

# **INSTRUCTIONS FOR USING THE DAIRY FARM NUTRIENT BALANCER SPREADSHEET Nutrient5cpXP**

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Manual Version 5.00

Original programming was done by Gary Anderson using Lotus 123. This manual describes enhanced capabilities compared with Nutrient 7 using an Excel spreadsheet. This version, nutrient5cpXP is designed to work with Microsoft Excel XP (version 2002). The program will work on earlier versions (ie. Excel 97) but the macros may not work.

These directions describe how to load and run the Excel spreadsheet, screens you will see on your computer, how to enter data and print reports.

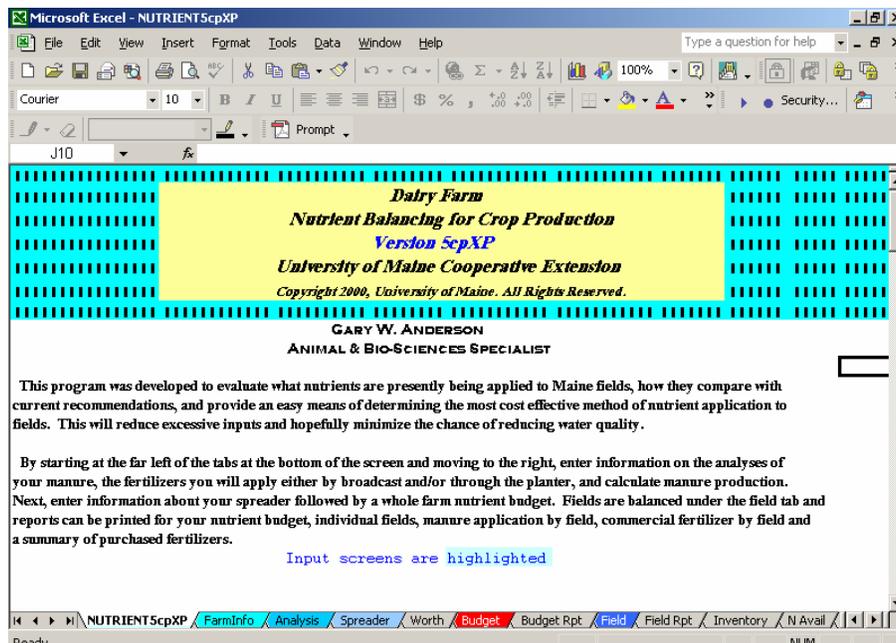
This program was developed to evaluate what nutrients are presently being applied to fields on Maine farms, provide a means of comparison of how nutrients applied compare with current recommendations and provide an easy means of determining the most cost effective method of nutrient application to fields. This will reduce excessive inputs and hopefully minimize the chance of reducing water quality.

**This program is based on Nitrogen, P2O5, and K2O. If the words phosphorus and potassium or the initials P or K are used either in the manual or program, they refer specifically to P2O5 and K2O.**

## **Loading the Excel spreadsheet**

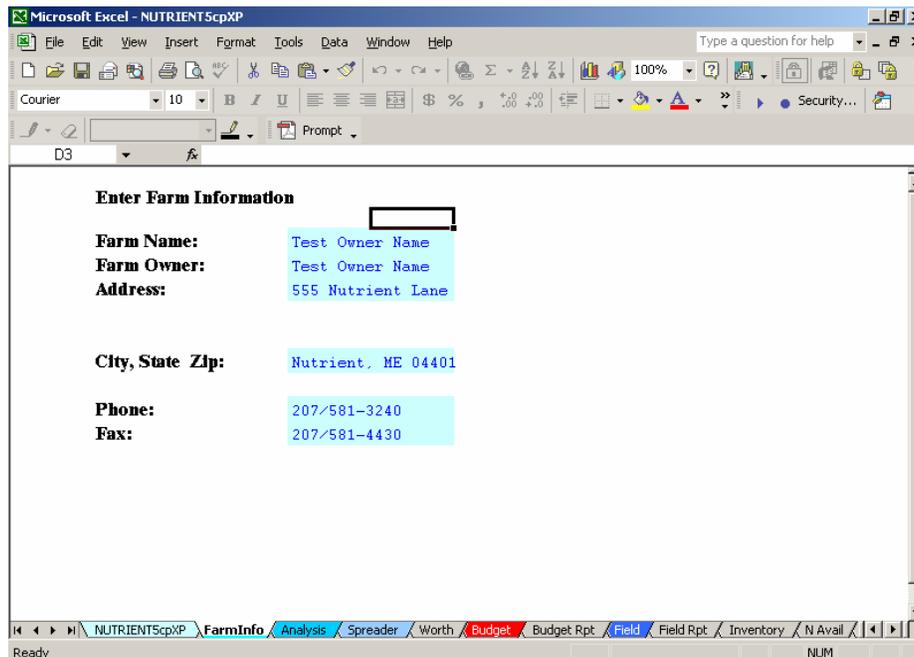
The current version of the spreadsheet is nutrient5cpXP; The size of the program is about 800K so that you can keep a copy of the spreadsheet and associated data for each farm on separate floppy disks if desired. Once you load the program, save the spreadsheet under the farm name. We will refer to tabs across the bottom of the screen once the program is loaded. The first tab as well as the opening screen list the version of the spreadsheet you are currently using. Different versions of the spreadsheet program are not compatible since different information is being collected and stored.

**Screen 1:**



This is the opening screen. This gives background information as well as the version of the spreadsheet you are using. You will progress from left to right, moving through the tabs at the bottom of the screen to enter farm information and generate reports. Cells with a light blue background are for data entry. Move to FarmInfo.

## FarmInfo



This is the screen where you will enter all the farm specific information relative to name and address. Move on to the right and click on the Analysis tab.

## Analysis

	A	B	C	D	E	F	G	H	I	J	K	L	
2					\$/ton			NH4-N	Org-N		Coefficients		
3	Source	% N	% P2O5	% K2O	/1000 gal	% H2O	%	%		Curr.	-1yr	-2 yr	-3 yr
4													
5	Liquid Cow Man-gal	0.31	0.18	0.30	\$10.00	91.8	0.13	0.18	0.35	0.12	0.05	0.02	
6	Solid Cow Manure	0.35	0.23	0.38	\$10.00	79.0	0.10	0.25	0.25	0.12	0.05	0.02	
7	Solid Other Manure	0.35	0.23	0.38	\$10.00	79.0	0.10	0.25	0.25	0.12	0.05	0.02	
8	Poultry Manure	1.19	2.77	1.84	\$10.00	68.9	0.56	0.63	0.60	0.10	0.05	0.05	
9	Muriate Potash	0	0	60	180	Broadcast							
10	Diammon Phosphate	18	46	0	290	Broadcast							
11	Lime	0	0	0	32	Broadcast							
12	Ammonium sulfate	21	0	0	200	Broadcast							
13	Urea	45	0	0	280	Broadcast							
14	Starter 10-20-10	10	20	10	270	Delivered through the planter							
15	Fertilizer name and analysis can be substituted for one of the above that is not used												
16	Liquid and Solid Cow Manure and Poultry Manure Cannot be Moved										Liquid	Solid	
17		Liquid	Solid	Other	Poultry	No. Animal Units				100	100		
18		,000 gal	tons	tons	tons	Days Housed				365	365		
19	Enter Manure Prod. On Farm:	2000	1000	0	0	Estimated Manure Prod.				547.5	1679		
20	Manure Used	0	0	0	0	(Dairy cattle production)				,000gal	tons		
21	Manure Remaining		2000	1000	0	0							

The analysis page is one of the **main** pages of the spreadsheet. Note that some of the cells have a light blue background. These are cells that you can input information. Note that you will be able to enter the name and the mineralization coefficients for the Solid Other Manure and that the Org-N column is locked out because this is a calculated field.

**Enter Manure Analyses** – Enter the analysis for each of the manure sources you will use or have used in the past three years. **The analyses shown are for illustrative purposes. The analysis of manure is quite variable depending on the management of the animal, handling of manure, and storage of manure. Manure testing provides the best estimate of nutrient content.** Inventory calculations in the program will track the four manure sources. Note that the spreadsheet asks for farm produced manure. If you have an inventory of manure produced on the farm enter the value here. If you plan to bring a manure source in from off farm, enter a zero.

On the bottom right of this spreadsheet is a small side calculation that can be used to estimate manure production using averages. The calculation is for dairy cow manure. Actual measurement of production is best. The numbers that are calculated are not carried forward to other parts of the spreadsheet; this calculation is provided to get a “book value” estimate of production.

Manure production is estimated by entering the number of animal units on your farm, the days manure goes into a storage and thus would be available for spreading. The prediction equation in the program assumes dairy cattle manure production. The prediction equation used estimates that about 23.5 tons of manure will be produced per year if one 1400 lb cow is entered. The program estimates 92 lbs (solid)/15 gallons (liquid) manure produced per day per animal unit. This number can vary depending on the amount of bedding used and whether or not milkhouse water, surface water, and rain are added to the same storage. These numbers are used to calculate a projected manure production for the number of days housed. The total production can be entered if known (the best) or estimated by the computer. Note that manure production can be projected in tons for a solid system or in units of 1,000 gallons if using a liquid system. If you are using another species, calculate the manure production and enter into the **Manure Produced on Farm** cell.

The equation used by the computer program does account for waste water that may be entering the manure storage. It does not account for rainwater, surface water or evaporation.

Enter the analyses of your fertilizer materials. You can utilize four different manure sources with this version. You can use a solid and liquid cow manure as well as a poultry manure source. The fourth source, Solid Other Manure, is able to be modified for your use. In the budget section, the ammonia nitrogen availability of this source will be the same as solid cow manure. You may also enter five different commercial fertilizer sources that are broadcast applied and one that is delivered through the planter. **Do not erase any of these lines. If you don't use a fertilizer, you will put in a zero for amount applied later. Make sure that your cost figures for each manure source are accurate.** You can estimate manure worth using the **Worth** tab. This will be discussed later in the manual.

As you are entering the fertilizer source materials available, you may not remember the analysis or price. There is a reference fertilizer file that can be viewed and/or updated with the fertilizer materials you commonly use. We have tried to include the most common fertilizer materials available in Maine; you can get average analysis values at the tab labelled **Reference**. Prices on this sheet are often out of date; make sure you have current price information.

You can update fertilizer composition based on local availability and price as well as add additional fertilizer materials that are not included in this Reference section. The prices shown in this example are not current and need to be updated. This provides a customizable reference file with current prices of locally available fertilizer materials.

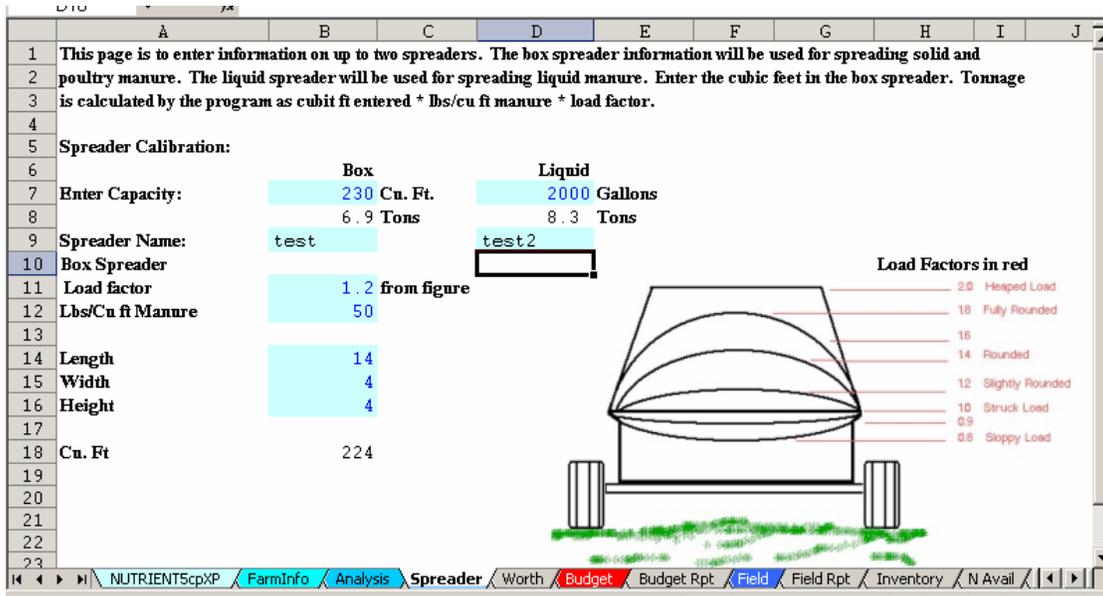
## **Spreader Calibration**

Next is the spreadsheet for spreader calibration. This form can be used to estimate the capacity of a box spreader. The figure gives you load factors that will be applied based on how high a box spreader is stacked. You can also enter the volume of a liquid spreader that you will use on this page as well. Consult your owner's manual to obtain capacity information.

If you are working with solid manure, enter the weight of the manure (typically, manure weight ranges from of 50 lbs/cu.ft. to 60 lbs/cu.ft depending on bedding use). Liquid manure is estimated to weigh 8.33 lbs per gallon. Under the type of spreader, enter the capacity of the spreader in cubic feet or gallons. This calculation is used to determine the number of spreader loads per acre and per field.

If you have a box spreader, you can get a rough estimate of the cubic feet by multiplying length X width X height in a struck load. For a box spreader, enter the load factor (see figure on the sheet) to indicate whether you will have a struck load, slightly heaped load, or heaped load. If the capacity rating listed by the manufacturer is for a heaped load, the load factor would be 2 or twice the volume of the struck capacity. If you have two different spreaders you will be using, apply manure with the first spreader to fields covered with that spreader and then change the spreader information to fit the second spreader. A number of conversion factors are given in Table 1.

For a round spreader, enter the volume of your spreader in gallons. An internal calculation is done to convert this to tons per spreader load. These calculations will be used in the generated reports to calculate the number of loads per acre and per field later on.



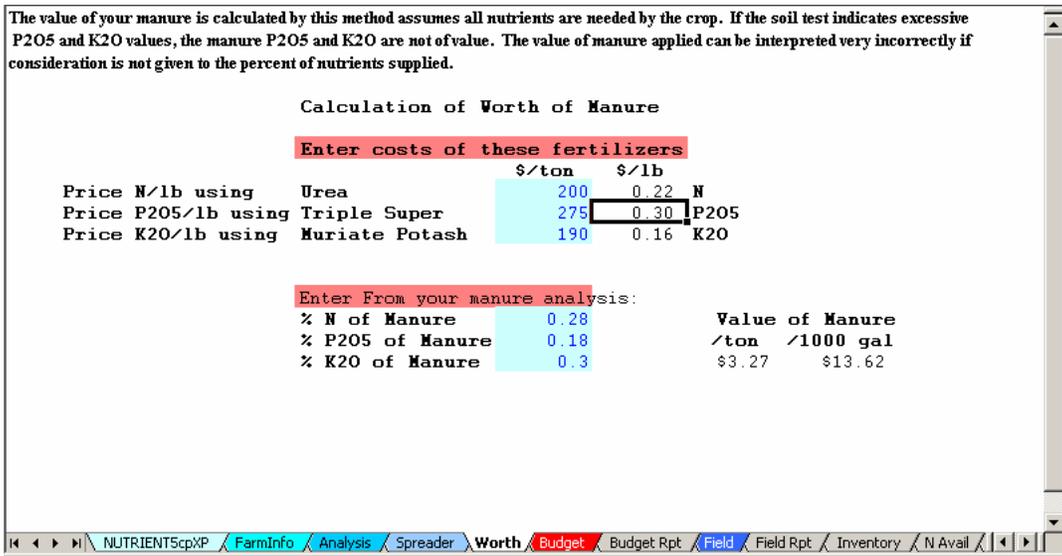
**Table 1. Commonly used conversions for manure spreader volumes.**

To Convert From:	To:	Multiply By:
Bushels	Cubic feet	1.24
Gallons	Cubic feet	0.134
Gallons	Pounds	8.3 (l)
Gallons	Tons	0.0041 (l)
Cubic feet	Gallons	7.48
Cubic feet	Pounds	62 (l) or 55 (s)
Cubic feet	Tons	0.031 (l) or 0.0275(s)

l = liquid manure s = solid manure

From: "Manure Applicator Calibration", NebGuide G95-1267-A by Rick Koelsch, Extension Engineer--Livestock Systems, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, November 1995

**Manure Worth** – The following screen is seen when you select the **Worth** tab. This also is a side calculation that you can use to put a value on a manure source based on the current price of three reference commercial fertilizers and the analysis of your manure. These values are not carried forward to other portions of the spreadsheet. After you do the calculations, you will need to enter them at the appropriate place (Analysis sheet). This calculation assumes that all of the nutrients are going to be utilized by the plant and basically calculates the cost of purchasing the nutrients in your manure by purchasing the commercial fertilizer sources.



Enter your values in the entry boxes in the **\$/Ton** column. Enter the current commercial prices (\$/ton) of fertilizer materials that provide sources of N, P, and K. Enter the analysis of your manure in the bottom half of the sheet. **The value of manure calculated by this method assumes all nutrients are needed by the crop. If the soil test indicates excessive P2O5 and K2O values, the manure P2O5 and K2O are not of value. The value of manure applied can be interpreted very incorrectly if consideration is not given to the percent of nutrients supplied.**

**Developing Your Farm Nutrient Budget**

The first step in developing your plan is to determine an overall farm nutrient budget. This will determine if you have excess nutrients produced above plant needs for your farm. The screen on the next page is used to calculate a nutrient budget for the farm. It compares the nutrients that are produced on the farm with the nutrients required for the crops you grow. This exercise will give you an idea if you are producing more or less nutrients than you require. It also gives you an idea of what nutrients can be brought on farm from off farm to supply your needs.

**Enter crop acre allocation, number of animal units and days housed.** Note the current crop acre allocation on this first screen. In the example farm on the previous page, there are 10 acres in corn production and 10 acres in grass production that are cut once per year. Notice that there is the opportunity to add acreage for new seeding acres and for two other crops not specifically listed. Farms that raise small grains could use these Crop 1 and Crop 2 (barley and alfalfa are listed in this example) spaces to list those crops.

The following screen shows the layout for entering crop allocation and manure production information. The lbs/Acre recommendations for each of the crops for the whole farm nutrient budget would be crop removal rates.

	A	B	C	D	E	F	G	H
5								
6	<b>Nitrogen Needs:</b>						<b>Total lbs</b>	
7		<b>Acres</b>		<b>lbs N Req/A</b>			<b>Nitrogen</b>	
8	Corn Acres---->	10		155			1550	
9	Grass Acres---->	10		160			1600	
10								
11	Crop 2	10		2			20	
12				<b>lbs N Req/A</b>				
13	Barley	10		20			200	
14	Alfalpa	10		20			200	
15				<b>Total N Needed-----&gt;</b>			3570	
16								
17				<b>Total N Produced----&gt;</b>			30223	
18								
19				<b>lbs Nitrogen</b>	<b>EXCESS</b>		26653	
20								
21	<b>P205 Budget - Whole Farm</b>							
22								
23	<b>P205 Needs:</b>						<b>Total lbs</b>	
24		<b>Acres</b>		<b>lbs P205 Req/A</b>			<b>P205</b>	
25	Corn Acres---->	10		86			860	
26	Grass Acres---->	10		60			600	
27								
28	Seeding Acres-->	10		?			?	

As you scroll down the **Budget** screen, you will be entering information relative to N, P2O5, and K2O for each of your crops.

The following table lists crop removal rates for various crops (see table 2).

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Now that you have entered information on your crop acre allocation, your spreader and the fertilizers you will use, it is time to move on to applying nutrients to your farm fields for crop production.

The first section is for the nitrogen budget. This budget reflects the plant available nitrogen in the current year based on manure produced during the current and previous three years. Assumptions are that your herd size has not dramatically changed during that time.

Below the nitrogen budget is the phosphorus budget. You will see the P2O5 budget screen on the next page. The screen is very similar to the nitrogen budget screen you just reviewed. Please note that acreage allocation has been carried forward. Again, the lbs P2O5 per acre recommendations for corn, grass topdressing and newly seeded acres were taken from crop removal rates. Depending on the acreage of your farm, these numbers would be different than this example and can be altered to fit your farm situation.

Continue to move down to the potassium budget section. This screen is very similar to the previous two screens. Again, the crop acreage allocation information is pulled from information you entered earlier. Again, the K2O requirements for corn, topdressing grass and newly seeded acres were from crop removal rates. K2O excess or need is shown at the bottom right of the computer screen.

The whole farm nutrient budget sheet can be used in a variety of ways for making farm management decisions. You can see if the farm is producing nutrients in excess of nutrients required with the current cropping pattern. This nutrient budget for the whole farm is only a rough calculation because you are using an average nutrient need for your crop acreage rather than that needed by individual fields. At this time you can use the computer to try different crop acreage allocations to see if production and use are more in line. If a farm is deficient in a particular nutrient, it gives a general indication of how much supplemental fertilizer material can be brought on to the farm without going into excess. This is particularly useful to determine tonnage of additional poultry manure, for example, that might be obtained or amount of commercial fertilizer that needs to be purchased.

A whole farm nutrient budget report similar to the one at the end of this manual can be obtained by using the menu selection process of choosing the **Budget RPT** tab. To print the report, select File, Print and OK from the various menus.

### **Balancing Nutrients for Fields on Your Farm**

You are now ready to balance nutrients for each of the fields on your farm. Enter this portion of the program by selecting the **Field** tab. If you have already worked with a field, you will edit the field with new information. After all of your field information is added, you can print out summary reports for your farm.

Following are a series of screen shots from the **Field** tab used for balancing nutrients by field.

	A	B	C	D	E	F	G	H	I
1	Template to balance nutrients for a field. Field Rpt. Contains the report of your balancing.								
2	Enter values in colored cells								
3									
4	Crop Year:	2000	*****Prev. Manure History*****						
5				Other		Solid	Liquid		
6	Farm Name:	Test Owner Name		Solid	Poultry	Cow	Cow		
7	Farm Owner:	Test Owner Name		0	0	3	2		1999
8	Address 1:	555 Nutrient Lane		0	0	3	2		1998
9	Address 2:	0		0	0	3	2		1997
10	Town, Zip:	Nutrient, ME 04401		Poultry/Solid Cow Tons/Acre					
11	Phone # :	207/581-3240		Liquid Cow gallons/acre					
12									
13									
14	Field Name:	example							3
15	No. Acres:	10		(1) Immediate (2) < 8 hours					
16				(3) 1 day (4) 2 days					
17	Crop Planted:			(5) 3-4 days (6) 5-7 days					
18	Desired Yld:			(7) >7 days					
19	Plowdown Credit:	40							
20									
21				Season of Manure Application					
22				(1) Fall (2) Spring/Summer: 2					
24	<b>ENTER AMOUNTS OF EACH FERTILIZER YOU PLAN TO USE</b>								
25	Liquid Cow Manure- gal/acre; solid cow and poultry- tons/acre; Commercial Fertilizers - lbs/acre								
26									
27	4000.0	Liquid Cow Man-gal	0	Muriate Potash	0	Ammonium sulfate			
28	0.0	Solid Cow Manure	75	Diammon Phosphate	0	Urea			
29	0.0	Solid Other Manure	25	Line					
30	0.0	Poultry Manure			0	Starter 10-20-10			
31			lbs	lbs	lbs				
32			N	P205	K20				
33									
34	Recommended Level, lbs----->		155	86	95				
35	From Prev. Years----->		2.9	-	-			(from manure residual)	
36	Plowdown Credit, lbs----->		40	-	-				
37	Supplied by Plan, lbs----->								
38	From Manure		45	54	100				
39	From Other Sources		14	35	0				
40	Deliv. Thru Planter----->		0	0	0		Total \$	\$/Acre	
41	Total Nutrients Avail----->		101	88	100	Cost Purch.Fert.	\$113	\$11	
42						Manure Worth	\$40		
43	Nutrients Needed, lbs----->		54	-2	-5				
44	% of Recommendation----->		65	103	105				
45									
46			Liquid	Poultry	Solid-Cow	Solid -Other	GO TO INVENTORY TO ADD		
47	Loads/Acre:		2.0	0.0	0.0	0.0	FIELD TO FIELDLIST		
48	Loads/Field:		20.0	0.0	0.0	0.0			
49									
50									
51	<b>Notes on Fertilizer Application: Form Method Timing Rate</b>								
52									
53									
54									
55									
56									
57									
58									
59									
60									

Here you will enter the Field Name, Crop, Size of the Field, Yield, Previous Manure History, when manure was applied and the interval from application of manure to incorporation. At the bottom of the screen you will enter the crop nutrient recommendation from your soil test for this field and balance the nutrients for this field. Move around the screen and enter the information requested. One of the advantages of this program is that it will allow you to account for poultry manure, solid cow manure, and liquid cow manure applied to an individual field both in the current year as well as historically.

Again, note that solid cow manure and poultry manure are entered as tons/acre, liquid manure as 1,000 gallons/acre and commercial fertilizer as lbs/acre.

Notice that the five (5) fertilizer materials, the four (4) manure sources plus the one (1) material you may deliver through the planter you entered as available for your farm have been moved to this screen. This screen can be used in a variety of ways. One of the best uses is to enter the nutrients required from your soil test and enter the fertilizer you **would have put on that field** if you were not balancing. You can quickly see whether you would have applied N, P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O in deficient or excessive amounts.

Now go ahead and balance nutrients for the individual field. The easiest method to follow is to first apply the manure to the field. **Liquid cow manure is entered in 1000 gallons per acre, solid cow manure and poultry manure in tons per acre and all other commercial fertilizer sources added as pounds per acre.** From a practical standpoint, the speed and delivery of manure can be adjusted little on a given field. Using a wide variety of manure application rates on a farm would be impractical, so enter manure applications in spreader loads. For example, if you had a 1500 gallon liquid spreader, enter liquid manure application in multiples of 1500 (1500, 3000, 4500, etc.). As you enter each fertilizer amount, watch the line labeled **Total Nutrients Available** and compare with the **Recommended Level** line. As you enter numbers, and move to another cell, the whole sheet recalculates the totals. Recalculation does not occur until you move to another input field. You can quickly finetune your estimates by entering a larger or smaller number of each fertilizer material. Next, balance P<sub>2</sub>O<sub>5</sub> and finally balance K<sub>2</sub>O needs. Depending on the crop, the final balancing of nitrogen would be done in combination with the nitrogen soil test.

The line labeled **Total Nutrients Avail** indicates the total pounds of N, P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O from the fertilizer sources, residual organic nitrogen from previous manure applications, plus any plowdown N credit you entered. The screen breaks down fertilizer nutrients delivered through the planter and those delivered by broadcast application. The line **Supplied by Plan** includes the fertilizer materials above plus any N plowdown credit entered. If additional nutrients are needed, the ratio of N, P, and K of a commercial blend is given in the line labeled **Ratio Nutrients Req.** The bottom line shows the percent of the soil test recommendation supplied by fertilizer materials and residual nitrogen applied to this field.

At the right of the screen is the cost of purchased fertilizer materials on a per acre and per field basis. The value of the manure materials is excluded from this value. The final report indicates the value of the manure applied to fields based only on the commercial costs of N, P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O. **Again, this calculation assumes all nutrients are needed by the crop. If the soil test indicates excessive P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O values, the manure P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O are not of value. The value of manure applied can be interpreted very incorrectly if consideration is not given to the percent of nutrients supplied.**

The time of application of manure changes the availability of ammonia nitrogen. The computer program uses the following factors for ammonia nitrogen availability (Table 3 and Table 4).

**Table 3**  
**Availability of Ammonia nitrogen fraction-Spring or Summer applied manure (% fertilizer equivalent)**

<u>Time to incorporation</u>	<u>Dairy or other livestock manure</u>		<u>Poultry</u>
By tillage or rain	<u>Liquid &lt;18% D.M. Solid &gt;18% D.M.</u>		
	-----% available-----		
Immediate/1 hr	95	95	90
< 8 hr	70	80	85
1 day	55	60	80
2 days	50	45	60
3-4 days	45	35	50
5-7 days	40	25	40
>7days or non-incorp.	40	10	20

N availability values are from Univ. Of Vermont (Jokela) and T. Sims, U of Delaware

**Table 4.**  
**Availability of Ammonia nitrogen fraction from fall-applied manure (% fertilizer equivalent)**

<u>Time to incorporation</u>	<u>Dairy or other livestock manure</u>		<u>Poultry</u>
By tillage or rain	<u>Liquid &lt;18% D.M. Solid &gt; 18% D.M.</u>		
	-----% available-----		
Immediate/1hr.	35	40	35
<8hr	25	30	30
1 day	25	25	30
2 days	20	20	25
3-4 days	20	15	20
5-7 days	15	10	15
>7days or non-incorp.	15	0	10

The calculation of residual organic nitrogen (data from Beegle, Penn State Univ.) assumes availability in the current year of application of 35% if dairy or other manure is less than 18% dry matter and 25% if over 18% dry matter. Availability of residual organic nitrogen from previous applications of dairy or other manure is 12% from manure applied one year ago, 5% from manure applied two years ago, and 2% from manure applied three years ago. Availability of residual organic nitrogen from poultry manure applied in the current year is 60%. Availability of residual organic nitrogen from poultry manure applied previously is 10% from manure applied one year ago, 5% from manure applied two years ago, and 5% from manure applied three years ago.

Some farms may grow legumes in rotation with corn. When a legume crop is plowed down, legume crop residue nitrogen needs to be included in calculations. If your soil test does not account for legume plowdown credit, the following table 5 can be used to estimate the credit.

**Table 5 Residual nitrogen contributions from legumes for corn production.**

<b>Alfalfa</b>	<b>First year after alfalfa</b>	
	50%-75% stand	110 lb/A
	25%-49% stand	80 lb/A
	<20% stand	40 lb/A
	<b>Second year after alfalfa</b>	
	50%-75% stand	50 lb/A
<b>Red Clover and trefoil</b>	<b>First year after clover or trefoil</b>	
	>50% stand	100 lb/A
	25%-49% stand	70 lb/A
	<25% stand	40 lb/A

Source: The Penn State Agronomy Guide. 1987-88 p. 23.

After you are satisfied with the balance of nutrients for the field, move to the field report. By moving to the Field Rpt tab and selecting File, Print, you will get a report printed of the field balance you just completed. Note that there is a notes section on the spreadsheet in the Field sheet so that you can add specifics to the field about form, method, timing and rate. Now, move to Inventory and use the key combination **Ctrl-A** to add the field information to a database of information for this farm. Once you have added the field information to the database, you can go back to the Field sheet and adjust inputs (make changes) for the next field. Print out the field report again for each successive field and add each field's data to the inventory.

Once you have fields added to the inventory, you can edit field data on a specific farm by going to the inventory sheet, moving your cursor to the name of the field and use the key combination **Ctrl-E** to copy the data back into the field sheet for adjustments and erasing the data in this line. Go back to the Field sheet, make adjustments, print your report and go back to inventory and use the **Ctrl-A** key combination to add the new data back into the inventory database where it was taken from.

As you move to another cell, all of the calculations, and summary reports are updated.

A way of streamlining your report generation is to have your WORD template open as you balance fields. Go ahead and print a hard copy of your field report (from the Field Rpt tab) and then, use your cursor to highlight the entire report (cells A1..J57). Click on the edit menu, move down to copy and select it. Now maximize WORD, move your cursor to the point where you want to insert the field report (you need a whole page), go to the EDIT menu and select paste.

Several other summary reports are generated by the spreadsheet. You can print out a report of manure use on fields, a report of commercial fertilizer use on fields and a summary of the total commercial fertilizer that you have planned for the farm; this last report is useful in determining the total tonnage of each fertilizer material required for the year.

Since all manure produced in a year is not spread at the same time, typically a nutrient budget is done with the total number of days housed for a calendar year. Manure is usually spread in the Spring and Fall. Some farms additionally remove manure from storage and spread after cutting first crop.

In order to model this actual manure removal schedule, go back and calculate the days housed between the manure removal periods. The simplest scenario would be spreading manure in the early spring and in the fall. Thus, certain fields on a farm would receive manure at one of these emptying times, but not another. Balance fields receiving manure for each removal period. Typically, this would be approximately two six month periods of manure storage. When a manure storage is emptied, farmers want to clean out the storage. This is especially true with fall spreading. A side calculation of this program will take the projected manure production during the housed period and subtract off manure applied to individual fields as the nutrients are balanced. After all the fields are balanced, the program will print a field summary report indicating the tons or 1,000 gallons of manure you started with, how much was applied to each individual field, and how much manure is left in the storage. This summary report lists loads of manure per field to be spread. If you end up with a large amount of manure not spread, you can go back and adjust levels of manure and/or other fertilizer levels to individual fields.





Nutrient, ME 04401

207/581-3240

**Fertilizers Purchased for this Management Plan**

<b>Fertilizer</b>	<b>Total lbs Fertilizer Used</b>	<b>Total tons Fertilizer Used</b>	<b>\$/ton</b>	<b>Total Cost</b>
Muriate Potash	0	0.0	180	\$0.00
Diammon Phosphate	0	0.0	290	\$0.00
Lime	0	0.0	32	\$0.00
Ammonium sulfate	0	0.0	200	\$0.00
Urea	0	0.0	280	\$0.00
Starter 10-20-10	0	0.0	270	\$0.00
<b>Total</b>				\$0.00