



Guidelines for Processing and Marketing Turkey Litter as Cattle Feed at the Turkey Farm

By

S.K. Varghese, A.P. Rahn, H.D. Ritchie, R.M. Cook and B. Salem, Animal Science Dept.;
I.J. Krupp and T.M. Johnson, agricultural agents, Ottawa Co.



**MICHIGAN STATE
UNIVERSITY
EXTENSION**

Introduction

Michigan turkey grower houses annually produce approximately 300,000 tons of litter. Turkey and broiler litter has been used as an alternative feed for ruminants in the southern states for several years because of its nutritive value. A recent Michigan study utilized turkey litter as a feed ingredient for growing-finishing steers. The analysis of DSTL (deep stacked turkey litter) used in this study showed crude protein values ranging from 31 to 36 percent and estimated TDN (total digestible nutrients) from 61 to 72 percent.

More Profit

Turkey litter generates more profit for the turkey producer when it is used as a feed ingredient than as a fertilizer. Using turkey litter as an alternative feed also reduces cost of production for cattle producers. Treating turkey litter as a feedstuff at the turkey house as well as at the cattle farm is key to the success of the system. Any breakdowns in the proper management of litter as a feedstuff may lead to less than desirable results.

Use Only Litter from the Grower House

In Michigan, the litter material commonly used in turkey houses is pine shavings. Brooder house litter is of poor feedstuff quality because its nutrient value is lower than that of the litter from grower houses. This is also true of litter from breeder houses. For this reason, litter from brooder houses and breeder houses should be used as fertilizer rather than cattle feed.

General Practices of Litter Management

In the grower house, turkey litter to be used as cattle feed needs to be properly managed to avoid contamination by metal, glass and other debris. Care also must be taken to prevent mixing dirt from the floor with the litter during its removal and storage. Excess contamination with soil may cause ash content to exceed 30 percent, which is the maximum level allowed by government regulation when litter is used as a feed.

Litter management practices in turkey grower houses vary among producers. Generally, litter is removed from turkey houses after four grow-out cycles. Others remove litter less often. Some producers remove litter from under the feed and water line only.

In recent times, using modern equipment such as a "Poultry House Keeper" to remove litter has become popular among some producers. The system used in removing the litter can affect its nutrient value. The analysis of DSTL cited in this publication is from litter collected from under the feed and water line area.

Record Keeping

Good records of the health history of the flocks raised during the period of litter accumulation, disease outbreaks (if any), litter removal practices, pathogen analyses, nutrient analyses, transport, cost of litter, cost of cattle feed ingredients, etc., will help the producer make intelligent decisions in selling the litter as cattle feed locally or in other parts of the state.

Do Not Feed Composted Dead Bird Litter

In recent years, composting of dead animals with live-stock waste has proved to be an effective method of carcass disposal. Several states allow composting of dead poultry on farm sites. Feeding such litter, however, can be potentially lethal to cattle. Serious disease outbreaks have been reported in Israel when cattle were fed litter containing dead birds. Therefore, this practice is not recommended. More research needs to be done in this area.

Storing and Processing Litter

In recent years, a few turkey producers have entered into the cattle feeding business. One of the reasons is the availability of turkey litter at little cost to the farm.

Turkey litter may be stored in a large open-ended building. Care should be taken that the litter is not touching the side walls or the roof of the building because litter generates heat that can pose a fire hazard. To prevent fires, keep litter at least 2 feet away from the side walls and the roof. If there is no building available, litter may be stored in the open, preferably on concrete.

Turkey litter needs to be processed before being fed to cattle to destroy pathogenic organisms. Pelleting, ensiling, deep stacking and composting are among the methods used to destroy pathogens. Deep stacking is the most efficient and economical method commonly used to "cure" the litter.



Pile is covered with plastic after the initial heating (one week).



Michigan cattle producers observe feeding DSTL diets to cattle.



Taking pile temperature using probe, three to five days after stacking.



Deep stacked turkey litter pile that has not been covered. Half of stack has already been fed to cattle. It is important that DSTL is removed from one end only.



Taking litter sample for pathogen and nutrient analyses.

Deep stacking is an anaerobic fermentation process; composting is an aerobic fermentation process. In the deep stacking method, the litter is piled 6 to 8 feet high and packed. **Caution:** If heavy tractors are used for packing, the pile of litter may not heat up to 130 degrees F. Under suitable conditions, the pile will generate heat in 3 to 5 days. The minimum temperature needed to destroy pathogens is 130 degrees F. Temperatures over 150 degrees F, however, may reduce the nutritive value of the litter. In addition to temperature, ammonia generated by the breakdown of urea during storage and lactic acid produced during fermentation may also destroy pathogenic organisms. After the initial heat, the stack may be covered with a 6 mil plastic sheet to prevent weather-related problems and runoff. Used tires may be placed on the stack to anchor the plastic cover.

Allow a minimum of 3 to 6 weeks curing before feeding litter to cattle. For safety, it is highly recommended that the litter be analyzed for **microbial pathogens** prior to feeding. **A 15-day withdrawal period of DSTL is required prior to cattle slaughter. Lactating dairy cows should never be fed DSTL, because there is no withdrawal period.**

Marketing DSTL

Turkey producers may want to develop some strategies for marketing DSTL. This can be done in consultation with the local Extension agent and with the input of other Extension professionals. Long-range plans for reasonable profit plus an outlet for disposal of the litter should be the goals of the turkey producer.

In some southern states, brokers are employed to market litter. They are involved in determining a price for the litter, timing of supply, transport cost, etc. In some states, poultry litter is transported as far as 200 miles to be fed to cattle. This suggests that, if one could develop marketing plans with long-term goals in mind, it could become beneficial to all parties involved.

In Michigan, the Michigan Department of Agriculture (MDA) Feed Division oversees the use of poultry litter as cattle feed. Any commercial use of turkey litter as cattle feed needs to be carried out under MDA guidelines and supervision. Please contact that office at (517) 373-1077, for further information.

Conclusion

Turkey litter from grower houses can be used as a cattle feedstuff if properly managed and cured. This approach can result in additional profit for the turkey producer, reduced cost for the cattle producer and reduced potential environmental pollution from disposal.

Other Information Sources

- Weaver, W.D. and G.H. Souder. 1990. Feasibility and Economics of Transporting Poultry Waste. Proceed. 1990 National Poultry Waste Management Symposium. p. 123-129.
- Fontenot, J.P. 1990. Recycling Animal Waste by Feeding to Enhance Environmental Quality. Proceed. American Feed Industry Association Nutrition Symposium. p. 56-70.
- Labosky, P., J.W. Dick and D.L. Cross. 1977. Bark Broiler Litter as a Potential Feedstuff for Ruminants. Poultry Sci. 56:2064.
- Ruffin, B.G. and J. Martin. Feeding Broiler Litter to Beef Cattle. Ala. Coop. Ext. Ser. Circ. ANR-280.
- Cross, D.L. 1977. Fermented Poultry Wastes for Cattle. Proceed. Alternate Nitrogen Sources for Ruminants. Tennessee Valley Authority Bull. Y-130.
- Cross, D.L. 1976. Turkey Litter Silage in Rations for Dairy Heifers. J. Dairy Sci. 59:919.
- Cross, D.L. 1974. Effect of Drying Temperature and Length of Drying Time on Survival of Microorganisms in Turkey Litter. Poultry Sci. 53:1915 (Abstr.)
- Cross, D.L. 1978. Efficacy of Broiler Litter Silage for Beef Steers. J. Anim. Sci. 47:544.
- Thompson, C.S. and D.L. Cross. 1978. Economic Analysis of Broiler Litter as a Feed for Steers. C. U. Ag. Exp. Sta. Bull. 610.
- Thompson, C.S., W.T. Borders, D.L. Cross and B.F. Jenny. 1976. Technical and Economic Evaluation of Turkey Litter Silage as a Feed Source for Replacement Dairy Heifers. S. C. Ag. Exp. Sta. Tech. Bull. 1058.

**MICHIGAN STATE
UNIVERSITY
EXTENSION**

MSU is an affirmative action/equal opportunity institution. Michigan State University Extension educational programs and materials are available to all without regard to race, color, national origin, sex, disability, religion or age. ■ Issued in furtherance of MSU Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Allen Lathrop, Director, MSU Extension, East Lansing, MI 48824. ■ This information is for educational purposes only. Reference to commercial products or trade names does not imply endorsement by MSU Extension or bias against those not mentioned. This bulletin becomes public property upon publication and may be reprinted verbatim as a separate or within another publication with credit to MSU. Reprinting cannot be used to advertise a commercial product or company.

New-12-98-IM-BP/KMF, 70¢, for sale only.