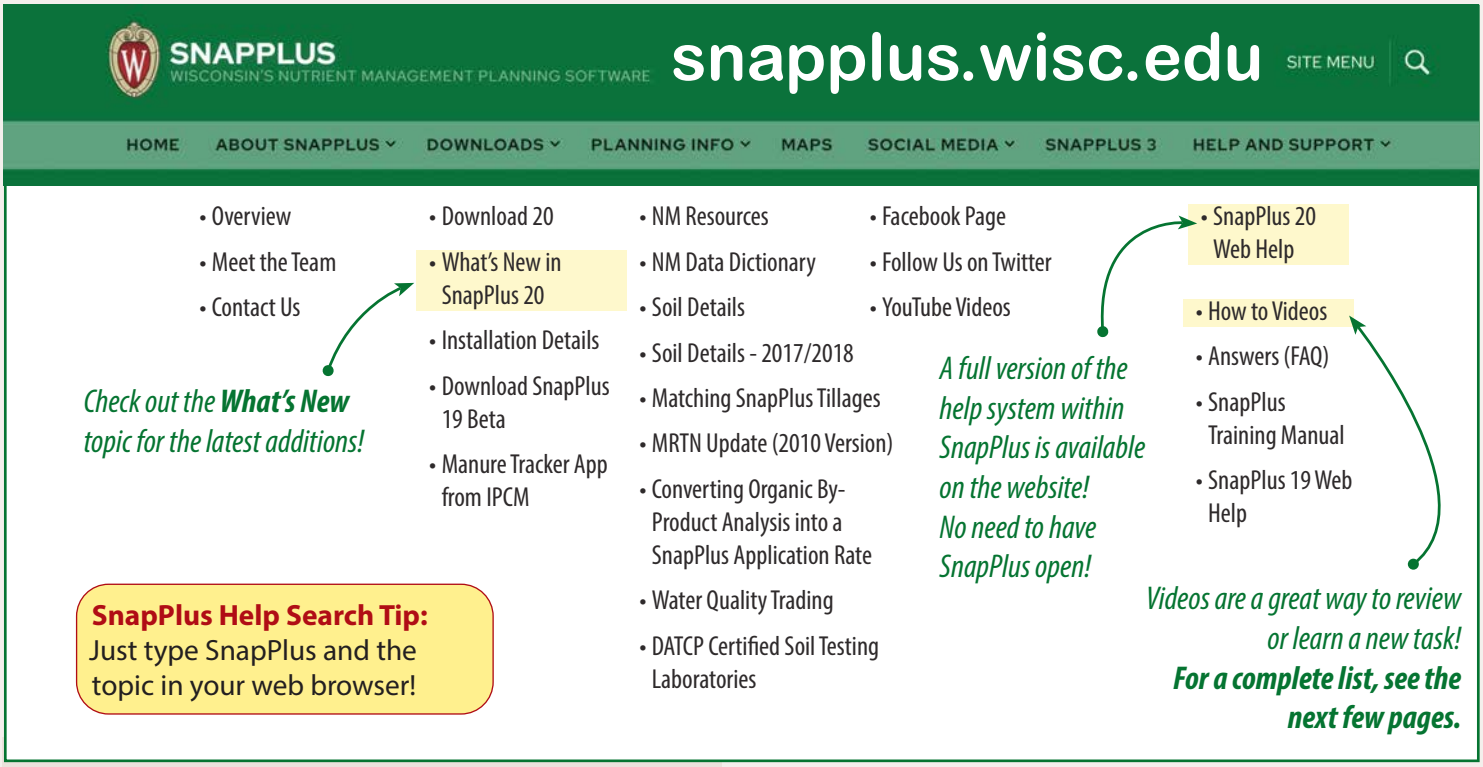
3. **Add** any new crops, soil tests, field, crop or nutrient information using the Farm, Soil Tests, SnapMaps, Fields and Nutrients Screens.
4. **Update** crop and nutrient application information for the current year and future year for each field.
5. **Run the Reports** from the Reports screen; review and correct problems. Suggested reports include Nutrient Mgmt Reports (NM2,NM3, NM6 & NM8) and Farm Mgmt Reports (FM2 & FM3).
6. **Archive your files using the** File Menu>Archive.

SnapPlus Tip: SnapPlus auto-fills most of the **NM 8 590 Checklist Report**.
It is the responsibility of the plan writer to review the checklist and check boxes that SnapPlus does not fill. See the **NM checklist and tips section** on pages 24-27 for more information. Electronic signatures are accepted on this report.

Save Snapshot saves your SnapPlus farm at a specific point in time. This gives you the option to revert the file back to that point during a session if needed. You can save multiple snapshots, so do it often!

Archive can save a file as either a compressed **.zip** file or a **.snapDB** file. Both file types are appended with a time-stamp to the name. Recommended for historical/reporting purposes or as a back-up.

The website is a great resource!



Have a question about SnapPlus?

Then ask it!

support@snapplus.wisc.edu

Want to learn more about the fundamentals of nutrient management?

Check out the self-paced, online UW Nutrient Management Farmer Curriculum at:

go.wisc.edu/nmfe

Or contact the NPM Program!

For a list of regional contacts:

https://ipcm.wisc.edu/npm-fast-facts-magazine/

NPM
November 2023 -2M

This publication is available from the Nutrient and Pest Management Program.
Contact us at: npm@extension.wisc.edu
or vist our website (ipcm.wisc.edu)

Check out DATCP's nutrient management website!

The Department of Agriculture, Trade and Consumer Protection's website is a great resource for information on cost-share, NM updates, trainings and more!

Want to attend a training?

For upcoming trainings & other offerings from DATCP, scan or click the QR code.

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

Still need help?

For SnapPlus training or nutrient management issues, contact DATCP's:

Andrea Topper: 608-405-0235, Andrea.Topper@wisconsin.gov
Cody Calkins: 608-224-4604, Cody.Calkins@wisconsin.gov

For information on the WI Phosphorus Index, contact UW Soils SnapPlus team:

Laura Ward Good: 608-262-9894, lwgood@wisc.edu
Hava Blair: 608-265-9354, hkblair@wisc.edu

Introduction to SnapPlus Playlist

This playlist is recommended as a starting point for new users.

Introduction to SnapPlus

1. What is SnapPlus?
2. Downloading and Installing the SnapPlus Program
3. Getting Started on the Farm Screen
4. Importing Soil Sample Test Results
   [if you have shapefiles, import these first (see video 8), then come back to this step]
5. Getting Started in SnapMaps
6. Navigating SnapMaps' Tools
7. Drawing Field Boundaries
8. Importing Shapefiles
9. Importing Select Information from SnapMaps to your SnapPlus Farm
10. Field Screen Basics
11. Nutrient Screen Basics
12. Entering Manure and Biosolids
13. Entering Fertilizers
14. Estimating Manure Annual Volumes
15. Cropping Screen Basics
16. Understanding Yield Goals, Tillage, Lime and MRTN

How-to videos 3

17. Planning Manure and Fertilizer Applications
18. Planning for all Fields by Year Using the Cropping Grid
19. Rotation Wizard 1: Crop Rotations
20. Rotation Wizard 2: Applying Crop Rotations to Fields
21. Rotation Wizard 3: Editing Applications
22. Reviewing Total Planned Manure Applications by Year and Season
23. Checking That a Completed Plan Meets Guidelines

SnapMaps Tutorials

SnapMaps Tutorials Playlist

1. Editing Field Boundaries
2. Adding Concentrated Flow Channels
3. Changing Field Labels
4. Creating a CAFO Spreadable Acres Map
5. Dismissing and Restoring a SWQMA
6. Splitting a Field
7. Create a PDF Map
8. Create a Multiple Area PDF Map

SnapPlus Additional Topics

SnapPlus Additional Topics Playlist

1. Running the Phosphorus Index
2. Planning for Nutrients Spread by Grazing Animals
3. Calculating the Dollar Value of On-Farm Nutrients
4. Planning and Recording Lime Applications
5. Creating Groups and Subfarms
6. Making Groups for Planning and Updating in the Cropping Grid
7. Rotation Wizard 4: Changing Planned Applications
8. Rotation Wizard 5: All Other Editing
9. Adjusting MRTN
10. Using the Easy Group Builder
11. Using Nutrient Systems
12. Exporting and Importing Farms, Groups and Subfarms
13. How to Enter Lab Analysis of Solid Biosolids
14. How to Enter Lab Analysis of Liquid Biosolids
15. How to Use the Daily Log
16. Create and Import an MS Excel Document Daily Log
17. SnapPlus Tips and Tricks!

SnapPlusVideo

Click on the above logo or scan the QR code to subscribe to the **SnapPlusUW** channel on YouTube, so you never miss a new video!

Check out DATCPs new **GIS Data Layer webpage** for all the SnapMap layers planners might need!
https://gis-widatcp.opendata.arcgis.com/

Having a technical issue with SnapPlus?

The SnapPlus website might have your answer!
https://snapplus.wisc.edu/news-help/answers-faq/

Do you have a new computer that isn't allowing the download of the SnapPlus program to complete? *If so, follow these steps to disable S Mode on your computer:*

1. Click on the Windows Start button > Settings> select the System Tab in the left-pane. In the right-pane, scroll down and click on the About option.
2. On the About screen, scroll down and click on Product Key and Activation Tab, located under Related Settings.
3. On the next screen, expand the S Mode entry and click on Open Store button.
4. If you are not signed-in to your Microsoft Account, you will be prompted to Sign-in to Windows Store using your Microsoft Account.
5. On the next screen, click on the Get button to switch your computer out of S Mode.
6. Once S Mode is switched OFF, you will see a pop-up, confirming that S Mode has been switched OFF and you can now install the SnapPlus program.

Do you see strange display behavior in SnapPlus, such as windows spontaneously resizing or text becoming very small when you click?

The best fix for this issue is to close and re-open SnapPlus. The problem seems to occur most often on the Fields page. The cause of the issue is the way that the Windows operating system tries to resize SnapPlus fonts and grids.

SnapPlus tools to help you…

Add or edit information for multiple fields and years

Tools menu > Easy Group Builder creates new groups or Excel reports based on user selected criteria.

Tools menu > Farm Settings sets winter spreading strategies for all fields or for field groups. On permitted farms, allows acknowledgement of proper planning for all fields.

Option to **Clear all restrictions** is helpful prior to a SnapMaps import to clear outdated restrictions or restrictions set by hand!

Tools menu > Nutrient System Editor creates a system or combination of fertilizer and manure sources that are used on a yearly basis for a crop that can be added to any cropping year and field throughout the database.

Tools menu > Update All Fields forces a recalculation of nutrient recommendations, rotational soil loss, and P index for all fields.

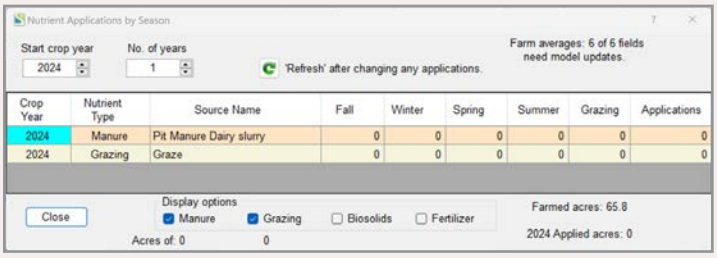
Tools menu > Rotation Wizard make changes to multiple fields and years (See page 10 for step-by-step instructions for adding crop or application data to fields):

SnapPlus Tip: When using the **Rotation Wizard** to speed up the planning process, make a Snapshot first. If you make a mistake, you can select **File>Revert to Last Snapshot** to start again.

- ✓ Change crop, yields, tillage, legume stand information for N credits or to add season notes, **Change existing crop data or applications to fields > Cropping data**
- ✓ Add/delete manure or fertilizer application, **Change existing crop data or applications to fields > Application data**
- ✓ Change spread method or rate for a planned application, **Change existing crop data or applications to fields > Application>Edit existing**
- ✓ Repeat past crop years' management in planning for future years, **Copy crop and application data to crop years**
- ✓ Delete crop years, **Delete crop & applications data from fields**
- ✓ Edit rotation length, start year, or information about contour or filter strips, **Edit rotational settings for fields**
- ✓ Edit the N price, crop price, MRTN price ratio, and MRTN range point for corn or wheat, **Edit MRTN data for fields**

Update, fine-tune or view management information

View menu>Nutrient Applications by Season to find out if the plan distributes all manure when it is available, see page 7 for more information.



View menu>Cropping Grid Edit to switch the Cropping screen between the default one-field, all-years view and ***an all-fields, one-year view,*** which allows for easier entry of manure applications based on soil test/crop removal levels.

Fields tab>Groups subtab to designate a group of fields that need the same updates. Groups can be selected in the Rotation Wizard.

Records tab to update planned manure applications with actual application rates used.

Help>Custom Excel Templates to create Daily Log Templates with field dropdowns or prefilled names/acres.

Set up for grazing (see page 12 for more information)

Nutrients Tab > Grazing herd setup to build your herds.

Nutrients Tab > Grazing herd setup > Grazing Est opens the Grazing application rate estimator. You can enter your herd, pasture size, days on pasture, and % of day spent grazing to get an estimated manure application rate in tons/acre for your situation.

Find more information about how to use these tools in the Help menu!

Tools menu > Rotation Editor builds rotation templates that can be reused multiple times in the Rotation Wizard.

SnapPlus Tip: When creating rotations in the **Rotation Editor**, you can just enter the abbreviations, and the full crop names will automatically be entered into the table. To see the abbreviations, click on the Crop Abbreviations button to see a list of the ones you selected on the farm screen. To see a full list of all crop abbreviations, go to the **Help>Help Contents> The Rotation Editor and Rotation Wizard> Using the Rotation Editor> A Guide to Crop Abbreviations**

SnapPlus Tip: To adjust UW recs to reflect **current soil nitrate test results**, go to the Cropping Screen and click on a cell in the UW Recommendation row to open the Nutrient Recommendation Details dialog box. Click on the cell in the Adjustment row to record the new data.

SnapPlus Tip: To record lime applications, go to the Cropping Screen and click on a cell in the **Lime Rec** row.

Importing soil samples

Make sure to have a .CSV or .XLSX file of your soil test data for easy import into SnapPlus. If you don't have a .CSV or .XLSX file call your Soil Lab to ask for one to be emailed to you.

If updating soil tests in an existing database, take caution that all field names are correct. A pop-up will appear and provide a list of field names that are "new", if that happens click close. SnapPlus will show you all the soil test data and highlight the field name cells orange if that field name doesn't currently exist in the database. To alter field name, click on the orange field name cell and type in correct field name. If multiple samples for the same field, SnapPlus will ask if you want to update all "new" field names with the correct field name.

Let's talk cropping years

A **calendar year** runs from January to December.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

A **cropping year** generally runs from harvest to harvest and varies from field to field based on the crop rotation.

NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
CROPPING YEAR **1**												CROPPING YEAR **2**												

For a field, the new cropping year starts after the previous crop has been harvested and spans the time to the next harvest.

Example 1: If a soybean field is harvested in October, and manure is applied following the harvest; enter the manure as a fall application of the ***following*** cropping year because the nutrients will be used by the crop harvested in the following year.

Example 2: If a corn silage field is harvested in September, and the field is limed and tilled following the harvest; count the lime application and the tillage as part of the ***following*** cropping year.

Example 3a: If a winter wheat field is harvested in July, manure is applied, and a forage crop is planted (a double crop), enter the summer manure application in the ***current*** cropping year because the nutrients are going to the forage crop.

Example 3b: If a winter wheat field is harvested in July, manure is applied, and then a cover crop is planted; enter the manure as a fall application in the ***following*** cropping year because no nutrients are recommended for a non-harvested cover crop, and the nutrients should be counted as contributing to the next crop.

Example 4a: If manure is applied to established hay between cuttings, the application should be entered as a summer application in the ***current*** year.

Example 4b: If manure is applied to hay after the last cutting of the year, that application should be entered as as a fall application in the ***following*** crop year.

? *What's the difference between groups and sub-farms?*

Groups can be used to logically organize fields by any means that might be useful. Fields may be in more than one group. Groups can also be used to reduce the number of fields displayed on the Fields Screen or in the Rotation Wizard.

Sub-farms can be used to identify fields that are located together geographically, fields that share the same manure sources, or rented fields with the same owner. Fields may only be in one sub-farm.

The Nutrient Screen subtabs

☑ Nutrient Sources

Use the **Nutrients>Nutrient Sources subtab** to enter each manure source (for example, pit manure, bedded pack, grazing manure) into the Manure/BioSources Data table.

You can also have SnapPlus auto-calculate the value of the manure in the plan. Just enter the price per pound of nitrogen, phosphorus and potassium in the **Value of Manure** table (located to the right of the Manure/BioSources Data table). SnapPlus uses the Known Manure Volume to calculate both a Per Unit $ and Total Value $.

☑ Manure Production Estimator

Estimate how much of each manure type by using the **Nutrients>Manure Production Estimator> Livestock Manure Production Estimator table** by clicking the **green plus sign** to add each animal type.

Tip: Click on the Add All Beef or Add All Dairy to instantly add multiple animal types.

For each animal type, enter in:
- ✓ Number of Head
- ✓ Total Number of Days
- ✓ % Collected and Spread as Solid
- ✓ % Collected and Spread as Liquid

Once the data is entered in the table, the Farm Totals for all manure will be displayed.

On the same page are the **Manure Storage** and the **Manure Spreader tables** which can also be used to estimate manure quantity for the farm.

SnapPlus Tip: Don't forget to add the spreader calibration method. On the Farm Screen, click the Document Spreader Calibration Methods button and select all that apply.

☑ Manure Analysis

Use the **Nutrients>Manure Analysis subtab** to import manure analysis data. It is important to remember in the **Import Manure Analysis** dialog box to click the **Import to SnapPlus button**. Then when back on the **Manure Analysis subtab**, click the **Save Selected to Nutrient Source** button.

Manure analyses are not required for 590 farms but are highly encouraged. SnapPlus by default will auto-populate nutrient sources with associated book values for nitrogen, phosphorus and potassium.

The Nutrient Application by Season table

To open the Nutrient Application by Season Tool, click on the icon of the wheat head in the orange box  next to the Help in the main menu bar at the top of the page.

The dialog box displays the total amounts planned or actual for each nutrient source by season. Selecting the nutrients to display at the bottom will turn off or on certain nutrient types. The annual amounts available, planned and remaining are also displayed. The amounts available are taken from the Manure/Bio Data table on the Nutrient Sources screen. The label in the lower right shows the number of acres that have applied manure. This dialog box will stay up as you move around from screen to screen in SnapPlus. When you make applications from the Cropping Screen this dialog will be visible but you will not be able to access it to change any settings. The same is true when you are using the rotation wizard.

In order for SnapPlus to identify if there is adequate acreage for manure produced and/or applied on the 590 Checklist, **planners must have all manure allocated for the current year in addition to one past year and one future year.**

Entering nutrient rates for biosolids, wastewater, and organic by-products

Q: How do I enter a sewage sludge (biosolids) or organic waste analysis if the lab report does not give the units in lb/ton or lb/1000 gallons?

A: If you have a typical lab report for biosolids, this will not be difficult. Select the appropriate biosolids or organic waste type in the Manure Bio Source Data table on the Nutrients tab, and then click on any cell in the analysis row. A box will pop up that will convert data from the lab report to lb/ ton or lb/1000 gallon. For step-by-step instructions, go to the **SnapPlus Additional Topics playlist** (pg 4) and watch videos 13 & 14.

You may get an analysis for an organic amendment that does not report the nutrient content in the same "% of dry matter" or "% of solids" units required in the SnapPlus Biosolids analysis entry. You will need to convert the results to these units using the reported solids content. Sometimes a wastewater-type analysis does not include any measurement of the solids content, and, in those cases, you cannot use the SnapPlus analysis entry boxes. You can still calculate the lb/1000 gallons of N, P_2O_5, and K_2O, however, if concentrations are given for these nutrients. Instructions for converting various types of lab reports can be found on the SnapPlus website under **Planning Information>Converting-Analysis-of-Organic-By-Products-to-N-P_2O_5-K_2O-Rates.pdf**

Tillages should be entered by **cropping year,** not calendar year. See the Let's talk cropping years section on page 6 for an explanation & examples.

SnapPlus tillage codes and explanations

SnapPlus uses the most soil-disturbing tillage option selected in the RUSLE2 database for each primary tillage category. If you meet "T" with SnapPlus, then you are protecting the field from excess soil erosion. Fall and spring chisel and moldboard options listed include multiple tillage passes.

increasing soil disturbance value

Code	Tillage	RUSLE2 operations (assumptions for soil loss calculations)
NTg	No-till green	No soil disturbance except for planter using a double-disk opener and fluted coulter. Spray operation kills previous cover crop the day before planting.
NT	No-till	No soil disturbance except for planter using a double-disk opener and fluted coulter.
ST	Strip-till	No soil disturbance except for 30% of the surface at planting with a strip-till planter.
SVT 1-pass	Spring vertical tillage	Spring pass using a seedbed conditioner with a double gang coulter caddy, rotary harrow, and rolling basket incorporator.
FFC 1-pass	Fall cultivation	One field cultivation in the fall with no spring tillage. Use for fall one-pass systems.
SFC 1-pass	Spring cultivation	One field cultivation before planting, use for most 1-pass systems.
FVT 2-pass	Fall vertical tillage	Fall pass plus a spring pass with same seedbed conditioner: double gang coulter caddy, rotary harrow, and rolling basket incorporator.
FCND 2-pass	Fall chisel, no disk	Fall chisel plowing (twisted shovel) and field cultivation before planting.
SCND 2-pass	Spring chisel, no disk	Spring chisel plowing (twisted shovel) and field cultivation before planting.
FCD 3-pass	Fall chisel, disked	Fall chisel plowing (twisted shovel) with spring disking (tandem) and field cultivation before planting.
SCD 3-pass	Spring chisel, disked	Spring chisel plowing (twisted shovel) followed by disking (tandem) and field cultivation before planting.
FP 3-pass	Fall moldboard plow	Fall moldboard plowing with spring disking (tandem) and field cultivation before planting.
SP 3-pass	Spring moldboard plow	Spring moldboard plowing followed by disking (tandem) and field cultivation before planting.

Note: Not all tillage options are used for all crops in SnapPlus because some crops are not typically grown with the full range of tillage systems.

Use **Diversified vegetables** for nutrient management planning for small scale-vegetable growers.

In response to the difficulties farmers growing a wide variety of vegetables on small acreages have in doing a nutrient management plan, SnapPlus has crop selections called "Diversified vegetables".

Diversified vegetables can be used whenever multiple crops are grown in rotation. There are three tillage options: tilled (6 passes in year), tilled with plastic mulch (3 passes), and tilled with organic mulch (3 passes). Where only one crop is grown per year, planners can use the Diversified vegetables (single crop), which has both 3-pass and 2-pass chisel plow tillage choices including ones with plastic or organic mulch. Diversified vegetable crops in SnapPlus use the UW-A2809 recommendations for "Truck crops".

SnapPlus Tip: If the tillage you are using isn't in SnapPlus, you can select the most similar SnapPlus system by comparing the STIR values. Go to **PLANNING INFO>MATCHING SNAPPLUS TILLAGES** on snapplus.wisc.edu for more information.

Excess nitrogen applications

Maximum allowable Nitrogen application **for corn**

The maximum allowable N rate for corn is set at the high end of the range for the 0.05 Corn: N price ratio. These are the highest N rates in the UW-Extension guidelines and are recommended where manure and legume credits provide all the corn crop's nitrogen needs.

Soil group: Yield Potential Previous crop	**Maximum N rate (lb/a)[1]**
Loamy: High yield potential soils	
Corn, forage legumes, legume vegetable, or green manures	**210**
Soybean or small grains	**160**
Loamy: Medium yield potential soils	
Corn, forage legumes, legume vegetable, or green manures	**160**
Soybean or small grains	**150**
Sands/loamy sands	
All crops-irrigated	**230**
All crops-not irrigated	**150**

[1] Includes Legume credits, Manure credits, This year's manure and This year's fertilizer.
Note: If the entire amount shown here is supplied through organic sources, some starter N fertilizer (up to 20 lb N per acre) can be applied before the SnapPlus warning notices are given.

Maximum allowable Nitrogen application **for wheat**

Soil group Previous crop	**Maximum N rate (N lb/a)[1]** Winter wheat	 Spring wheat
Loamy[2]		
Corn, forage legumes, legume vegetable, or green manures	**85**	**75**
Soybean or small grains	**65**	**55**
Sandy (sands/loamy sands) -All crops	**115**	**105**
Organic-All crops	**0**	**0**

[2] Soils in the loamy group that have less than 2% organic matter (OM) use the sandy group maximum allowable N rate. Loamy soils with greater than 10% OM have maximum allowable N rates that are 30 lb N per acre lower than those shown in the table.

Maximum allowable Nitrogen application for crops other than MRTN or legume crops

	Maximum N rate (N lb/a)[1]
All N from manure/legume credits	**1.2x UW recs**
Commercial N	**UW recs**

SnapPlus Tip: Note: The 590 Standard does not allow commercial fertilizer N applications where there is no N recommendation, as is the case with most legume crops. However, due to the difficulty that sometimes occurs in obtaining N-free P_2O_5 or S fertilizers, SnapPlus does not give an excess N warning if up to 70 lb of the legume N allowance is applied as commercial fertilizer if that fertilizer includes required nutrients.

Maximum allowable 1st year manure Nitrogen application rates **for legume & (legume + companion) crops**[3]

	Yield range	**Manure N allowed (lb/a)[1]**
Alfalfa; alfalfa/brome; red clover; or trefoil, birdsfoot, seeding or established	**<1.5 ton/a**	**50**
	1.5 - 2.5 ton	**100**
	2.6 - 3.5 ton	**155**
	3.6 - 4.5 ton	**205**
Barley for grain underseeded with alfalfa, alfalfa/brome, or red clover seeding	**All yield levels, bu/a**	**150**
Dry beans	**10-20 cwt**	**75**
	21-30 cwt	**125**
	31-40 cwt	**175**
Oats for grain underseeded with alfalfa, alfalfa/brome, or red clover seeding	**All yield levels, bu/a**	**140**
All pastures that include legumes	**0.5-1.9 ton**	**55**
	2 -3 ton	**115**
	3.1 - 4.0 ton	**160**
	4.1 - 5.0 ton	**205**
Small grain silage underseeded with alfalfa	**2 - 3.5 ton**	**170**
Small grain & legume silage	**2 - 3.5 ton**	**70**
Small grain & legume silage underseeded with alfalfa	**2 - 3.5 ton**	**170**
Soybean forage	**2-3.5 ton**	**170**
Soybean, grain and grain + straw	**15-25 bu**	**75**
	26-35 bu	**115**
	36-45 bu	**155**
	46 bu or greater	**195**

[3] Some SnapPlus legume crops such as peas and snap beans are not included in this table because N removal in the harvested portions of the crop is similar to their N fertilizer recommendation.

The rotation wizard 10

The Rotation Wizard is a tool in SnapPlus that can help you save time by entering data for multiple years and crops. Before working with the wizard, go to **File** and click on **Save Snapshot**. Then if you make a mistake using the wizard, you can click on **Revert to Last Snapshot** to return to your original file.

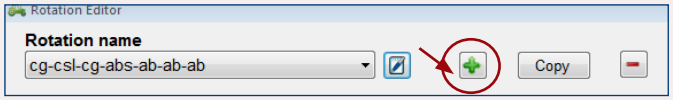
1. Open the **Rotation Wizard** either from the Cropping Screen or from the Tools menu.

2. **You are in Step1 of the Rotation Wizard.** Use the default selection > Add crop or application data to fields. Click **Next**.

3. **You are in Step 2 of the Rotation Wizard.** Select **Edit Rotation.** You are now in the Rotation Editor.

   Quick Note: A good method for naming is to use crop abbreviations, for example cg-csl-cg-abs-ab-ab-ab. Using the correct abbreviations will automatically fill-in the crop names in the next step. To access the abbreviations list, click on **Crop Abbreviations** and make note of the crops in your rotation.

4. Click on the **plus sign icon** to create a new rotation.



A naming dialog box will open where you can type the name of the new rotation. Once named, it can be edited, copied, renamed or deleted.

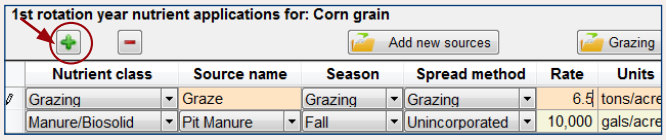
5. If you used the crop abbreviations, the table will be filled in (go to the step 6).

If not, just click on the **plus sign icon** under Rotation Years to add a line to the table, then select the crop from the dropdown menu. Continue until all the years of the rotation are completed. If the desired crops aren't listed, then you must go back to the Farm Screen to select them for your farm.

6. Use the dropdown menus to fill in Yield Goal and Tillage for each year of the rotation. Also, check the Irrigated box if appropriate.

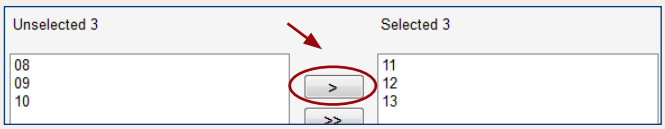
   Tillage explanations can be found in the SnapPlus Help by clicking on the ? and searching for tillage.

7. To add nutrient applications, select a year in the top table, then click on the **plus sign icon** below and use the dropdown menus to fill in each cells of that row. Repeat for each year of the rotation. Click **Close**.



One suggestion for making your fertilizer plan easier to implement is to enter only manure applications during this step. Once the on-farm nutrients are entered, you will be able to view the adjusted UW recommendations and add Fertilizer applications accordingly.

8. **You are back in Step 2 of the Rotation Wizard.** Choose the fields (or groups or subfarms) that will use the new rotation and move them to the box on the right. Click **Next**.



9. **You are now in Step 3 of the Rotation Wizard.** Your goal in this step is to tell the program where each field is in the rotation in the given year. You also have the opportunity to identify fields that are farmed on the contour, strip-cropped or have filter strips.

   Use the dropdown menus along with the **Rotation Info** at the bottom of the dialog box. Fill in the information for each field row, making sure to set the Start Year and Year in Rotation. When completed, click **Next**.

   To change multiple rows within a column at one time, select ALL until the grid is blue. Then left click on the column header and select value to change all rows.

   For rotations with alfalfa, we recommend that the start year goes back two growing seasons for carry-over legume credits. So if you are planning for 2024, then start your rotation in 2022 to account for any legumes grown two years prior. For rotations with soybean, go back one year to account for the legume credit.

10. **You are in Step 4 of the Rotation Wizard.** This step allows you to make adjustments to applications pre-assigned to each cropping year, or you can delete them as needed.

    Use the dropdown menus to select the Season and Spread Method for the nutrient applications listed. Use the **plus sign or minus icon to add or delete applications.** When completed, click **Next**.

11. **You are in the Confirm step of the Rotation Wizard.** Review the information listed to confirm if it's correct. If so, Click on **Apply & Continue** if you want to stay in the Wizard or **Apply & Exit** to return to the main screen. If you would like to make edits, click on **Back**.

Orange flag: This plan uses purchased fertilizer to apply more P_2O_5 than is recommended for the crop rotation on this field. Reduce or eliminate P_2O_5 fertilizer on this field.

590 Standard: Commercial P_2O_5 should not be applied to a field in excess of any year's recommendation if the total recommended for the rotation has already been applied. Corn can get 20 lb/acre starter.

How this is calculated in SnapPlus: P_2O_5 recommendations are summed for the entire rotation. Then the total P_2O_5 amount applied (as manure and fertilizer) is added for each consecutive year. When the amount applied exceeds the recommendation for the rotation and the amount recommended for the individual crop year is also exceeded, then P_2O_5 fertilizer applications are flagged (except those of 20 lb/acre or less for corn).

Orange flag: P_2O_5 applied as starter to corn should be applied at planting and placed subsurface with, or in a band in close proximity to, the seed.

590 Standard: Up to 20 pounds per acre of P_2O_5 starter fertilizer may be applied to corn grown on soils testing excessively high, where no fertilizer is recommended.

How SnapPlus identifies this problem: When adding starter in the nutrient application planner SnapPlus checks to see the placement of the fertilizer. If the user chooses spread method as subsurface, SnapPlus identifies the application as a starter and will not flag.

Orange flag: One or more applications are not compatible with 'none' or 'no till' selected.

How to fix the problem: This message indicates a data entry problem with a manure or fertilizer Spread method of Incorporated which is not possible with a crop year tillage of no-till or none. Tillage choice needs to be updated.

Orange flag: Winter manure P_2O_5 applications exceed this year's crop removal by __ lbs.

590 Standard: On frozen or snow-covered soils, do not exceed the P removal of the following crop when applying manure.

How SnapPlus identifies this problem: SnapPlus will flag once a winter manure application exceeds the P_2O_5 removal of the following crop. User must reduce rate of manure applied during winter.

Orange flag: The liquid manure application rate exceeds the rate allowed for a single application in the SWQMA, or an unincorporated liquid manure application on this tiled field exceeds the maximum rate of 12,000 gal/acre.

590 Standard: When unincorporated liquid manure and/or organic by-products applications with ≤ 11.0% dry matter occur on non-frozen soils within a SWQMA, OR where subsurface drainage is present, limit applications to 12,000 gallons per acre per application.

How SnapPlus identifies this problem: If a fall, spring or summer liquid manure application is planned at a rate greater than 12,000 gallon per acre on a field with the "Field in SWQMA" or "Tile Lines Present in Field" boxes checked on the screen, one on these messages will appear.

continued on next page

Restriction flags 11

On the Cropping Screen, SnapPlus flags problem applications in **This Year's Manure** or **This Year's Fertilizer**. **Red** boxes indicates a N over-application and **orange** means a 590 planning problem. Click on the box to learn why the application was flagged. Here are some examples!

Red flag: Spring or summer N fertilizer applications on this field do not meet the requirements for highly permeable soils. Use one of these: split applications, a nitrification inhibitor with ammonium forms of N, or a slow-release N fertilizer.

590 Standard: On P soils, when commercial N is applied for full season crops in the spring and summer, do not exceed the UWEX Pub. A2809 crop N rate guidelines and apply one of the following strategies:

- A split or delayed N application to apply a majority of crop N requirement after crop establishment.
- Use a nitrification inhibitor with ammonium forms of N.
- Use slow and controlled release fertilizers for a majority of the crop N requirement applied near the time of planting.

How to fix the problem: User can split nitrogen applications by documenting season applied, summer or spring. Users can also build their own nitrogen fertilizer that has an inhibitor or slow-release product. If user does build their own fertilizer with inhibitor or slow-release selected SnapPlus identifies that and won't require split application seasons to be documented.

Red flag: Overapplication of N of __ lbs N/acre.

590 Standard: Available N from all sources shall not exceed the annual N requirement of non-legume crops consistent with UWEX A2809.

How to fix the problem: User must reduce rate of N applications

Red flag: This field has fall or late-summer N applications in excess of what is allowed for P soils with a high N-leaching potential.

590 Standard: On P and R soils:

- When a crop is growing, such as perennial crops, overwintering annual crops, double crops, and cover crops, use rates that will not smother these crops and limit N rates to those specified in UWEX A*2809* or 120 pounds per acre of available N, whichever is less.
- For annual crops that will not be planted until the following spring or summer, delay application until soil temperatures are less than 50°F or October 1, whichever occurs first, and limit N rates to those specified in UWEX Pub. A**2809** or 90 pounds per acre of available N, whichever is less

How to fix the problem: Reduce fall or late-summer manure application so that pounds of available N are less than recommendations in A2809 for that specific crop or less than the threshold identified in the message (90 or 120 pounds, depending on crop as outlined in the 590 Standard). If your message indicates that you are using a manure with less than 4% dry matter, you will need to follow the additional 590 restrictions outlined in the message.

Orange flag: Manure applications (except grazing) are prohibited within 1,000 ft of a municipal well.

590 Standard: Application of untreated manure (except that deposited by grazing animals) is prohibited with 1,000 ft of a public water supply designated as a community potable water well.

How this is determined in SnapPlus: Manures that have been treated to substantially reduce pathogens should be entered on the SnapPlus Nutrient Sources tab as the Nutrient Type 'Treated manure, solid' or 'Treated manure, liquid'. If a manure that is not a treated type is applied where more than 50% of the field is within the 1,000 ft buffer area of a municipal well, this flag will appear. If less than 50% of the field is within the municipal well buffer, a guidance message will be generated indicating that the buffer needs to be avoided.

5 steps for adding pastures

If you have pastures on your farm, they need to be part of the NM plan whether nutrients are applied by grazing or gleaning animals or mechanically applied for all seasons (see ***Soil testing and pastures***).

1. Farm Screen, add pastures to your farm's crops. In the Unselected Crops List, select a pasture and stocking rate that best describes your pasture/management (see ***Selecting pasture crops*** for details).

2a. If you have soil test results, go to the **Soil Test Screen** and import them, then go to SnapMaps, open the website, draw the pasture boundaries, download and confirm the information on the desktop. Alternatively, you can add the pasture on the Field Screen.

2b. If you don't have soil test results, go to **SnapMaps,** open the website, draw the pasture boundaries, download and confirm the information on the desktop. Alternatively, you can add the pasture on the Field Screen. Next, go to the Soil Tests Screen and on the bottom half of the screen, click the plus sign to add a soil test. Name your sample and use the following data:
reasonable pH level between 5.5-7, 6% organic matter (OM), 150 ppm P (set to meet the P Index standard), 101 ppm K.

3. Cropping Tab, to add crop information to the pasture. Navigate to the pasture in the Field dropdown menu. In the current year, select pasture as your crop and add a yield goal.

Using the ***Add/Copy/Delete*** button above the crop years, select **I want to Add years to end** and choose the number of years you wish to add. If this is permanent pasture, you may add several years; this will copy all the information you entered for your first year.

4. Nutrients Screen, add pasture manure source. Working in your current crop year, go to the Grazing Herd Setup subtab and Add Herd; name the herd and select animal group. Next, add animal types and numbers to the herd. Remember to hit CALC button each time you add another animal type to your herd or change any other information in the calculator. This will provide a daily rate of manure produced.

Use the **Grazing Est** button to open the **Grazing Application Estimator** that will determine the manure application rate for your pasture. Enter the pasture acreage, number of days on pasture and percent of time each day spent on pasture. The tons/acre rate is calculated along with the animal units (AU). Hit the Refresh button if you make changes; make a note of the application rate (a good place to keep a record of the rate per acre, days grazing and percent of each day is in the Field Notes column for the pasture on the Fields screen).

Go to the **Nutrient Sources** subtab and add a manure source. Select from the dropdown menu the kind of grazing manure and type in a name for your manure source (use something similar to the herd's name) and save; the manure source will show in the Cropping Tab.

In the upper right hand corner (while still in the Nutrient Sources subtab), select the **Copy Sources, Fertilizers, Herds** button. Arrow over your nutrient source and herd type and edit dates to cover the time span you wish to make the manure available in.

SnapPlus Tip: Buttons that open the **Grazing Est** are in all of the places where you can enter manure application rate.

5. Cropping Tab or Rotation Wizard, add manure applications to your pasture. On the cropping screen, go to your pasture and click on any cell in the **This year's manure** or **This year's fertilizer** to open the **Nutrient Application Planner.** Under Manure/Biosolid Application, add your grazing herd and the application rate (from step 4).

You can also enter the applications using the **Rotation Wizard>Add crop and application data** to fields.

Soil testing and pastures

For fields or pastures with mechanical nutrient applications, determine field nutrient levels from soil samples collected within the last 4 years according to 590 Standard and UWEX Pub. A2809, *Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin,* typically collecting 1 sample consisting of 10 cores per 5 acres.

Soil tests are not required on pastures that do not receive mechanical applications of nutrients if <u>either</u> of the following applies:

1. The pasture average stocking rate is one animal unit per acre (one AU = 1,000 lbs of animal) or less at all times during the grazing season.
2. The pasture is winter grazed or stocked at an average stocking rate of more than one animal unit per acre during the grazing season, and a nutrient management plan for the pasture complies with 590 using an assumed soil test phosphorus level of 150 PPM and organic matter content of 6%.

A little more advice

When you are finished adding pastures, adjust your Rotation Settings to cover the correct span of years in the Cropping Tab, then click on Calculate All Years.

- ✓ If nothing flags (orange or red), run the NM 2 Compliance Check report.
- ✓ If you have any flags, they will need to be corrected. You may need to adjust your herd size (less animals, shorter time on pasture) improve your pasture (more/better cover) get an actual slope reading (defaults may be high for your slope and slope length) or if you used the default setting, take an actual soil test (your actual ppm P may be lower than the assumed 150 ppm).
- ✓ Remember if you add or reduce animal numbers in the future, you will have to go back in your plan and modify your animal numbers.

Selecting pasture crops

SnapPlus pastures are identified by the method of stocking, animal density and correct pasture plant mix. The stocking rates and densities are as follows:

- ✓ **Pasture rotational stocking:** Rotational grazing with a maximum of 10 days on before rest, with less than 2 animal units per acre during grazing season and 3 inches or greater average minimum grass height. There are three choices for this type of pasture: grass/legume, grass or legume more than 30%.
- ✓ **Pasture, variable stocking, managed continuous:** This represents a system that may have different numbers of animals at different times, but is still managed to provide nutrition for the animals and maintain 3 inches or greater average minimum grass height. Should have less than 2 animal units per acre during grazing season. There are three choices for this type of pasture: grass/legume, legume more than 30% or no crop defined.
- ✓ **Pasture continuous stocking, low density:** Animal may be present continuously, but the density is so low that an average minimum grass height of 3 inches is maintained. No more than 1 animal unit per acre planned during grazing season.
- ✓ **Pasture continuous stocking, high density:** Animals are present continuously or for long periods of time at a high enough density that an average minimum grass height of 3 inches is not maintained and bare areas are present. Greater than 1 animal unit per acre continuous stocking can lead to insufficient surface cover.
- ✓ **Pasture, dry lot, exercise area:** High animal density. Provides <10% nutrition for animals and has many bare areas (50%) throughout growing season. Any area with 3 or more animal units per acre during the growing season should definitely be called a dry lot.

Note: The crop **Grass hay** should not be used as a pasture crop since it does have the sod disturbance expected with grazing. Grass hay assumes three cuttings per year of hay with no disruption of the soil surface when the hay is cut. Therefore, the estimated soil loss from grass hay typically is much less than that from any of the pasture crops.

Some definitions

Feedlot: A barnyard, exercise area, or other outdoor area where livestock are concentrated for feeding or other purposes and self–sustaining vegetative cover is not maintained. "Feedlot" does not include a winter grazing area or a bare soil area such as a cattle lane or a supplemental feeding area located within a pasture, provided that the bare soil area is not a significant source of pollution to waters of the state. Note that **grazed woodlands** are considered feedlots.

Grazing season: Includes the months of the year when pasture vegetation is actively growing.

Pasture: Land on which livestock graze or otherwise seek feed in a manner that maintains the vegetative cover over the grazing area. Pasture may include limited areas of bare soil such as cattle lanes and supplemental feeding areas provided the bare soil areas are not significant sources of pollution to waters of the state.

Glossary 14

590 restrictions: Nutrient application restrictions from the 590 standard, which include winter spreading, surface water quality management area (SWQMA), fall nitrogen application, set-backs from conduits to groundwater, and other restrictions.

Adjusted UW recommendations: P_2O_5 & K_2O recommended by University of Wisconsin for that crop and soil test minus the P_2O_5 & K_2O carryover since the last soil test.

CAFO manure restriction (R) or(W): Soils that are typically less than 24 inches to bedrock (R) or apparent water table (W).

Concentrated flow channel: Areas within or on field edges where water flow channelizes and can erode soil.

Conduits to groundwater: Wells, sinkholes and other landscape features that can provide a direct connection for water to flow from the soil surface to the ground-water table.

Cropping year: For a field, the new cropping year starts after the previous crop has been harvested and spans the time to the next harvest.

Drained: Indicates the field is artificially drained with drainage ditches or sub-surface tiles. Checking this will remove the limitation on crop production for poorly drained and very poorly drained silt loam soils. If a soil has no other limitations, checking drained will change a soil from medium to high yield potential for corn N recommendations.

Ephemeral channel: A shallow channel caused by the convergence of overland sheet flow and rill erosion. It will reoccur in the same place after the field is tilled.

Field "T": Tolerable soil loss (the amount the field can lose in tons/acre/year) as determined by soil type.

Filter areas: A grass strip within a field or an area on the edge of a field designed to capture sediment in runoff. These selections in SnapPlus assume there are no concentrated flow channels through the grass filters.

Gully: An erosion channel that cannot be crossed with ordinary farming equipment.

Locked: When is Locked is checked for a field in the SnapMap Fields tab, new SnapMaps field information for that field will not import into SnapPlus and over-write existing data.

Municipal well: A public water system identified by the Wisconsin Department of Natural Resources (WI DNR) as a ***community*** potable well. Can be owned by a municipality or by an entity such as a mobile home park or subdivision. These points are already included in SnapMaps.

N restricted soil: Soils that have the potential for nitrate leaching to ground water. Definition of symbols: (P) High permeability soils, (R) Less than 20 inches to bedrock, (W) Less than 12 inches to apparent water table, (+) This map unit may have any of the N restrictive features, however an on-site investigation is needed to identify which restrictions may actually be present.

On-contour: A field that is consistently planted and tilled on the contour across the slope.

P Index: The Wisconsin Phosphorus Index, a planning tool used to rank fields by runoff P loss potential. Annual total PI is calculated by estimating the average annual runoff P delivery from a field to surface water. **Particulate PI** is an estimate of P delivered with eroded sediment, and **Soluble PI** is an estimate of dissolved P delivered from soil and nutrient applications.

Public well: A well that serves at least 25 of the same people over 6 months of the year. These wells are identified as ***non-community*** potable wells by the WI DNR and include schools, restaurants and churches. Planners need to add these as points to their maps.

Spread method: Unincorporated (broadcast on surface with more than 72 hours before tillage); Incorporated (surface-applied and incorporated into soil by tillage or infiltration); Injected-manure (injected below soil surface or incorporated by tillage within 1 hour); SubSurface-fertilizer (applied below the soil surface); Grazing-manure (deposited directly from the animal).

Soil conditioning Index (SCI): A positive number indicates soil organic matter is likely increasing across the rotation, while a negative number indicates it is likely to be decreasing.

Strip crop: Contour strips of alternating row and hay crops. Assumes at least two strips on the field slope length. This is more restrictive and helps reduce calculated erosion more than on-contour.

Tiled: Indicates subsurface drainage is present in the field and liquid manure rates are limited to 12,000 gallon per acre per application.

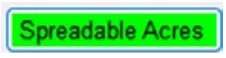
SWQMA: A Surface Water Quality Management Area is an area within 300 ft of a perennial stream/river or 1,000 ft of a lake/pond.

Verified: Checking verified in the Fields tab or in the Spreadable Acres table says that the field information has been updated through field observations by a county LCD. This check will prevent future SnapMaps imports from overwriting the verified information.

Winter strategies: Winter strategies are conservation practices listed in the 590 standard that are applicable when winter manure applications are planned on fields with slopes greater than 6% and/or concentrated flow channels present in or on the field boundary. A minimum of two winter strategies must be in place for these fields.

SnapPlus Tip: Need something explained? Click the **Help** in the far right upper corner of the SnapMaps website!

Field, cropped and manure spreadable acres



In addition to calculating the total number of acres in a field, SnapMaps calculates how much of the field can be cropped (Cropping acres), meets the requirements for manure spreading (Manure spreadable acres), and where frozen and snow-covered soil manure spreading is allowed (Winter spreadable). These acres are displayed and editable in the **Spreadable Acres table** accessible from the Fields tab.

Upload with care!

Uploading deletes the cloud data in SnapMaps before replacing it with new information from the SnapPlus desktop. Because of this, do not upload if you have changes made in SnapMaps that have not yet been downloaded.

Downloading before uploading ensures that you have the most recent version of the maps saved in SnapPlus. Specific times you need to upload:

- ✓ Creating a new farm
- ✓ Working on a group or subfarm and switching to a different one, be sure to download before switching
- ✓ After adding new fields, merging or splitting fields, or changing a field name in the SnapPlus desktop.
- ✓ Changing plan type between CAFO and 590

SnapPlus Tip: After you have downloaded from SnapMaps, don't forget to click the Import Highlighted Cells button to add the new data.

Protecting field data from unwanted editing

There are **two ways** to protect field data from being overwritten when data is **downloaded** from SnapMaps.

In the SnapMaps tab, the Locked column: Check this box to restrict the importing of data for any given field row. By checking this, SnapPlus Import will ignore the downloaded SnapMaps data and keep the existing data for that field.
In the Fields tab, the Verified column: Check this box to indicate that the information in that row has been verified by the county LCD and that you do not want it to change upon future SnapMap imports.
This is useful when you import new information into SnapPlus but do not want the values of a certain field to be overwritten by that information. If at some later date you want to re-enable overwriting, just uncheck the Verified box and the import will proceed as usual.

Important note! When the verified box is checked on the Fields tab, the locked button on the SnapMaps tab is automatically checked. If you want to import from SnapMaps, you will also need to go to the SnapMaps tab and uncheck the **Is Locked** box so you can import into the Fields tab successfully!

Getting started in SnapMaps

1 Open a current SnapPlus farm on the desktop.

2 Go to the **SnapMaps** tab. By default, the **SnapMaps Fields** sub-tab will open.

3 Click the **Upload** button. This will upload any existing field information to the SnapMaps web application.

4 Click the **Website** button to work on field maps.

SnapMaps will open in the web browser. You will see:

- ✓ Map Layers panel on the left side of the screen
- ✓ Menu bar on the top of the screen
- ✓ Land map on the main part of screen

On the following pages is a complete list of menu items and map layers for SnapMaps. This will give you an idea of what tools are available and how to use them.

5 Click the **Download** button on the desktop SnapMaps tab when you have completed your SnapMaps work on a farm. This will bring all the field boundaries, features, soils, cropped and spreadable acres, and restrictions information into the desktop database, where they can be imported into the appropriate tabs.

Important: *Click Download whenever you have completed map changes you want to keep. Otherwise, you might overwrite the new map information with an upload.*

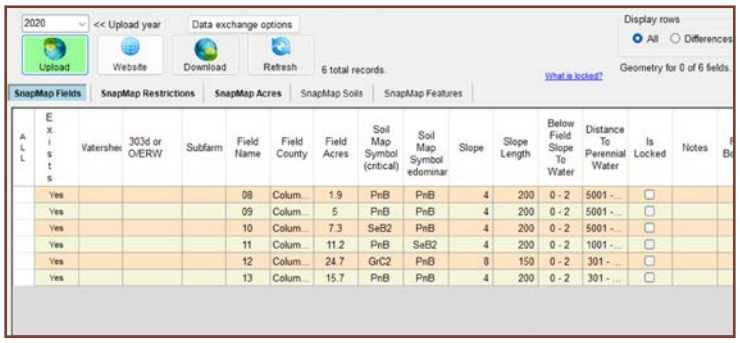
What if I have shapefiles from another software application?

SnapMaps allows you to import shapefiles from other mapping software for a variety of features such as fields, wells, manure prohibited areas, exclusion areas, concentrated flows, soil sample points and more. Navigate to Drawing Tools > Import a Shapefile in SnapMaps online and select the type of feature you are importing. The shapefile must be a .zip file for import. Features in SnapMaps can also be exported as shapefiles to be used in other GIS software.

How can I make maps with better titles and smaller legends with only what is relevant?

Open a Word or PowerPoint file. Add your title. Use the Microsoft Snipping Tool to make a picture of anything you see on your computer or SnapMaps screen and paste it into the open Word or PowerPoint file. To get the Snipping Tool, click the Microsoft Start Flag and type the tool name in the search box. Make one legend and get multiple fields on one page regardless of their proximity to each other.

SnapMaps desktop TABS



SnapMap Fields

Displays information about each field from SnapMaps. SnapMaps calculates the area of the field in acres, the soil map symbols for the critical and dominant soils, and the average slope and the distance from the middle of the field to the nearest surface water (used for P Index calculations). The displayed slope and slope length are the defaults for the Critical soil. ***Use the Import button at the bottom left of the tab to import *highlighted* field information to the SnapPlus Fields page.***

Restrictions

Displays the nutrient application restriction areas for each field from SnapMaps. ***Use the Import button at the bottom left of the tab to to import *highlighted* restrictions to the SnapPlus Field Restriction Features***

SnapMap Acres

For a non-permitted farm, the tab displays five SnapMaps-calculated acre columns for each field: Actual Field Boundary Acres (total acres inside boundaries), Farmed/cropping (cropped acres = total acres - exclusions), Manure spreadable, Manure prohibited and Winter spreadable acres.

For a permitted farm (CAFO), the tab displays two versions of the Manure spreadable and Manure prohibited acres. One is for when a 25 ft no-manure area is required along waterways (allowed when manure is injected or incorporated or in long-term no-till) and the other is for when a 100 ft no-manure buffer is needed (most surface applications).

SnapMap Soils

Displays information about the individual soils that make up each field. This SnapMaps subtab lists the symbols for all the soil map units found on each field in the plan and the percentage of the field covered.

Where can I find nutrient management planning characteristics of the all the soil series mapped in Wisconsin?

On the SnapPlus website under **PLANNING INFO>SOILS DETAILS** is a link to a filterable spreadsheet called Wisconsin Soil Classifications for Nutrient Management Planning. There are also links to spreadsheets showing which soil map unit characteristics used in SnapPlus were updated in past NRCS Soil Survey updates.

? *What are critical and predominant soils?*

There may be many soil map units with widely ranging characteristics mapped in a single field. SnapMaps is designed to select the ones best suited for use in erosion calculation and fertility recommendations.

Critical soil: This is the soil map unit used in the soil loss calculations in SnapPlus. It is automatically filled with the most vulnerable soil (highest Erosion Sensitivity) that makes up at least 10% of a field.

Predominant soil: This is the soil map unit that is used for making crop nutrient recommendations. It is automatically filled in with the soil map unit that covers most of the field. If there is no map unit that makes up more than 50% of the field, SnapPlus selects a map unit with a Soil group and Yield Potential that best represents the field.

A soil map unit symbol begins with letters or numbers that stand for the soil series name and is followed by a capital letter that stands for the slope class (plus a number 2 if the soil is eroded): A = 1-2%. B = 2-6%, C= 6-12%, and D =12-18% slope. For example, DgD2 is a Dodgeville silt loam with slopes between 12 – 18%. If there is no capital letter at the end of the symbol, the soil is very flat.

This table also shows soil map unit characteristics used in SnapPlus calculations: the default (typical) slope and slope length for that soil map unit, the Soil group (Loamy, Organic, Sandy), Yield potential (for corn N response (High, Medium, Sandy), the soil erodibility factor K, Tolerable soil loss value T, Erosion Sensitivity ES (calculated using soil, slope length, K and T), and late summer-fall N restrictions classifications based on soil characteristics (Shallow water table W, Shallow to Bedrock R, and Highly Permeable P).

SnapMap Features

Lists all of the user-drawn features specified in SnapMaps along with the geometry.

SnapMaps website TABS

On the left side of the screen is a collapsible window with the three tabs: Map Legend, Field Properties and Field List. By default, the window is open with the Map Legend tab selected. Each tab provides a wealth of information about, and in some cases, opportunities for customizing fields that you have drawn or imported into SnapMaps or entered in from the SnapPlus desktop application.

Above the tabs is some information: Layers, Farm Name and View Metadata. Clicking the Layers button will collapse the window vertically and clicking on View Metadata will create a Microsoft Excel file (download) that contains background information on the active layers, including the source, the year it is from and a short description.

Map Legend

See the following page for description.

Field List

The Field List tab displays a list of all current fields entered in SnapMaps in a table format with the following columns: Field Name, Acres, Crops, Tillage and Applications. When you type text into the search text box, fields will be filtered based on the text you type in. For example, if you type in corn, all fields that have corn will be filtered and shown. This also will filter the map and only fields that meet the search criteria will be displayed.

From this tab, you can export the table into a .CSV file, a Microsoft Excel file or a PDF. You can also print directly and search the table from within the tab.

Field Properties

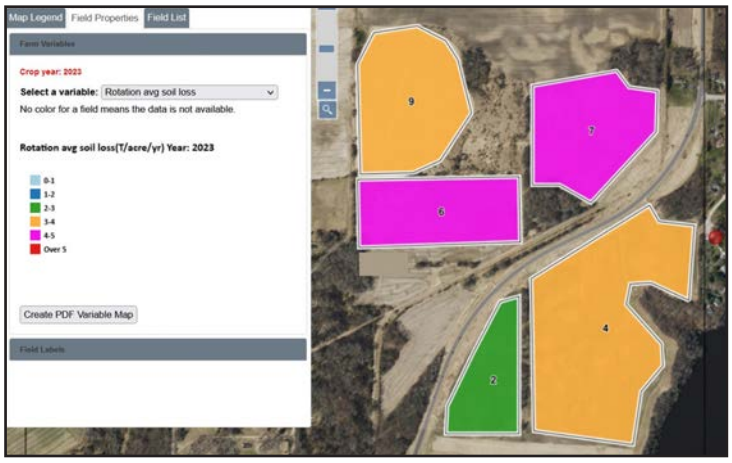
The Field Properties tab allows you to code your SnapMaps using the Farm Variables subtab or customize the field labels using the Field Labels subtab. To collapse or expand the subtabs, just click on their names. Note that the cropping year is set to the year that you are currently working in the SnapPlus desktop application.

The **Farm Variables subtab** offers the following variables available in the dropdown menu; use the Create a PDF variable map button to download and print the map.

- Rotational soil conditioning index
- Rotation avg P Index
- Organic Matter %
- Rotation avg soil loss
- Lime (NI 60-69) need
- Adjusted P_2O_5 need
- Adjusted K_2O need
- Soil loss compared to tolerance
- Rotational P_2O_5 Balance
- Rotational K_2O Balance
- On contour
- Is irrigated
- Too few soil samples
- Soil test too old
- N: Over (+)/Under(-) adj UW rec
- P_2O_5: Over (+)/Under(-) adj UW rec
- K_2O: Over (+)/Under(-) adj UW rec
- Expected spring residue cover
- Soil test P
- Soil test K
- Soil pH

The **Field Labels subtab** allows you to select one or two variables from dropdown menus to create customized field labels for your SnapMaps.

- SnapMap Field Name
- SnapMap Field Acres
- Field Acres
- Spreadable acres 25 ft strategy
- Spreadable acres 100 ft strategy
- Winter Spreadable acres
- Tract ID
- FSA Field name
- Crop
- Lime (NI 60-69) need
- Adjusted P_2O_5 need
- Adjusted K_2O need
- Rotation avg soil loss
- Soil loss compared to tolerance
- Soil test P ppm
- Soil test K ppm
- Organic matter %



Create custom Field Property maps

Visualize key information about your fields!

For example, you can display field soil test P values, expected spring residue cover, N: Over/under values & more.

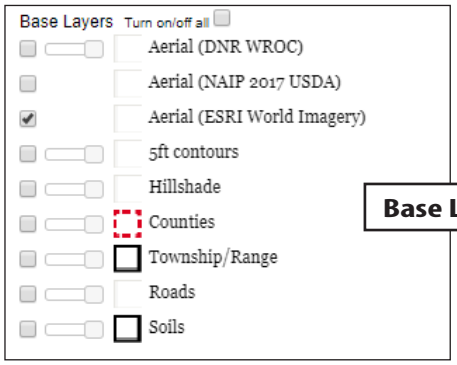
To make a Field Property Map, click the **Field Properties** tab. Select a **Field Variable** you would like to map from the drop-down menu. Pan and zoom to your desired fields, then click **Create PDF Variable Map** to download a copy.

Customize field labels by expanding the **Field Labels** panel and select new label variables from the dropdown menus.

Map Legend Understanding the layers and their meanings (non-permitted farms)

Below are what you would see for a non-permitted farm; CAFOs will have a few extra layers with special nutrient management planning requirements.

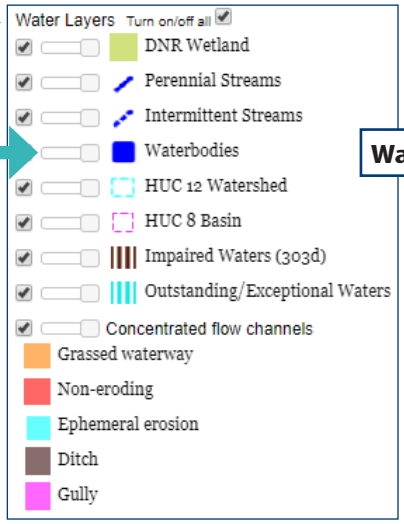
SnapMaps layers contain information using colors, patterns and symbols **that can be turned on/off with multiple layers active at any one time** (layers are stacked on top of each other in a set order — the first active layer in the list will be drawn on the bottom, then the next one on the list drawn on top of it, and so on; layer transparency can be set with the slider). Many of the layers are semi-transparent so that they may be used together. If you want to turn on all of the layers in a section, check the Turn on/off all checkbox next to the layer title. To turn them all off, uncheck the box. You may have to click this twice to get the result you desire.



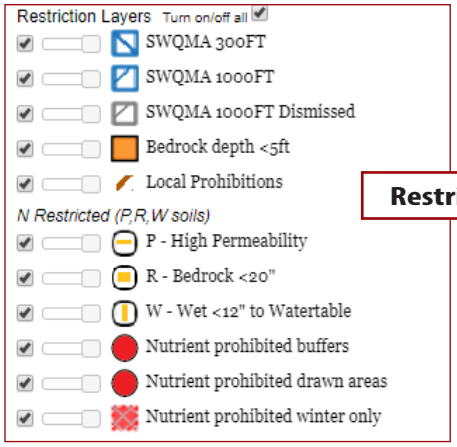
Base Layers

Turn a layer on or off by checking the box

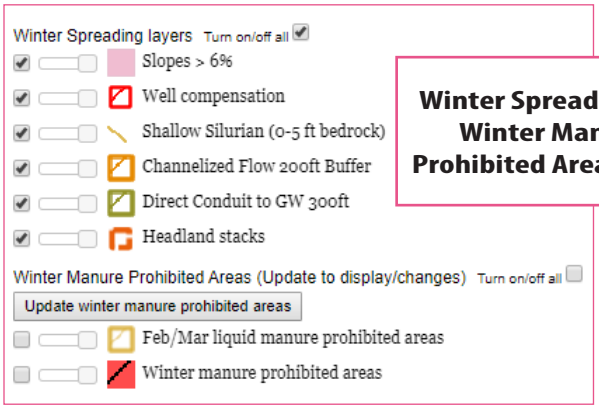
Use the slider to reduce or increase the transparency of the layer



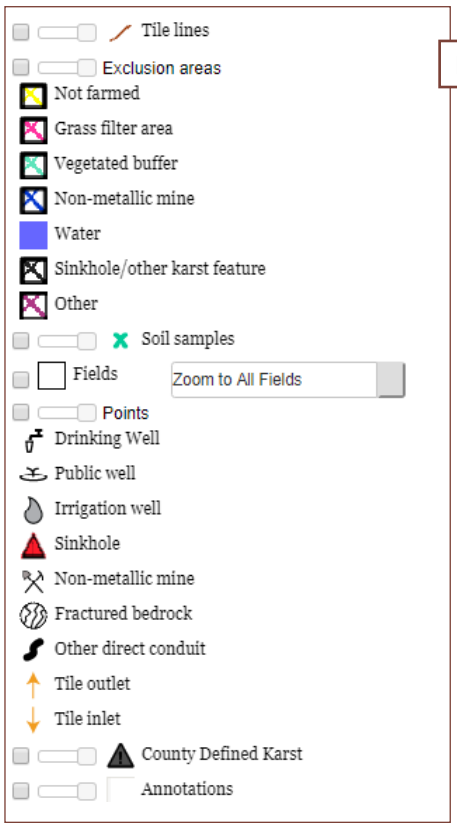
Water Layers



Restriction Layers



Winter Spreading and **Winter Manure Prohibited Area Layers**

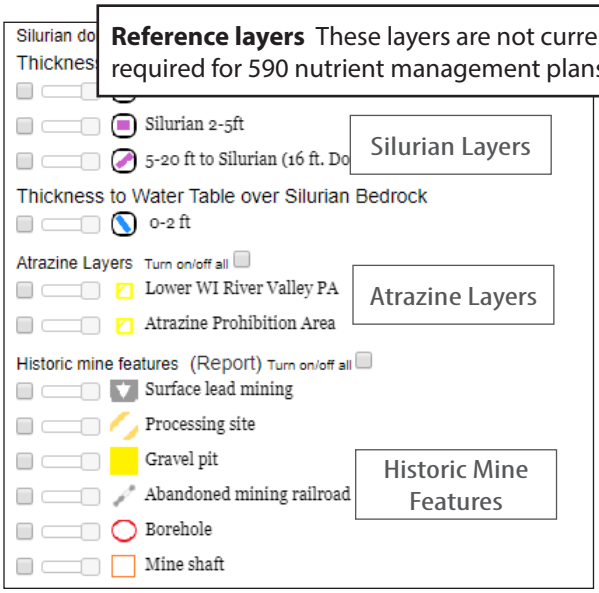


Farm Layers

The farm layers displays some of the features that you draw in SnapMaps, such as field boundaries, exclusion areas, point features (like wells and sinkholes) and tile lines.

County defined karst features are already included in the SnapMap layer. They can be turned on/off by checking the box.

Reference layers These layers are not currently required for 590 nutrient management plans.



SnapMaps website MENU

Across the top of the screen is the menu bar. Click on the dropdown menus to see the list of options for each

Information Tools Menu

- ✓ Clear Active Tool
- ✓ Uncheck All Layers Except Area
- ✓ Identify Soil Type
- ✓ Identify Field
- ✓ Create Text File of Parcels for Farm
- ✓ Measure Distance
- ✓ Measure Area
- ✓ Spreadable Acres (update)
- ✓ Change Shapefile Export Projection (for exporting shapefiles)

Drawing Tools Menu

Draw Features

✓Field
✓Field with Common Land Unit
✓Exclusion Area
✓Concentrated Flow Channel
✓Point
✓Tile Line
✓Soil Sample
✓Annotation
✓Headland Stack
✓Manure Prohibited Area
✓Manure prohibited area by buffering field boundary
✓Manure prohibited area by buffering water features in a field
✓Manure prohibited area by buffering wetland features in a field
✓Manure prohibited area by buffering custom features

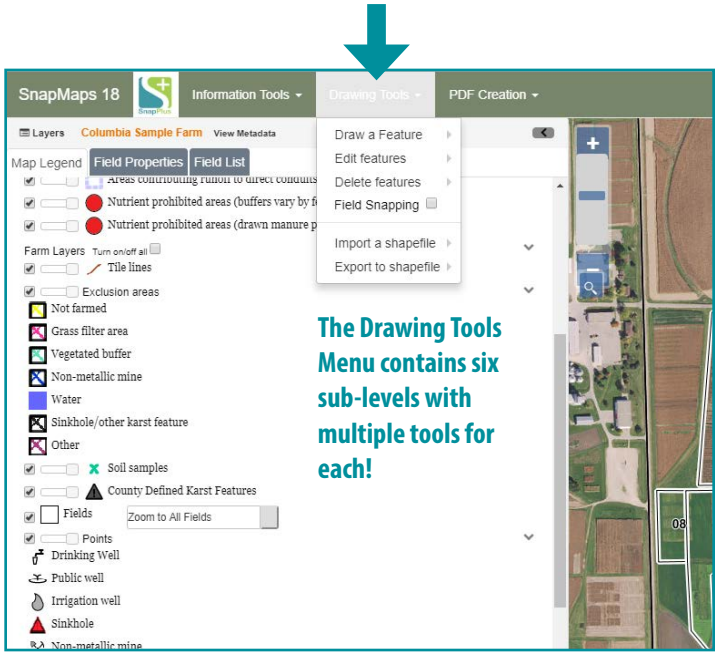
Edit Features

✓Fields
✓Fields with Common Boundary
✓Points
✓Exclusion Areas
✓Soil Sample
✓Annotation
✓Manure Prohibited Area
✓Split Manure Prohibited Areas
✓Concentrated Flow Channels
✓Split Fields
✓Dismiss a 1000 ft SWQMA
✓Restore Dismissed 1000 ft SWQMA
✓Headland Stack

Delete Features

✓Fields
✓Points
✓Exclusion Areas
✓Concentrated Flow Channels
✓Tile Lines
✓Soil Samples
✓Annotation
✓Manure Prohibited Area
✓Delete Geometry for Updating Boundaries
✓Headland Stack

Field Snapping (drawing snaps to field boundaries)



Import a Shapefile (zipfile (must contain a shapefile)

✓Fields
✓Points
✓Exclusions
✓Concentrated Flow Channels
✓Tile Lines
✓Soil Samples
✓Manure Prohibited Areas
✓Headland Stacks

Export to Shapefile (zipfile (must contain a shapefile)

✓Fields
✓Points
✓Exclusions
✓Tile Lines
✓Concentrated Flow Channels
✓Soil Samples
✓Manure Prohibited Areas
✓Headland Stacks
✓All Features
✓Spreadable Field Acres
✓5-acre Polygons Created from Fields
✓1-acre Centroids Created from Fields
✓Manure Applications
✓Winter Spreadable Field Areas

PDF Creation Menu

✓Create PDF of Map
✓Create PDF of Winter Manure Prohibited Areas Map
✓Load a Saved Print Map Area
✓Define Print Map Area
✓Clear Print Map Areas
✓Create Map Legend Description

Search T-R-S

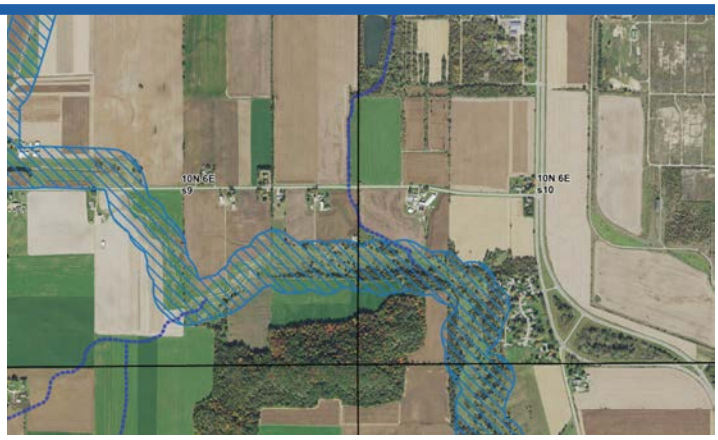
About

Help

Restriction Layers

Blue diagonal line pattern:
SWQMAs

What is a SWQMA? SWQMA stands for Surface Water Quality Management Area. They require special care in management to avoid surface water contamination because they are adjacent to surface water. Specific conservation practices must be in place for fall, spring and summer nutrient applications. No nutrient applications are allowed in the winter. The SWQMA for streams and rivers is 300 ft on each side, while that for lakes and ponds extends for 1000 ft. Note: SWQMA is often pronounced as swik-muh.

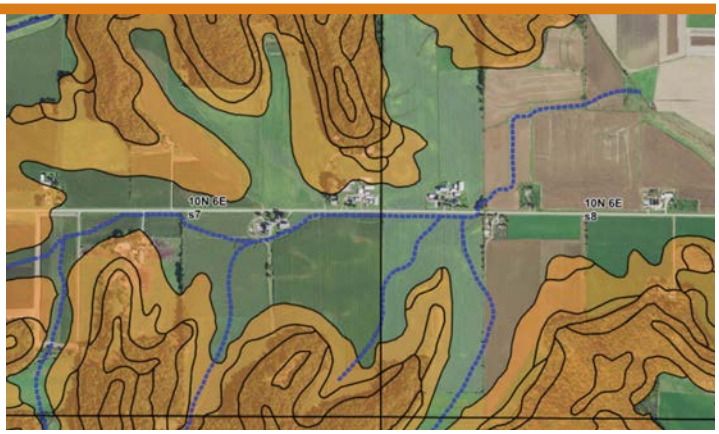


Gold lines or squares:
Nitrogen (N) restricted soils

Soils identified as having a high risk for allowing contaminates to leach through to groundwater are labeled **P** (high permeability), **R** (bedrock likely to be within 20 inches of the soil surface), or **W** (water table within 12 inches of the surface). These soils have restrictions on the rates of fertilizer and manure N applied in the late summer or fall. In addition, P soils require practices to prevent N fertilizer leaching year-round.

Orange areas:
Bedrock depth less than 5 ft

Why does bedrock depth matter? Those areas where bedrock is within 5 feet of the surface are deemed to have an increased risk of groundwater contamination and have some restrictions on fertilizer nitrogen applications in the fall and late summer when no crop is being grown.



Red areas:
Nutrient prohibited areas

Red areas on the maps show where there is a prohibition on manure applications. These are often buffer areas around direct conduits to groundwater, such as wells and sinkholes. The exact prohibitions for these areas vary by the feature they buffer, and in some cases, fertilizer is also prohibited.

For example, there is a 1000 ft no-manure area around municipal wells to protect public water supplies — manure can be applied if it has been treated to kill pathogens.

Planners can also draw manure prohibited areas to show where manure is prohibited in a particular area of a field or the boundary around a field at a custom width.

Winter Spreading and Prohibition Area Layers for non-permitted farms

Pink areas:
Winter restrictions slope > 6%

The areas in pink are likely to have slopes greater than 6%. Winter manure applications on fields with slopes greater than 6% require special management to protect against manure runoff.

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

Khaki diagonal line pattern:
Direct conduit to GW 300 ft

Direct conduits to groundwater have a 300 ft setback for winter manure applications. The setback surrounds direct conduits including wells, sinkholes, fractured bedrock at the surface, mine shafts, non-metallic mines, tile inlets discharging to groundwater, quarries or depressional groundwater recharge areas over shallow fractured bedrock.

Red diagonal line pattern:
Well compensation

These are areas where wells have been contaminated with livestock manure in the past. To protect from future contamination, manure applications are prohibited in February and March.

Yellow diagonal line pattern:
Silurian soils

Why are these soils important? The areas designated as Silurian soils are likely to have less than 5 feet of soil over Silurian dolomite bedrock. This type of dolomite bedrock has numerous cracks and fractures that can allow water to flow rapidly from the soil to groundwater. To protect groundwater from contamination, manure applications are prohibited in February and March.

Farm Layers

White lines:
Field boundaries

Field boundaries can be either drawn in SnapMaps or imported as shapefiles from other mapping programs. In the Field Properties tab, you can customize the field label to include data such as field acres, spreadable acres strategy, winter spreadable acres, tract ID, FSA name, crop, rotation average soil loss, soil test P, K or pH, and organic matter.

Crosshatched areas, multiple colors:
Exclusion areas

Exclusion areas are drawn in SnapMaps and represent the part(s) of a field that should not be included in the field acres for nutrient management planning. Exclusion areas include the following:

Yellow = Not farmed
Green = Vegetated buffer
Black = Sinkhole/ other karst feature
Magenta = Grass filter area
Blue = Non-metallic mine
Purple = Other
Solid blue = Waterbody

Icons or symbols:
Point features

Point features include wells, irrigation wells, drinking wells, fractured bedrock, sinkholes, non-metallic mines, other direct conduits to groundwater, tile inlets and outlets. Once drawn, SnapMaps automatically creates the appropriate nutrient prohibition buffer (a red circle) around all point features that would provide a pathway for groundwater contamination.

Red lines:
Tile lines

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

Water Layers

Blue lines:
Perennial or intermittent streams

Perennial streams are indicated with a solid blue line and may or may not be named on the map. Intermittent streams are a dashed blue line. Normally, a perennial stream has water in its channel at all times, while an intermittent stream flows only when it receives water from rainfall runoff or from some surface source (such as melting snow).

Colored lines, varying widths:
Concentrated flow channels

Planners need to draw recognizable flow channels in a field or adjacent to fields. Flow channels can be drawn with varying widths from 5-100 feet. Areas with concentrated flow channels need special management for winter manure applications to avoid manure runoff. Ephemeral erosion channels and eroding gullies need to be remediated.

Turquoise = Ephemeral erosion channel
Orange = Grassed waterway
Brown = Ditch
Red = Non-eroding channel
Magenta = Gully

Light green areas:
DNR wetland

A wetland is an area where water is at, near or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions. There are required setbacks from wetlands for permitted farms (CAFOs).

Blue areas:
Waterbodies

Lakes and ponds are considered perennial waterbodies that hold water year-round. They are Surface Water Quality Management Areas (SWQMAs) that require special care in management to avoid surface water contamination from runoff or soil erosion.

ARM-LWR-480.docx (REV, 06/22/17)

Wisconsin Department of Agriculture, Trade and Consumer Protection
Division of Agricultural Resource Management
Bureau of Land and Water Resources
PO Box 8911, Madison WI 53708-8911, Phone: 608-224-4605

Use this form to check nutrient management (NM) plans for compliance with the WI NRCS 2015-590 Standard.

Nutrient Management Checklist

Wis. Stat. §92.05(3) (k), Wis. Admin. Code §ATCP50.04(3) and Ch. 51

COUNTY	DATE PLAN SUBMITTED	GROWING SEASON YEAR PLAN IS WRITTEN FOR	(from harvest to harvest)
TOWNSHIP: (T. N.) RANGE: (R. E., W).		CHECK ONE: ☐ Initial Plan or ☐ Updated Plan	

NAME OF FARM OPERATOR RECEIVING NM PLAN First Name LastName	FARM NAME (OPTIONAL)		BUSINESS PHONE ( ) -
STREET ADDRESS	CITY	STATE	ZIP
REASON THE PLAN WAS DEVELOPED: Click and choose. (Ordinance, NR 243 WPDES or NOD, DATCP-FP or cost share (cs), DNR-cs, USDA-cs, Other)			CROPLAND ACRES (OWNED & RENTED)
RENTED FARM(S) LANDOWNER NAME(S) AND ACREAGE: add sheet(s) if needed			

WAS THE PLAN WRITTEN IN SNAPPLUS? ☐ YES ☐ NO	If yes, which software version, if known?
CHECK PLANNER'S QUALIFICATION: Click and choose. (1. NAICC-CPCC, 2. ASA-CCA, 3. SSSA-Soil Scientist, 4. DATCP approved training course, 5. Other approved by DATCP)	

NAME OF QUALIFIED NUTRIENT MANAGEMENT PLANNER First Name Last Name			BUSINESS PHONE ( ) -
STREET ADDRESS	CITY	STATE	ZIP

Use header sections to add comments. Mark NA in the shaded sections if no manure is applied.

1. Does the plan include the following nutrient application requirements to protect surface and groundwater? *This section applies to fields and pastures. If no manure is applied, check NA for 1.c., 1.h., 1.i., 1.n., 1.o., 1.q., 1.s.*	Yes	No	NA
a. Determine field nutrient levels from soil samples analyzed by a DATCP **certified laboratory**.	☐	☐	☐
b. For fields or pastures with mechanical nutrient applications, determine field nutrient levels from **soil samples** collected within the last **4 years** according to 590 Standard (590) and UWEX Pub. A2809, *Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin* (A2809) typically collecting **1 sample per 5 acres** of 10 cores. Soil tests are not required on **pastures** that do not receive mechanical applications of nutrients if either of the following applies: 1. The pasture average stocking rate is one animal unit per acre or less at all times during the grazing season. 2. The pasture is winter grazed or stocked at an average stocking rate of more than one animal unit per acre during the grazing season, and a nutrient management plan for the pasture complies with 590 using an assumed soil test phosphorus level of 150 PPM and organic matter content of 6%.	☐	☐	☐
c. For **livestock siting permit approval**, collect and analyze soil samples meeting the requirements above in 1. b., excluding pastures, within 12 months of approval and revise the nutrient management plan accordingly. Until then, either option below maybe used: 1. Assume soil test phosphorus levels are greater than 100 ppm soil test P, OR 2. Use preliminary estimates analyzed by a certified DATCP laboratory with soil samples representing > 5 ac/sample.	☐	☐	☐
d. **Identify all fields'** name, boundary, acres, and location.	☐	☐	☐
e. Use the field's previous year's legume credit and/or applications, predominant soil series, and realistic yield goals to determine the crop's nutrient **application rates consistent with A2809 for ALL forms of N, P, and K**.	☐	☐	☐
f. Make no **winter applications of N and P** fertilizer, except on grass pastures and winter grains.	☐	☐	☐
g. Document method used to determine **application rates**. Nutrients shall not runoff during or immediately after application.	☐	☐	☐
h. Identify in the plan that **adequate acreage** is available for manure produced and/or applied.	☐	☐	☐
i. Apply a single phosphorus (P) assessment using either the **P Index** or **soil test P** management strategy to all fields within a tract when fields receive manure or organic by-products during the crop rotation.	☐	☐	☐
j. Use **complete crop rotations** and the field's **critical soil** series to determine that sheet and rill erosion estimates will not exceed **tolerable soil loss** (T) rates on fields that receive nutrients.	☐	☐	☐
k. Use contours; reduce tillage; adjust the crop rotation; or implement other practices to **prevent ephemeral erosion**; and maintain perennial vegetative cover to **prevent reoccurring gullies** in areas of concentrated flow.	☐	☐	☐
l. Make no nutrient applications within 8' of **irrigation** wells or where **vegetation is not removed**.	☐	☐	☐
m. Make no nutrient applications within **50' of all direct conduits to groundwater**, unless directly deposited by gleaning/pasturing animals or applied as starter fertilizer to corn.	☐	☐	☐

ARM-LWR-480.docx (REV. 0

SnapPlus 590 NM Checklist Report

Answers for the plan year are automatically entered in the report setup. Be sure to check all answers and fill in any blanks. Use the header sections to add comments.

NA ☒ SnapPlus will check NA for all shaded areas if **no manure or organic wastes** are applied in plan (1 c,h,i,n,q,s and 2 a-g).

Nutrient Management Checklist

Wis. Stat. §92.05(3) (k), Wis. Admin. Code §ATCP50.04(3) and Ch. 51

COUNTY | DATE PLAN SUBMITTED | GROWING SEASON YEAR PLAN IS WRITTEN FOR (from harvest to harvest)

TOWNSHIP: (T. N.) RANGE: (R. E., W). | CHECK ONE: ☐ Initial Plan or ☐ Updated Plan

NAME OF FARM OPERATOR RECEIVING NM PLAN	FARM NAME (OPTIONAL)	BUSINESS PHONE
First Name LastName		( ) -

STREET ADDRESS	CITY	STATE	ZIP

REASON THE PLAN WAS DEVELOPED: Click and choose. (Ordinance, NR 243 WPDES or NOD, DATCP-FP or cost share (cs), DNR-cs, USDA-cs, Other)	CROPLAND ACRES (OWNED & RENTED)

RENTED FARM(S) LANDOWNER NAME(S) AND ACREAGE: add sheet(s) if needed

WAS THE PLAN WRITTEN IN SNAPPLUS? ☐ YES ☐ NO If yes, which software version, if known?

CHECK PLANNER'S QUALIFICATION: Click and choose.
(1. NAICC-CPCC, 2. ASA-CCA, 3. SSSA-Soil Scientist, 4. DATCP approved training course, 5. Other approved by DATCP)

NAME OF QUALIFIED NUTRIENT MANAGEMENT PLANNER	BUSINESS PHONE
First Name Last Name	( ) -

STREET ADDRESS	CITY	STATE	ZIP

SnapPlus auto fills farmer and consultant contact names.

Use header sections to add comments. Mark NA in the shaded sections if no manure is applied.

1. Does the plan include the following nutrient application requirements to protect surface and groundwater?

Add comments and explanations for the plan in this section.

This section applies to fields and pastures. If no manure is applied, check NA for 1.c., 1.h., 1.i., 1.n., 1.o., 1.q., 1.s.

	Yes	No	NA
a. Determine field nutrient levels from soil samples analyze	☒	☐	☐
b. For fields or pastures with mechanical nutrient applications, determine field nutrient levels from **soil samples** collected within the last **4 years** according to 590 Standard (590) and UWEX Pub. A2809, *Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin* (A2809) typically collecting **1 sample per 5 acres** of 10 cores. Soil tests are not required on **pastures** that 1. The pasture average st 2. The pasture is winter g at an average stocking rate of more than one animal unit per acre during the grazing season, and a nutr nt plan for the pasture complies with 590 using an assumed soil test phosphorus level of 150 P matter content of 6%.	☒	☐	☐
c. For **livestock siting permit** ct and analyze soil samples meeting the requirements above in 1. b., excluding pastures, within 12 months of approval and revise the nutrient management plan accordingly. Until then, either option below maybe used: 1. Assume soil test phosphorus levels are greater than 100 ppm soil test P, OR 2. Use preliminary estimates analyzed by a certified DATCP laboratory with soil samples representing > 5 ac/sample	☐	☐	☒
d. **Identify all fields'** name	☒	☐	☐
e. Use the field's previous yea determine the crop's nutri	☒	☐	☐
f. Make no **winter applicatio** tilize	☒	☐	☐
g. Document method used to **ication rat** application.	☒	☐	☐
h. Identify in the plan that **ad** is available for manure produced and/or applied.	☒	☐	☐
i. Apply a single phosphorus (sing either the **P Index** or **soil test P** management strategy to all fields within a tract when fields receive manure or organic by-products during the crop rotation.	☒	☐	☐
j. Use **complete crop rotations** and the field's **cri** exceed **tolerable soil loss** (T) rates on fields th	☒	☐	☐
k. Use contours; reduce tillage; adjust the crop rotation; or implement other practices to **prevent ephemeral erosion**; and maintain perennial vegetative cover to **prevent reoccurring gullies** in areas of concentrated flow.	☐	☐	☐
l. Make no nutrient applications within 8' of **irrigation** wells or where **vegetation is not removed**.	☐	☐	☐
m. Make no nutrient applications within **50' of all direct conduits to groundwater**, unless directly deposited by	☐	☐	☐

SnapPlus checks yes if soil test results are present for **every** active field.

SnapPlus checks yes if **all** fields comply with soil test requirements in the plan year (not too few or too old).

SnapPlus does not check for pasture exceptions

SnapPlus will always check NA, manually correct if it is a siting plan.

SnapPlus checks yes if field borders are present in SnapMaps for all active fields listed. If not, it will be left blank.

SnapPlus checks yes if there are no N or P_2O_5 over-application problems for any field in the current plan year.

N and P_2O_5 applied as corn starter fertilizer need to be at planting and placed subsurface

SnapPlus checks yes because SnapPlus does not allow winter fertilizer applications.

SnapPlus checks yes if any calibration method is selected on the Farm screen.

SnapPlus checks yes if Avg. Soil Loss is less than "T" for all fields in the planning year.

Mark yes, no or NA.

For 1.l. and 1.m., mark yes if features are mapped

For 1.k., if any field has unrepaired gully/ephemeral erosion in Field Problems, SnapPlus checks no

SnapPlus checks yes if there are no compliance messages for the chosen P assessment strategy. These strategies do not apply to fields that only receive P_2O_5 fertilizer with no manure or organic by-products during the rotation.

SnapPlus checks yes if the "Remaining volume" for every nutrient source is less than or equal to 10% of the "Available Annual Volume" produced in the prior, current plan and following year. It will be left blank if any of the 3 years is missing the annual volume or planned applications.

	Yes	No	NA
n. Make no **untreated manure applications** to areas within 1000' of a **community potable water well** or within 100' of a **non-community potable water well** (ex. church, school, restaurant) unless manure is treated to substantially eliminate pathogens.	☐	☐	☐
o. Make no manure applications to areas **locally delineated** by the Land Conservation Committee or in a conservation plan as areas contributing runoff to direct conduits to groundwater unless manure is substantially buried within 24 hours of application.	☐	☐	☐
p. Make no applications of **late summer or fall commercial N fertilizer** to the following areas UNLESS needed for establishment of fall seeded crops OR to meet A2809 with a blended commercial fertilizer. Commercial fertilizer N applications shall not exceed 36 lbs. N/acre on: • Sites vulnerable to N leaching **PRW Soils** (P=high permeability, R= bedrock < 20 inches, or W= wet < 12 inches to apparent water table); • Soils with depths of 5 feet or less to bedrock; • Area within 1,000 feet of a community potable water well. On **P soils, when commercial N is applied** for full season crops in **spring and summer**, follow A2809 and apply one of the following: 1. A split or delayed N application to apply a majority of crop N requirement after crop establishment. 2. Use a nitrification inhibitor with ammonium forms of N. 3. Use slow and controlled release fertilizers for a majority of the crop N requirement applied near the time of planting.	☐	☐	☐
q. Limit manure applications in late summer or fall using the lesser of A2809 or the following 590 rates on **PRW Soils.** Use ≤ 120 lbs. available N/acre on: **P and R soils** on *all crops, except annual crops*. Additionally, manure with ≤ 4% dry matter (DM) wait until after soil temp. < 50°F or Oct. 1, and use either a nitrification inhibitor OR surface apply and do not incorporate for at least 3 days. **W soils or combo. W soils** on *all crops.* Additionally, manure with ≤ 4% DM on *all crops* use at least one of the following: **1**. Use a nitrification inhibitor; **2**. Apply on an established cover crop, an overwintering annual, or perennial crop; **3**. Establish a cover crop within 14 days of application; **4**. Surface apply & don't incorporate for at least 3 days; **5**. Wait until after soil temp. < 50°F or Oct. 1. Use ≤ 90 lbs. available N/acre on: **P and R soils** on *annual crops* wait until after soil temp. < 50°F or Oct. 1. Additionally, manure with ≤ 4% DM use either a nitrification inhibitor OR surface apply and do not incorporate for at least 3 days. **W soils or combination W soils** receiving manure with ≤ 4% DM on *all crops*.	☐	☐	☐
r. Use at least one of the following practices on **non-frozen soils for all nutrient applications** within Surface Water Quality Management Area **(SWQMA)** = 1000' of lakes/ponds or 300' of rivers: **1**. Maintain > 30% cover after nutrient application; **2**. Effective incorporation within 72 hours of application; **3**. Establish crops prior to, at, or promptly following application; **4**. Install/maintain vegetative buffers or filter strips; **5**. Have at least 3 consecutive years no-till for applications to fields with < 30% residue (silage) and apply nutrients within 7 days of planting.	☐	☐	☐
s. Limit mechanical applications to **12,000 gals/acre of unincorporated liquid manure or organic by-products** with 11% or less dry matter where **subsurface drainage** is present OR within **SWQMA**. Wait a minimum of 7 days between sequential applications AND use one or more of the practice options on non-frozen soils listed in 1.r.1. through 1.r.5.	☐	☐	☐

2. When frozen or snow-covered soils prevent effective incorporation, does the plan follow these requirements for winter applications of all mechanically applied manure or organic by-products? *This section doesn't apply to winter gleaning/pasturing meeting 590 N and P requirements.*

If no manure is applied, check NA for 2.a. through 2.g..	Yes	No	NA
a. Identify **manure quantities planned to be spread during the winter**, or the amount of manure generated in 14 days, whichever is greater. *For daily haul systems, assume 1/3 of the manure produced annually will need to be winter applied.*	☐	☐	☐
b. Identify **manure storage capacity** for each type applied and stacking capacity for manure ≥ 16% DM if permanent storage does not exist.	☐	☐	☐
c. Show on map and make no applications within the **SWQMA**.	☐	☐	☐
d. Show on map and make no surface applications of liquid manure during **February and March** where **Silurian dolomite** is within 60 inches of the soils surface OR where **DNR Well Compensation** funds provided replacement water supplies for wells contaminated with livestock manure.	☐	☐	☐
e. Show on map and make no applications of manure within **300 feet** of **direct conduits to groundwater**.	☐	☐	☐
f. Do not exceed the P removal of the following growing season's crop when applying manure. Liquid manure applications are limited to **7,000 g/acre**. All winter manure applications are not to exceed **60 lbs. of P2O5/acre**.	☐	☐	☐
g. Make no applications of manure to fields with **concentrated flow channels** unless using two of the following: **1.** Contour buffer strips or contour strip cropping; **2.** Leave all crop residue and no fall tillage; **3.** Apply manure in intermittent strips on no more than 50% of field; **4.** Apply manure on no more than 25% of the field waiting a minimum of 14 days between applications; **5.** Reduce manure app. rate to 3,500 gal. or 30 lbs. P2O5, whichever is less; **6.** No manure application within 200 feet of all concentrated flow channels; **7.** Fall tillage is on the contour and slopes are lower than 6%. Make no applications to **slopes greater than 6%** (soil map units with C, D, E, and F slopes) unless the plan documents that no other accessible fields are available for winter spreading AND two of the options 2.g.1. through 2.g.5. are used.	☐	☐	☐

I certify that the plan represented by the answers on this checklist complies with Wisconsin's NRCS 2015-590 NM Standard or is otherwise noted.

Qualified NM planner signature NAICC-*Certified Professional Crop Consultant*, ASA-*Certified Crop Adviser*, or SSSA-*Soil Scientist* Date

Qualified NM farmer-planner or Authorized farm operator signature receiving and understanding the plan Date

Signature if reviewed for quality assurance Date

	Yes	No	NA
n. Make n… non-cor… pathoge…	☐	☐	☐
o. Make n… plan as a… hours of…	☐	☐	☒
p. Make no applications of **late summer or fall commercial N fertilizer** to the following areas UNLESS needed for establishment of fall seeded crops OR to meet A2809 with a blended commercial fertilizer. Commercial fertilizer N applications shall not exceed 36 lbs. N/acre on: • Sites vulnerable to N leaching **PRW Soils** (P=high permeability, R… • Soils with depths of 5 feet or less to bedrock; • Area within 1,000 feet of a community potable water well. On **P soils, when commercial N is applied** for full season crops… the following: 1. A split or delayed N application to apply a majority of crop N requirement after crop establishment. 2. Use a nitrification inhibitor with ammonium forms of N. 3. Use slow and controlled release fertilizers for a majority of the crop N requirement applied near the time of planting.	☒	☐	☐
q. Limit manure applications in late summer or fall using the lesser of A2809 or the following 590 rates on **PRW Soils.** Use ≤ 120 lbs. available N/acre on: **P and R soils** on *all crops, except annual crops*. Additionally, manure with ≤ 4% dry matter (DM) wait until after soil temp. < 50°F or Oct. 1, and use either a nitrification inhibitor OR surface apply and do not incorporate for at least 3 days. **W soils or combo. W soils** on *all crops.* Additionally, manure wi… **1**. Use a nitrification inhibitor; **2**. Apply on an established cov… **3**. Establish a cover crop within 14 days of application; **4**. Surf… **5**. Wait until after soil temp. < 50°F or Oct. 1. Use ≤ 90 lbs. available N/acre on: **P and R soils** on *annual crops* wait until after soil temp. < 50°F or Oct. 1. Additionally, manure with ≤ 4% DM use either a nitrification inhibitor OR surface apply and do not incorporate for at least 3 days. **W soils or combination W soils** receiving manure with ≤ 4% DM on *all crops*.	☒	☐	☐
r. Use at least one of the following practices on **non-frozen soils for all nutrient applications** within Surface Water Quality Management Area **(SWQMA)** = 1000' of la… **1**. Maintain ≥ 30% cover after nutrient application; **2**. Effective incorporation within 72 hou… application; **4**. Install/maintain vegetative buffers or filter strips; **5**. Have at least 3 consecutive years no-till for applications to fields with < 30% residue (silage) and apply nutrients within 7 days of planting.	☒	☐	☐
s. Limit mechanical applications to **12,000 gals/acre of unincorp…** less dry matter where **subsurface drainage** is present OR with… sequential applications AND use one or more of the practice o…	☒	☐	☐

2. When frozen or snow-covered soils prevent effective incorporation, does the plan follow these requirements for winter applications of all mechanically applied manure or organic by-products? *This section doesn't apply to winter gleaning/pasturing meeting 590 N and P requirements.*

If no manure is applied, check N/A for 2.a. through 2.g.

	Yes	No	NA
a. Identify **manure quantities planned to be spread during the winter**, or the amount of manure generated in 14 days, whichever is greater. *For daily haul systems, assume 1/3 of the manure produced annually will need to b…*	☐	☐	☐
b. Identify **manure storage capacity** for each type applied and stacking capacity for manure ≥ 16% DM if permanent storage does not exist.	☐	☐	☐
c. Show on map and make no appli…	☒	☐	☐
d. Show on map and make no surf… is within 60 inches of t… for wells contaminated with livestock manure.	☒	☐	☐
e. Show on map and make no applications of manure within **300 feet** of **direct conduits to groundwate…**	☐	☐	☐
f. Do not exceed the P removal of t… applications are limited to **7,000**	☒	☐	☐
g. Make no applications of manure to fields with **concentrated flow channels** unless using two of the following: **1.** Contour buffer strips or contour strip cropping; **2.** Leave all crop residue and no fall tillage; **3.** Apply manure in intermittent strips on no more than 50% of field; **4.** Apply manure on no more than 25% of the field waiting a minimum of 14 days between app… of all concentrated flow channels; **7.** Fall tillage is on the contour and slopes are lower than 6%. Make no applications to **slopes greater than 6%** (soil map units with C, D, E, and F slopes) unless the plan documents that no other accessible fields are available for winter spreading AND two of the options 2.g.1. through 2.g.5. are used.	☒	☐	☐

I certify that the plan represented by the answers on this checklist complies with Wisconsin's NRCS 2015-590 NM Standard or is otherwise noted.

Qualified NM planner signature — NAICC-*Certified Professional Crop Consultant*, ASA-*Certified Crop Adviser*, or SSSA-*Soil Scientist* — Date

Qualified NM farmer-planner or Authorized farm operator signature receiving and understanding the plan — Date — Signature if reviewed for quality assurance — Date

SnapPlus leaves blank. Mark yes, no or N/A. Answer yes if all public wells are mapped; buffer areas for community (municipal) and non-community (public) wells are taken out of manure spreadable acres; treated manure sources can be applied.

SnapPlus checks NA if all field borders are in counties with no locally delineated layers (most users). SnapPlus leaves this blank if field borders intersect or are in locally delineated county layers; answer yes or no.

SnapPlus checks yes if all fields comply with listed commercial fertilizer nitrogen application requirements on areas vulnerable to N leaching to groundwater.

SnapPlus checks yes if all fields comply with listed manure application nitrogen requirements on areas vulnerable to N leaching to groundwater.

SnapPlus checks yes if all fields with SWQMAs comply with at least 1 of the 5 listed practices.

SnapPlus checks yes if surface applications of liquid manure do not exceed 12,000 gallons per acre per application where fields have tile drainage or intersect SWQMA boundaries.

Add comments and explanations for the plan in this section. If necessary, attach a separate page.

Mark yes, no or NA.

SnapPlus checks yes if field borders are present; all winter manure applications can only be planned in the winter spreadable area of the field and not in the winter prohibited spreading area.

SnapPlus checks NA; unless areas intersect any field, then SnapPlus checks yes and provide appropriate guidance.

Mark yes or no.

SnapPlus checks yes if winter manure applications occur and are in compliance with the standard.

SnapPlus checks yes if two practices are planned for all winter applications for fields with concentrated flow channels or slopes > 6%.

If the farm has no manure and/or no winter spreading, SnapPlus will check NA.

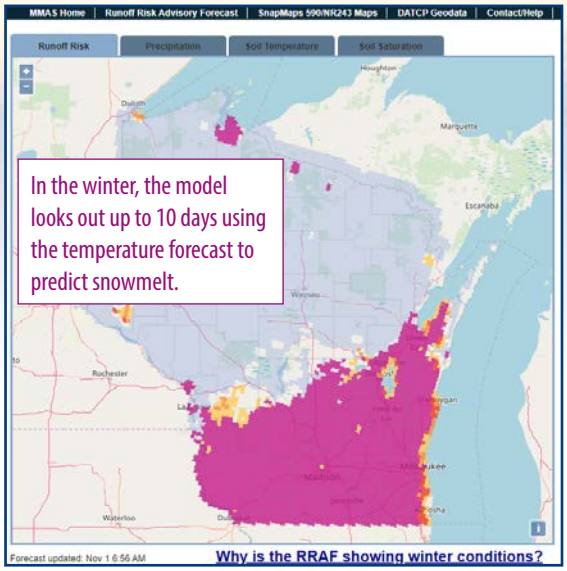
Yes, electronic signatures can be used for the 2015-590 NM Checklist!
The intention of the signature block is to ensure the farmer understands the 2015-590 Standard, some requirements are new. Since the form is a fillable Word document and a SnapPlus report, it makes sense to use an electronic signature. As noted in Wisconsin Statute, an electronic signature satisfies the signature requirement of the 2015-590 Checklist. s. 137.15, (3) and (4), Wis. Stats. 137.15(3).

I need to spread manure...but am not sure about runoff.

Is the local weather the best source for information?

No, there is a better source! The Runoff Risk Advisory Forecast (RRAF) is a tool built by the National Weather Service and UW-Madison to predict manure runoff potential and present it in a user-friendly map.

The runoff forecast provides maps showing short-term runoff risk for daily planning, accounting for factors including soil moisture, weather forecast, crop cover, snow cover and slope. It is updated four times daily by the National Weather Service. The data is shown using four-kilometer grids (1.5 square mile), allowing users to look at conditions at a very local level. The RRAF is not a regulatory tool and is intended to help farms avoid manure runoff problems by assessing the risk of runoff before they make applications. The map displays the runoff risk not just for the current day, but 72 hours into the future based on precipitation model forecasts. In the winter, the model looks up to 10 days ahead using the temperature forecast to predict snowmelt. This 'look ahead' allows better short-term planning of manure and other nutrient applications.



Other helpful information on the Runoff Risk Advisory Forecast site:

- Prediction maps for precipitation, soil temperature, and soil moisture
- Snapshots of past RRAF maps by date and time of day
- Guidance on what to do if you must spread when the RRAF indicates a high risk of runoff.

http://www.manureadvisorysystem.wi.gov/runoffrisk/index