

Pennsylvania's Alternative Manure Utilization and Treatment Strategy

APPROVED September 2007

Prepared by the Alternative Manure
Utilization and Treatment Sub-Committee

2007 All Bay Meeting – December 11, 2007
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This morning...

- ✓ Overview of strategy development
- ✓ Identification of nutrient imbalance areas
- ✓ Strategy goal
- ✓ Strategy recommendations
 - Generic Nutrient Balance Sheets
 - Manure Matching Tool – www.manuretrader.org



Strategy Development

February 2006 PA Nutrient Management Advisory Board (NMAB) established Sub-Committee

July 2007 NMAB acted on Strategy

September 2007 PA State Conservation Commission approved Strategy

Sub-Committee membership includes...

- Agricultural community
- Environmental groups
- Agricultural lending
- Conservation districts
- Nutrient management specialists
- Agricultural by-product processing
- Agricultural engineering
- Biosolid industry
- Local and state government
- General public
- State Conservation Commission



Strategy Structure

- ✓ Description of the Alternative Manure Utilization and Treatment Sub-Committee
- ✓ Identification of nutrient imbalance areas
- ✓ Estimate of excess manure volume
- ✓ Short-term recommendations
- ✓ Long-term recommendations
- ✓ Education and outreach recommendations
- ✓ Appendices

Represents a significant step in addressing nutrient balance in Pennsylvania

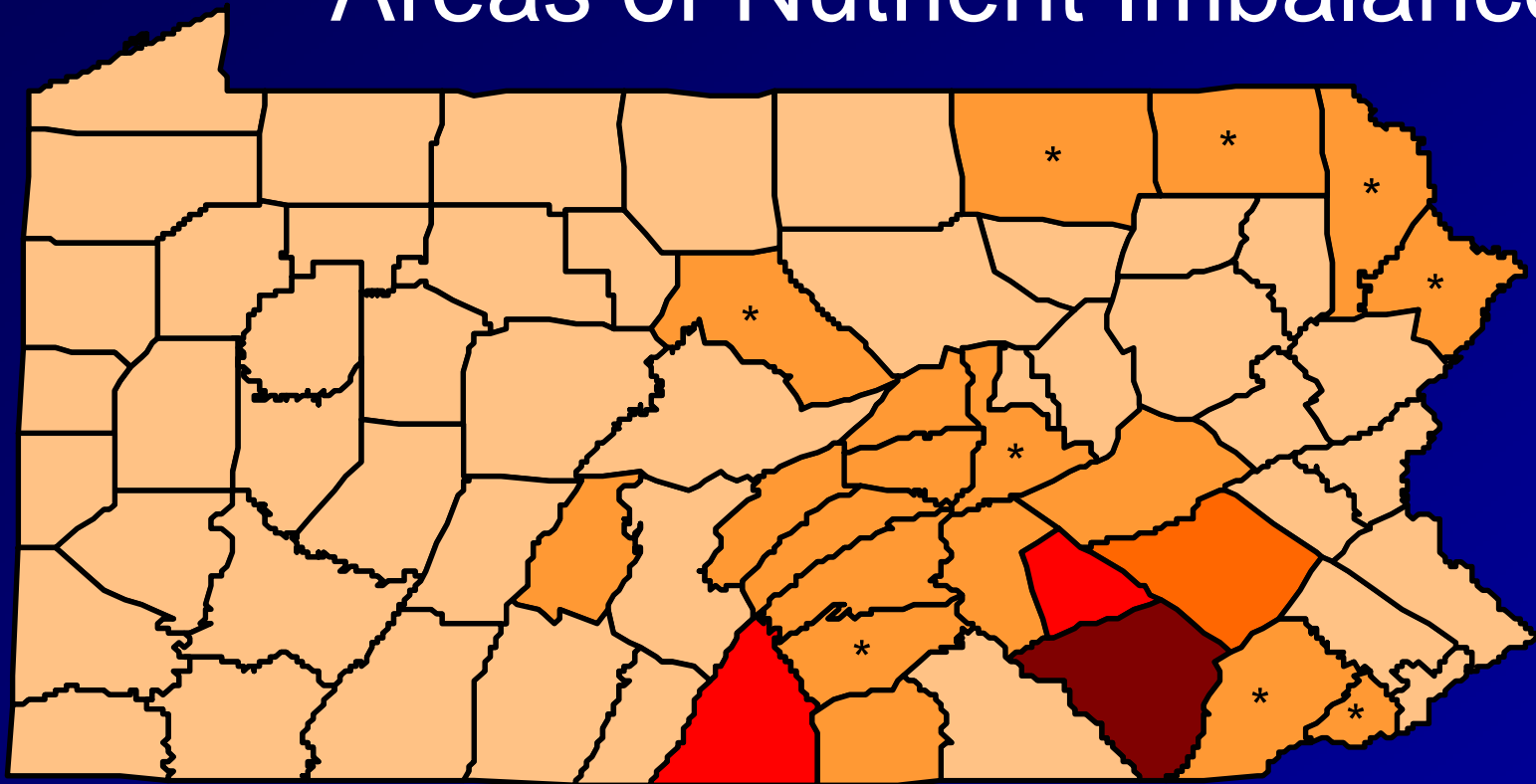


Areas of Nutrient Imbalance

Assessment focused on phosphorus (P) balances

- ✓ Studies show similar trends
 - Southcentral and southeastern PA excessive
 - Western and northwest PA deficient
- ✓ Additional factors impacting results
 - Eligibility of lands to receive manure
 - Urban sprawl
 - Increased costs of production
 - Ag land use costs versus development costs

Areas of Nutrient Imbalance



Assessment based on Manure P minus Crop P (tons)

- 500 to 0 tons P

* 0 to 100 tons P

0 to 500 tons P

500 to 1000 tons P

1000 to 2500 tons P

2500 to 5000 tons P



Strategy Goal

Through long and short-term strategy recommendations move toward long-term nutrient balance in Pennsylvania.

3 yrs - Evaluate short-term recommendation impact

5 yrs - Evaluate long-term recommendation impact

2015 - Target reduction of identified nutrient excess counties

Continue evaluation of nutrient excess/deficient counties



Strategy Recommendations

Short-term: Generic NBS development, changes to NM Grant Program, monitoring nutrient distribution, and economic feasibility evaluations

Long-term: Facilitate manure movement, expand uses of manure based compost, manure separation, incineration/cogeneration, reclamation of resource extraction sites, P binding amendments, and feed management

Education and Outreach: Manure matching tool, supporting educational materials, web site development, and tool to compare the value of fertilizer to manure application

Manure Matching Tool

Generic Nutrient Balance Sheets

Manure Matching Tool – www.manuretrader.org

The screenshot shows the homepage of the Pennsylvania Manure Trader website. The header features the site name "Manure Trader" in large green letters, with "Pennsylvania" above it and "manuretrader.org" below. To the right is the SBDC Pennsylvania logo, which includes the text "Small Business Development Centers Helping businesses start, grow, and prosper". Below the header is a navigation bar with links for "Tell a Friend", "Feedback", and "Help".

The main content area is divided into several sections:

- Navigate:** A vertical menu on the left with links for Home, Browse Listings, Exchange News, Links, Broker Directory, and Hauler Directory.
- My Account:** A vertical menu with links for Post a Listing, My Listings, Report Results, My Profile, and Login.
- Exchange Info:** A section stating "Your exchange administrator is: PA Manure Trader".
- Exchange News:** A section with three news items, each with a "Read This" button: "Manure Trader featured in Pittsburgh Tribune Review and Scranton Times Tribune", "Are You a Manure Broker or Hauler? Contact Us!", and "Welcome to Pennsylvania Manure Trader".
- Browse Listings:** A search area with a "Search For:" input field (optional), a "Type:" dropdown menu set to "All", a "Search" button, and an "Advanced Search >" link. Below this is a "Category:" dropdown menu set to "-- All Categories --" and a "Browse" button.
- All Listings:** A section header at the bottom of the main content area.

Developed by PA SCC & SBDC
Broker & Hauler resources
Confidential postings and exchanges

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[Login](#)

Browse Listings

Search For: (optional) [Advanced Search >](#)

Type:

Category:

Exchange Info

Your exchange administrator is:
[PA Manure Trader](#)

All Listings

A =Available W =Wanted

Material	Quantity	Frequency	Price	Date
A Free Horse Manure/ Sawdust	300 yd ³	Continuous	Free	Nov 26, 07
A Aged Horse Manure	5 ton	Continuous	Free	Nov 13, 07
A free horse manure free truck loading	20 yd ³	Continuous	Free	Nov 01, 07
W straw bedded horse manure removal	1 ton	Every 4 Days	Negotiable	Oct 29, 07
A 20 Yr old Manure	1	One-Time	Negotiable	Oct 22, 07
A Free Horse & Cattle Manure	50 yd ³	One-Time	Free	Oct 21, 07
W Garden Manure Wanted	1 ton	One-Time	Free	Oct 21, 07
W Broiler Manure	1	Continuous	\$6.00 per short ton	Oct 16, 07
A Free Horse Manure - Black Gold	1	Every 30 Days	Free	Oct 15, 07
A Dry deep pit layer manure	4000 ton	Every 100 Days	\$5.00 per short ton	Oct 15, 07

Post Available and Wanted Manure

Multiple search options for postings



Generic Nutrient Balance Sheets

Facilitate manure movement

- ✓ Allows for nitrogen-based manure applications for three years without soil testing

Proposed Implementation Guidance (November 2007)

- ✓ Identification of eligible counties
 - Overall county P balance & average county soil test P level
 - Majority of counties determined to be eligible
- ✓ Identification of farms without a significant manure application history
 - Two options based on rotation and monoculture crop management
- ✓ Companion NBS will be developed in Standard Format



Generic Nutrient Balance Sheets

Minimize inputs

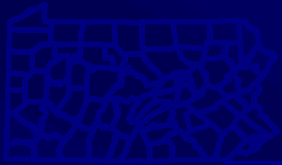
Allow input changes

Crop Yield

Manure Analysis

Developing management scenarios

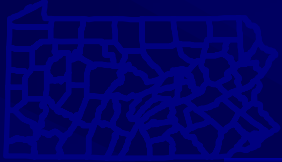
DRAFT Generic Nutrient Balance Worksheet: Corn; Spring Applied Dairy Manure; Rarely - Residual Manure N						
Crop Management Unit Identification		Acres	Crop	Yield		Required Soil Test Date
Fields 1A, 2, and 4		100	Corn	Amount	Unit	November 2010
				130	bu/A	
Manure Plan Basis	OPTION 1 - P Removal Generic NBS	OPTION 2 - N Requirement		OPTION 3 - P Index Generic NBS		
	1. P removal rates 2. > 150 ft. application setback from streams, lakes, or ponds	<input checked="" type="checkbox"/> Calculate P Balance? → No 1. N requirement rates 2. > 150 ft. application setback from streams, lakes, or ponds 3. Soil test required in 3 years.		1. P Index Evaluation (must be attached)		
	(Use the P ₂ O ₅ column to determine acceptable rate and complete the N column to determine additional N needed)	Enter Soil Test Value (ppm Mehlich 3 P) → Generic NBS (Use N column to determine acceptable rate)		(Use the appropriate column(s) based on the P Index to determine acceptable rate)		
Manure Type	Manure Analysis		Application Timing and Method			
Dairy	Total N	P ₂ O ₅	K ₂ O	Spring incorporated within 2-4 days		
	28	13	25			
	Unit of Analysis → lb/1000 gal					
Determination of Nutrient Recommendation - Additional Information						Notes:
Nitrogen			Phosphorus			
N Recommendation (per unit of yield)			Crop P ₂ O ₅ Removal (per unit of yield)			
Calculated N Recommendation (lb N/A)			Calculated Crop P Removal (lb P ₂ O ₅ /A)			
Soil Test N Recommendation (lb N/A)			Soil Test P Recommendation (lb P ₂ O ₅ /A)			
			N	P ₂ O ₅	Application Record and Notes ¹	
A) Recommendation (lb/A)			130			
<small>Nitrogen: Tables 1 & 2 or Soil Test (AG Guide Tables 12-6;12-7)</small> <small>Phosphorus: Option 2 & 3 - Table 3 or Soil Test (whichever is greater) (AG Table 12-9)</small>						
B) Fertilizer Applied (lb/A)						
Regardless of Manure e.g. starter						
Other Organic Sources Applied (lb/A)						
e.g. Biosolids, Other Manure						
C) Residual Manure N (lb/A)			0			
Rarely: < 2 years out of 5 years						
D) Previous Legume N (lb/A)						
See Application Record and Notes						
E) Net Nutrient Requirement (lb/A)						
(A-B-C-D)						
F) Manure Nutrient Content (lb/ton or lb/1000 gal)			28 lb/1000 gal			
G) Nitrogen Availability Factor			0.35			
H) Available Nitrogen (lb/ton or lb/1000 gal)			9.8			
(F x G)						
I) Balanced Manure Rate (ton/A or gal/A)				gal/A		
For N: (E/H) For P: (E/F)						
J) Actual Planned Manure Rate (ton/A or gal/A)				gal/A		
Must be less than or equal to the appropriate Balanced Rate based on the plan basis being used.						
K) Nutrients Applied at Planned Rate (lb/A)						
For N: (J x H) For P: (J x F)						
L) Nutrient Balance at Planned Rate (lb/A)						
(E-K) (Indicate short or excess)						



Summary

Represents a significant step in addressing nutrient balance in Pennsylvania

- Identifies areas of nutrient imbalance
- Sets goals and recommendations for...
 - Short-term
 - Long-term
 - Education/outreach actions
- Process of implementing strategy recommendations



Additional Information

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Strategy available at:

<http://agenvpolicy.aers.psu.edu/default.htm>