

## If I am a non-poultry producer, should I use poultry litter as a nutrient source?

What are some of the basic points non-poultry producers (end users) need to know when considering poultry litter as a nutrient source for crop production? Poultry litter is a bulky, high volume nutrient source and will need to provide the needed site-specific nutrients at a price competitive with commercial fertilizer.

### Key points/steps to consider:

1. What are the crop nutrient needs (nitrogen, phosphate and potash) based on soil testing?
2. What is the cost per acre to apply commercial fertilizer to supply the crop nutrient needs?
3. What is the nutrient value of the poultry litter being considered for land application?
4. What is the per acre cost to have poultry litter delivered and spread to meet crop nutrient needs?
  - Includes the price of litter, the nutrient content, brokerage fees (if applicable), transportation to the farm, storage, loading and spreading.
5. Compare the cost per acre for using poultry litter with the cost of using commercial fertilizer.

### Economic evaluations of potential litter use should be made on a site-specific basis.

A potential end user can contact his local Virginia Cooperative Extension office for assistance in evaluating the economics of using litter on his farm.

## Using Virginia Poultry Litter as a Nutrient Source:

Given that Virginia has a poultry waste management regulation that regulates how poultry producers use poultry litter, what are the requirements of non-poultry producers who receive and use (end users) Virginia poultry litter?

- For transfers of 10 tons or more of litter/365 days, the poultry producer or broker must provide the end user with a copy of the most recent nutrient analysis of the litter and a copy of Virginia's Department of Environmental Quality (DEQ) Poultry Litter Storage and Utilization Fact Sheet.
- The end-user must acknowledge in writing the amount of litter received, receipt of the manure analysis information, receipt of the DEQ Litter Fact Sheet, and where the litter is to be applied.
- To minimize the environmental impact of nitrogen and phosphorus applied as litter, end users should use litter consistent with the DEQ Poultry Litter Storage and Utilization Fact Sheet or as specified in a certified Nutrient Management Plan (NMP).
- Poultry litter should be applied to not exceed the nitrogen needs of the crop AND poultry litter should be applied to limit the continued build up of phosphorus in very high (VH) phosphorus testing soils.
- The general permit does **not** require end users of poultry litter to have a nutrient management plan although NMPs are required by some local ordinances, or to receive cost share/tax credit.
- The Virginia DEQ Poultry Litter Storage and Utilization Fact Sheet can be obtained from your local DEQ office or on the Internet at: [www.deq.state.va.us/regulations/xwaterregs.html](http://www.deq.state.va.us/regulations/xwaterregs.html)

## Potential Uses For Poultry Litter as a Fertilizer and Soil Amendment

- Crop, pasture, and hay lands
- As a topdressing for lawns, ball fields, golf courses, and other landscapes, particularly if properly composted and screened.
- Land reclamation (e.g., roadside, construction, and mineland)
- Plantation forestry



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**Authors:** G. L. Mullins & E. S. Bendfelt

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# Poultry Litter as a Fertilizer and Soil Amendment



**Poultry litter, if properly handled, is a valuable organic source of essential plant nutrients and soil amendment to improve soil quality. Applying poultry litter to agricultural lands is a proven, environmentally sound method for recycling essential nutrients. This brochure reviews the use of poultry litter as a fertilizer and soil amendment for non-poultry producers**

Virginia Cooperative Extension

*Knowledge for the Commonwealth*



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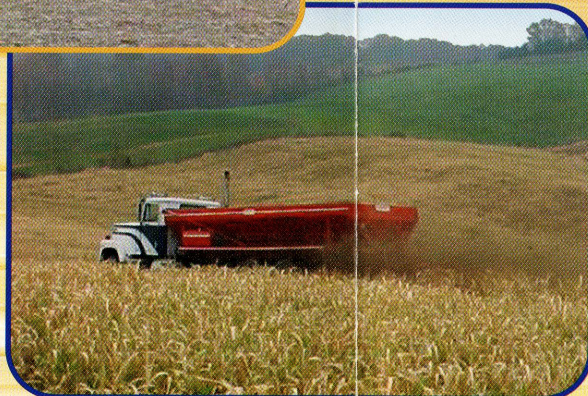


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## Potential for Non-Poultry Growers to Use Litter

Virginia's poultry waste management program will increase the opportunities for non-poultry growers to utilize poultry litter as a nutrient source. It is estimated that more than 400,000 tons of poultry litter are produced annually that must be managed in an environmentally responsible manner.

Management of poultry litter during and after bird production is the responsibility of individual poultry farmers. Due to public concerns about the potential environmental impacts of long-term applications of animal manure to agricultural soils, Virginia's poultry farmers are now encouraged to use and market poultry litter off the farm as a soil amendment to lands inherently low in soil fertility.



## Nutrient Value of Poultry Litter:

- Poultry litter consists mainly of poultry manure and bedding material (e.g., pine shavings or peanut hulls).
- Poultry litter is used primarily as a source of nitrogen (N), phosphorus (P) and potassium (K), but litter also contains calcium, magnesium, sulfur, and some micronutrients.
- Nutrient value of litter is generally reported as the pounds of total nutrient per ton.
- Nitrogen is expressed as total nitrogen and ammonium nitrogen and plant available nitrogen (PAN).
- Phosphorus is expressed as total phosphate ( $P_2O_5$ )
- Potassium is reported as total potash ( $K_2O$ ).

Table 1 reports the average nutrient contents of poultry manure sampled and tested in Virginia from 1989 to 1992 and Table 2 the manure tested in 1998-1999.

Nutrient value of litter can vary 30 to 50% depending on type of bird, feed and moisture content, and the clean-out technique and schedule of individual operations.

Adding the enzyme Phytase to feed rations increases the utilization of phosphorus in the feed and reduces the need to supplement rations with inorganic phosphorus. Thus, phytase can reduce total phosphate content of poultry litter 20- 40%.

To account for this variation, all sources of poultry manure should be analyzed for nutrient content prior to land application.



## Additional Benefits: Organic Matter and pH

Soil organic matter has a positive effect on soil structure, tilth, water-holding capacity, aeration, pH buffering, cation exchange capacity, and microbial activity. Poultry litter contains a considerable amount of organic matter due to the manure and bedding material.

Litter can also have an impact on soil pH and liming due to varying amounts of calcium carbonate in poultry feed.



**Table 1. Average Nutrient Values for Poultry Manure Tested in Virginia from 1989 to 1992.**

Manure Type	Available N Broadcast	Available N		$P_2O_5$	$K_2O$	Ca	Mg	% Moisture
		Incorporated Immediately	Incorporated Immediately					
Dry Broiler Litter	37	42	62	29	41	8	28	
Dry Turkey Litter	37	42	64	24	43	7	35	
Layer or Breeder	21	25	65	24	123	8	43	
Liquid Poultry*	27	41	41	31	40	5	93	

\*Nutrient values are presented in pounds/1000 gallons. All other values are pounds/ton. Available nitrogen estimated based on application to a spring or fall crop.

**Table 2. Average Nutrient Values for Virginia Manure Tested 1998-99**

Manure type	Total N*	Total $P_2O_5$ *	Total $K_2O$ *	Available N	
				Broadcast	Incorporated Immediately
Poultry solid w/out litter (53)	54	57	42	31	37
Poultry deep pit (5)	50	50	27	29	34
Poultry solid w/ litter (761)	72	58	43	42	47

\*All nutrient values are reported in pounds per ton. Numbers in parentheses indicate number of samples.

Available nitrogen estimated based on application to a spring or fall crop.

Available N Broadcast: Assumes 60% of the organic nitrogen and 50% of the ammonium nitrogen are plant available

Available N Incorporated Immediately: Assumes 60% of the organic nitrogen and 90% of the ammonium nitrogen are plant available