



IFAS EXTENSION

Poultry Manure as a Fertilizer ¹

D.R. Sloan, G. Kidder and R.D. Jacobs²

Animal manures have been used effectively as fertilizers for centuries. Poultry manure has long been recognized as perhaps the most desirable of these natural fertilizers because of its high nitrogen content. In addition, manures supply other essential plant nutrients and serve as a soil amendment by adding organic matter. Organic matter persistence will vary with temperature, drainage, rainfall, and other environmental factors. Organic matter in soil improves moisture and nutrient retention. The utilization of manure is an integral part of sustainable agriculture.

Poultry manure is often produced in areas where it is needed for crop, hay and pasture fertilization. The increased size and frequent clean-out of many poultry operations make poultry manure available in sufficient quantities and on a timely basis to supply most fertilization needs.

The most common procedure for determining the amount of manure to add per acre is to consider the manure's nitrogen content and the nitrogen needs of the crop. Some typical compositions for poultry manure are listed in Table 1 . Nitrogen recommendations for selected crops and a range of

manure application rates for these crops are presented in Table 2 .

In areas where phosphorus movement off-site can lead to eutrophication of surface waters, phosphorus rather than nitrogen may be the factor determining application rate of manure.

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2. D.R. Sloan, Extension Poultry Specialist, Dairy and Poultry Sciences Department; G. Kidder, Extension Soils Specialist, Soil and Water Science Department; R.D. Jacobs, Area Poultry Specialist, Dairy and Poultry Sciences Department, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 32611.

Table 1.

Table 1. Average nutrient composition of chicken manures¹.				
Manure Type	Total N	Ammonium (NH ₄ -N)	Phosphorus (as P ₂ O ₅)	Potassium (as K ₂ O)
Broiler				
lb/ton				
Fresh (no litter)	26	10	17	11
Broiler house litter ²	72	11	78	46
Breeder house litter ²	31	7	54	31
Stockpiled litter ²	36	8	80	34
Layer				
Fresh (no litter)	26	6	22	11
Undercage scraped ³	28	14	31	20
Highrise stored ⁴	38	18	56	30
lb/1,000 gallons				
Liquid slurry ⁵	62	42	59	37
Anaerobic lagoon sludge	26	8	92	13
lb/acre-inch				
Anaerobic lagoon liquid	180	155	45	265
¹ Source: Biological and Agricultural Engineering Dept., North Carolina State University, as reported in "Poultry Manure as a Fertilizer Source," Soil Facts fact sheet authored by J.P. Zublena, J.C. Barker, and T.A. Carter, North Carolina Coop. Ext. Serv., Raleigh. ² Annual manure and litter accumulation; typical litter base is sawdust, wood shavings, or peanut hulls. ³ Manure collected within two days. ⁴ Annual manure accumulation on unpaved surfaces. ⁵ Six to 12 months' accumulation of manure, excess water usage, and storage-surface rainfall surplus; does not include fresh water for flushing.				

Table 2.

Table 2. Nitrogen recommendations and suggested application rates of layer manure and broiler litter for selected crops.			
Crop ¹	Recommended N (lbs/acre)	Layer manure (tons per acre)	Broiler manure with litter (tons per acre)
Improved perennial grasses	160	4 - 6	3 - 5
Oranges, mature	200		
Grapefruit, mature	160	4 - 6	3 - 5
Pine	100 - 200	2 - 6	3 - 5
Corn, non-irrigated 15,000 plants/acre	180	3 - 7	2 - 5
Corn, irrigated 30,000 plants/acre	240	6 - 10	5 - 7
Vegetable garden	100	2 - 5	2 - 4
¹ Due to the timing needs for nitrogen and the high value of commercial vegetable crops, manure is not recommended as the sole source of nitrogen for those crops.			