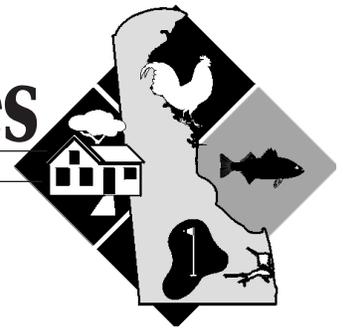


Delaware Nutrient Management Notes

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Poultry Litter: Resource or Waste?

Whether poultry litter is a valuable commodity or a waste product depends on your perspective

By Greg Binford, Dave Hansen
and Bud Malone

University of Delaware

If you are a poultry grower with no land for applying poultry litter, your main concern with poultry litter is getting rid of it when you have excess. If you are a poultry grower with many acres of land for growing crops, you most likely look at poultry litter as a valuable nutrient source that can reduce the need to buy inorganic fertilizers.

Poultry litter is an excellent source of nutrients and can be integrated into many fertilizer programs. Anyone who uses poultry litter, however, must realize that improper management can lead to nutrient imbalances in the soil that can injure the health of surface water and groundwater. Table 1 on page 2 shows average nutrient contents for broiler litter — but it is important to realize that management factors can have a major influence on the *actual* nutri-

ent content. Some of the factors that can influence the amount of available nutrients from poultry litter include: nutrient composition of the feed, handling and storage of the litter, and how soon the litter is incorporated after application to the soil. Because of this potential variation in nutrient content, we advise that you send a manure sample to a laborato-



Proper management of nutrients from poultry litter results in healthy crops and minimizes environmental problems.

ry for exact nutrient analysis. For tips on poultry-litter sampling, see the September 2000 Nutrient Management Notes (Vol. I No. 9).

Crop producers need to know the value of poultry litter in order to decide if they should use it. However, determining the exact value of poultry litter can be difficult for several reasons. One reason is that not all of the nutrients in poultry litter

are going to be required to maximize growth of the crop, because enough of those nutrients are already present in the soil. Secondly, as already mentioned, the nutrient value of poultry litter can vary greatly depending on how it is managed before the litter is applied to the soil. Its nutrient value can also vary depending on how it is managed

after the litter is applied to the soil. Despite these variations, it is possible to make some estimates on the value of poultry litter based on averages, and assuming best management practices are used.

Table 1 compares the cost of each nutrient in poultry litter with its equivalent cost as a commercial fertilizer.

When determining the actual value,

however, it is important to include the value of only those nutrients that the crop needs, not the total value of all nutrients that are present in the poultry litter — in other words, the amount that would be applied as fertilizer if poultry litter were not used.

It is not possible to develop one economic value of poultry litter for all situations because **see page 2** ➤

Poultry Litter: Resource or Waste?

from page 1 ► of the many potentially different situations and management practices that are used. Soils that have a history of poultry litter application and that have nutrients

that have accumulated to sufficient levels will likely need nothing but nitrogen added. In this situation, the only nutrient having economic value would be the nitrogen, which means

the economic value would be between \$10.50 and \$17.50 per ton of litter (as shown in Table 1). In such a situation it would be important to consider the potential environmental impact of applying large quantities of phosphorus to soils that do not require additional phosphorus for crop production.

How to read this table: Total nutrient content multiplied by the availability percentage gives the number of pounds of available nutrient per ton of litter in the first year. This total multiplied by the cost of that nutrient as a commercial fertilizer gives its first-year dollar value. Total nutrient content times the fertilizer cost gives the total nutrient value over time.

Table 1	total nutrient content pounds per ton	nutrient availability* percentage of total	available nutrient pounds per ton	fertilizer cost per pound of nutrient	available nutrient value* per ton of litter	total nutrient value** per ton of litter
Nitrogen	70	60%	42	.25	\$10.50	\$17.50
Phosphorus	70	80%	56	.20	\$11.20	\$14.00
Potassium	45	80%	36	.15	\$5.40	\$6.75
Calcium	44	N/A	N/A	N/A	N/A	N/A
Magnesium	10	N/A	N/A	N/A	N/A	N/A
Sulfur	10	80%	8	.25	\$2.00	\$2.50
Boron	.05	60%	.025	\$2.00	.05	.10
Manganese	.7	.6	.42	.60	.25	.42
Zinc	.6	.6	.36	.70	.25	.42
Total Value					\$29.65	\$41.69

* For the initial year of application.
 ** Assumes total quantity of nutrient added and that this nutrient will become available in future years. Also, assumes immediate incorporation of poultry litter after application.

Some additional assumptions in Table 1:

- (1) Assumes all needed calcium and magnesium will be added through lime and that there is no economic value of these nutrients in poultry litter.
- (2) Does NOT include any costs associated with handling, transporting, or applying litter.
- (3) Assumes a crop response would occur from all of these nutrients, while in many cases the only needed nutrient is nitrogen.
- (4) These estimates for nutrient contents of litter are for broiler operations; layer operations typically have much lower nutrient contents per ton of manure because of much greater moisture contents.

Table 1 also assumes that the only economic value of poultry litter is from the nutrients in the litter that can substitute for commercial fertilizer. However, it is difficult to quantify the additional value from the organic matter in poultry litter. We know that organic matter can influence many physical and chemical properties of soils. Increasing organic matter tends to improve the overall soil tilth, water-holding capacity, cation exchange capacity, etc.

It is important to remember, however, that continuous use of poultry litter at rates that supply nutrients in amounts greater than what crops can assimilate will result in the build-up of nutrients in the soil to levels that can injure the health of nearby waterways and groundwaters. It is important to use soil testing to detect and prevent the excessive accumulation of nutrients.

The cost of handling, transportation, and application must be considered when comparing poultry litter to commercial fertilizer as a nutrient source. Also, soil testing should be used to determine which nutrients are recommended in a particular cropping rotation, and any economic comparison should not include nutrients see next page ►

Poultry Litter

from page 2 ► that are not needed by the crops to be grown.

In addition to the immediate economic benefits of poultry litter as a nutrient source, it may also provide future savings in some situations.

For example, in a field with low to moderate phosphorus or potassium levels, an application of poultry litter to meet the high nitrogen demands

of a crop such as corn will leave residual phosphorus or potassium for a different future crop.

Overall, poultry litter is a valuable product and can

► For information on who to contact to purchase or sell poultry litter, call the Nutrient Management Program at 698-4500.



Spinner spreaders like this are commonly used to apply dry products such as poultry litter.

have considerable economic value when applied to land as a crop nutrient source. Litter handlers should pay careful attention to best management practices both within the poul-

try operation and the crop operation to maximize the value of poultry litter and minimize the environmental and legal risks associated with poor management of poultry litter.

Certification classes offered at many locations

The University of Delaware is offering Session I certification classes for nutrient generators and private nutrient handlers now through

April 2002. All certification must be completed by Jan. 1, 2004, and within one year of your first session.

There is no fee for the sessions. For more information, contact your local county extension office.

Contacts for each county are:

- New Castle County — Cindy Timko, (302) 831-2667.
- Kent County — Elizabeth Paterson, Cheryl Rocha or Carol McClister, (302) 730-4000.
- Sussex County — Jeanie Johnson, (302) 856-2585, ext. 305.

Here are the dates and locations for upcoming Session I:

New Castle County

Dec. 4, 1 p.m. – 4 p.m., at the Blackbird Community Center.

Jan. 15, 6 p.m. – 9 p.m., at the Blackbird Community Center.

Feb. 26, 1 p.m. – 4 p.m., at the New Castle County Extension Office in Newark.

Kent County

Dec. 10, 9 a.m.– noon, at the Kent County Cooperative Extension Office in Dover.

Sussex County

Dec. 20, 6 p.m. – 9 p.m., at the Research and Education Center on Route 9 in Georgetown.

Jan. 24, 9 a.m. – noon, at the Greenwood VFW.

Jan. 29, 6 p.m. – 9 p.m., at the Research and Education Center on Route 9 in Georgetown.

Feb. 12, 6 p.m. – 9 p.m., at the Ellendale Fire Hall.



Certification classes are offered throughout Delaware for nutrient generators and private handlers.

**HOW TO GET INVOLVED
AND VOICE YOUR OPINION:**

- Meet and talk to commission members

- Attend commission meetings (Call the Nutrient Management Program for dates and locations.)

Nutrient Management Program
(302) 698-4500 or (800) 282-8685

BILL ROHRER
Program Administrator

STEVE HOLLENBECK
Environmental Coordinator

CYNDI ROWE
Senior Secretary

University Nutrient Specialists

DR. DAVID HANSEN
(302) 856-7303

DR. GREG BINFORD
(302) 831-2146

SHAWN TINGLE
(302) 856-7303

SYDNEY YOUNG
(302) 856-7303

County Extension Offices

CARL DAVIS - New Castle
(302) 831-2506

GORDON JOHNSON - Kent
(302) 697-4000

DERBY WALKER - Sussex
(302) 856-7303

Delaware Nutrient Management Commission

Name	Appointed by	Phone	Affiliation	Title
William Vanderwende	Senate	(302) 349-4423	Sussex County Dairy Producer	Chairman, Commission
David Baker	Senate	(302) 378-3750	New Castle County Grain Industry	Chairman, Planning Subcom.; DNMC Vice Chairman
James Baxter	House of Rep.	(302) 856-9526	Sussex County Poultry Producer	
Edwin Brown, II	Governor	(302) 227-2053	Golf Course/Lawn Care Industry	
Stephen Corazza	House of Rep.	(302) 653-3583	New Castle County Poultry Producer	Chairman, Government Interaction Subcommittee
James Elliot	Governor	(302) 539-3409	Sussex County Citizens	
Carlton Fifer	Senate	(302) 697-2141	Kent County Vegetable Industry	
John Hughes	Governor	(302) 739-4411	Director, Division of Soil & Water Conservation, DNREC	
David Jones	House of Rep.	(302) 422-8017	Environmental Advocacy Group	
Tony Keen	Senate	(302) 684-3196	Nutrient Consultant	Chairman, Technology Subcommittee
Connie Larimore	House of Rep.	(302) 398-8304	Kent County Poultry Producer	Chairman, Budget Subcommittee
Dale Ockels	Governor	(302) 684-0456	Sussex County Swine Producer	Chairman, Compliance & Enforcement Subcommittee
Brian Schilling	House of Rep.	(302) 934-7684	Commercial Applicator	Chairman, Industry Relations
Carl Solberg	Senate	(302) 492-1225	Environmental Advocacy Group	Chairman, Program & Education Subcommittee
Richard Sterling	Governor	(302) 653-7060	Commercial Nursery Industry	
Michael T. Scuse (Ex-Officio)		(302) 698-4500	Secretary, Department of Agriculture	
Nicholas A. DiPasquale (Ex-Officio)		(302) 739-4403	Secretary, Department of Natural Resources & Environmental Control	
Vincent Meconi (Ex-Officio)		(302) 577-4502	Secretary, Department of Health and Social Services	
William Rohrer, Jr. (Ex-Officio)	DNMC	(302) 698-4500	Nutrient Management Program Administrator	



e-mail
nm@dda.state.de.us

Web site
www.state.de.us/deptagri

Upcoming DNMC meetings

- Dec. 11
- Jan. 8
- Feb. 12
- Mar. 12

all at 7 p.m., DDA, Dover

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Delaware Nutrient Management Program

2320 South DuPont Highway
Dover, DE 19901