

Poultry Litter For Pasture and Hay

Carl S. Hoveland,
University of Georgia

There are about 1 billion broilers, 12 million laying hens, 13 million broiler breeder hens, 12 million replacement pullets, and over 2 million turkeys in Georgia. Most of the poultry industry is located in north Georgia but in recent years there has been a sizeable increase in broiler production in the southern part of the State. Although some people view the poultry industry as a threat to beef production, it has been beneficial in furnishing poultry litter for fertilizer on grassland and feed for many cattle in Georgia. In the drought of 1993 when hay was unavailable or very expensive, poultry litter mixed with corn provided inexpensive feed for cattle. Most of the poultry litter in Georgia is used on pasture and hayland. There are some problems in using it and many unanswered questions, but in this article

we will try to provide a few guidelines for use.

What is poultry litter?

Poultry litter consists of the manure generated by the birds, wood shavings or sawdust, feathers, and waste feed. Moisture content is usually 20 to 25%. As might be expected, nutrient content is quite variable, depending on amount of bedding used, time in the poultry house, and time of year. On average, broiler house litter will contain the following amount of nutrients per ton of litter: 66 lb N, 50 lb P₂O₅, and 40 lb K₂O. When poultry litter is stockpiled, there can be a sizeable loss of nitrogen which may decline to 35 lb N/ton. Ammonia volatilization or loss to the air is greatest when it is wet. Thus, storing it under dry

conditions will substantially reduce losses of nitrogen, the most valuable nutrient in the litter. When poultry litter is spread on a pasture or hayfield, there will be a further loss of generally less than 20% of the nitrogen.

How much poultry litter can I apply?

Obviously, the best way to determine the desired application rate is to obtain a soil test and base application on nutrients needed by the crop. However, in many cases the broiler producer is anxious to dispose of the litter on grassland as cheaply as possible in close proximity to the poultry houses. This often results in very heavy applications with very high levels of potassium and especially phosphorus in the forage. There is also

the potential danger of contaminating ground water with nitrogen which can be harmful to human and cattle health.

Maximum recommended application rates on bahia and bermudagrass pasture would be 4 tons of litter/acre/application with a yearly total of 6 tons. Tall fescue and orchardgrass pasture would have a maximum of 4 tons/acre/application with a yearly total of 5 tons/acre. Bermudagrass hay would have a maximum of 4 tons/cutting. There is much that we do not know about maximum application rates on pasture and potential nutrient runoff. We are doing research on this problem at the Central Georgia Station where runoff of water, nutrients, and coliform bacteria from mixed bermudagrass-tall fescue pasture watersheds where continuous and rotational stocking methods of grazing are being used with cattle.

Practical, economical applications are much less than the maximum rates given above. For example, productive tall fescue pastures would need about 60 lb N/acre in autumn and again in late winter. Even allowing for some ammonia loss, about 1 to 2 tons of poultry litter would provide adequate nitrogen and not build up excess levels of phosphorus and potassium. An advantage of poultry litter

over synthetic nitrogen fertilizer is the slower release of nitrogen over time.

How much can I afford to pay for poultry litter as fertilizer?

The largest factor contributing to cost of poultry litter is the distance it has to be transported. It is bulky and it contains water so transportation and spreading costs will determine the value of poultry litter on your farm. The N, P₂O₅ and K₂O in average poultry litter is worth about \$30 per ton. However, if your soil test results say that you do not need the phosphate and potash, then the poultry litter will be worth only \$15/ton for the nitrogen in it. As synthetic nitrogen fertilizer prices rise, the price you can afford to pay for poultry litter will increase. Obviously, if the price of poultry litter is higher than you can apply the same nutrients from commercial fertilizer, then poultry litter will not be an attractive alternative.

Do weed seed in poultry litter make my pasture weedy?

Often, livestock producers report that they have more weeds where they apply poultry litter, suggesting that they spread

weed seed with the litter. A recent study in Alabama collected samples of fresh litter from 18 broiler houses in various parts of the state. In the greenhouse, when kept moist for six weeks, no weeds were found growing in the litter but when weed seed were planted in the litter, they grew luxuriantly. This is conclusive evidence that the broiler litter did not introduce weed seed into the pastures but rather that the weed seed were already in the pasture and broiler litter stimulated germination and growth. Obviously, an effective herbicide program may be needed when broiler litter or any fertilizer is applied to a pasture.

Conclusion

With over 2 million tons/year of poultry litter being generated in Georgia, there is tremendous opportunity to use this valuable resource, mainly as a fertilizer but also for cattle feed. The challenge is to use it efficiently and not waste the nutrients or cause environmental problems with excess application rates. As poultry production expands in south Georgia, an excellent source of forage plant nutrients will be available to cattle producers in that area.