

Cooperative Extension



Utilizing Dry Poultry Litter – An Overview

University of Arkansas, United States Department of Agriculture, and County Governments Cooperating

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Introduction

Poultry is Arkansas's top farm commodity, valued at more than \$2 billion in 1994. Arkansas is the largest broiler-producing state in the nation and ranks third in national turkey production and sixth in egg production.

The manure produced by these birds is a valuable by-product of the state's poultry industry. Poultry litter is a valuable, natural soil amendment that adds nutrients and organic matter to increase soil fertility. It is also a potential pollutant of surface and groundwater if mishandled.

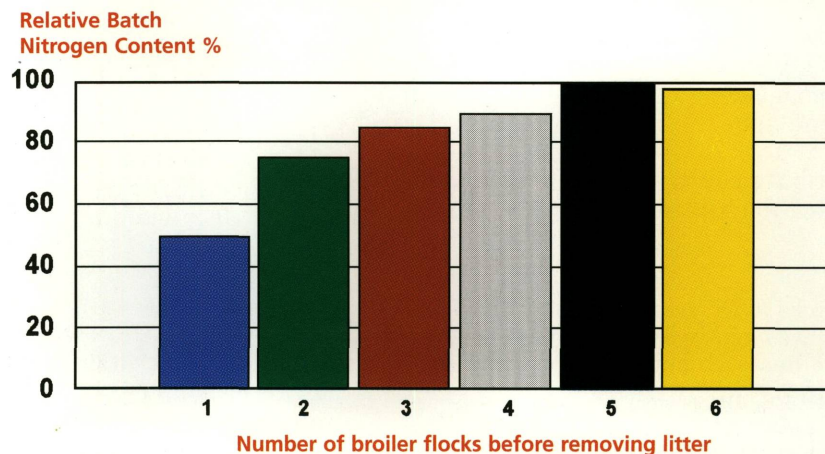
Handling and Storage of Poultry Manure

Poultry manure is stored in a variety of ways depending on the needs of the producer. The methods used to handle and store manure greatly affect its value as a soil nutrient.

Litter composition varies depending on the length of storage, the method of removal and whether or not bedding was added, raked or caked between flocks. The nitrogen content increases with the number of flocks and generally peaks after four or five flocks of broilers (Figure 1).

The most economical way to handle litter is to leave it in the poultry house until it can be used, usually by land application. However, limited cleanout time and/or unfavorable weather conditions may require stockpiling the litter outside the poultry house until it can be used. Proper storage is essential for litter to maintain its value as a soil nutrient and to prevent it from polluting surface water or ground water. Storage enables the producer to apply litter when needed for proper plant nutrition, rather than simply timing applications between broiler flocks. Applying litter when needed by the crop is consistent with environmental concerns and promotes uniform distribution.

Figure 1. Number of Flocks vs Accumulated Nitrogen in Broiler Litter



The nitrogen content of litter typically increases with the number of broiler flocks until leveling off after accumulating manure from four to five flocks. Adapted from Natural Resources Conservation Service (NRCS) Agricultural Waste Management Field Handbook.

The key to proper storage is to keep the litter dry. Protect the litter stack from rainfall and surface runoff to avoid the leaching of nutrients from the stack. Avoid stacking litter more than 5 to 6 feet deep to prevent overheating and burning.

A roofed structure with a clay or a concrete floor provides easy access to poultry manure that must be stored. Large quantities of manure can be stored and kept dry in these "dry stack" structures. Another option is a stack covered with a well-secured tarpaulin or heavy plastic sheeting. Covered stockpiles are normally used to satisfy occasional short term storage needs. Poultry litter should not be stored outside unless it is covered by some type of waterproof sheeting and water is diverted away from the stack. Piles of litter should not be stored where runoff reaches streams, wells or other water sources.

Utilizing Poultry Manure

Poultry litter is a valuable resource and can be utilized in many ways. Cattlemen who don't raise poultry often purchase litter to fertilize forages. Quality litter is routinely used as an ingredient in beef cattle rations. Litter may be composted to produce a rich, uniform mixture suitable for use in gardens and nurseries. Arkansas rice farmers and other row crop producers are a rapidly developing market for poultry litter. Litter is a natural soil amendment that may enhance crop production more than a mineral fertilizer, especially where top soil has been cut during land leveling operations. In Arkansas, most poultry litter is used as a fertilizer for forage production.

To ensure the most effective use of the nutrients in poultry litter as well as protect water quality, develop a nutrient management plan. The Natural Resources Conservation Service (NRCS) or conservation district water quality technicians can provide assistance in the development of nutrient management plans. Although not required under current regulation, a voluntary plan should be developed for each field in which litter is to be applied.

Best Management Practices

Follow these management practices when spreading litter to get the nutrient benefits of litter and to avoid the potential for surface or groundwater contamination.

- Distribute poultry litter uniformly over the application site according to a site-specific



Responsible use of poultry litter reduces the potential for water pollution and can result in an abundant hay harvest.

nutrient management plan or at a rate not to exceed 5 tons per acre per year with no more than 2.5 tons in each application.

- Do not apply poultry litter on land when the soil is saturated, frozen, covered with snow or during rainy weather or when precipitation is in the immediate forecast.
- Do not apply poultry litter on slopes with a grade of more than 15 percent or in any way that allows manure to enter water sources. Follow a site-specific management plan, especially if you have unique features to consider.
- Do not make surface application of poultry litter within 100 feet of streams, ponds, lakes, springs, sinkholes, wells, water supplies and dwellings. Do not apply within 25 feet of rock outcroppings.
- Keep records of the dates, amounts and specific sites where you apply poultry litter. If you sell your litter, keep a record of who buys the litter and the dates and amount sold.
- Cover or tarp vehicles transporting poultry litter on state or federally maintained roads or any public road for more than one mile.

Develop a good relationship with the surrounding community. Avoid spreading litter when it would be objectionable to your neighbors. For additional information on poultry manure management and utilization, contact your local county Cooperative Extension Service agent.

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