

Requirements for Poultry Litter Use and Storage

You have received this fact sheet because you are the end user of poultry waste (dry poultry litter containing poultry manure and/or composted dead poultry) also referred to as poultry litter. As required by the Virginia Pollution Abatement Regulation and General Permit for Poultry Waste Management (9VAC25-630), poultry litter must be used in a manner consistent with this fact sheet or as specified in a nutrient management plan (NMP) prepared by a Virginia certified Nutrient Management Planner.

This fact sheet is intended to summarize the requirements and best management practices for land application of poultry litter as a source of crop nutrients. If poultry litter is to be used for purposes other than land application to crops (for example: animal feed or fuel), these uses may be subject to other laws or regulations. If poultry litter is to be used outside of Virginia, contact that state regarding their requirements.

Storage Requirements

Poultry litter that is not immediately land applied must be stored properly. Poultry waste shall be stored in a manner that prevents contact with surface water and ground water. If poultry litter must be stored prior to use, the following criteria shall be followed:

- If litter is not stored under roof, the storage site must be at least:
 - 100 feet from surface water, intermittent drainage, wells, sinkholes, rock outcrops, and springs; and
 - 200 feet from any occupied dwellings not on the end-user's or broker's property (unless the occupant of the dwelling signs a waiver of the storage site).
- If stored outside longer than 14 days, the litter must be covered with an impermeable barrier that will resist wind.
- Do not store litter where the water table is less than 1 foot deep.
- If litter is stored in areas where the ground water table is less than 2 feet deep year round, install an impermeable barrier under the litter. Construct impermeable barriers using at least 12 inches of compacted clay, at least 4 inches of reinforced concrete, or another material of similar structural integrity which has a minimum permeability rating of 0.0014 inches per hour (1×10^{-6} centimeters per second).
- Poultry litter must be protected from storm water runoff accumulating onto or under it.

Soil Sample Collection

Where soil samples are necessary to utilize any of the methods described in this document the sample must be less than three (3) years old. A representative soil sample of each field is comprised of at least 20 cores randomly sampled throughout the field. Samples should be taken from the top 4 inches of soil where land is not tilled, or the top 6 inches of soil where land is tilled.

Additional Information

This fact sheet provides basic information. For additional information regarding requirements for poultry litter management, please visit the DEQ website at: <https://www.deq.virginia.gov/Programs/Water/LandApplicationBeneficialReuse/LivestockPoultry/VirginiaPoultryWasteManagementRequirement.aspx>. or toll free (in Virginia) at **1-800-592-5482**.

Land Application Rate

The poultry litter application rate can be determined using one of four options:

Option 1: Nutrient Management Plan (NMP)

Poultry litter application rates based on a nutrient management plan can be used when the plan has been developed by a certified nutrient management planner in accordance with §10.1-104.2 of the Code of Virginia. For assistance in locating a nutrient management plan writer consult the Virginia Nutrient Management Certified Planner Directory, available at: http://www.dcr.virginia.gov/soil_and_water/documents/nmdir.pdf

Option 2: Standard Rate

Poultry litter may be applied to any crop at a rate of 1.5 tons per acre once every three years under the following conditions:

- 1) Nutrients have not been supplied by manure, biosolids, or other organic sources, other than pastured animals, to the proposed land application sites within the previous three years of the proposed land application date of poultry litter, and
 - 2) In the absence of current soil sample analyses and recommendations.
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Option 3: Soil Test Recommendations

Litter application rates based on soil test recommendations can be used under the following conditions:

- 1) The soil sample has been taken in the last three years from the proposed field where litter will be applied.
- 2) Soil test recommendations have been provided by a laboratory whose procedures are in accordance with 4VAC50-85-140 A 2 f of the Department of Conservation and Recreation Nutrient Management Regulation. The list of laboratories that DCR approves the lab recommendations can be found at: <http://www.dcr.virginia.gov/soil-and-water/document/nmlablist.pdf>
- 3) Nutrients from the litter application do not exceed the nitrogen or phosphorus recommendations for the proposed crop or double crops. The recommendations are in accordance with 4VAC50-85-140 A 2 a of the DCR Nutrient Management Regulation. If the litter application rate is made to supply all of the future crop phosphorus needs, no additional phosphorus is to be applied during the rotation.

Example for Calculating Poultry Litter Rate based on Soil Test Recommendation:

Litter Application Rate (Tons per acre)	=	Soil Test P Recommendation Litter P Analysis
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Corn crop needs: **120 lbs/acre Nitrogen** and soil test recommendation for **60 lbs/ac Phosphorus**

Poultry litter analysis: Available Nitrogen = **40 lbs/ton of litter**, P₂O₅ = **50 lbs/ton of litter**

<i>Three (3) Crop Rotation:</i>	<u>1st Crop</u>	+	<u>2nd Crop</u>	+	<u>3rd Crop</u>	<u>Options</u>
	Corn grain 60 lbs/ac P recommended 1.2 tons litter		Wheat grain 60 lbs/ac P recommended 1.2 tons litter		Soybeans 60 lbs/ac P recommended 1.2 tons litter	Apply 1.2 tons to each crop OR Apply only 3.0 tons litter to Corn (0.6 tons litter to Wheat or Soybeans)

In this example, 1.2 tons of litter (60 ÷ 50) will provide the 60 lbs of phosphorus needed for each crop with the nitrogen needs supplemented by commercial fertilizer. Alternatively, applying 3.0 tons of litter to the corn crop provides 150 lbs (50x3) of phosphorus for the rotation without exceeding the 120 lbs of nitrogen (40x3) needed by the corn crop. Litter used on the wheat or beans cannot exceed the total phosphorus needs of the rotation.

Option 4: Phosphorous Crop Removal

Litter application rates based on phosphorus crop removal can be used when the soil test phosphorus levels do not exceed the values listed in Table 1. Table 2. is used to determine the pounds of P₂O₅ removed per unit of harvested yield. As an example calculation using typical values, Table 3 represents litter rates calculated using a poultry litter analysis of: **40 lbs/ton N, 52 lbs/ton P₂O₅, and 53 lbs/ton K₂O** along with average crop yields.

REGION	Mehlich I procedure		Mehlich III procedure	
	P (lbs/acre)	P (ppm)	P (lbs/acre)	P (ppm)
Eastern Shore & Lower Coastal Plain	270	135	506	253
Middle & Upper Coastal Plain & Piedmont	272	136	508	254
Ridge & Valley	324	162	562	281

Crop	Yield (per Acre)	Nitrogen Needs of Crop (lbs/acre)	Poultry Litter Rate (tons/acre)	Nutrients supplied by Poultry Litter		
				N (lbs)	P ₂ O ₅ (lbs)	K ₂ O (lbs)
Corn grain	120 bushels	120	0.9	35	45	50
Corn silage	17 tons	130	1.3	50	70	70
Wheat grain	80 bushels	100	0.8	30	40	45
Barley grain	80 bushels	80	0.6	25	30	30
Barley silage	8.0 tons	80	0.8	30	40	45
Rye silage	6.0 tons	100	0.8	30	40	45
Soybeans (dc)	25 bushels	0	0.4	15	20	20
Hay	3 tons	80	1.0	40	50	55
Pasture	n/a	60	0.6	25	30	30

LITTER RATE CALCULATION

$$\text{Poultry Litter Rate} = \frac{\text{Yield per acre (tons or bushels)} \times \text{P}_2\text{O}_5 \text{ removal per yield unit (lbs)}}{\text{Poultry Litter P}_2\text{O}_5 \text{ content (lbs per ton)}}$$

(Tons per acre)

Table 2. Phosphorus Removed

Crops	LBS. P ₂ O ₅ Per Yield Unit (lbs)	
	Grain - Bushels	Silage - Tons
Row Crops		
Corn	0.38	4.2
Wheat	0.51	4.2
Barley	0.40	5.1
Rye	0.45	5.6
Soybeans	0.89	10.0
Forages	Hay - Tons	Pasture
Fescue or Orchardgrass	16*	****
Bermudagrass	10.4*	****

Notes for Table 2:

- 1.* Use 1/2 of the yield from VALUES if planted in the spring, 0 if planted in the fall, to calculate crop removal for the establishment year.
**** Productivity I & II - 30 lbs
Productivity III - 25 lbs
Productivity IV - 20 lbs
2. For double crops, add removal for each crop.
3. Additional crops - see Table 4-7 of the DCR Standards and Criteria at: <http://www.dcr.virginia.gov/document/standardsandcriteria.pdf>

Example for Calculating Poultry Litter Rate based on P₂O₅ removal: Poultry litter analysis: Nitrogen = **40 lbs/ton**, P₂O₅ = **52 lbs/ton**, K₂O = **53 lbs/ton**
Crop yields: Corn grain = **120 bushels**, Wheat grain = **80 bushels**, Soybeans = **25 bushels**
Three (3) Crop Rotation:

$$\text{1st Crop} + \text{2nd Crop} + \text{3rd Crop} = \text{Litter Application Rate on 1st Crop}$$

In this example, 2.1 tons of litter will provide 84 lbs

$$\text{Corn grain 0.9 tons} + \text{Wheat grain 0.8 tons} + \text{Soybeans 0.4 tons} =$$

2.1 tons litter applied to Corn
(NO litter applied to Wheat or Soybeans)

of available Nitrogen to the corn crop. The corn needs an additional 36 lbs (120-84) of Nitrogen that must be supplied by commercial fertilizer. The wheat must also be provided with commercial Nitrogen fertilizer when that crop is actively growing. Litter cannot be used on the wheat or beans because the phosphorus has been supplied in the litter applied to the corn.

Land Application Timing

The application schedule below shall be followed in cases where the land application is not being covered under a Nutrient Management Plan (NMP) - not using *Option 1. - NMP* to determine the land application rate.

CROP	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Corn												
Small Grain												
Hay or Pasture *												
Hay or Pasture **												
* Includes all cool-season grasses: fescue, orchardgrass (growth occurs in the cooler months of the spring & fall)												
** Includes all warm-season grasses: bermudagrass (growth occurs in the heat of the summer)												
	Poultry litter may be spread during these periods											
	Do not spread poultry litter during these shaded periods											

Do not spread poultry litter more than 30 days prior to planting.

Poultry litter may be applied to frozen ground if all of the following conditions are met:

- Slopes are not greater than 6%;
- A minimum of a 200-foot vegetative or adequate crop residue buffer is maintained between the application area and all surface water courses;
- Only those soils characterized by USDA as "well drained" with good infiltration are used; **and**
- At least 60% uniform cover by vegetation or crop residue is present in order to reduce surface runoff and the potential for leaching of nutrients to ground water.

Land Application Timing in Cases of Emergency

In cases of where poultry waste / litter storage is threatened by emergencies such as fire or flood or where these conditions are imminent, poultry litter can be land applied outside of the spreading schedule outlined in the Fact Sheet. If this occurs, the end-user or broker shall document the land application information in accordance with (9VAC25-630-70 A 3) summarized in the *Recordkeeping and Reporting Requirements Section - Land Application* on page 5 of this Fact Sheet.

Land Application Setbacks

Do not spread litter within the following setback areas:

- 100 feet from wells or springs
- 100 feet from surface water without a permanent vegetated buffer*
- 35 feet from surface water with a permanent vegetated buffer*
- 50 feet from limestone outcroppings
- 25 feet from other rock outcroppings
- 200 feet from occupied dwellings (unless the occupant signs a waiver of the buffer zone)
- Litter shall not be applied in such a manner that it would discharge to sinkholes that may exist in the area.

* A vegetated buffer is a permanent strip of dense vegetation established parallel to the contours of and perpendicular to the dominant slope of the field.

Recordkeeping Requirements

When a poultry waste end-user is the recipient of more than 10 tons of poultry waste in any 365-day period, the end-user shall maintain records regarding the transfer and land application of poultry waste.

Poultry Litter Transfers

Poultry litter transfers must comply with the criteria outlined in this fact sheet. All records must be maintained for at least three (3) years from the date of the transaction. The attached *End-User Poultry Litter Transfer Recordkeeping Form* is provided to meet the recordkeeping requirements of the end-user.

Provide to the litter source by the end-user:

1. Recipient Name & Signature
2. Recipient Address
3. Locality where litter will be utilized (nearest town/city, county and zip code)
4. Name of stream or waterbody nearest to utilization or storage site
5. Written acknowledgement of receipt of : 1) the waste / litter, 2) the nutrient analysis, and 3) this fact sheet

Document for required records:

1. Source Name
 2. Source Address
 3. Source Permit Number (if applicable)
 4. Date litter was received
 5. Amount of litter received
 6. Final use of poultry litter
 7. Locality where litter will be utilized (nearest town/city, county and zip code)
 8. Name of stream or waterbody nearest to utilization or storage site.
 9. Method used to determine rate options: , 1. - NMP, 2. - Standard Rate, 3. - Soil Test or 4. - Phosphorus Crop Removal.
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Land Application

Land application of poultry litter must comply with the criteria outlined in this fact sheet. All records must be maintained for at least three (3) years from the date of the land application date. The attached *End-User Poultry Litter Land Application Recordkeeping Form* is provided to meet the recordkeeping requirements of the end-user.

Document for required records:

1. Nutrient analysis of litter
 2. Maps identifying the land application fields and storage sites
 3. Land application rate(s)
 4. Land application date(s)
 5. Crops planted
 6. Soil test results (if obtained)
 7. Nutrient Management Plan (NMP) (if applicable)
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Reporting Requirements

Poultry Litter Transfers Records

End-users shall submit the poultry waste transfer records required by 9VAC25-630-70 A1 and A2 in accordance with the timing outlined below.

- 1) Beginning (one year after the effective date of this regulation) and continuing through (two years after the effective date of this regulation), upon request by the department, the end-user shall submit the records in a format and method determined by the department; and
 - 2) Beginning (three years after the effective date of this regulation), the end-user shall submit to the department, annually, the records for the preceding state fiscal year (July 1 through June 30) no later than September 15.
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End-User Poultry Litter Transfer Recordkeeping and Reporting Form

This record must be maintained by the end-user for at least three (3) years from the date of the litter transfer.

SOURCE INFORMATION: Poultry Grower or Poultry Waste Broker			
DEQ Registration/Permit #: _____			
Name: _____		Business Name: _____	
Mailing Address: _____			
Street	City	State	Zip

Date(s): _____		Amount in Tons: _____		Analysis N-P-K (available - lbs/ton): _____	
Locality where litter will be utilized or stored:				Nearest Stream or Waterbody to Land Application or Storage Area:	
Town/City _____		County _____	Zip _____		
Final Use of Litter: <input type="checkbox"/> Fertilizer <input type="checkbox"/> Feed <input type="checkbox"/> Fuel <input type="checkbox"/> Other (specify): _____		Method Used to Determine the Land Application Rate: <input type="checkbox"/> Phosphorus Crop Removal <input type="checkbox"/> Standard Rate			
<input type="checkbox"/> Soil Test Recommendations		<input type="checkbox"/> Nutrient Management Plan			

Date(s): _____		Amount in Tons: _____		Analysis N-P-K (available - lbs/ton): _____	
Locality where litter will be utilized or stored:				Nearest Stream or Waterbody to Land Application or Storage Area:	
Town/City _____		County _____	Zip _____		
Final Use of Litter: <input type="checkbox"/> Fertilizer <input type="checkbox"/> Feed <input type="checkbox"/> Fuel <input type="checkbox"/> Other (specify): _____		Method Used to Determine the Land Application Rate: <input type="checkbox"/> Phosphorus Crop Removal <input type="checkbox"/> Standard Rate			
<input type="checkbox"/> Soil Test Recommendations		<input type="checkbox"/> Nutrient Management Plan			

SOURCE INFORMATION: Poultry Grower or Poultry Waste Broker			
DEQ Registration/Permit #: _____			
Name: _____		Business Name: _____	
Mailing Address: _____			
Street	City	State	Zip

Date(s): _____		Amount in Tons: _____		Analysis N-P-K (available - lbs/ton): _____	
Locality where litter will be utilized or stored:				Nearest Stream or Waterbody to Land Application or Storage Area:	
Town/City _____		County _____	Zip _____		
Final Use of Litter: <input type="checkbox"/> Fertilizer <input type="checkbox"/> Feed <input type="checkbox"/> Fuel <input type="checkbox"/> Other (specify): _____		Method Used to Determine the Land Application Rate: <input type="checkbox"/> Phosphorus Crop Removal <input type="checkbox"/> Standard Rate			
<input type="checkbox"/> Soil Test Recommendations		<input type="checkbox"/> Nutrient Management Plan			

Date(s): _____		Amount in Tons: _____		Analysis N-P-K (available - lbs/ton): _____	
Locality where litter will be utilized or stored:				Nearest Stream or Waterbody to Land Application or Storage Area:	
Town/City _____		County _____	Zip _____		
Final Use of Litter: <input type="checkbox"/> Fertilizer <input type="checkbox"/> Feed <input type="checkbox"/> Fuel <input type="checkbox"/> Other (specify): _____		Method Used to Determine the Land Application Rate: <input type="checkbox"/> Phosphorus Crop Removal <input type="checkbox"/> Standard Rate			
<input type="checkbox"/> Soil Test Recommendations		<input type="checkbox"/> Nutrient Management Plan			

End-User Poultry Litter Land Application Recordkeeping Form

This record must be maintained by the end-user for at least three (3) years from the land application date. If litter is not land applied, this information is not required to be documented.

Date Litter Applied	Field ID	Number of Acres	Crop Planted	Nutrient Analysis of Litter (available N-P-K lbs/ton)	Tons of Litter Applied per Acre

In addition, the following items must be maintained for at least three (3) years from the land application date:

1. **Field Maps:** a copy of the map with field ID for each field receiving litter
2. **Soil Tests:** If a soil test was obtained, a copy of the test result(s)
3. **NMP:** If an NMP was used to determine the application rate(s), a copy of the plan