

SESSION V  
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**Future Success**

*What will be covered in Session V:*

**Developing a Sustainable NMP**

LESSON 1: Making Use of Your Plan

LESSON 2: Recordkeeping

LESSON 3: Reporting to State and Federal Agencies

LESSON 4: Updating the Plan

**Terms to Learn**

- Medium Farm Operation (MFO)
- Large Farm Operation (LFO)
- Environmental Quality Incentives Program (EQIP)

**Exercise**

1. Checklist

## LESSON V-1

### Making Use of Your Plan

**C**ongratulations! You have written your own NMP. Now what? The NMP is not just a stack of paperwork to be filed away in a desk drawer until next year. Instead, it is a working plan that you should refer to throughout the growing season, especially before planting, spreading manure, or fertilizing crops. Chances are that you are not going to carry the whole plan with you in your tractor, but rather you will leave it somewhere safe and out of the elements. For this reason, you can print out the Plan Summary in your workbook and put it in the tractor or truck for easy reference. The Plan Summary shows manure and fertilizer

applications for the cropping season. It also indicates fields that need to be soil tested this year.

#### Using your NMP to Order Fertilizer

The nutrient management plan that you just created can be a powerful tool on many fronts. Most importantly, the information in the plan can help you in purchasing fertilizer for your farm. During the field by field planning section of the course you entered the nutrient recommendations for your fields (based on soil tests) and you subtracted the amount of nutrients contributed by manure

Summary																								
Producer: Joe Farmer					Farm Name: Green Valley Farm										Crop Year: 2009									
Field	Field #	Acres	Current Crop	Next Year's Crop	Manure (rate/ac)								Fertilizer						Soil Sample					
					Fall				Spring				1		2		3			4				
					1	2	3	4	1	2	3	4	th gal	tons	th gal	tons	th gal	tons		th gal	tons	lbs/ac	N	P
back	345-11	15.0	CS	HG	5	0	0	0	5	0	0	0	0	0	0	0	#1	130	10	20	20	0	2	Soil to be tested this year
																	#2	100	46	0	0	0	0	
																	#3	0	0	0	0	0	0	
1 Notes:																								
oak tree	345-12	26.0	HG	HG	0	0	0	0	0	0	0	0	8	0	0	0	#1	40	46	0	0	0	1	Soil to be tested this year
																	#2	0	0	0	0	0	0	
																	#3	0	0	0	0	0	0	
2 Notes:																								
triangle	345-13	5.0	CS	CS	5	0	0	0	5	0	0	0	0	0	0	0	#1	100	10	10	20	0	2	
																	#2	0	0	0	0	0	0	
																	#3	0	0	0	0	0	0	
3 Notes:																								
behind the barn	362-1	34.0	P	P	0	0	0	0	0	0	0	0	0	0	0	0	#1	0	0	0	0	0	2	
																	#2	0	0	0	0	0	0	
																	#3	0	0	0	0	0	0	
4 Notes:																								
across the road	362-2	25.5	CS	HG	5	0	0	0	5	0	0	0	0	0	0	0	#1	0	0	0	0	0	2	
																	#2	0	0	0	0	0	0	
																	#3	0	0	0	0	0	0	
5 Notes:																								
Johnny's house	362-3	8.0	HG	HG	5	0	0	0	0	0	0	0	10	0	0	0	#1	0	0	0	0	0	0	
																	#2	0	0	0	0	0	0	
																	#3	0	0	0	0	0	0	
6 Notes:																								

The plan summary provides a concise version of your NMP. Print a copy and keep it handy in your tractor or truck.

## CUSTOM APPLICATORS AND NUTRIENT MANAGEMENT PLANS

If you hire a custom applicator for spreading manure on your farm, you need to make sure that the equipment operators and the supervisor are aware that you are following a NMP. Do not just hand your plan to the custom operators and expect them to interpret it. Instead, give a clear list of the manure application rate for each field and the total number of loads that each field should get. Have them keep a tally as they spread, to see how close they come to the amount you requested.

Humboldt RCD



*Give the custom applicator clear instructions about how much manure to spread on each field.*

applications. Often you were left with a balance of nutrients that your crops still need. These nutrients can be added to the soil in the form of fertilizer. Of course, you can't purchase different blends of fertilizer for each field. This is unrealistic from both practical and economic standpoints. Once you know the remaining nutrient needs of your fields, you should start to group together fields that have similar needs. In most cases, a farm can group the fields into five or fewer categories. First a farm might group fields based on crop type (corn, grass

hay, legume hay). Within these crops, the fields will be further partitioned into fields with high nutrient needs and those with lower requirements. Once the groupings are complete you can make an estimate of the type of fertilizer you might need for those fields. This information can then be brought to the fertilizer dealer, who can help develop the best blend for the crop fertility needs.

*Making sure that crop nutrients are applied in the correct amounts where they are needed can save money.*



For example:

### Group 1: Corn Fields

Subgroup 1a:

Corn with nutrient needs around  
150 lbs. N - 100 lbs. P - 200 lbs. K

Subgroup 1b:

Corn with nutrient needs around  
150 lbs. - N 40 lbs. - P 100 lbs. K

### Group 2: Grass Hay

Subgroup 2a:

Grass with nutrient needs around  
150 lbs. N - 50 lbs. P - 120 lbs. K

Subgroup 2b:

Grass with nutrient needs around  
150 lbs. N - 0 lbs. P - 60 lbs. K

These simple groupings of fertilizer needs for your fields will enable your salesman to formulate some blends that work well for your farm.

## THE PRE-SIDEDRESS NITRATE TEST

**N**itrogen is often a limiting nutrient in agriculture, yet it is not measured by standard soil tests. This is because it is difficult to predict how much nitrogen will be available for a crop based on a soil sample taken weeks or months before the time of peak nitrogen demand. In your NMP you credited N from manure you spread before the crop was even planted. However, if there are several straight days of rain before topdress of corn, you can make a pretty good guess that much of that manure N will no longer be available for your corn. The tool developed in Vermont for fine tuning sidedress N amounts based on field conditions is called the pre-sidedress nitrate test (PSNT). The PSNT is not required by NMPs, but is a way to save money and take nutrient management to the next level.

The PSNT is performed shortly before topdress (when corn is 8 to 12 inches tall) and measures the plant-available nitrogen (nitrate) in the top 12 inches of soil. Because N is so prone to changing form, the soil

sample must be dried or refrigerated after it is taken, and delivered to the testing lab the same day. Turn-around is quick (within 24 hours on business days) so that you can get your fertilizer on in a timely fashion.

As with any test or recommendation, there are some limitations. The main one is that the PSNT cannot account for unexpected changes in conditions after soil sampling. For example, if unusually heavy rains occur a few days after sampling, significant nitrate can be lost to leaching or denitrification. If this occurs and if there is time, resample the field. If not, adjust the recommended N rate based on your best judgment to account for suspected losses.

In 2008, the cost for the PSNT was \$8.00 at the UVM Agricultural Testing Lab. Many farmers have found that the PSNT can save them money on fertilizer. For more information, contact UVM Extension or the UVM Agricultural Testing Lab, or visit the following website: <http://pss.uvm.edu/vtcrops/?Page=articles/PSNTTest.html>.

University of Wisconsin



*The pre-sidedress nitrate test is done when the corn is 8 to 12 inches high, just before its major vegetative growth occurs.*

## LESSON V-2

### Recordkeeping

**R**ecordkeeping is a critical part of nutrient management planning. Not only is it important to know what you planned to do, but also what you actually did. Maybe you had to reallocate some of the manure being spread because the access road to a field was too wet to drive the spreader on. Or maybe you decided not to plow under the alfalfa field that you were planning to plant with corn this year. In other words, the weather doesn't always cooperate and sometimes plans have to change. You are responsible for keeping a record of that change. Keeping records will also make the plan more useful over time. Recordkeeping will help you refine the plan and make the recommendations more accurate.

The most important records to keep are:

- Planting and harvest dates
- Dates and amounts of manure, compost, and fertilizer applications
- Crop yields for each field

The NMP recordkeeping requirements are to:

- Keep an updated copy of the NMP itself at your farm.
- Provide copies of current soil tests (check your soil test schedule to see which fields need updated soil samples) and waste tests (one for each waste storage facility per year).
- As you update your plan, keep the old records on file for five years.



*Figure out a record-keeping system that works for you and stick to it.*

There are also record keeping requirements if you transfer manure off your farm. Maintain records showing the date and amount of manure, litter, or process wastewater that leaves the permitted operation, and record the name and address of the recipient. Keeping the import/export agreement will satisfy this requirement.

## CALCULATING FORAGE YIELDS

Yield measurements are extremely important in nutrient management planning. Knowing average yields will allow you to choose nutrient applications of manure and fertilizer that minimize costs, maximize fertilizer efficiency, and reduce potential environmental problems. Yields are also critical as a measuring tool to evaluate new products, improve management techniques, and allow you to make more informed decisions concerning feeding practices for your livestock. Knowing your forage supplies for the year in the fall allows you to buy or sell forage at the time of year that is most financially rewarding to your operation.

Various methods of measuring yields are available to producers. The most accurate is to weigh truck or wagonloads going into a silo or barn, and to take dry matter samples then. This is often not feasible due to limitations of time and necessary equipment (scales). Other methods of yield checks include field sampling and documenting estimated weights of loads.

### Measuring Wagonloads

Measuring yields by wagonload is probably the most common method used by producers. Ideally you should weigh average loads to get a representative load weight. It is important to know the dry matter of

the forage to get an accurate measure of the actual nutrient harvest.

Some recent work in Wisconsin found that wagon loads in the 30 to 50% dry matter range averaged around 5 pounds of dry matter per cubic foot of wagon. Surprisingly, the forage density did not vary greatly with forage type (corn silage or haylage).

Working with this information, we can now estimate the load on a wagon by multiplying volume by density.

For example:

A wagon measures 16 ft. long by 7.25 ft. wide and is filled to a depth of 6 ft.

$$16 \text{ ft.} \times 7.25 \text{ ft.} \times 6 \text{ ft.} = 696 \text{ cubic ft.}$$

$$\begin{aligned} 696 \text{ cubic ft.} \times 5 \text{ lbs. dry matter per cubic ft.} &= \\ 3,480 \text{ lbs. dry matter or} & \\ 1.74 \text{ tons of dry matter yield per acre} & \end{aligned}$$

If we want to calculate actual weight, we need to divide this figure by the dry matter of the forage (28%).

$$\begin{aligned} 1.74 \text{ tons} \div \text{by } 28\% &= \\ 6.96 \text{ tons of feed on the wagon} & \end{aligned}$$



*Truck scales can be used to weigh crop yields.*

## LESSON V-3

### Reporting to State and Federal Agencies

**A**t the end of each season the state and/or federal government require that you report on your nutrient management for the previous year. Whether you report to state or federal agencies or both will depend on which programs you have enrolled in. The agency you report to wants to know what you did and why you did it. Use this step by step process when you are ready to fill out paperwork and gather necessary information to meet reporting requirements.

#### Required Forms

Depending on your program enrollment, you may need to send your plan to NRCS and/or the Vermont Agency of Agriculture Foods and Markets.

**Large Farm Operation (LFO).** The State of Vermont defines a LFO as a farm with more than 700 mature dairy cows (whether milking or dry), 1000 beef cattle or cow/calf pairs, 1000 youngstock or heifers, 500 horses, 55,000 turkeys or 82,000 laying hens (without a liquid manure handling system). Unlike the MFO program, LFO permits are individual to each farm. Refer to the Vermont Agency of Agriculture website (address on page 104) for additional information on requirements for compliance.

**Medium Farm Operation (MFO).** The State of Vermont defines a MFO as a dairy with 200–699 mature animals, whether milking or dry. Other MFOs include beef operations (300–999) cattle or cow/calf pairs), youngstock and heifer operations (300–999 youngstock or heifers), horse operations (150–499 horses), turkey operations (16,500–54,999 turkeys), and egg facilities (25,000–81,999 laying hens without a liquid manure handling system).

The State of Vermont requires an annual compliance form. Refer to the MFO general permit for other reporting requirements or refer to the website address given on page 104.

**Environmental Quality Incentives Program (EQIP).** This program, administered by NRCS, is a voluntary conservation program for farmers and ranchers that promotes agricultural production and environmental quality as compatible national goals. EQIP offers financial and technical help to assist eligible participants install or implement structural and management practices on eligible agricultural land. If you are enrolled in EQIP, NRCS requires crop records from the previous crop year. This includes planting and harvest dates, yields, soil tests, annual manure test, and dates and amounts of manure, fertilizer, and compost applications.

#### Records

Both state and federal agencies require that a farm keep records. You can use the forms provided in the binder or make your own.

**Recordkeeping Summary Sheet.** Document discrepancies between what you planned to do and what you actually did on the farm last season. If you did not follow your plan, explain why (i.e. weather). The recordkeeping summary sheet can be found in the class binder. A sample is shown on the next page.

#### Make Requested Changes

Make any required changes from the previous year. Usually these are listed in a letter sent by the state.

## NUTRIENT MANAGEMENT RECORDKEEPING SUMMARY

### General Information

Producer:

Crop Year:

### Seasonal Events

*Describe any unexpected weather, pest, equipment, material availability, or labor problems that occurred this year that caused you to change your nutrient applications or cropping patterns from what you had planned:*

### Nutrient Application Changes

*Describe how your applications or cropping were different because of these events; on which fields were applications higher / lower than planned? How do you think this will impact the fields' overall nutrient balance? Do any rotations need to be adjusted to maintain adequate erosion control?*

### Implications for Next Year

*Do you need to alter your plans for next year to compensate for events this year? Do soil or manure tests need to be repeated sooner than expected? Do fields need to be reseeded ahead of schedule, or rotations adjusted?*

Name of Nutrient Management Records Reviewer:

Date of Review:

Recommendations Resulting From Records Review

*The recordkeeping summary sheet is found in the NMP binder.*

## LESSON V-4

### Updating the Plan

If there have been any changes on your farm since last year's NMP, you will need to record these changes on the updated NMP. Did you lease a neighbor's farm to increase your acreage? Did you add more animals to your herd? Below is an outline of specific sections of the NMP that may require updating.

#### How and When to Modify Each Section

**Farm Information Sheet.** Change this sheet if you have increased your herd size, increased your acreage, changed rotations, changed tillage systems, or if there has been any other major change on your farm.

**Maps.** Add or modify maps if you have added additional farms, tracts, or fields. Contact NRCS or NRCD to make these changes.

**Soil Information.** Add additional soil information sheets if you have added additional farms, tracts, or fields. You will only need to change this section if you added new maps. Contact NRCS or your local Natural Resource Conservation District to make these changes.



**Soil Analysis.** Update this section with new soil tests. Check your soil sampling schedule and modify it if necessary. Remove old tests and replace them with new versions, archiving old tests to monitor soil P levels.

**Manure Production.** Update this section if you have added additional animal units or have modified your storage units. If you have changed this section you will need to:

- Modify the animal waste overview page
- Modify the sheet for manure nutrients available for crop production
- Reallocate manure on individual field sheets if necessary

**Manure Analysis.** Update this section with manure tests from the past year. You need at least one manure sample analysis per year.

**Field Information.** Update this section if you have added new fields. Update the crop history section.

**Field by Field Planning.** Fill out new field by field nutrient management sheets if necessary. New field sheets will be needed if there are new soil tests.

## ADDITIONAL RESOURCES FOR NUTRIENT MANAGEMENT PLANNING

### The University of Vermont Extension

Saint Albans office: (802) 524-6501

Soil, Nutrient and Manure Management

<http://pss.uvm.edu/vtcrops/?Page=nutrientmanure.html>

### Crops and Soils Homepage

<http://pss.uvm.edu/vtcrops/>

### Nutrient Recommendations for Field Crops in Vermont

[http://www.uvm.edu/pss/vtcrops/articles/VT\\_Nutrient\\_Rec\\_Field\\_Crops\\_1390.pdf](http://www.uvm.edu/pss/vtcrops/articles/VT_Nutrient_Rec_Field_Crops_1390.pdf)

### Agricultural and Environmental Testing Lab

[http://pss.uvm.edu/ag\\_testing/](http://pss.uvm.edu/ag_testing/)

### USDA Natural Resources Conservation Service in Vermont

State office: (802) 951-6795 <http://www.vt.nrcs.usda.gov/>

### Vermont Soil Survey Information

[http://www.vt.nrcs.usda.gov/soils/so\\_stat.html](http://www.vt.nrcs.usda.gov/soils/so_stat.html)

### Key to the Soils of Vermont

<http://efotg.nrcs.usda.gov/treemenuFS.aspx?Fips=50001&MenuName=menuVT.zip>

### NRCS Manure Screening Tool

[http://www.vt.nrcs.usda.gov/technical/Nutrient\\_Management/](http://www.vt.nrcs.usda.gov/technical/Nutrient_Management/)

### Vermont Department of Agriculture, Food and Markets

(802) 828-2430 <http://www.vermontagriculture.com/>

### Vermont Accepted Agricultural Practice (AAPs)

<http://www.vermontagriculture.com/ARMES/awq/AAP.html>

### Vermont Medium Farming Operations (MFO) Program

<http://www.vermontagriculture.com/ARMES/awq/MFO.html>

### Vermont Association of Conservation Districts

<http://www.vacd.org/>

## EXERCISE V-1

### Checklist

**B**efore you submit your nutrient management plan, check through it to make sure that all of the necessary information has been completed. Worksheets contained in the spreadsheet program are indicated in blue.

#### SESSION I

- Farm information worksheet
- Maps (proximity, conservation plan, nitrate leaching, topographic, environmental concerns, soils)
- Soil fact sheets
- Soil test results organized
- Soil test interpretation and planning strategy
- Soil test schedule
- RUSLE2 (with your crop rotation indicated)
- Field inventory
- Manure application schedule

#### SESSION II

- Animal waste system overview sheet
- Calculation of amount of manure produced
- Manure test for each storage
- Manure analysis worksheet
- Manure storage nitrogen calculations (one for each manure storage)
- Manure nutrient values
- P-index

#### SESSION III

- Farm nutrient balance
- Risk assessment worksheet

#### SESSION IV

- Field plan recommendation worksheets (one per field)
- Manure drawdown worksheet
- Manure import/export form and alternative manure utilization form (if applicable)

#### SESSION V

- For plan updates:
- Records
- Revise any applicable parts of computer workbook
- Recordkeeping summary sheet
- Any additional forms required by program enrollment