



Pasture Planning Tool Instructions

USDA-NRCS

PENNSYLVANIA



Considerations for Using the Pasture Planning Tool

For Grazing Management:

- Used when forage intake for nutritional needs is present
- User can select to plan Continuous or Rotational Grazing
- Calculates forage /animal balance
- User defines number of animal groups
- User defines number of pastures or alternatives needed
- Turn-out for exercise is planned under Vegetation Management

For Vegetation Management:

- Used when forage value/intake from pasture is not desired
- Turn-out for exercise is planned using this option
- Can help producer meet environmental regulations
- User defines number of animal groups
- User defines number of pastures or alternatives needed
- Nutrient Calculator must be completed with this option
- Specific protocol for managing vegetation is defined on Notes page

Additional Considerations: In either situation, it's important to understand that pastures need to be rested to prevent overgrazing. This includes the entirety or significant portions of a pasture area. Users of the Pasture Planning Tool should be prepared to discuss and define these procedures with their clients.

The Nutrient Calculator must be used with Vegetation Management and on pastures when there are no current soil tests or stocking density exceeds 2 animal units per acre.

Grazing Mgmt.

Vegetation Mgmt.

Overview

Considerations:

- Planning for forage intake
- Typical exercise lot situation
- Begin producer discussion by demonstrating nutrient balance
- Document 528/alternatives for grazing plan
- Plan Continuous or Rotational options

Getting Started

1. Open the tool- this is what you'll see. "Enable Content" and save a version for your files (see page 4).
2. Familiarize yourself with the new format- tabs at the top, a "ribbon" of buttons for each tab and instructions for each section that can help you navigate throughout the tool.
3. Three key tabs: Pasture Tool General, Graze Mgmt, Veg. Mgmt...you can move between sheet tabs and/or along the Ribbon within each tab without losing work.
4. Follow the graphic instructions on the next page to begin your input for the Pasture Planning Tool...then move to step 5 on page 5.

Note the "Tabs" and "Ribbon" at the top

**NATURAL RESOURCES CONSERVATION SERVICE
PASTURE PLANNING TOOL**

USDA
United States Department of Agriculture

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Client Name: _____
County: _____
Tract No.: _____
Planned By: _____
Date: _____

A prescribed grazing system consists of properly managed stands of forage crops that are managed in such a way as to protect the natural resources. Stocking rates and grazing management are linked together to accomplish the objectives.

DEFINITION
The controlled harvest of vegetation with grazing or browsing animals, managed with the intent to achieve a specified objective.

PURPOSES
This practice is to be applied as part of a conservation management system to maintain or improve the following:

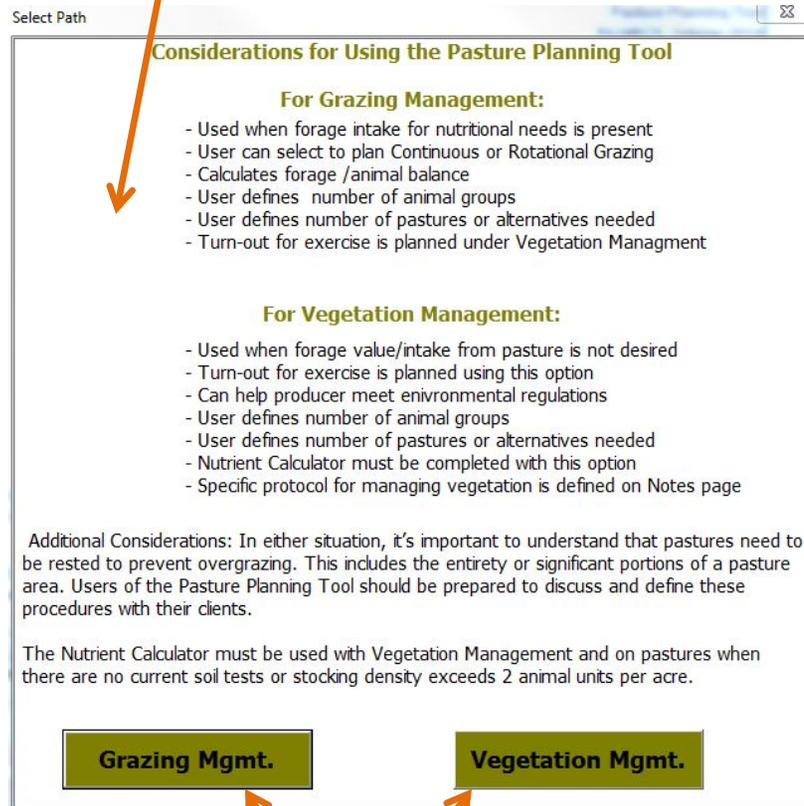
- Desired Species Composition and Vigor of Plant Communities
- Quantity and Quality of Forage for Grazing and Browsing Animals' Health and Productivity
- Surface and/or Subsurface Water Quality and Quantity
- Riparian and Watershed Function
- Accelerated Soil Erosion and Soil Condition
- Quantity and Quality of Food and/or Cover Available for Wildlife
- Fine Fuel Loads to Achieve Desired Conditions

RESOURCE MANAGEMENT SYSTEM
Prescribed grazing systems are a combination of practices installed and managed to protect the forage resources to reduce erosion, improve water quality and quantity, improve air quality, conserve energy, complement and/or improve wildlife habitat, and promote economic viability of producers.

OPERATION AND MAINTENANCE
Apply the prescribed grazing plan annually, adjusting as conditions require. Maintain travel surfaces, stream

The screenshot displays the Microsoft Excel interface for the 'PA Pasture Planning Tool-v1.xlsm'. The ribbon includes 'File', 'Home', 'Insert', 'Page Layout', 'Formulas', 'Data', 'Review', 'View', 'Acrobat', and custom tabs: 'Pasture Tool General', 'Graze Mgmt', and 'Veg. Mgmt'. The 'Pasture Tool General' tab is active, showing options like 'Cover Sheet', 'Plan Path', 'Notes', 'Instr-Cover Sheet', 'Instr-Plan Path', 'Instr-Forage Needs', 'Instr-Veg. Mgmt', 'Instr-Nutr. Calc.', 'Instr-Print', 'Print Sheet', 'Veg. Mgmt. Report', and 'Graze Report'. A yellow 'Protected View' warning bar is at the top, with an 'Enable Editing' button. Below it is a 'Security Warning' bar with an 'Enable Content' button. The main content area features the USDA logo and 'United States Department of Agriculture'. A blue box contains 'Pasture Planning Tool Credits' and a list of names. A light blue callout box with red text says: '1. When first opening the Tool, if you see any of these notifications, you must enable both for the Tool to function properly'. Below the credits is a form with input fields for 'Client Name:', 'County:', 'Tract No.:', and 'Planned By:'. Another light blue callout box with red text says: '2. Fill out information section; mark the purposes for planning or documenting Prescribed Grazing'. Below the form is a 'PURPOSES' section with a list of checkboxes: 'Desired Species Composition and Vigor of Plant Communities', 'Quantity and Quality of Forage for Grazing and Browsing Animals' Health and Productivity', 'Surface and/or Subsurface Water Quality and Quantity', 'Riparian and Watershed Function', 'Accelerated Soil Erosion and Soil Condition', 'Quantity and Quality of Food and/or Cover Available for Wildlife', and 'Fine Fuel Loads to Achieve Desired Conditions'. A third light blue callout box with red text says: '3. Click Print Sheet if desired then click on Plan Path', with arrows pointing to the 'Print Sheet' and 'Plan Path' buttons in the ribbon. The bottom of the screen shows the status bar with 'Ready' and '100%' zoom.

- The **cover sheet** is your starting point: Gives definition, purposes and items to consider when planning pasture and grazing systems.
- When you hit “Print Sheet” this is what you’ll see.
- If you select “Plan Path” this is what you’ll see.



- Once you decide which “**path**” you will choose to build your plan, click on the corresponding button. REMEMBER: Click Grazing Mgmt. *where livestock will be consuming pasture for daily forage DM intake*; Click Vegetation Mgmt. *where the goal is to manage vegetation for environmental compliance or no planned nutritional intake*. For our example, we’re starting with Vegetation Mgmt.

Vegetation Management

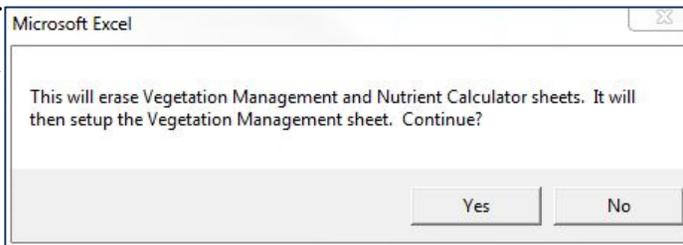
- Purpose
 - When forage value/intake from pasture is not desired
 - Turn-out for exercise is planned
 - Help producer meet environmental regulation
- Functions
 - To be able to turn livestock out and meet the 3 in. minimum cover requirement (State Reg.)
- Goal in using this sheet
 - Make recommendations for potential grazing days available, usable acres, total forage from pasture and seasonal balance.

Step by Step:

1. After you select Vegetation Mgmt. as the Plan Path;
2. Reset the worksheet if there are values present (for a new project);
3. Fill in the number of alternatives and number of groups;
4. Click Setup VM Sheet (see next page); you will see the message below- click yes.

Note: Vegetation Management is designed for planning pasture management where NO dry matter intake is coming from pasture. DO NOT use Vegetation Management for planning or documenting Continuous Grazing.

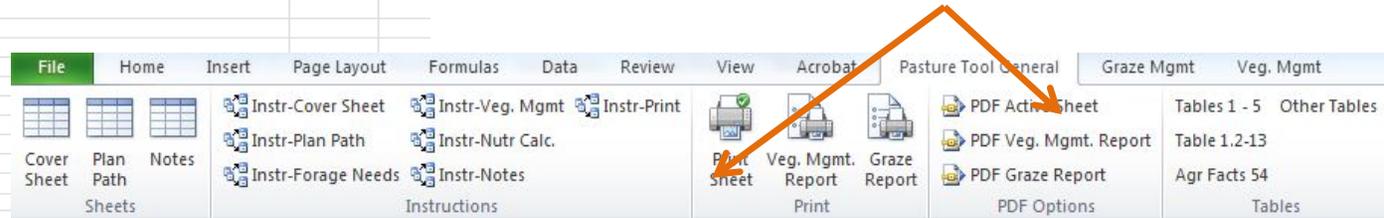
	A	B	C	D	E	F	G
3	Enter the Number of Alternatives/Pastures (Up to 4)				1		
4	Enter the Number of Groups (Up to 4)				1		
6	Name of Alternative/Pasture:						
7	Group Name						
8	Type of Livestock						
9	Number of Livestock						
10	Weight of Livestock (lbs.)						
11	Dry Matter Supplement/Head/Day (lbs.)						
12	Forage Species						
13	Pasture Acres						
14	Start Date						
15	End Date						
16	Days on Pasture	0					
17	Stocking Density (au/acre)	#DIV/0!					
18	Pasture Forage Production (lbs./acre)						
19	Pasture Utilization %	90					
20	Total Forage Produced from Pasture (lbs.)	0					
21	Total Daily Forage Consumed by All Animals from Pasture (lbs.)	0					
22	Total Forage needed from Pasture (lbs.)	0					
23	Season Balance (lbs.) - Surplus or Deficit	0					
24	Potential Grazing Days Available	#DIV/0!					
25	Recommended Acres for Minimal Rest	#DIV/0!					



5. Below is what the sheet will look like when completed for Vegetation Management. Note that this sheet shows two completed blocks: one is the Benchmark and one is the Alternative.

	A	B	C	D	E	F
2						
3	Enter the Number of Alternatives/Pastures (Up to 4)					2
4	Enter the Number of Groups (Up to 4)					1
5						
6	Name of Alternative/Pasture:	benchmark				
7	Group Name	mares				
8	Type of Livestock	Horses				
9	Number of Livestock	20				
10	Weight of Livestock (lbs.)	1100				
11	Dry Matter Supplement/Head/Day (lbs.)	2				
12	Forage Species	KB				
13	Pasture Acres	10				
14	Start Date	04/01				
15	End Date	11/01				
16	Days on Pasture	214				
17	Stocking Density (au/acre)	2.2				
18	Pasture Forage Production (lbs./acre)	600				
19	Pasture Utilization %	90				
20	Total Forage Produced from Pasture (lbs.)	5400				
21						
22	Total Daily Forage Consumed by All Animals from Pasture (lbs.)	40				
23	Total Forage needed from Pasture (lbs.)	8560				
24						
25	Season Balance (lbs.) - Surplus or Deficit	-3160				
26	Potential Grazing Days Available	135.0				
27	Recommended Acres for Minimal Rest	15.9				
28						
29						
30						
31	Name of Alternative/Pasture:	Alternative				
32	Group Name	mares				
33	Type of Livestock	Horses				
34	Number of Livestock	20				
35	Weight of Livestock (lbs.)	1100				
36	Dry Matter Supplement/Head/Day (lbs.)	2				
37	Forage Species	KB/OG				
38	Pasture Acres	10				
39	Start Date	04/01				
40	End Date	11/01				
41	Days on Pasture	214				
42	Stocking Density (au/acre)	2.2				
43	Pasture Forage Production (lbs./acre)	900				
44	Pasture Utilization %	90				
45	Total Forage Produced from Pasture (lbs.)	8100				
46						
47	Total Daily Forage Consumed by All Animals from Pasture (lbs.)	40				
48	Total Forage needed from Pasture (lbs.)	8560				
49						
50	Season Balance (lbs.) - Surplus or Deficit	-460				
51	Potential Grazing Days Available	202.5				
52	Recommended Acres for Minimal Rest	10.6				
53						
54						

6. From here, you can opt to **print or pdf the Veg. Mgmt. sheet** (see Ribbon) and file it as documentation for the client's conservation plan, or go back to plan additional options such as Continuous or Rotational Grazing.

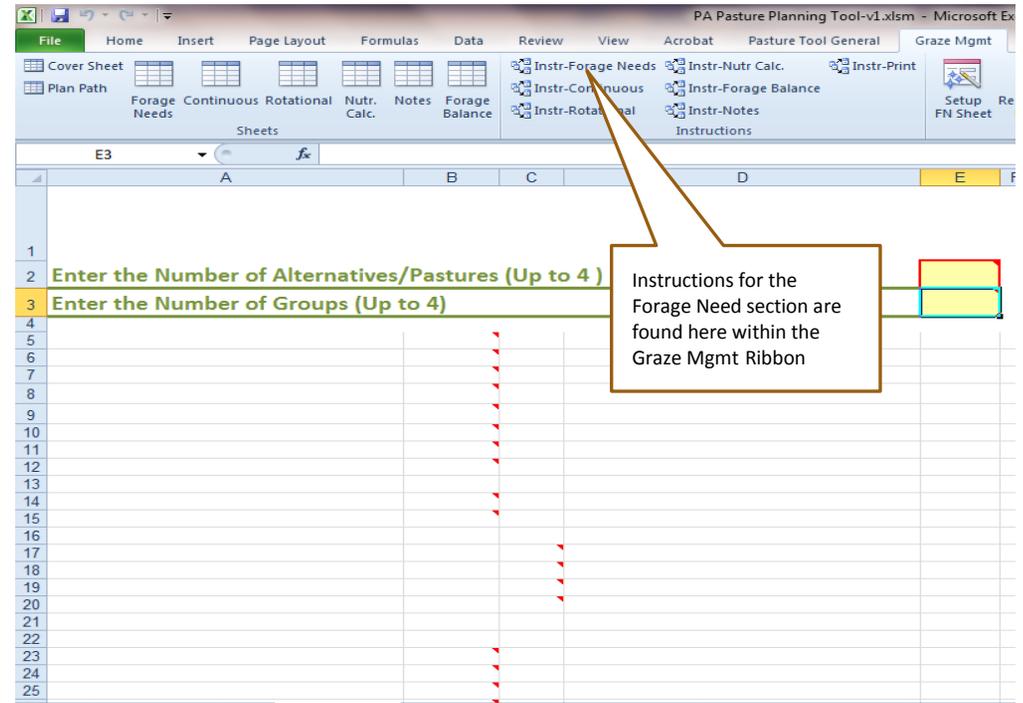


7. After printing or filing the Veg. Mgmt. sheet, click on Nutrient Calculator to figure the balance for each of the planned options. See page 14 for Nutrient Calculator instructions.
8. From here, if you'd like to plan an option or alternative using grazing management (continuous or rotational), go back to Plan Path to select it. That will take you back to the Forage Need sheet.
9. Forage Need will assist you in setting up the framework for grazing management alternatives and help to determine forage/animal balance and planning needs (acre requirements, paddock sizing).
10. See the next section to begin planning for grazing management.

Grazing Management:

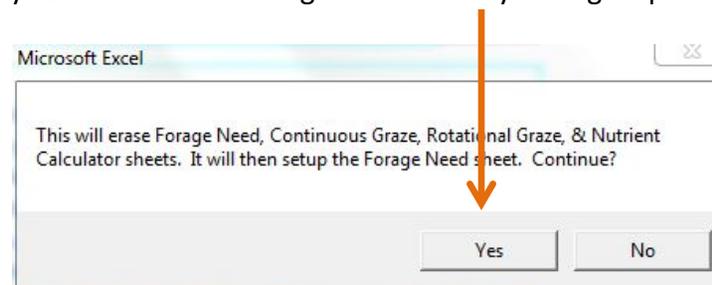
Forage Need-

- Purpose
 - Sets up the framework for Continuous and/or Rotational Grazing
 - Defines the number of pastures/alternatives the planner is evaluating
 - Defines the landowner's animal groups
- Functions
 - Begin planning for forage value as a component of livestock feed/nutrition (either continuous or rotational)
 - Begin planning for grazing management in terms of adequate plant cover (3" or more)
- Goal in using this sheet
 - Bridgework for Continuous and Rotational Grazing to determine Forage/Animal Balance
 - Calculates acres requirements and paddock sizes
- Helpful Hints
 - Think ahead- how many pastures or alternatives will you plan?
 - Options- Animal groups on 1 pasture with multiple alternatives; Separate animal groups on separate pastures; Animal group with multiple pasture settings



Step by Step:

1. Reset the worksheet if there are values present (for a new project);
2. After you clear and reset the FN sheet, fill in the number of pastures/alternatives and groups (top 2 yellow boxes);
3. Click Setup FN Sheet (see next page); you will see the message below- click yes. Page 9 provides detailed graphic instructions to follow.



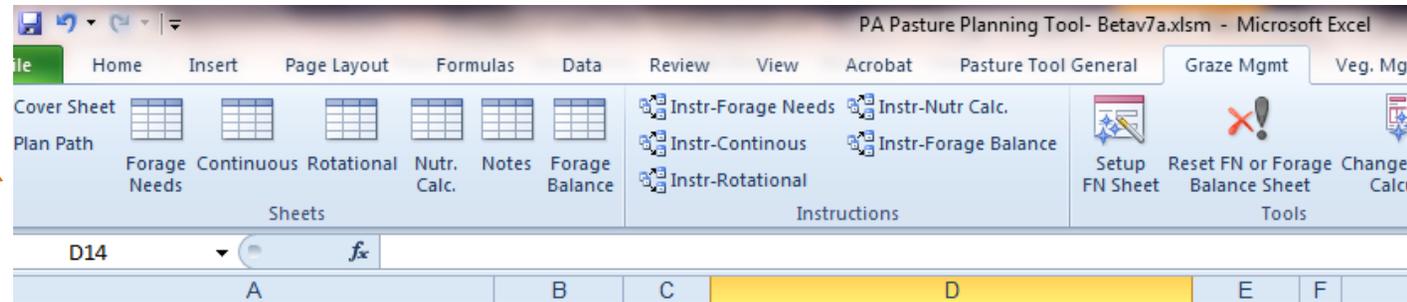
4. Follow the instructions provided here then proceed to the next page.

The screenshot shows the 'PA Pasture Planning Tool- Betav7a.xlsm' in Microsoft Excel. The ribbon includes 'File', 'Home', 'Insert', 'Page Layout', 'Formulas', 'Data', 'Review', 'View', 'Acrobat', 'Pasture Tool General', 'Graze Mgmt', and 'Veg. Mgmt'. The 'Graze Mgmt' ribbon has buttons for 'Setup FN Sheet', 'Reset FN or Forage Balance Sheet', and 'Change Nutrient Calculator'. The spreadsheet has columns A-F and rows 1-21. Rows 2 and 3 are highlighted in green with instructions: 'Enter the Number of Alternatives/Pastures (Up to 4)' and 'Enter the Number of Groups (Up to 4)'. Cells E2 and E3 contain the value '1'. A yellow block covers rows 5-20 in column B. A blue box highlights cell B9. Four callout boxes provide instructions: 1. 'Reset the work sheet if there are values present when the Pasture Tool is opened for a new project' (points to 'Reset FN or Forage Balance Sheet'). 2. 'Fill in the number of pastures or alternatives - Then add the number of groups per pasture or alternative and click Setup FN Sheet' (points to E2 and E3). 3. 'Fill in the yellow blocks for all animal groups included per alternative/pasture' (points to the yellow block in column B). 4. 'When finished, choose whether you would like to run Continuous Grazing or Rotational Grazing and select the corresponding button' (points to the 'Rotational' button on the 'Sheets' ribbon).

Row	Column A	Column B	Column C	Column D	Column E	Column F
1						
2	Enter the Number of Alternatives/Pastures (Up to 4)				1	
3	Enter the Number of Groups (Up to 4)				1	
4						
5	Name of Alternative/Pasture:					
6	Group Name					
7	Type of Livestock					
8	Number of Livestock					
9	Weight of Livestock (lbs.)					
10	% Intake of Body Weight					
11	Dry Matter Supplement/Head/Day (lbs.)					
12	Total Supplement in Dry Matter in Lbs.		0			
13						
14	Total Daily D.M. (lbs.)		0			
15	Total Forage Needed from Pasture (lbs.)		0			
16						
17	Total Group Forage Needs From Pasture (lbs.)		0			
18	Start Date					
19	End Date					
20	Days on Pasture		0			
21						

Continuous Grazing example (*Rotational Grazing example, page 19):

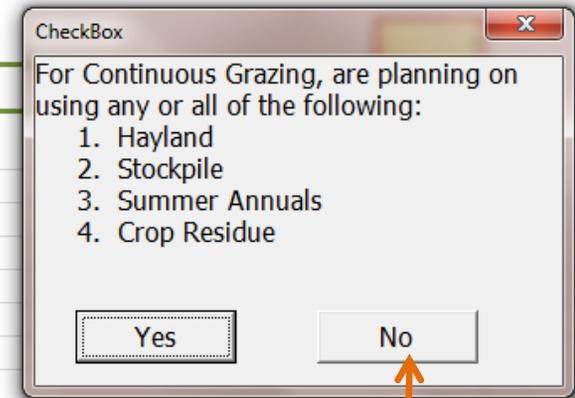
5. After following the instructions on the previous page, the sheet will look like this.



6. We're going to select "No" in the checkbox that appears for this example. For assistance in planning for the options given, please consult your area grazing specialist.

Enter the Number of Alternatives/Pastures (Up to 4)
Enter the Number of Groups (Up to 4)

Name of Alternative/Pasture:	Bnchmrk
Group Name	Cows
Type of Livestock	Beef
Number of Livestock	10
Weight of Livestock (lbs.)	1400
% Intake of Body Weight	2.5
Dry Matter Supplement/Head/Day (lbs.)	0
Total Supplement in Dry Matter in Lbs.	0
Total Daily D.M. (lbs.)	350
Total Forage Needed from Pasture (lbs.)	350
Total Group Forage Needs From Pasture (lbs.)	350
Start Date	04/15
End Date	09/30
Days on Pasture	168



7. The sheet will set up as shown on the next page. Follow the instructions provided on the next two pages to move through the sheets for continuous grazing.

Select Yes if planning these options and need a cumulative forage balance; Select No if none of these options are being planned; we're going to select No for our example.

PA Pasture Planning Tool- Betav7a.xlsm - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat Pasture Tool General Graze Mgmt Veg. Mgmt

Cover Sheet Plan Path Forage Needs Continuous Rotational Nutr. Calc. Notes Forage Balance Instr-Forage Needs Instr-Continous Instr-Rotational Instr-Nutr Calc. Instr-Forage Balance Setup FN Sheet Reset FN or Forage Balance Sheet Change Nutrient Calculator Print St Graze F

E13

1 **Continuous Grazing- Forage Balance & Grazing Days Available**

2		
3	Name of Alternative/Pasture:	Bnchmrk
4	Group Name	Cows
5	Pasture Acres	10
6	Pasture Forage Production (lbs./acre)	3000
7	Stocking Density (au/acre)	1.4
8	Pasture Utilization %	60
9	Total Available Forage (lbs.)	18000
10	Forage Species	OG RC
11	Total Daily Forage Needed For All Groups (lbs.)	350
12	Start Date	04/15
13	End Date	09/30
14	Days on Pasture	168
15	Total Pasture Forage Needed for Season (lbs.)	58800
16	Season Balance (lbs.) - Surplus or Deficit	-40800
17		
18		
19	Grazing Days Available	51
20		
21	Acres Required	32.7
22		

Click here to edit info entered for Forage Need. Note- you can move between sheets without losing work.

Under Continuous Grazing, as stocking rate increases, so does pasture utilization because the livestock are lacking feed and may begin to consume otherwise unpalatable forage.

Recommended pasture forage production levels:
 Excellent management: 4000
 Good management: 3000
 Poor management: 2000

1 Fill in Pasture acres, production level, and forage species

2 The tool will calculate the season balance and estimate the grazing days available for the grazing season as well as the number of acres required to meet the forage needs from pasture

3 From here, click on the Nutrient Calculator button or if you would like to use rotational grazing as an alternative, you can click the Rotational button

4 If using Continuous Grazing as an alternative to the grazing system, you must click "Change Nutrient Calculator" to move forward; if you need to save your work, do "Save as" at this point and file the option.

PA Pasture Planning Tool- Betav7a.xlsm - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat Pasture Tool General Graze Mgmt Veg. Mgmt

Cover Sheet Plan Path Forage Needs Continuous Rotational Nutr. Calc. Notes Forage Balance Instr-Forage Needs Instr-Continuous Instr-Rotational Instr-Forage Balance Instr-Forage Balance Setup FN Sheet Reset FN or Forage Balance Sheet Change Nutrient Calculator

C3 fx ='Forage Need'!B5

Under Continuous Grazing, as stocking rate increases, so does pasture utilization because the livestock are lacking feed and may begin to consume otherwise unpalatable forage.

Recommended pasture forage production levels:

Continuous Grazing- Forage Balance & Grazing

1	Continuous Grazing- Forage Balance & Grazing	
2		
3	Name of Alternative/Pasture:	Bchmrk
4	Group Name	Cows
5	Pasture Acres	10
6	Pasture Forage Production (lbs./acre)	3000
7	Stocking Density (au/acre)	1.4
8	Pasture Utilization %	60
9	Total Available Forage (lbs.)	18000
10	Forage Species	OG RC
11	Total Daily Forage Needed For All Groups (lbs.)	350
12	Start Date	04/15
13	End Date	09/30
14	Days on Pasture	168
15	Total Pasture Forage Needed for Season (lbs.)	58800
16		
17	Season Balance (lbs.) - Surplus or Deficit	-40800
18		
19	Grazing Days Available	51
20		
21	Acres Required	32.7

Nutrient Calculator Path

Select one of the following available options to base the Pasture Nutrient Calculator upon. Options are only available if they have been started.

Continuous Graze Rotational Graze Vegetation Management

Click on the option you are working with to move forward to the Nutrient Calculator; Note- only the available paths will be active

Nutrient Calculator

Purpose

- Estimate nutrient balance on pasture, which can also include other applied N, P, and K inputs
- Economic considerations for the value of manure that grazing livestock add to the system

Function

- Remember to do a SAVE AS between planning alternatives
- For this example, we're referring back to the Vegetation Management example/scenario from page 8.

Helpful Hints

- Production is in *pounds per acre*
- Use table 1.2-13 for manure production and values
- Economic value is optional, will run without it
- Groups go across the page (4), alternatives go down the page (4).
- Remember, yellow boxes for input, green for output.
- In addition, when in doubt contact your area grazing specialist.

PA Pasture Planning Tool- Betav7a.xlsm - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat Pasture Tool General Graze Mgmt Veg. Mgmt

Instr-Cover Sheet Instr-Nutr Calc. Instr-Plan Path Instr-Veg. Mgmt

Cover Sheet Plan Path Veg. Mgmt Sheets Nutr. Calc. Notes

Setup VM Sheet Reset VM Sheet Change Nutrient Calculator

Print Sheet Veg. Mgmt. Report PDF Active Sheet PDF Veg. Mgmt. Report

Print PDF Options

E3 fx 1

	A	B	C	D	E	F	G
3	Enter the Number of Alternatives/Pastures (Up to 4)				1		
4	Enter the Number of Groups (Up to 4)				1		
5							
6	Name of Alternative/Pasture:						
7	Group Name						
8	Type of Livestock						
9	Number of Livestock						
10	Weight of Livestock (lbs.)						
11	Dry Matter Supplement/Head/Day (lbs.)						
12	Forage Species						
13	Pasture Acres						
14	Start Date						
15	End Date						
16	Days on Pasture	0					
17	Stocking Density (au/acre)	#DIV/0!					
18	Pasture Forage Production (lbs./acre)						
19	Pasture Utilization %	90					
20	Total Forage Produced from Pasture (lbs.)	0					
21							
22	Total Daily Forage Consumed by All Animals from Pasture (lbs.)	0					
23	Total Forage needed from Pasture (lbs.)	0					
24							
25	Season Balance (lbs.) - Surplus or Deficit	0					
26	Potential Grazing Days Before Rest Required	#DIV/0!					
27	Recommended Acres for Minimal Rest	#DIV/0!					
28							

Nutrient Calculator Path

Select one of the following available options to base the Pasture Nutrient Calculator upon. Options are only available if they have been started.

Continuous Graze Rotational Graze Vegetation Management

After clicking the Nutrient Calculator button, select Vegetation Management as the scenario in which to run the Nutrient Calculator; Select Yes to clear the calculator when the next box pops up

Step-by-Step

1. There are instruction boxes in the Nutrient Calculator when you open it; please review the introduction and notes before proceeding so you have a good understanding of the reasoning behind nutrient balance as well as implications of fertilizer use and grazing animals on the same fields.

Pasture Nutrient Calculator

Introduction

The Pennsylvania Nutrient Management Program's pasture nutrient calculator is to be used to evaluate the potential for excess nutrients to degrade water quality on pasture systems that have a pasture stocking rate greater than 1 AU/Acre and no mechanical applications of manure. If the pasture nutrient calculator shows that Total Available Nitrogen per acre does not exceed net nitrogen requirements to produce forage, then there is no water quality problem from excess N. If the Total Available Nitrogen per acre exceeds the Net N requirements, then adjust the pasture stocking rate downward until meeting or below the required nitrogen level for the forage.

Use the P Index screening tool to determine if there is a need to further evaluate water quality concerns from excess phosphorous. If part B of the P Index needs to be determined follow the pasture management guidance for the P Index Rating found. Pasture management guidance for the P Index can be found in Exhibit 4 of the Planning Guidance for Treating Concentrated Livestock Areas.

This calculator uses book values to estimate the nutrients coming from manure deposited by the animals grazing on the pasture or confined to a concentrated livestock area. On pastures where additional nutrients from mechanical applications of manure are applied follow the procedure for evaluating the excess nutrients degrading water quality concern presented in NRCS practice code 590 and the Pennsylvania Nutrient Management Program. Code 590 and the PA NMP balance nutrients according to soil test data.

For grazing systems where excessive levels of potassium are a concern for the nutritional needs and production goals of the kinds and classes of livestock in the system, soil and/or forage testing should be conducted to evaluate if a problem exists or not.

The pasture nutrient calculator has an information input section. The green shaded boxes show the calculations. The pasture nitrogen balance worksheet is included as it presents the formulas used in deriving the nitrogen calculations in the shaded boxes. Links to the appropriate Agronomy Guide Table are provided in the calculator and are also referenced again in the pasture nitrogen balance worksheet. As the Agronomy Guide is updated periodically, it is recommended to check the links to be sure that the current values are being used. For example only, the current version of the tables are provided in this tool.

THE ECONOMIC IMPLICATION OF GOOD MANAGEMENT OF N, P & K GENERATED BY GRAZING LIVESTOCK.

The following calculations give an estimate of the dollar value of the total manure nutrients generated by the grazing livestock. They are derived from the cost of equivalent amounts of some of the more commonly used fertilizer materials, e.g. urea, triple superphosphate and muriate of potash. While the values don't consider differences in availability, they are meant to show the economic significance of the nutrients deposited by the livestock. With good distribution, timing and proper setbacks farmers may lower resource degradation, and the costs associated with importing lost nutrients.

2. This is what the blank sheet will look like...

Information Input	
Name of Alternative/Pasture:	
Number of Animals	
Weight	
Daily Manure Production	
Total Days	
Hours Per Day	
Manure N Analysis	
Manure P2O5 Analysis	
Manure K Analysis	
Acres	
Expected Yield (pounds/acre)	
Planned Fertilizer N (lb/acre)	
Residual Manure N (lb/acre)	
N Availability	
Planned Fertilizer P2O5 (lb/acre)	
Planned Fertilizer K (lb/acre)	
N Crop Removal (lb/Acre)	0.0
Total Pounds of Available Nitrogen	0.0
Total Pounds of Available N/Acre	0.0
Balance N (lb/Acre)	0.0
Value of N from Manure	\$0.00
Value of Urea per ton	<input type="text"/>
=	\$0.00 per lb.
P2O5 Crop Removal (lb/Acre)	0.0
Total Pounds of P2O5 produced	0.0
Total Pounds of P2O5 produced/Acre	0.0
Balance P2O5 (lb/Acre)	0.0
Value of P from Manure	\$0.00
Value of P fertilizer per ton	<input type="text"/>
=	\$0.00 per lb.
K Crop Removal (lb/Acre)	0.0
Total Pounds of K produced	0.0
Total Pounds of K produced/Acre	0.0
Balance K (lb/Acre)	0.0
Value of K from Manure	\$0.00
Value of Potash per ton	<input type="text"/>
=	\$0.00 per lb.

Note:

If the balance of a particular nutrient shows up as a **-number**, this means that the livestock are depositing nutrients above the expected update of the vegetation in the pasture.

After completing the Pasture Nutrient Calculator, proceed to the Notes page to complete the Pasture Planning Tool.

This is where the user will define the client's goals and objective, develop a contingency statement, identify management for sensitive areas, and list any planned practices or enhancements.

3. Follow the graphic steps provided here then proceed to the next page.

Information Input

30					
31					
32	Name of Alternative/Pasture:				
33	Number of Animals				
34	Weight				
35	Daily Manure Production				
36	Total Days				
37	Hours Per Day				
38	Manure N Analysis				
39	Manure P2O5 Analysis				
40	Manure K Analysis				
41	Acres				
42	Expected Yield (pounds/acre)				
43	Planned Fertilizer N (lb/acre)				
44	Residual Manure N (lb/acre)				
45	N Availability				
46	Planned Fertilizer P2O5 (lb/acre)				
47	Planned Fertilizer K (lb/acre)				
48					
49					
50	N Crop Removal (lb/Acre)	0.0			
51	Total Pounds of Available Nitrogen	0.0			
52	Total Pounds of Available N/Acre	0.0			
53	Balance N (lb/Acre)	0.0			
54	Value of N from Manure	\$0.00	Value of Urea per ton		\$0.00 per lb.
55					
56	P2O5 Crop Removal (lb/Acre)	0.0			
57	Total Pounds of P2O5 produced	0.0			
58	Total Pounds of P2O5 produced/Acre	0.0			
59	Balance P2O5 (lb/Acre)	0.0			
60	Value of P from Manure	\$0.00	Value of P fertilizer per ton		\$0.00 per lb.
61	K Crop Removal (lb/Acre)	0.0			
62	Total Pounds of K produced	0.0			
63	Total Pounds of K produced/Acre	0.0			
64	Balance K (lb/Acre)	0.0			
65	Value of K from Manure	\$0.00	Value of Potash per ton		\$0.00 per lb.

Instructional Callouts:

- Fill in Alternative/Pasture, Animal Numbers and Weight
- Fill in daily manure production from Table 1.2-13
- Fill in days on pasture, hours per day on pasture
- Fill in manure nutrient values from Table 1.2-13
- Enter number of acres and expected pasture yield
- Fill in any planned fertilizer rates for N, P, and/or K
- Enter N availability (0.2) and select Residual N from drop-down
- Balance of N, P, and K. Negative value means over-application by livestock
- Estimated dollar value of nutrients applied by livestock
- Optional: Fill in value of N, P, and K. Use current value of that fertilizer

4. This is what the sheet will look like after you input the information.
5. Note that it gives you the residual manure as a result of grazing as well as the value of N, P or K from the grazing management- this can be a discussion point for you when presenting to the landowner.
6. If you'd like to offer additional producer alternatives such as Continuous or Rotational Grazing, do a "Save as" here for the Veg. Mgmt option then go back to Plan Path and select grazing management to run through the process again for grazing options.
7. In addition, if you intend to save the files or a working copy in Toolkit, please select the pdf option, as the files for the Nutrient Calculator will be quite large.
8. If this is your last step (just planning for Veg. Mgmt), the next phase of developing your plan/report is the Notes section (see page 22).

Name of Alternative/Pasture:	1			
Number of Animals	10	15		
Weight	1200	150		
Daily Manure Production	90	40		
Total Days	200	200		
Hours Per Day	24	24		
Manure N Analysis	11	23		
Manure P2O5 Analysis	7	8		
Manure K Analysis	10	20		
Acres	15			
Expected Yield (pounds/acre)	6500			
Planned Fertilizer N (lb/acre)	0			
Residual Manure N (lb/acre)	20.0			
N Availability	0.2			
Planned Fertilizer P2O5 (lb/acre)	0			
Planned Fertilizer K (lb/acre)	0			
N Crop Removal (lb/Acre)	162.5			
Total Pounds of Available Nitrogen	279.0			
Total Pounds of Available N/Acre	18.6			
Balance N (lb/Acre)	123.9			
Value of N from Manure	\$212.2	Value of Urea \$700.0 per ton	\$700.0	per \$0.76lb.
P2O5 Crop Removal (lb/Acre)	48.8			
Total Pounds of P2O5 produced	828.0			
Total Pounds of P2O5 produced/Acre	55.2			
Balance P2O5 (lb/Acre)	-6.5			
Value of P from Manure	\$486.0	Value of P fertilizer per ton	\$540.0	per \$0.59lb.
K Crop Removal (lb/Acre)	162.5			
Total Pounds of K produced	1260.0			
Total Pounds of K produced/Acre	84.0			
Balance K (lb/Acre)	78.5			
Value of K from Manure	\$493.5	Value of Potash per ton	\$470.0	per \$0.39lb.

*Rotational Grazing Example:

1. Follow the graphic steps to the right to plan for rotational grazing as an option.

2. This is what the sheet will look like.

3. If planning more than one alternative (or benchmark and alternative), go back to Forage Needs to change the information (number of alternatives and groups); Click on the Tools tab (*far right side of the Graze Mgmt ribbon*) and clear the Forage Needs sheet to start over.

4. See the next page for an example of what that would look like after you hit "yes" to go back and plan multiple alternatives together.

PA Pasture Planning Tool- Beta7a.xlsm - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat Pasture Tool General Graze Mgmt Veg. Mgmt

Cover Sheet Plan Path Forage Needs Continuous Rotational Nutr. Calc. Notes Forage Balance Instr-Forage Needs Instr-Continous Instr-Rotational Instr-Nutr Calc. Instr-Forage Balance Instr-Notes Instr-Print

Setup FN Sheet Reset FN or Balance Sheet Change Nutrient Calculator

L1

1 **Rotational Grazing- Forage Balance and Paddock Information**

3	Name of Alternative/Pasture:	Bnchmrk
4	Forage Species	OG
5	Acres Available	25
6	Stocking Density (au/acre)	0.6
7	Pasture Forage Production (lbs./acre)	6000
8	Start Date	04/15
9	End Date	09/30
10	Days on Pasture	168
11	Days per Paddock	3
12	Pasture Utilization %	75
13	Available Forage (lbs.)	4500.0
14		
15	Forage Needed/Day (lbs.)	350
16	Days per Paddock	3
17	Forage/Paddock (lbs.)	1050
18	Forage Available Per Rotation (lbs./paddock)	900
19	Paddock Size	1.2
20	Number of Paddocks Required	
21	15 day rest	6
22	30 day rest	11
23	45 day rest	16
24	60 day rest	21
25	Acres needed	
26	15 day rest	7.0

1 Click here if you need to go back and edit info entered in Forage Needs then click Rotational to go back to this page.

2 Fill in Pasture acres, production level, and forage species.

3 The tool will calculate the season balance and estimate the grazing days available for the season as well as the number of acres required to meet the forage needs from pasture.

4 From here, click on the Nutrient Calculator button; if Rotational Grazing is an alternative, you'll need to click "Change Nutrient Calculator" before continuing

5 An optional sheet to plan a Year Round Forage budget is available for use; consult your Grazing Specialist for more information

File Home Insert Page Layout Formulas Data Review View Acrobat Pasture Tool General Graze Mgmt Veg. Mgmt

Cover Sheet Plan Path Forage Needs Continuous Rotational Nutr. Calc. Notes Forage Balance Instr-Forage Needs Instr-Continous Instr-Rotational Instr-Nutr Calc. Instr-Forage Balance Instr-Notes Instr-Print

Setup FN Sheet Reset FN or Balance Sheet Change Nutrient Calculator

Enter the Number of Alternatives/Pastures (Up to 4)

2

Enter the Number of Groups (Up to 4)

2

Name of Alternative/Pasture:	Pasture	Group Name	Goat
Group Name	Beef	Type of Livestock	Does
Type of Livestock	Steers	Number of Livestock	10
Number of Livestock	10	Weight of Livestock (lbs.)	140
Weight of Livestock (lbs.)	900	% Intake of Body Weight	2
% Intake of Body Weight	2.5	Dry Matter Supplement/Head/Day (lbs)	0.25
Dry Matter Supplement/Head/Day (lbs)	2	Total Supplement of Dry Matter in Lbs	2.5
Total Supplement in Dry Matter in Lbs	20		
		Total Daily D.M. (lbs.)	28
Total Daily D.M. (lbs.)	225	Total Forage Needed from Pasture (lb	25.5
Total Forage Needed from Pasture (lb	205		
		Total Group Forage Needs From Pasture (lbs.)	231
Total Group Forage Needs From Pasture (lbs.)	231	Start Date	05/01
Start Date	05/01	End Date	####
End Date	####	Days on Pasture	152
Days on Pasture	152		

5. Enter the information in the yellow blocks (green is output!)

6. After inputting the information, click on Rotational Grazing as outlined above (when in doubt, hit the Instructions in the ribbon!) to go to the sheet on the next page.

Name of Alternative/Pasture:	Hay	Group Name	Goat
Group Name	Beef	Type of Livestock	Does
Type of Livestock	Steers	Number of Livestock	10
Number of Livestock	10	Weight of Livestock (lbs.)	140
Weight of Livestock (lbs.)	900	% Intake of Body Weight	2
% Intake of Body Weight	2.5	Dry Matter Supplement/Head/Day (lbs)	0.25
Dry Matter Supplement/Head/Day (lbs)	2	Total Supplement of Dry Matter in Lbs	2.5
Total Supplement of Dry Matter in Lbs	20		
		Total Daily D.M. (lbs.)	28
Total Daily D.M. (lbs.)	225	Total Forage Needed from Pasture (lb	25.5
Total Forage Needed from Pasture (lb	205		
		Total Group Forage Needs From Pasture (lbs.)	231
Total Group Forage Needs From Pasture (lbs.)	231	Start Date	07/15
Start Date	07/15	End Date	08/15
End Date	08/15	Days on Pasture	31
Days on Pasture	31		

Rotational Grazing- Forage Balance and Paddock Information

Pasture		Hay	
Name of Alternative/Pasture:	Pasture	Name of Alternative/Pasture:	Hay
Forage Species	OG R.CI	Forage Species	OG
Acres Available	10	Acres Available	6
Stocking Density (au/acre)	1.0	Stocking Density (au/acre)	1.7
Pasture Forage Production (lbs./acre)	6000	Pasture Forage Production (lbs./acre)	4000
Start Date	05/01	Start Date	07/15
End Date	09/30	End Date	08/15
Days on Pasture	152	Days on Pasture	31
Days per Paddock	3	Days per Paddock	3
Pasture Utilization %	75	Pasture Utilization %	75
Available Forage (lbs.)	4500.0	Available Forage (lbs.)	3000.0
Forage Needed/Day (lbs.)	230.5	Forage Needed/Day (lbs.)	230.5
Days per Paddock	3	Days per Paddock	3
Forage/Paddock (lbs.)	691.5	Forage/Paddock (lbs.)	691.5
Forage Available Per Rotation (lbs./paddock)	900	Forage Available Per Rotation (lbs./paddock)	600
Paddock Size	0.8	Paddock Size	1.2
Number of Paddocks Required		Number of Paddocks Required	
15 day rest	6	15 day rest	6
30 day rest	11	30 day rest	11
45 day rest	16	45 day rest	16
60 day rest	21	60 day rest	21
Acres needed		Acres needed	
15 day rest	4.6	15 day rest	6.9
30 day rest	8.5	30 day rest	12.7
45 day rest	12.3	45 day rest	18.4
60 day rest	16.1	60 day rest	24.2
Season Feed Bal. after Main Alternative/Pasture	9964		
Season Feed Bal. after 2nd Alternative/Pasture	20818.5		

7. Fill in the yellow blocks to get your results as shown to the left.

8. The next step is the Nutrient Calculator ([back to page 15](#))

Notes Section

1. The final part of the plan/report for pasture land use is the notes section.

2. This is where you provide a narrative description for the plan, which can also be used to guide the client in decision making.

3. Fill out the Client's Goals/Objectives, Contingency Statement, Sensitive Areas and Treatment, and Planned Practices (See next two pages for examples of each).

4. The narrative in each notes section should be specific and directly related to the farm, tract, and fields you are planning the options/alternatives for.

5. Please review the instructions in the bright yellow box to the right of each of the notes section input boxes.

6. There are additional instructions for the Contingency section in EFOTG, which is linked directly from the green button to the right. NOTE: having a Contingency Statement for periods of drought, wet weather, seasonal forage fluctuations, etc. is *required*.

PA Pasture Planning Tool- Betav7.xlsm - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat Pasture Tool General Graze Mgmt Veg. Mgmt

Cover Sheet Plan Path Veg. Mgmt Nutr. Calc. Notes

Instr-Cover Sheet Instr-Nutr Calc. Instr-Plan Path Instr-Veg. Mgmt

Setup VM Sheet Reset VM Sheet Change Nutrient Calculator

Print Sheet Veg. Mgmt. Report PDF Active Sheet PDF Veg. Mgmt. Report

Print PDF Options

K18

1 Client Goals/Objectives:

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23 Contingency Statement:

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State the client's goals/objectives as well as any other information to help define the operation, i.e., water access, hours of turn-out, etc.

Once completed with all sections, you can print the entire report or each page separately; additionally, you can save the report or each page as a PDF

To complete your documentation of 528 for the pasture land units, attach any necessary maps or other supporting documentation and place it in the Customer's folder

Consult Section IV of PA EFOTG in the 528- Prescribed Grazing Folder for guidance on developing a Contingency Statement.

This is required for all conservation plans documenting grazing guidance.

Additional guidance can be found in the PA Conservation and Regulatory Compliance Handbook

Click Here to go to EFOTG

If you would like to plan an alternative such as Continuous or Rotational Grazing, click on Plan Path and then select "Grazing Mgmt"

Client Goals/Objectives:

This Conservation Plan meets Tolerable Soil Loss and reflects the needed treatment to protect pasture resources under the current grazing system. Soil productivity will be maintained or improved. When applied, this system will meet current State and Federal Conservation Requirements for applying Prescribed Grazing to highly erodible land. TXXX in Farm County consists of 18.1 grazeable land acres. Mr. Farmer currently maintains 1 main grazing paddock, Field 2 (which is currently NOT subdivided). All other Fields for TXXX are crop fields (currently planted to corn). Fields 2, 4 and 6 are planned for conversion to rotational grazing except Field 1 which will be in annual corn rotation. Animal groups consist of 5 cow/calf pairs and 5 feeders (primarily steers).

State the client's goals/objectives as well as any other information to help define the operation, i.e., water access, hours of turn-out, etc.

The next two pages (24-25) include examples of statements that could be made within each notes section for your report. *Remember to be specific for the operation you are working with.*

Contingency Statement:

Winter: The 10 acres of existing pasture area on this farm do not provide the forage needed for 50 cows. Animals need to be fed in the barn or proposed stabilized heavy use area. The pasture area will be managed for nutrients rather than forage needs. Livestock should be confined to the barnyard or stabilized heavy use area during winter or during periods of freeze/thaw. If a barnyard or stabilized heavy use area is unavailable, animals should be restricted to a smaller sacrifice area proposed for Field 8. This field has well-drained soils and is located away from the stream. This area will be soil tested once every 3 years and will not be part of the pasture acreage during the growing season and will instead be used for hay production. Do not fertilize sacrifice or winter feeding areas, unless fertilizer is recommended following a soil test analysis.

Consult Section IV of PA EFOTG in the 528- Prescribed Grazing Folder for guidance on developing a Contingency Statement.

This is required for all conservation plans documenting grazing guidance.

Additional guidance can be found in the PA Conservation and Regulatory Compliance Handbook

[Click Here to go to EFOTG](#)

Sensitive Area Location & Treatment / Management Options:

All sensitive areas related to permanent surface waters will be protected. Livestock will not be permitted to have access to flowing surface waters or standing water in wetland, or low areas anytime water is present such as the one present at the lower end of Fields 2 and 4 on TXXX, preventing direct discharge of nutrients into the stream. Animals will not have unrestricted access to heavily wooded areas. Eliminating time on these areas will help maintain the field as productive pasture and prevent soil erosion and other resource concerns from becoming an issue. |

● Rectangular Snip

Define sensitive areas within the grazing unit and how they should be managed.

Be descriptive when calling for exclusion of water courses, wetlands, bodies of water, etc.

Explain buffer widths, periods of livestock restriction or permitted access.

Planned Enhancement / Additional Practices:

Past attempts to remove the persistent Red Root Weed should be continued, until they are successful. This troublesome plant should be removed from the grazing system if possible, since it has no forage value to the cattle and also outcompetes the desirable plants in the pastures. Previous herbicide treatments and reseeding were only marginally successful with normal treatment methods. Once possible option for reseeding the pastures would be to exclude the cattle both during and after the weed, spray, and seeding, until the new seeding has become completely established - for example, confining the cattle earlier than November, so that there is enough time for both a fall weed treatment and reseeding. That way, the new grass would have until the next April to become established - without grazing pressure or weed competition. If the pasture grasses could be improved, their forage value and production would both increase; as a result less supplemental feed (hay and grain) could be used, with no loss in animal weight.

Define additional practices that should be implemented as part of the grazing system.

List practices along with proposed quantities.

If negative balances from the Pasture Nutrient Calculator exist, guidance for addressing those results can be defined here.

Printing your plan/report:

1. May be completed from any page in the tool;
2. Printing options are presented in detail on the right; If you have trouble with your printer, use option 3, create a pdf version then print that document (*some printers may be touchy!*).

The screenshot shows the Microsoft Excel interface for the 'PA Pasture Planning Tool - Betav7a.xlsm'. The ribbon includes 'File', 'Home', 'Insert', 'Page Layout', 'Formulas', 'Data', 'Review', 'View', 'Acrobat', 'Pasture Tool General', 'Graze Mgmt', and 'Veg. Mgmt'. The 'Pasture Tool General' ribbon has several groups: 'Cover Sheet' (Cover Sheet, Plan Path, Notes Sheets), 'Instructions' (Instr-Cover Sheet, Instr-Plan Path, Instr-Forage Needs, Instr-Veg. Mgmt, Instr-Nutr Calc.), 'Print' (Print Sheet), 'Veg. Mgmt. Report Print' (Veg. Mgmt. Report Print), 'Graze Report' (Graze Report), and 'PDF Options' (PDF Active Sheet, PDF Veg. Mgmt. Report, PDF Graze Report). The spreadsheet area shows columns A-M and rows 1-6. The text 'NATURAL RESOURCES CONSERVATION SERVICE PASTURE PLANNING TOOL' is centered in the spreadsheet. The USDA logo is in the bottom right. Three callout boxes with blue borders and red text provide instructions:

- Option 1:** Print each active sheet individually by clicking "Print Sheet" after completing each page.
- Option 2:** After completing all pages for either Vegetation Management or Grazing Management, select Veg. Mgmt Report or Graze Report to print all
- Option 3:** Save each individual page or the selected reports directly as a PDF

Other Resources

1. Tables- the same tables are included as in the previous job sheet, with some updates. They are also available in EFOTG and in the appendix of this instructions document.

2. Yearly Forage/Animal Budget

- Used as *an option* for advanced decision-making in terms of developing various pasture scenarios;
- Livestock demand and stocking levels change during the year, so the budget sheet can help to plan for that;
- Results are qualified as rough estimates and should be documented as such in the notes section of the report;
- See the next three pages for a description of use of the budget;
- If you'd like to use the sheet, please ask your area grazing specialist for assistance.

Table 1. Suggested PA Grazing Stubble Heights and Typical Yields for Forages in a Grazing System

Species	Height In Inches		Quality Yield* (lbs DM/Ac.)		
	Turn In	Removal	Good	Poor	Overgrazed
COOL SEASON GRASS					
Kentucky bluegrass	4 to 6	3	4500	2000	1000
Smooth bromegrass	6 to 8	3 to 4	6500	3000	1500
Orchardgrass	6 to 8	3 to 4	8000	3000	1500
Reed canarygrass	8 to 10	3 to 4	8000	3000	1500
Ryegrass	6	3 to 4	7500	4000	2000
Tall fescue	6 to 8	3 to 4	7000	3500	1750
Timothy	8	4	6500	3000	1500
GRASS-LEGUME MIX					
Alfalfa / Grass	6 to 8	3 to 4	10000	4500	2250
Orchardgrass - ladino clover	6 to 8	3 to 4	6500	3000	1500
Birdsfoot trefoil / Grass	6	3 to 4	8500	3500	1750
Ryegrass - clover	6	3	6000	2750	1375
Tall fescue - ladino clover	6 to 8	3 to 4	6000	3000	1500
Red Clover / Grass	4 to 7	3 to 4	9000	6000	3000
Kentucky bluegrass - white clover	4 to 6	3	3500	1500	750
LEGUMES					
Alfalfa	6	3 to 4	8000	4000	2000
Ladino / White clover	6 to 8	3	2500	1000	500
WARM SEASON GRASS					
Bermudagrass	4	3	5000	2500	
Switchgrass	12 to 18	6 to 8	9000	6000	
ANNUAL CROPS					
Small grains	4 to 6	3	3500	1500	
Sorghum	18 to 30	10	10000	5000	
Brassicas (spring seeding)	12 to 18	6	10000	5000	
Brassicas (summer seeding)	12 to 18	6	9000	4000	
CROP RESIDUES					
Corn Stover		N/A	6000	3000	
Soybean		N/A	2000	1000	

*Select Poor Quality Yields for soil types with low productivity. Select Good Quality Yields for soil types with high productivity. Producer's management should be considered in yield determination as well.

1. This is what the sheet looks like.

2. Detailed instructions are on the next page and in the ribbon.

The screenshot shows the 'PA Pasture Planning Tool-v1.xlsm' spreadsheet in Microsoft Excel. The ribbon includes 'File', 'Home', 'Insert', 'Page Layout', 'Formulas', 'Data', 'Review', 'View', 'Acrobat', 'Pasture Tool General', 'Grazing Mgmt', and 'Veg. Mgmt'. The 'Pasture Tool General' ribbon has buttons for 'Cover Sheet', 'Plan Path', 'Forage Needs', 'Continuous', 'Rotational', 'Nutr. Calc.', 'Notes', 'Forage Balance', 'Instr-Forage Needs', 'Instr-Continuous', 'Instr-Rotational', 'Instr-Nutr Calc.', 'Instr-Forage Balance', and 'Instr-Notes'. The 'Grazing Mgmt' ribbon has 'Tools', 'Print', 'PDF Options', and 'Tables'. The 'Veg. Mgmt' ribbon has a question mark icon. The spreadsheet displays a 'Yearly Livestock/Forage Balance Sheet' for 10/16/2014. The sheet includes input fields for farm information (Farm #, Tract #, Producer, Planner, County), livestock information (Type, Breed, Present Number, Average wt, Intake %, Adj. Factor), and forage availability (Present pasture available, Present hayland available, Other Feeds). Calculated values are shown in green cells, such as 'Total Available' for pasture and hayland, 'Total Other Feeds', 'Total DM needs', and 'Potential Grazing Days'. The spreadsheet also includes sections for 'Estimate of useable corn residue', 'Estimate of useable covercrops for grazing', 'Brassicas for grazing', and 'Estimate of forage available for stockpiling'. The status bar at the bottom shows 'Ready' and a zoom level of 75%.

3. After reviewing the instructions presented here, check out the next page for two examples of this function. *And remember, when in doubt call your area grazing specialist.*

Year-Round Forage Budget Instructions

This sheet is an optional guide. Use it to demonstrate the approximate yearly hay and pasture balance for a set number of livestock. It can help to compare different supplemental pasture scenarios. Green cells will show calculation results.

Yearly Livestock/Forage Balance Sheet

Landuser Name: _____ County: _____ Tract No: 1324
9/21/2014

Farm #: _____ Present pasture available: _____ Acres
Tract #: _____ Ave. yield per acre: _____ lbs.
Producer: _____ **Total Available** 0
Planner: _____ Present hayland available: _____ Acres
County: _____ Hay yield per acre: _____ lbs.
Total Available 0
(Hay yield is actual hay produced and baled)

(Be conservative on yields or base on desired yields and fertilize accordingly)

Livestock Type: _____
Breed: _____
Present Number: 15
Average wt: 1250 lbs.
Intake %: 2.5
Adj. Factor: 1.08
(See Adjustment Factors Table below)

Other Feeds (All Dry Matter weight):
Silage available _____ lbs. 10% % Waste/Loss
Haylage available _____ lbs. 15% % Waste/Loss
Dry Feed available _____ lbs. 5% % Waste/Loss
Other hay available _____ lbs. 15% % Waste/Loss
Total Other Feeds 0

Total DM needs= 506 lbs. per day
Total DM needs= 184781.25 lbs. per year

Estimate of useable **corn residue**:
% Utilization of total Residue = 45
Potential Grazing Days = 212
Corn yield = 125 Bushels
Available Acres = 34

Estimate of useable **covercrops** for grazing: (wheat, ry, etc)
Utilization % _____
Potential Grazing Days = 0
Pounds DM _____ Per Ac. Inch
Grazable Inches _____
Available Acres _____
(Use 200 lbs if unknown)

Brassicas for grazing
Acres _____ Potential grazing days = 0.0
Utilization _____
Yield/Ac lbs. _____
(Use 4000 if yield unknown)

Estimate of **forage available for stockpiling**:
% Utilization _____
Potential Grazing Days = 0
Pounds DM _____ Per Ac. Inch
Grazable Inches _____
Available Acres _____
(Use 250 lbs if unknown)

_____ % Utilization
(Use Table A as guide)

_____ % Hay Loss
(15% Average)

Dry Matter= 107100 lbs. potentially available
Livestock DM balance= -77681.25 lbs.
(Positive number indicates DM needs should be met)

Estimated hay balance with present livestock numbers is: -38.8 Tons
(positive= extra, negative= needed to meet present numbers)

Producer may want to consider increasing/decreasing herd by -6 Animal Units, i.e. cow/calf pairs, stockers
(positive= increase, negative= decrease in number)

Table A Grazing Utilization		Adjustment Factors (Adjusted for calves and metabolism)	
80% Utilization	≤ 1 day rotation	1.08	Spring calving cows
75% Utilization	2-3 day rotation	1.09	Fall calving cows
70% Utilization	4 day rotation	1.00	Stockers
65% Utilization	5 day rotation	1.08	Dairy replacements
60% Utilization	6-14 day rotations	1.00	All others

Use average values for pasture and hayland acres and yields; include any other feeds that are used.

2. If utilized, fill in corn yield, number of acres and utilization....grazing days will be calculated

3. If utilized, fill in cover crop yield (may use grazing stick), number of acres and utilization....grazing days will be calculated

4. If utilized, fill in brassica yield, number of acres and utilization....grazing days will be calculated

5. If utilized, fill in stockpiled yield, grazeable inches, number of acres and utilization....grazing days will be calculated

6. Fill in utilization for main pasture and percent hay loss

Because livestock stocking levels and dry matter requirements vary throughout the year, this balance reflects deficits or surpluses in general terms. The accuracy of this sheet should be considered and reported on the notes page. Actual demand / supply and balance can vary from this result.

1 **Yearly Livestock/Forage Balance Sheet** *****

2
3 Farm #: **6378** Present pasture available: **15** Acres
4 Tract #: **2598** Ave. yield per acre: **6000** lbs.
5 Producer: **John** **Total Available 90000**
6 Planner: **same** Present hayland available: **12** Acres
7 County: **CI** Hay yield per acre: **6000** lbs.
8 **Total Available 72000**

9 Livestock (Hay yield is actual hay produced and baled) yields or bas- desired yield, fertilize accordingly

10 Type: **Beef cows**
11 Breed: **Angus**
12 Present Number: **15** Other Feeds (All Dry Matter weight):
13 Average wt: **1250** lbs. Silage available lbs. **10%** % Waste/Loss
14 Intake %: **2.5** Haylage available lbs. **15%** % Waste/Loss
15 Adj. Factor: **1.08** Dry Feed available lbs. **5%** % Waste/Loss
16 (See Adjustment Factor Table below) Other hay available lbs. **15%** % Waste/Loss
17 **Total Other Feeds 0**

18 Total DM needs: **506** lbs. per day
19 Total DM needs: **184781** lbs. per year

20 Estimate of useable **corn residue**:
21 % Utilization of total Residue = **0** Corn yield = **0** Bushels
22 Potential Grazing Days = **0** Available Acres = **0**

24 Estimate of useable **covercrops** for grazing (actual, non-rot) Pounds DM Per Ac. Inch
25 Utilization % **0** (Use 200 lbs if unknown)
26 Potential Grazing Days = **0** Grazable Inches Available Acres

30 **Brassicas for grazing**
31 Acres **0.0** Potential grazing days = **0.0**
32 % Utilization **0** (Use 4000 if yield unknown)
33 Yield/Ac lbs. **0**

35 Estimate of **forage available for stockpiling**: Pounds DM Per Ac. Inch
36 % Utilization **0** (Use 250 lbs if unknown)
37 Potential Grazing Days = **0** Grazable Inches Available Acres

40 **70** % Utilization (Use Table A as guide)
41
42 **15** % Hay Loss (65% average)

44 Dry Matter = **124200** lbs. potentially available
45
46
47

48 Livestock DM balance = **-60581** lbs.
49 (Positive number indicates DM needs that should be met)

52 Estimated hay balance with present livestock numbers is: **-30.3** Tons
53 (positive=extra, negative=needed to meet present numbers)

54 Producer may want to consider increasing/decreasing herd by **-5** Animal Units, i.e., adult full grown steers
55 (positive=increase, negative=decrease in number)

58 **Table A**
59 **Grazing Utilization**

80% Utilization	≤ 1 day rotation
75% Utilization	2-3 day rotation
70% Utilization	4 day rotation
65% Utilization	5 day rotation
60% Utilization	6-14 day rotations
45% Utilization	14-30 day rotations

58 **Adjustment Factors**
59 (Adjusts for calving and metabolism)

1.08	Spring calving cows
1.09	Fall calving cows
1.00	Stockers
1.08	Dairy replacements
1.00	All others

1 **Yearly Livestock/Forage Balance Sheet** *****

2
3 Farm #: **6378** Present pasture available: **15** Acres
4 Tract #: **2598** Ave. yield per acre: **6000** lbs.
5 Producer: **John** **Total Available 90000**
6 Planner: **same** Present hayland available: **12** Acres
7 County: **CI** Hay yield per acre: **6000** lbs.
8 **Total Available 72000**

9 Livestock (Hay yield is actual hay produced and baled) yields or bas- desired yield, fertilize accordingly

10 Type: **Beef cows**
11 Breed: **Angus**
12 Present Number: **15** Other Feeds (All Dry Matter weight):
13 Average wt: **1250** lbs. Silage available lbs. **10%** % Waste/Loss
14 Intake %: **2.5** Haylage available lbs. **15%** % Waste/Loss
15 Adj. Factor: **1.08** Dry Feed available lbs. **5%** % Waste/Loss
16 (See Adjustment Factor Table below) Other hay available lbs. **15%** % Waste/Loss
17 **Total Other Feeds 0**

18 Total DM needs: **506** lbs. per day
19 Total DM needs: **184781** lbs. per year

20 Estimate of useable **corn residue**:
21 % Utilization of total Residue = **50** Corn yield = **175** Bushels
22 Potential Grazing Days = **116** Available Acres = **12**

24 Estimate of useable **covercrops** for grazing (actual, non-rot) Pounds DM Per Ac. Inch
25 Utilization % **0** (Use 200 lbs if unknown)
26 Potential Grazing Days = **0** Grazable Inches Available Acres

30 **Brassicas for grazing**
31 Acres **0.0** Potential grazing days = **0.0**
32 % Utilization **0** (Use 4000 if yield unknown)
33 Yield/Ac lbs. **0**

35 Estimate of **forage available for stockpiling**: Pounds DM Per Ac. Inch
36 % Utilization **0** (Use 250 lbs if unknown)
37 Potential Grazing Days = **0** Grazable Inches Available Acres

40 **70** % Utilization (Use Table A as guide)
41
42 **15** % Hay Loss (65% average)

44 Dry Matter = **183000** lbs. potentially available
45
46
47

48 Livestock DM balance = **-1781** lbs.
49 (Positive number indicates DM needs that should be met)

52 Estimated hay balance with present livestock numbers is: **-0.9** Tons
53 (positive=extra, negative=needed to meet present numbers)

54 Producer may want to consider increasing/decreasing herd by **0** Animal Units, i.e., adult full grown steers
55 (positive=increase, negative=decrease in number)

58 **Table A**
59 **Grazing Utilization**

80% Utilization	≤ 1 day rotation
75% Utilization	2-3 day rotation
70% Utilization	4 day rotation
65% Utilization	5 day rotation
60% Utilization	6-14 day rotations
45% Utilization	14-30 day rotations

58 **Adjustment Factors**
59 (Adjusts for calving and metabolism)

1.08	Spring calving cows
1.09	Fall calving cows
1.00	Stockers
1.08	Dairy replacements
1.00	All others

TABLES (Also found in the Tool ribbon and Section III, eFOTG)

Table 1: Suggested PA Grazing Stubble Heights and Typical Yields for Forages in a Grazing System

Species	Height In Inches		Quality Yield* (lbs DM/Ac.)		
	Turn In	Removal	Good	Poor	Over-grazed
COOL SEASON GRASS					
Kentucky bluegrass	4 to 6	3	4500	2000	1000
Smooth brome grass	6 to 8	3 to 4	6500	3000	1500
Orchardgrass	6 to 8	3 to 4	8000	3000	1500
Reed canarygrass	8 to 10	3 to 4	8000	3000	1500
Ryegrass	6	3 to 4	7500	4000	2000
Tall fescue	6 to 8	3 to 4	7000	3500	1750
Timothy	8	4	6500	3000	1500
GRASS-LEGUME MIX					
Alfalfa / Grass	6 to 8	3 to 4	10000	4500	2250
Orchardgrass - ladino clover	6 to 8	3 to 4	6500	3000	1500
Birdsfoot trefoil / Grass	6	3 to 4	8500	3500	1750
Ryegrass - clover	6	3	6000	2750	1375
Tall fescue - ladino clover	6 to 8	3 to 4	6000	3000	1500
Red Clover / Grass	4 to 7	3 to 4	9000	6000	3000
Kentucky bluegrass - white clover	4 to 6	3	3500	1500	750
LEGUMES					
Alfalfa	6	3 to 4	8000	4000	2000
Ladino / White clover	6 to 8	3	2500	1000	500
WARM SEASON GRASS					
Bermudagrass	4	3	5000	2500	
Switchgrass	18-Dec	6 to 8	9000	6000	
ANNUAL CROPS					
Small grains	4 to 6	3	3500	1500	
Sorghum	18 to 30	10	10000	5000	
Brassicas (spring seeding)	30 days	6	10000	5000	
Brassicas (summer seeding)	30 days	6	9000	4000	
CROP RESIDUES					
Corn Stover	N/A		6000	3000	
Soybean	N/A		2000	1000	
*Select Poor Quality Yields for soil types with low productivity. Select Good Quality Yields for soil types with high productivity. Producer's management should be considered in yield determination as well. Select "over-grazed" yields if documenting 528 for vegetation management of pastures.					

Table 2: Average Weights of Livestock

(Adapted from PA Act 38 Supplement 5- Standard Animal Weights)

Type	Beef	Dairy	Sheep/Goat	Horse
Mother w/Young	1400	N/A	225	1200
Mature Female	1100	1400	175	1000
Immature/Feeder	950	950	150	850
Growing	650	750	75	500
Young	300	375	50	200
Breeding Male	1500	2000	300	1100

Table 3: Average Length of Grazing Season (Based on Forage Production Zone)

Pennsylvania Average	180 days
Central Northeast	180
Northern Northeast	165
Southern Northeast	195
Upper Mid-South	210 days

Forage Production Zones

- Central Northeast
- Northern Northeast
- Southern Northeast
- Upper Mid South
- State Line
- County Line

PA Forage Production Zone MAP

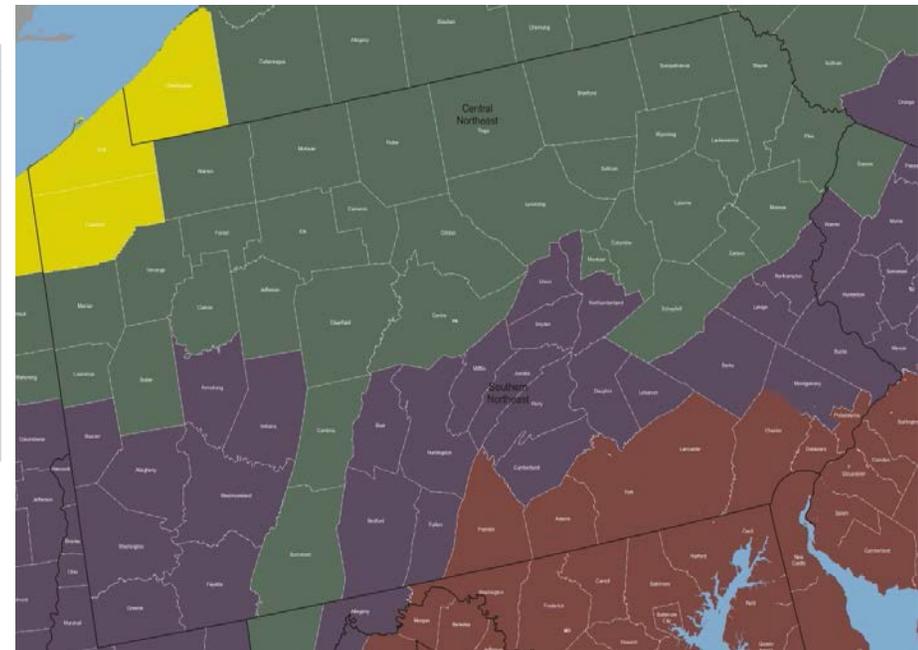


Table 4: Dry Matter Intake as % Body Weight (BW) per Day

Beef Animals	2.5%
Ewes-Lactating	2.5-4.0%
Ewes-Maintenance	1.8-2.0%
Horses	2.0%
Goats-Lactating	5.0%
Goats-Maintenance	1.8-2.0%
Lactating Dairy Cows - Pasture Only	3.0%
Lactating Dairy Cows - TMR/Grain (High Milk Production)	4.0%
Dry Cows/Heifers	2.4%

Table 5: Utilization Rate Based on Length of Paddock Occupation

Length of Occupation (days)	Utilization Rate (%)
1 day or less	80%
2 -3 days	75%
4 days	70%
5 days	65%
6+ days	60%
Continuous Grazing - Low Stocking Density	35%
Continuous Grazing - High Stocking Density / Overgrazed	90%

Table 6. Rest Periods for Grazing Systems

Season	Weather Condition	Forage Growth Rate	Rest Period
Spring	Cool, Moist	Fast	10 - 14 days
Spring	Warm, Dry	Medium	14 - 20 days
Summer	Hot, Moist	Slow	30 - 35 days
Summer	Hot, Dry	Very Slow	40 - 60 days

Average summer rest for PA is typically 35 days.

(Taken from PSU Agronomy Fact 43, 1994)

Table 7. Dry Matter (DM) Values for Common Feed Supplements

Common Feeds	% DM/lbs of Feed
Corn Silage	35
Alfalfa Haylage	43
Grass Haylage	44
Sudex Haylage	28
Wheatlage	34
Ryelage	30
Barley Silage	38
Dry Hay	89
Baleage	50 - 65
Grain and Grain Mixes	90

Note - to convert pounds of "as fed" feed to pounds of DM fed:

Pounds of feed x %DM = Total lbs of DM fed

Table 8. Estimated Forage Yield

Non-Irrigated Forage Yield/Year		Forage Yield / Acre-Inch
Tons / Acre / Year	lbs DM / Acre / Year	
4.5	9000	300
4	8000	270
3.5	7000	230
3	6000	200
2.5	5000	170
2	4000	130
1.5	3000	100

*Note - Yield is based on 5 rotations/year, harvesting an average of 6 inches each rotation.

lbs DM produced/Ac/Season = 6 rotations X 5 inches of available forage X lbs DM Forage/Inch